

Draft

# GUIDELINES FOR ACCEPTING WATER INTO THE FRIANT-KERN CANAL

Environmental Impact Report  
SCH #2022120093

Prepared for  
Friant Water Authority

May 2023





Draft

# GUIDELINES FOR ACCEPTING WATER INTO THE FRIANT-KERN CANAL

Environmental Impact Report  
SCH #2022120093

Prepared for  
Friant Water Authority

May 2023



2600 Capitol Avenue  
Suite 200  
Sacramento, CA 95816  
916.564.4500  
esassoc.com



Atlanta	Palm Beach County	San Diego
Bend	Pasadena	San Francisco
Irvine	Pensacola	San Jose
Los Angeles	Petaluma	Sarasota
Mobile	Portland	Seattle
Oakland	Rancho Cucamonga	Tampa
Orlando	Sacramento	Thousand Oaks

D202200916

**OUR COMMITMENT TO SUSTAINABILITY** | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.

# TABLE OF CONTENTS

## Guidelines for Accepting Water into the Friant-Kern Canal Draft EIR

	<u>Page</u>
<b>Acronyms and Other Abbreviations</b> .....	<b>v</b>
<b>Executive Summary</b> .....	<b>ES-1</b>
ES.1 Introduction .....	ES-1
ES.2 Project Objectives.....	ES-1
ES.3 Summary of Proposed Guidelines .....	ES-2
ES.4 Alternatives to the Proposed Guidelines.....	ES-2
ES.5 Areas of Known Controversy and Concern.....	ES-7
ES.6 Next Steps for the EIR.....	ES-7
ES.7 Summary of Environmental Impacts of the Proposed Guidelines.....	ES-8
<b>Chapter 1, Introduction</b> .....	<b>1-1</b>
1.1 Introduction .....	1-1
1.2 Purpose of the Draft EIR.....	1-2
1.3 Environmental Review and Approval Process .....	1-2
1.4 Scope of the EIR.....	1-5
1.5 Organization of the Draft EIR.....	1-6
<b>Chapter 2, Project Description</b> .....	<b>2-1</b>
2.1 Background .....	2-1
2.2 Objectives of the Guidelines .....	2-3
2.3 Study Area .....	2-4
2.4 Proposed Guidelines .....	2-4
2.5 Anticipated Required Permits and Approvals .....	2-12
<b>Chapter 3, Environmental Setting, Impacts, and Mitigation Measures</b> .....	<b>3-1</b>
3.1 Approach to the Analysis .....	3.1-1
3.2 Aesthetics .....	3.2-1
3.3 Agriculture and Forestry Resources .....	3.3-1
3.4 Air Quality .....	3.4-1
3.5 Biological Resources .....	3.5-1
3.6 Cultural Resources .....	3.6-1
3.7 Energy .....	3.7-1
3.8 Geology and Soils and Paleontology .....	3.8-1
3.9 Greenhouse Gas Emissions .....	3.9-1
3.10 Hazards and Hazardous Materials.....	3.10-1
3.11 Hydrology and Water Quality .....	3.11-1
3.12 Land Use and Planning .....	3.12-1
3.13 Noise .....	3.13-1
3.14 Transportation .....	3.14-1
3.15 Tribal Cultural Resources .....	3.15-1
3.16 Utilities and Service Systems .....	3.16-1

	<u>Page</u>
<b>Chapter 4, Cumulative Impacts</b> .....	<b>4-1</b>
4.1 Introduction.....	4-1
4.2 Cumulative Context and Approach.....	4-2
4.3 Cumulative Projects.....	4-3
4.4 Approach to the Cumulative Impact Analysis.....	4-3
4.5 Cumulative Impact Analysis.....	4-5
<b>Chapter 5, Other CEQA Considerations</b> .....	<b>5-1</b>
5.1 Significant and Unavoidable Impacts.....	5-2
5.2 Significant Irreversible Environmental Changes.....	5-2
5.3 Growth-Inducing Impacts.....	5-3
<b>Chapter 6, Project Alternatives</b> .....	<b>6-1</b>
6.1 Introduction.....	6-1
6.2 Objectives.....	6-2
6.3 Alternatives Considered and Screening Criteria.....	6-2
6.4 Alternatives to the Proposed Guidelines.....	6-4
6.5 Environmentally Superior Alternative.....	6-7
<b>Chapter 7, List of Preparers</b> .....	<b>7-1</b>
<b>Chapter 8, References</b> .....	<b>8-1</b>

**Appendices**

- A. Notice of Preparation (NOP) and NOP Comment Letters
- B. Draft Guidelines for Accepting Water into the Friant-Kern Canal
- C. Special-Status Plant and Wildlife Species Lists
- D. Cultural and Tribal Cultural Resources Supplemental Setting Information

**Figures**

Figure 2-1	Study Area.....	2-5
Figure 3.3-1	Mapped Farmland.....	3.3-3
Figure 3.8-1	Quaternary Faults in the Study Area.....	3.8-3
Figure 3.11-1	Surface Water Hydrology Features.....	3.11-3
Figure 3.11-2	Groundwater Subbasins within the Study Area.....	3.11-11

**Tables**

Table ES-1	Summary Comparison of the Environmental Impacts of the No Project Alternative and the Proposed Guidelines.....	ES-4
Table ES-2	Summary of Impacts and Mitigation Measures.....	ES-9
Table 2-1	Proposed Guidelines for Accepting Water into the Friant-Kern Canal.....	2-7
Table 3.2-1	Applicable General Plan Goals and Policies—Aesthetics.....	3.2-4
Table 3.2-2	Summary of Impact Conclusions—Aesthetics.....	3.2-5
Table 3.3-1	Applicable General Plan Goals and Policies—Agriculture and Forestry Resources.....	3.3-5
Table 3.3-2	Summary of Impact Conclusions—Agriculture and Forestry Resources.....	3.3-6
Table 3.4-1	State and Federal Attainment Status.....	3.4-2
Table 3.4-2	Criteria Pollutants and Their Effects on Health.....	3.4-2

	<u>Page</u>
<b>Tables (continued)</b>	
Table 3.4-3	Applicable General Plan Goals and Policies—Air Quality ..... 3.4-5
Table 3.4-4	Summary of Impact Conclusions—Air Quality ..... 3.4-6
Table 3.5-1	Applicable General Plan Goals and Policies—Biological Resources ..... 3.5-11
Table 3.5-2	Summary of Impact Conclusions—Biological resources ..... 3.5-13
Table 3.6-1	Applicable General Plan Goals and Policies—Cultural Resources ..... 3.6-9
Table 3.6-2	Summary of Impact Conclusions—Cultural Resources ..... 3.6-11
Table 3.7-1	Applicable General Plan Goals and Policies—Energy ..... 3.7-4
Table 3.7-2	Summary of Impact Conclusions—Energy ..... 3.7-5
Table 3.8-1	Applicable General Plan Goals and Policies—Geology, Soils, and Paleontology ..... 3.8-9
Table 3.8-2	Summary of Impact Conclusions—Geology and Soils and Paleontology ..... 3.8-10
Table 3.9-1	Applicable General Plan Goals and Policies—GHG Emissions and Climate Change ..... 3.9-7
Table 3.9-2	Summary of Impact Conclusions – Greenhouse Gas Emissions ..... 3.9-10
Table 3.10-1	Hazardous Waste Cleanup Sites within 0.5 Miles of the Friant-Kern Canal ..... 3.10-2
Table 3.10-2	Applicable General Plan Goals and Policies—Hazards and Hazardous Materials ..... 3.10-9
Table 3.10-3	Summary of Impact Conclusions—Hazards and Hazardous Materials 3.10-11
Table 3.11-1	Friant Division Long-Term Contractors ..... 3.11-6
Table 3.11-2	Key Water Quality Parameters ..... 3.11-9
Table 3.11-3	Tulare Lake Basin Plan Parameters and Surface Water Quality Objectives ..... 3.11-17
Table 3.11-4	Tulare Lake Basin Plan Groundwater Quality Objectives ..... 3.11-18
Table 3.11-5	Applicable General Plan Goals and Policies—Hydrology and Water Quality ..... 3.11-20
Table 3.11-6	Summary of Impact Conclusions—Hydrology and Water Quality ..... 3.11-21
Table 3.11-7	Friant-Kern Canal In-Prism Water Quality Thresholds ..... 3.11-22
Table 3.12-1	Applicable General Plan Goals and Policies—Land Use and Planning .. 3.12-3
Table 3.12-2	Summary of Impact Conclusions—Land Use and Planning ..... 3.12-4
Table 3.13-1	Acoustics Terms ..... 3.13-2
Table 3.13-2	Applicable General Plan Goals and Policies—Noise and Vibration ..... 3.13-5
Table 3.13-3	Summary of Impact Conclusions—Noise and Vibration ..... 3.13-7
Table 3.14-1	Applicable General Plan Goals and Policies—Transportation ..... 3.14-3
Table 3.14-2	Summary of Impact Conclusions—Transportation ..... 3.14-4
Table 3.15-1	Applicable General Plan Goals and Policies—Tribal Cultural Resources ..... 3.15-7
Table 3.15-2	Summary of Impact Conclusions—Tribal Cultural Resources ..... 3.15-8
Table 3.16-1	Active Landfills in the Vicinity of the Study Area ..... 3.16-2
Table 3.16-2	Water and Irrigation Districts in Kern, Fresno, and Tulare Counties ..... 3.16-3
Table 3.16-3	Applicable General Plan Goals and Policies—Utilities and Service Systems ..... 3.16-7
Table 3.16-4	Summary of Impact Conclusions—Utilities and Service Systems ..... 3.16-8
Table 6-1	Summary Comparison of the Environmental Impacts of the No Project Alternative and the Proposed Guidelines ..... 6-8

This page intentionally left blank



## Acronyms and Other Abbreviations

Acronym/Abbreviation	Definition
°F	degrees Fahrenheit
2008 Policy	<i>2008 Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals</i>
AB	Assembly Bill
AC	Agricultural/Rural Conservation zoning
ACCM	asbestos-containing construction material
Ad Hoc Committee	Friant-Kern Canal Water Quality Ad Hoc Committee
AE	Exclusive Agricultural zoning
AF	acre-feet
AL	Limited Agricultural zoning
ALUP	airport land use plan
APCD	Air Pollution Control District
AQMD	Air Quality Management District
Basin	Tulare Lake Basin
basin plan	water quality control plan
BMP	best management practice
BP	Before Present
BPS	best performance standards
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal/OSHA	California Occupational Safety and Health Administration
CalARP	California Accidental Release Prevention Program
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
California Register	California Register of Historical Resources
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code

<b>Acronym/Abbreviation</b>	<b>Definition</b>
CCA	Community Choice Aggregation
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
Central Valley Regional Water Board	Central Valley Regional Water Quality Control Board
CEQA	California Environmental Quality Act
CEQA Guidelines	<i>Guidelines for Implementing the California Environmental Quality Act</i>
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA	California Endangered Species Act
cfs	cubic feet per second
CO <sub>2</sub>	carbon dioxide
CHRIS	California Historical Resources Information System
CH <sub>4</sub>	methane
CLUPP	Land Use Commission's Airport Land Use Policy Plans
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
Construction General Permit	General Permit for Storm Water Discharges Associated with Construction Activities
Contractors	collectively, water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the Friant-Kern Canal
Cooperative Agreement	voluntary agreement to adopt and implement the proposed Guidelines
CRPR	California Rare Plant Rank
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CVC	Cross Valley Canal
CVP	Central Valley Project
CWA	Clean Water Act
dB	decibel

<b>Acronym/Abbreviation</b>	<b>Definition</b>
dBA	A-weighted decibel
Delta	Sacramento–San Joaquin Delta
DOC	California Department of Conservation
DPR	California Department of Parks and Recreation
Draft EIR	draft environmental impact report
DTSC	California Department of Toxic Substances Control
EIR	environmental impact report
EPCA	Energy Policy and Conservation Act
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
Final EIR	final environmental impact report
FIRM	Flood Insurance Rate Map
FR	<i>Federal Register</i>
FMMP	Farmland Mapping and Monitoring Program
Friant	Friant Water Authority
Friant Contractors	Friant Division long-term contractors
FTA	Federal Transit Administration
FSZ	Farmland Security Zone
GHG	greenhouse gas
GIS	Geographic Information System
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
GWP	global warming potential
HCP	habitat conservation plan
HSC	California Health and Safety Code
ID	Irrigation District
IPCC	Intergovernmental Panel on Climate Change
kWh	kilowatt-hours
LIM	Land Inventory and Monitoring
LOS	level of service
LUST	leaking underground storage tank
M&I	municipal and industrial
maf	million acre-feet
MBTA	Migratory Bird Treaty Act

<b>Acronym/Abbreviation</b>	<b>Definition</b>
MCL	maximum contaminant level
MD	Munitions Debris
Millerton water	water from Millerton Lake
MT	metric tons
MTCO <sub>2e</sub>	metric tons of carbon dioxide equivalent
MMTCO <sub>2e</sub>	million metric tons of carbon dioxide equivalents
N <sub>2</sub> O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
Non-Millerton water	water from sources other than Millerton Lake
NOP	notice of preparation
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
O <sub>3</sub>	ozone
O&M HCP	San Joaquin Valley Operation and Maintenance Habitat Conservation Plan
OHP	California Office of Historic Preservation
OPR	Governor's Office of Planning and Research
OPR Technical Guidelines	<i>Technical Advisory on Evaluating Transportation Impacts in CEQA</i>
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PCE	Tetrachloroethylene
PG&E	Pacific Gas and Electric Company
PM <sub>2.5</sub>	fine particulate matter
PM <sub>10</sub>	inhalable particulate matter
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPV	peak particle velocity

<b>Acronym/Abbreviation</b>	<b>Definition</b>
PRC	Public Resources Code
proposed Guidelines	proposed <i>Guidelines for Accepting Water into the Friant-Kern Canal</i>
Pump-Back Project	Friant-Kern Canal Reverse-Flow Pump-Back Project
Put	the introduction of water
R-1-C	Single Family Residential zoning
R-A	Rural Residential zoning
R-E	Recreational zoning
R-R	Rural Residential zoning
RCRA	Resource Conservation and Recovery Act
Reclamation	United States Department of the Interior, Bureau of Reclamation
RPS	renewables portfolio standard
RS	Rural Settlement zoning
RWA	Recovered Water Account
SB	Senate Bill
SEL	single-event noise level
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SOI PQS	U.S. Secretary of the Interior's Professional Qualifications Standards
State Water Board	State Water Resources Control Board
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
T-P	Trailer Park Residential zoning
TAF	thousand acre-feet
Take	delivery of Friant Division Class 1, Class 2, Recovered Water Account (Paragraph 16b), and Unreleased Restoration Flows supplies
TCE	Trichloroethylene
Title 22	Title 22 California Drinking Water Standards
TDS	total dissolved solids

<b>Acronym/Abbreviation</b>	<b>Definition</b>
TMDL	total maximum daily load
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	decibel notation as vibration decibels
VMT	vehicle miles traveled
VOC	volatile organic compounds
WD	Water District
Williamson Act	California Land Conservation Act of 1965
WSD	Water Storage District

# EXECUTIVE SUMMARY

---

## ES.1 Introduction

The Friant-Kern Canal plays a critical role in delivering water to over one million acres of highly productive farmland and several cities and towns along the eastern rim of the San Joaquin Valley (Friant Water Authority 2018). Part of the Friant Division of the federal Central Valley Project (CVP), the 152-mile canal begins at the Friant Dam on the San Joaquin River north of the City of Fresno, which created the reservoir known as Millerton Lake. Water from Millerton Lake (Millerton water) is the main source of water delivered through the Friant-Kern Canal, however, water from sources other than Millerton Lake (referred to as “Non-Millerton water”) is regularly introduced and conveyed. The Friant Water Authority (Friant), a joint powers authority, has been working with Friant Division long-term contractors (Friant Contractors) and the United States Department of the Interior, Bureau of Reclamation (Reclamation) to develop the proposed *Guidelines for Accepting Water into the Friant-Kern Canal* (proposed Guidelines) to ensure the quality of water conveyed through the Friant-Kern Canal is protected for sustained domestic and agricultural use.

Pursuant to the California Environmental Quality Act (CEQA), Friant is the lead agency and has prepared this Draft Environmental Impact Report (EIR) to analyze potentially significant impacts that may result from implementation of the proposed Guidelines.

## ES.2 Project Objectives

As presented in Chapter 2, *Project Description*, the objectives of the proposed Guidelines are to:

- Provide greater protection of the quality of water introduced to or received from the Friant-Kern Canal for sustained domestic and agricultural use.
- Define the water quality thresholds, including the “leave behind” water associated with introduced Non-Millerton water and corresponding water quality, as well as the methodologies and tools for monitoring and forecasting water quality in the Friant-Kern Canal.
- Guide the application review process, implementation procedures, and the responsibilities of water contractors and other parties authorized by Reclamation to introduce or receive Non-Millerton water into or from the Friant-Kern Canal.

## ES.3 Summary of Proposed Guidelines

The proposed Guidelines would be applicable to all Non-Millerton water introduced or diverted from the Friant-Kern Canal including but not limited to: groundwater pump-ins, surface water diversions and pump-ins, recaptured and recirculated San Joaquin River Restoration Program Restoration Flows, and water introduced at the Friant-Kern Canal-Cross Valley Canal intertie and delivered via reverse flow on the Friant-Kern Canal. The proposed Guidelines define the water quality thresholds and required “leave behind water” associated with introduced Non-Millerton water and corresponding water quality, as well as the methodologies and tools for monitoring and forecasting water quality in the Friant-Kern Canal. The proposed Guidelines describe the Friant review process for applications to Reclamation to introduce Non-Millerton water into the Friant-Kern Canal, implementation procedures, and the responsibilities of water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the Friant-Kern Canal (collectively, “Contractors”).

While implementation of the proposed Guidelines would not result in Friant making any physical modifications to the Friant-Kern Canal, in response to the proposed Guidelines Contractors may need to take certain actions to ensure that a proposed introduction of Non-Millerton water meets the water quality thresholds of the Guidelines. These Contractor actions may include blending of water, changes in timing of the introduction or discharge of Non-Millerton water, use of alternative water supplies, or construction and operation of small water treatment facilities at the source of the pump-in. In addition, Friant or Contractors may need to construct and/or maintain facilities for monitoring and forecasting water quality (e.g., water quality monitoring stations). Potential Contractor actions in response to the proposed Guidelines, including general types of construction activities, construction timing, and operational considerations are discussed in more detail in Chapter 2, *Project Description*.

## ES.4 Alternatives to the Proposed Guidelines

As described in Chapter 6, *Project Alternatives*, the alternatives to the proposed Guidelines considered in this Draft EIR were developed based on information gathered during development of the proposed Guidelines and many iterations of water quality thresholds and management protocols were considered. In 2018 a “Friant-Kern Canal Water Quality Ad Hoc Committee” formed with the task of preparing an update to Reclamation’s 2008 Policy. Through a negotiation process, thresholds were established, and management protocols were determined. Various draft versions of the proposed Guidelines were prepared based on input received from Ad Hoc Committee members, Reclamation, and the Friant Board of Directors. The result of this process was the development of the proposed Guidelines.

In addition, as described in Chapter 6, as part of consideration of alternatives to the proposed Guidelines to be considered in the Draft EIR, potential alternatives were screened based on their ability to feasibly attain most of the basic project objectives, their feasibility within the limits of Friant’s jurisdiction, and their ability to reduce or eliminate any significant environmental impacts of the proposed Guidelines. The alternative considered but rejected was a large-scale, regional desalination plant. This alternative proposed constructing a 90-million-gallon-per-day



plant that could process approximately 100,880 acre-feet per year. A desalination plant would meet the project objectives, including protecting the quality of water introduced to or received from the Friant-Kern Canal for sustained domestic and agricultural use. However, the construction and operation of the desalination plant, including the brine disposal, would not avoid or lessen environmental impacts compared to the proposed Guidelines. Therefore, this alternative was rejected from further consideration.

As a result of the proposed Guidelines development process and alternatives screening, one alternative was identified for further evaluation in the Draft EIR.

Under the No Project Alternative, water would continue to be introduced into the Friant-Kern Canal consistent with the water quality monitoring requirements of the 2008 Policy. The 2008 Policy provides limited protections for water quality with a focus on domestic use water quality thresholds only. Under the No Project Alternative, there would be no water quality threshold management based on agronomic principles that are protective of the most sensitive crops in the region. No “leave behind” water would be available to provide additional leaching water and support agronomic practices to effectively manage applied salts and long-term salt loading in the root zone, nor would monitoring and communication protocols be implemented. Under the No Project Alternative, Contractors and water users may need to act to appropriately manage applied salts and salt loading as a result of changes to the quality of water conveyed in the Friant-Kern Canal, and to protect their water supply for sustained domestic and agricultural use. Actions that Contractors are currently implementing and may need to implement under the No Project Alternative (i.e., should the 2008 Policy remain unchanged) could include operational and maintenance activities associated with water quality monitoring and reporting. Therefore, Contractors may continue to install small water quality monitoring stations and/or manage applied salts and salt loading under the No Project Alternative.

Under the No Project Alternative, no action would be taken to approve the proposed Guidelines. None of the water quality requirements defined in the proposed Guidelines would be implemented, including water quality threshold management or the quantified “leave behind” water required for Non-Millerton water being introduced into the canal. In addition, potential actions (other than installation of small water quality monitoring stations) that might be taken by Contractors to meet the proposed Guidelines’ requirements and described in Chapter 2, *Project Description*, would not occur.

**Table ES-1** presents a comparison of impacts by resource issue area for the proposed Guidelines and the No Project Alternative.

As shown in Table ES-1, and as discussed in Chapter 6, *Project Alternatives*, the No Project Alternative would result in construction-related impacts similar to those of the proposed Guidelines, given that ground-disturbing activities may occur. However, the No Project Alternative could result in greater water quality impacts, and potentially greater impacts on agricultural resources and water supply (including groundwater demand or the need for new water supplies or water facilities), than the proposed Guidelines because water quality thresholds and actions would not be implemented for Non-Millerton water entering the Friant-Kern Canal. In addition, the No Project

Alternative would not meet the project objectives of the proposed Guidelines. Therefore, the proposed Guidelines are considered the environmentally superior alternative because the proposed Guidelines would result in potential impacts on fewer environmental resources than the No Project Alternative. Implementation of appropriate general protection measures, species protection measures, and mitigation measures would minimize the potential for significant impacts from the proposed Guidelines.

**TABLE ES-1  
SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE  
AND THE PROPOSED GUIDELINES**

Resource Topic		Proposed Guidelines	No Project Alternative
3.2 Aesthetics	<b>3.2-1:</b> Implementation of the proposed Guidelines could have a substantial adverse effect on a scenic vista.	LTS	LTS
	<b>3.2-2:</b> Implementation of the proposed Guidelines could substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	LTS	LTS
	<b>3.2-3:</b> Implementation of the proposed Guidelines could, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. In an urbanized area, implementation of the proposed Guidelines could conflict with applicable zoning and other regulations governing scenic quality.	LTS	LTS
	<b>3.2-4:</b> Implementation of the proposed Guidelines could create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	LTS	LTS
3.3 Agriculture and Forestry Resources	<b>3.3-1:</b> Implementation of the proposed Guidelines could convert Farmland to nonagricultural use or conflict with a Williamson Act contract or zoning for agricultural use.	LTS	LTS+
	<b>3.3-2:</b> Implementation of the proposed Guidelines could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use.	LTS	LTS+
3.4 Air Quality	<b>3.4-1:</b> Implementation of the proposed Guidelines could conflict with or obstruct implementation of the applicable air quality plan.	LTS	LTS
	<b>3.4-2:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS
	<b>3.4-3:</b> Implementation of the proposed Guidelines could expose sensitive receptors to substantial pollutant concentrations.	LTS	LTS
	<b>3.4-4:</b> Implementation of the proposed Guidelines could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LTS	LTS
3.5 Biological Resources	<b>3.5-1:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.	LSM	LSM
	<b>3.5-2:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS.	LSM	LSM

**TABLE ES-1  
SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE  
AND THE PROPOSED GUIDELINES**

	Resource Topic	Proposed Guidelines	No Project Alternative
3.5 Biological Resources (cont.)	<b>3.5-3:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.	LSM	LSM
	<b>3.5-4:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS
	<b>3.5-5:</b> Implementation of the proposed Guidelines could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	LSM	LSM
3.6 Cultural Resources	<b>3.6-1:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	LSM	LSM
	<b>3.6-2:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	LSM	LSM
	<b>3.6-3:</b> Implementation of the proposed Guidelines could disturb human remains, including those interred outside of dedicated cemeteries.	LSM	LSM
3.7 Energy Resources	<b>3.7-1:</b> Implementation of the proposed Guidelines could result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.	LTS	LTS
	<b>3.7-2:</b> Implementation of the proposed Guidelines could conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LTS	LTS
3.8 Geology and Soils and Paleontology	<b>3.8-1:</b> Implementation of the proposed Guidelines could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to fault rupture, strong seismic ground shaking, seismic-related ground failure, or landslides.	LTS	LTS
	<b>3.8-2:</b> Implementation of the proposed Guidelines could result in substantial soil erosion or the loss of topsoil.	LTS	LTS
	<b>3.8-3:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS
	<b>3.8-4:</b> Implementation of the proposed Guidelines could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LTS	LTS
3.9 Greenhouse Gas Emissions	<b>3.9-1:</b> Implementation of the proposed Guidelines could generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LTS	LTS
	<b>3.9-2:</b> Implementation of the proposed Guidelines could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	LTS

**TABLE ES-1  
SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE  
AND THE PROPOSED GUIDELINES**

Resource Topic	Proposed Guidelines	No Project Alternative	
3.10 Hazards and Hazardous Materials	<b>3.10-1:</b> Implementation of the proposed Guidelines could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment, or that could be located within one-quarter mile of a school.	LTS	LTS
	<b>3.10-2:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS
	<b>3.10-3:</b> Implementation of the proposed Guidelines could 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, could create a significant hazard to the public or the environment.	LTS	LTS
	<b>3.10-4:</b> Implementation of the proposed Guidelines could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LTS	LTS
	<b>3.10-5:</b> Implementation of the proposed Guidelines could expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires.	LTS	LTS
3.11 Hydrology and Water Quality	<b>3.11-1:</b> Implementation of the proposed Guidelines could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	LTS	LTS+
	<b>3.11-2:</b> Implementation of the proposed Guidelines could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LTS	LTS+
	<b>3.11-3:</b> Implementation of the proposed Guidelines could alter existing drainage patterns.	LTS	LTS
	<b>3.11-4:</b> Implementation of the proposed Guidelines in flood hazard, tsunami, or seiche zones could risk releases of pollutants due to project inundation.	LTS	LTS
	<b>3.11-5:</b> Implementation of the proposed Guidelines could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LTS	LTS+
3.12 Land Use and Planning	<b>3.12-1:</b> Implementation of the proposed Guidelines could conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LTS	LTS
3.13 Noise	<b>3.13-1:</b> Implementation of the proposed Guidelines could result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the actions carried out in response to the implementation of the proposed Guidelines, in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LSM	LSM
	<b>3.13-2:</b> Implementation of the proposed Guidelines could result in the generation of excessive groundborne vibration or groundborne noise levels.	LSM	LSM

**TABLE ES-1**  
**SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE**  
**AND THE PROPOSED GUIDELINES**

Resource Topic	Proposed Guidelines	No Project Alternative
3.14 Transportation	3.14-1: Implementation of the proposed Guidelines could conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	LTS
	3.14-2: Implementation of the proposed Guidelines could conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS
	3.14-3: Implementation of the proposed Guidelines could substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS
	3.14-4: Implementation of the proposed Guidelines could result in inadequate emergency access.	LTS
3.15 Tribal Cultural Resources	3.15-1: Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.	LSM
3.16 Utilities and Service Systems	3.16-1: Implementation of the proposed Guidelines could require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	LTS
	3.16-2: Implementation of the proposed Guidelines would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	LTS
	3.16-3: Implementation of the proposed Guidelines could 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, and would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	LTS

NOTES: LTS—Less than significant; LSM—Less than significant after application of feasible mitigation measure(s); - = Impact is less severe than under the proposed Guidelines; + = Impact is more severe than under the proposed Guidelines.

SOURCE: Data compiled by Environmental Science Associates in 2023.

## ES.5 Areas of Known Controversy and Concern

One comment letter was received in response to the Notice of Preparation (NOP). The California Native American Heritage Commission (NAHC) provided details on some cultural resource regulations pertaining to the proposed Guidelines and requested that the NAHC be contacted for a Sacred Lands File (SLF) search and list of California Native American Tribes for the study area. See Appendix A of the Draft EIR for the NOP and comment letter.

## ES.6 Next Steps for the EIR

This Draft EIR will be published and made available to federal, state, and local agencies and interested organizations and individuals who may want to review and comment on the adequacy of the analysis. Notice of this Draft EIR will be sent directly to persons, tribal groups, and

agencies that commented on the NOP. The 45-day public review period for this Draft EIR is Friday May 12, 2023 through 5:00 p.m. on Monday June 26, 2023. During the public review period, written comments should be postmarked by Monday June 26, 2023, and mailed or emailed to:

Friant Water Authority  
c/o Ian Buck-Macleod  
854 N. Harvard Avenue  
Lindsay, CA 93247  
ibuckmacleod@friantwater.org

Please use “Guidelines for Accepting Water into the Friant-Kern Canal EIR Comments” in the subject line. Please also include the name of a contact person if submitting comments on behalf of an agency, tribal group, or organization. All comments received, including names and addresses, will become part of the official administrative record and may be available to the public.

A Notice of Availability (NOA) for the Draft EIR was made available at the Fresno, Kern and Tulare County Clerks offices and published in The Fresno Bee and The Bakersfield Californian on Friday May 12, 2023. The Draft EIR is available for review on Friant’s website: <https://friantwater.org/public-notices>, and at the Friant Water Authority office at 854 N. Harvard Avenue, Lindsay, CA 93247.

During the 45-day review period, a virtual public meeting will be held on Tuesday May 30, 2023 from 3:00 p.m. to 5:00 p.m. via the Zoom web conference application. Information about the Draft EIR public meeting can be found on Friant’s website: <https://friantwater.org/public-notices>.

## **ES.7 Summary of Environmental Impacts of the Proposed Guidelines**

Potential environmental impacts and associated mitigation measures are summarized in **Table ES-2**.

**TABLE ES-2**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures	
3.2 Aesthetics	3.2-1: Implementation of the proposed Guidelines could have a substantial adverse effect on a scenic vista.	LTS	None Required.	NA	
	3.2-2: Implementation of the proposed Guidelines could substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	LTS	None Required.	NA	
	3.2-3: Implementation of the proposed Guidelines could, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. In an urbanized area, implementation of the proposed Guidelines could conflict with applicable zoning and other regulations governing scenic quality.	LTS	None Required.	NA	
	3.2-4: Implementation of the proposed Guidelines could create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	LTS	None Required.	NA	
	3.3 Agriculture and Forestry Resources	3.3-1: Implementation of the proposed Guidelines could convert Farmland to nonagricultural use or conflict with a Williamson Act contract or zoning for agricultural use.	LTS	None Required.	NA
		3.3-2: Implementation of the proposed Guidelines could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use.	LTS	None Required.	NA
		3.4-1: Implementation of the proposed Guidelines could conflict with or obstruct implementation of the applicable air quality plan.	LTS	None Required.	NA
		3.4-2: Implementation of the proposed Guidelines could 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.	LTS	None Required.	NA

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.4 Air Quality (cont.)	<p>3.4-3: Implementation of the proposed Guidelines could expose sensitive receptors to substantial pollutant concentrations.</p> <p>3.4-4: Implementation of the proposed Guidelines could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.</p>	LTS	None Required.	NA
3.5 Biological Resources	<p>3.5-1: Implementation of the proposed Guidelines could result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.</p>	PS	<p><b>Mitigation Measure 3.5-1a:</b> One botanical survey shall be conducted prior to construction activities to determine the presence or absence of special-status plant species within the construction footprint, including staging and haul routes. The surveys shall be conducted in general accordance with the <i>Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities</i> (CDFW 2018) and shall be timed to appropriately coincide with the blooming period in all suitable habitat located within any anticipated disturbance areas.</p> <p><b>Mitigation Measure 3.5-1b:</b> In the event that special-status plant species are found during the botanical surveys, the locations of the special-status plants shall be marked and a 50-foot buffer shall be established as avoidance areas both in the field, using flagging, staking, fencing, or similar devices, and on construction plans.</p> <p><b>Mitigation Measure 3.5-1c:</b> If non-listed, special-status plants are identified during botanical surveys and complete avoidance is not practicable, coordination with CDFW and/or USFWS shall be conducted as appropriate to develop the conservation plan. No take of state-listed species shall occur without an Incidental Take Permit (ITP) from CDFW.</p> <p><b>Mitigation Measure 3.5-1d:</b> To avoid special-status wildlife habitat, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>To the extent practicable, site(s) shall be identified that avoid habitats of special-status species (which may include foraging, sheltering, migration, and rearing habitat in addition to breeding or spawning habitat).</li> <li>Buffers around special-status species habitats shall be established to exclude effects of construction activities. The size of the buffer shall be in accordance with USFWS and CDFW protocols for the applicable special-status species.</li> <li>To the extent practicable, construction activities shall be scheduled to avoid special-status species' breeding, spawning, or migration locations during the seasons or active periods that these activities occur.</li> <li>Where impacts on special-status species are unavoidable, impacts shall be compensated for by restoring or preserving in-kind suitable habitat on-site or off-site, or by purchasing restoration or preservation credits.</li> </ul>	LSM

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated



**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<p><b>Mitigation Measure 3.5-1e:</b> To protect wildlife, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>• <b>Avoidance of Vegetation Disturbance.</b> Sites shall be selected that will minimize, to the greatest extent feasible, the amount of soil and upland vegetation disturbance during construction and use methods creating the least disturbance to vegetation. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed shall be limited to the extent of all temporary and permanent impacts as defined by the final project design.</li> <li>• <b>Environmental Awareness Training.</b> Prior to engaging existing or new personnel in construction activities, new construction personnel shall participate in environmental awareness training conducted by an agency-approved biologist or resource specialist. Construction personnel will be informed about the identification, potential presence, legal protections, and avoidance and minimization measures relevant to special-status species that potentially occur on the site.</li> <li>• <b>Environmental Monitoring.</b> A qualified biologist shall ensure that all applicable protective measures are implemented during construction. The qualified biologist shall have authority to stop any work if they determine that any permit requirement is not fully implemented. The qualified biologist will prepare and maintain a monitoring log of construction site conditions and observations, which will be kept on file by the lead agency.</li> <li>• <b>Work Area and Speed Limits.</b> All construction work and materials staging shall be restricted to designated work areas, routes, staging areas, temporary interior roads, or the limits of existing roadways.                         <ul style="list-style-type: none"> <li>- Prior to start of work, brightly colored fencing or flagging or other practical means shall be erected to demarcate the limits of the activities within 100 feet of sensitive natural communities and habitat areas (e.g., any aquatic features), including designated staging areas; ingress and egress corridors; stockpile areas, soil, and materials; and equipment exclusion zones. Flagging or fencing shall be maintained in good repair for the duration of construction activities.</li> <li>- Vehicles shall obey posted speed limits and will limit speeds to 20 miles per hour within the study area on unpaved surfaces and unpaved roads to reduce dust and soil erosion and avoid harm to wildlife.</li> </ul> </li> <li>• <b>Daily Removal of Food Trash.</b> All food trash shall be properly contained within sealed containers, removed from the work site, and disposed of daily to prevent attracting wildlife to construction sites.</li> </ul>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<p><b>Mitigation Measure 3.5-1f:</b> To protect nesting birds, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>To the extent practicable, vegetation removal shall be scheduled to avoid the breeding season for nesting raptors and other special-status birds (generally February 1 through August 31, depending on the species). Removal of vegetation outside of the nesting season is intended to minimize the potential for delays in vegetation removal due to active nests.</li> <li>If work is to occur during the breeding season for nesting birds, a qualified biologist shall conduct a minimum of one pre-construction survey for nesting migratory birds and raptors within the project area for all construction-related activities that will occur during the nesting season. The pre-construction survey shall be conducted no more than 15 days prior to the initiation of construction in a given area and will be phased based on the construction schedule. If an active nest is found, a construction-free buffer zone (250 feet for migratory birds, 500 feet for raptors) shall be established around the active nest site. If establishment of the construction-free buffer zone is not practicable, appropriate conservation measures (as determined by a qualified biologist and approved by CDFW) shall be implemented. These measures may include but are not limited to consulting with CDFW to establish a different construction-free buffer zone around the active nest site, conducting daily biological monitoring of the active nest site, and delaying construction activities in the vicinity of the active nest site until the young have fledged.</li> <li>If burrowing owls are detected within the project area during the non-breeding season and maintaining a 150-foot, no-disturbance buffer is not practicable, a qualified biologist shall submit an exclusion and passive-relocation plan to CDFW for approval. The exclusion and passive-relocation plan will generally follow the guidelines outlined in Appendix E of the <i>Staff Report on Burrowing Owl Mitigation</i> (CDFG 2012). If occupied burrows are detected during the breeding season and maintaining a 250-foot no-disturbance buffer is not practicable, CDFW will be consulted to determine and approve alternative measures to minimize the potential for disturbance to occupied burrows and nesting activities. Measures may include but are not limited to continuous biological monitoring by a qualified biologist until it has been determined that the young have fledged and are no longer reliant on the nest or parental care for survival or construction is complete. No direct disturbance of burrows with eggs or young can be conducted without written authorization from CDFW and USFWS.</li> <li>For construction activities that occur between February 1 and August 31, a qualified biologist shall conduct pre-construction surveys for raptors. The pre-construction surveys will include the project footprint and a minimum of a 0.50-mile radius where access is permitted around the construction area in suitable nesting habitat (i.e., large trees). The pre-construction surveys shall be conducted no more than 10 days before ground disturbance in a given area and will be phased based on the construction schedule. If nesting raptors are detected, an appropriate no-disturbance buffer (initially set at 500 feet for raptors; reductions in the standard buffer for raptors may be allowed where circumstances suggest the birds will not abandon the active nest with a</li> </ul>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<p>reduced buffer size. A qualified biologist will determine whether reducing the buffer is likely to substantially increase disturbance of nesting birds, taking into account the presence or absence of dense vegetation, topography, or structures that would block project activities from view; the life history and behavior of the bird species in question; and the nature of the proposed activity. If a reduced buffer is implemented, the biologist shall monitor bird behavior in relation to work activities. At a minimum, the biologist will monitor the baseline behavior of the birds for at least 30 minutes prior to the commencement of the work activity and for at least one hour immediately following the initiation of the work activity, when response by the nesting birds to the novel activity is expected to be greatest) shall be established and monitored by a qualified biologist. Buffers shall be maintained until a qualified biologist has determined that the young have fledged and are no longer reliant on the nest or parental care for survival.</p> <ul style="list-style-type: none"> <li>If construction results in permanent loss of alfalfa fields (high-quality foraging habitat for Swainson's hawk), this loss shall be mitigated at a minimum of a 1:1 ratio. Mitigation shall occur in coordination with CDFW and may consist of but is not limited to purchasing mitigation credits from a CDFW-approved mitigation bank, obtaining conservation easements with appropriate provisions to maintain the land as suitable foraging habitat in perpetuity, establishing new alfalfa fields, or implementing other habitat conservation measures as approved by CDFW.</li> </ul> <p><b>Mitigation Measure 3.5-1g:</b> To protect special-status amphibians and reptiles, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>If western spadefoot is encountered during construction activities, it will be allowed to move out of harm's way of its own volition, or a qualified biologist will relocate it to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.</li> <li>Prior to moving equipment at the start of a day, construction personnel shall inspect underneath parked vehicles and heavy machinery for amphibians or reptiles. If any are found, they will be allowed to move out of the construction area under their own volition, or a qualified biologist will relocate the organism(s) to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.</li> </ul> <p><b>Mitigation Measure 3.5-1h:</b> To protect Crotch's bumble bee, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>If construction activities will involve conversion of grassland or shrublands, a survey for Crotch's bumble bee shall be conducted prior to construction activities during the Crotch's bumble bee active period (i.e., March to July).</li> <li>The survey will be a visual survey conducted by a qualified biologist who will search for Crotch's bumble bee activity and the presence of ground nests. If an active ground nest is observed, it shall be avoided. If avoidance of the active nest is not possible, CDFW will be consulted for approval of alternative measures to protect the Crotch's bumble bee.</li> </ul>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<p><b>Mitigation Measure 3.5-1j:</b> To protect San Joaquin kit fox, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>• Before the start of ground-disturbing activities within suitable habitat areas for San Joaquin kit fox (i.e., alkali desert scrub, annual grassland, pasture, barren) an approved biologist shall conduct preconstruction surveys in accordance with USFWS' <i>Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during Ground Disturbance</i> (USFWS 2011). Preconstruction surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox.</li> <li>• If a natal/pupping den is discovered within the work area or within 200-foot buffer of the work area boundary, the USFWS shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization from USFWS. If the preconstruction survey reveals an active natal/pupping den, the Contractor shall contact the Service immediately to obtain the necessary take authorization. No construction work shall be allowed within 200 feet of the newly discovered natal/pupping den without written approval from the Service.</li> </ul> <p><b>Mitigation Measure 3.5-1j:</b> To protect Tipton kangaroo rat, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>• Before the start of construction, the approved biologist shall conduct a habitat assessment to determine presence of special-status small mammal species burrows or their signs. If no observations, burrows, or signs of special-status small-mammal species are detected, no further measures will be required.</li> <li>• If burrows and signs of special-status small mammal species are observed, the approved biologist will conduct protocol-level surveys in accordance with <i>Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats</i> (USFWS 2013)</li> <li>• If signs of Tipton kangaroo rat are detected during the survey, the Contractor, under the supervision of the approved biologist, shall establish non-disturbance exclusion zones (using wildlife exclusion fencing [e.g., a silt fence or similar material]). The non-disturbance exclusion fence with one-way exit/escape points shall be placed to exclude the Tipton kangaroo rat from the construction area.</li> </ul> <p><b>Mitigation Measure 3.5-1k:</b> To protect American badger, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>• No more than 30 days before the start of construction activities, a qualified biologist shall conduct pre-construction surveys for American badgers within suitable habitat on the project site. If a potentially active den is found in a construction area, a burrow probe shall be used to determine the presence of badgers, or the den openings may be monitored with tracking medium or an infrared-beam camera for three consecutive nights to determine current use.</li> </ul>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<p>Potential (inactive) dens within the limits of disturbance shall be blocked or excavated to prevent use during construction. If American badgers or active dens are detected during these surveys, the following measures shall be implemented.</p> <ul style="list-style-type: none"> <li>Disturbance of any American badger dens shall be avoided to the extent practicable. American badger dens are used for shelter, escape, cover, and reproduction, and are thus vital to the survival of American badgers. If present, occupied badger dens shall be flagged, and ground-disturbing activities avoided, within 50 feet of the occupied den during the nonbreeding season (July 1 through February 14). Dens determined to be occupied during the breeding season (February 15 through June 30) shall be flagged, and ground-disturbing activities avoided, within 200 feet to protect adults and nursing young. Buffers may be modified by the qualified biologist with the written concurrence of CDFW.</li> <li>If avoidance of an active non-maternity den is not feasible, badgers shall be relocated by slowly excavating the burrow (either by hand or with mechanized equipment under the direct supervision of a qualified biologist) before or after the rearing season (February 15 through June 30). Any passive relocation of American badgers shall occur only under the direction of a qualified biologist.</li> </ul>	
	<p>3.5-2: Implementation of the proposed Guidelines could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS.</p>	PS	<p><b>Mitigation Measure 3.5-2:</b> To avoid or minimize disturbance of sensitive natural communities, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li><b>Avoidance of Sensitive Natural Communities.</b> The proponent of the action will select sites that will avoid sensitive natural communities, including riparian habitats, by doing the following: <ul style="list-style-type: none"> <li>To the maximum extent practicable, project elements shall be designed to avoid effects on sensitive natural communities.</li> <li>Flagging or fencing shall be installed by a qualified biologist around any sensitive natural community to be avoided by construction.</li> <li>Flagging or fencing shall remain in place throughout the duration of the construction activities and will be inspected and maintained regularly by a qualified biologist until completion of construction activities. Fencing shall be removed when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.</li> <li>Where impacts on sensitive natural communities other than waters of the United States or state are unavoidable, impacts shall be compensated for by restoring and/or preserving in-kind sensitive natural communities on-site, or off-site at a nearby site, or by purchasing in-kind restoration or preservation credits from a mitigation bank.</li> </ul> </li> <li><b>Restoration of Temporarily Affected Areas.</b> For any areas temporarily affected by construction activities, the following measures shall be implemented: <ul style="list-style-type: none"> <li>Prepare a restoration plan for sites with temporary impacts, for review by CDFW.</li> </ul> </li> </ul>	LSM

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<ul style="list-style-type: none"> <li>- Minimize soil disturbance and stockpile topsoil for later use in any areas to be graded.</li> <li>- Amend soil as necessary before installing replacement plants.</li> <li>- Use only native plant species for revegetation.</li> <li>• <b>Preservation of Large Trees.</b> Existing native vegetation shall be retained as practicable, with special focus on the retention of shade-producing and bank-stabilizing trees and brush with greater than 6-inch-diameter branches or trunks. If large trees must be removed, compensation shall be implemented within 12 months of removal of such large trees. Compensation shall be implemented through one of three mechanisms or some combination thereof: (1) replacement via replanting at a minimum ratio of 1:1 based on a diameter-at-breast-height (DBH) basis, (e.g., planting six 1-inch DBH trees for a single, removed 6-inch DBH tree); (2) permanent preservation of large, native trees, which could include, but not be limited to, establishment of a conservation easement on lands that support native trees; or (3) contribution to the respective, established, approved tree conservation fund where the tree impact occurred.</li> <li>• <b>Avoidance of Excessive Soil Compaction.</b> Wherever possible, vegetation disturbance and soil compaction shall be minimized by using low-ground-pressure equipment with a greater reach than other equipment, or that exerts less pressure per square inch on the ground.</li> <li>• <b>Materials and Methods of Native and Invasive Vegetation Removal.</b> If riparian vegetation is removed with chain saws or other power equipment, machines that operate with vegetable-based bar oil will be used, if practicable. All invasive plant species (e.g., those rated as invasive by the California Invasive Plant Council or local problem species) shall, if feasible, be removed using locally and routinely accepted agricultural practices. Stockpiling of invasive plant materials is prohibited during the flood season.</li> <li>• <b>Revegetation of Disturbed Areas.</b> All temporarily disturbed areas shall be de-compacted and seeded/planted with a mix of native riparian, wetland, and/or upland plant species suitable for the area. The proportion of the action shall develop a revegetation plan, including (as applicable) a schedule; plans for grading of disturbed areas to pre-construction contours; a planting palette with plant species native to the study area; invasive species management; performance standards; and maintenance requirements (e.g., watering, weeding, and replanting). Plants for revegetation shall come primarily from active seeding and planting; natural recruitment may also be proposed if site conditions allow for natural recruitment to reestablish vegetation and avoid potential negative risks associated with erosion and impacts on water quality. Plants imported to the restoration areas will come from local stock, and to the extent possible, from local nurseries. Only native plants (genera) will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for restoration planting or seeding.</li> </ul>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<p><b>Mitigation Measure</b></p> <ul style="list-style-type: none"> <li>• <b>Revegetation Materials and Methods.</b> Following the completion of work, site contours shall be returned to preconstruction conditions or redesigned to provide increased biological and hydrological functions.                             <ul style="list-style-type: none"> <li>- Any area barren of vegetation as a result of implementation of an action shall be restored to a natural state by mulching, seeding, planting, or other means with native trees, shrubs, willow stakes, erosion control native seed mixes, or herbaceous plant species.</li> <li>- Where disturbed, topsoil shall be conserved for reuse during restoration to the extent practicable.</li> <li>- Native plant species comprising a diverse community structure (plantings of both woody and herbaceous species, if both are present) that follow a CDFW-approved plant palette shall be used for revegetation of disturbed and compacted areas, as appropriate.</li> <li>- Irrigation may also be required to ensure the survival of shrubs, trees, or other vegetation.</li> <li>- Soils that have been compacted by heavy equipment shall be de-compacted, as necessary, to allow for revegetation.</li> </ul> </li> <li>• <b>Materials and Methods of Revegetation Erosion Control.</b> If erosion control fabrics are used in revegetated areas, they shall be silt in appropriate locations to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics shall be used.</li> <li>• <b>Revegetation Monitoring and Reporting.</b> All revegetated areas shall be maintained and monitored for a minimum of two years after replanting is complete and until success criteria are met, to ensure that the revegetation effort is successful. The standard for success is 60 percent absolute cover compared to an intact, local reference site. If an appropriate reference site cannot be identified, success criteria will be developed for review and approval by CDFW on a project-by-project basis based on the specific habitat affected and known recovery times for that habitat and geography. A summary report of the monitoring results and recommendations at the conclusion of each monitoring year shall be prepared.</li> </ul>	
	3.5-3: Implementation of the proposed Guidelines could result in a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.	PS	<p><b>Mitigation Measure 3.5-3:</b> To avoid or minimize disturbance to wetlands and waters, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:</p> <ul style="list-style-type: none"> <li>• <b>Avoidance of Jurisdictional Wetlands and Other Waters.</b> Sites shall be selected that shall avoid, minimize, and if necessary, compensate for reduction in area and/or habitat quality of wetlands and jurisdictional waters, through the following measures:                             <ul style="list-style-type: none"> <li>- To the maximum extent practicable, elements of Contractor actions shall be designed to avoid effects on wetlands and other waters, including rivers, streams, vernal pools, and seasonal wetlands.</li> <li>- Flagging or fencing shall be installed by a qualified biologist around any jurisdictional wetland or other aquatic feature to be avoided by construction.</li> <li>- Flagging or fencing shall remain in place throughout the duration of construction and will be inspected and maintained regularly by a qualified biologist until completion of the project. Fencing shall be removed when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.</li> </ul> </li> </ul>	LSM

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.5 Biological Resources (cont.)			<ul style="list-style-type: none"> <li>- Staging areas, access roads, and other facilities shall be placed to avoid and limit disturbance to waters of the state and other aquatic habitats (e.g., streambank or stream channel, riparian habitat) as much as possible. When possible, existing ingress or egress points shall be used and/or work shall be performed from the top of the creek banks or from barges on the waterside of the stream or levee bank, or dry gravel beds.</li> <li>- Wetlands and other waters of the United States, and waters of the state that would be removed, lost, and/or degraded shall be replaced, restored, or enhanced on a "no net loss" basis (in accordance with all permits secured from and related requirements imposed by USACE and State Water Board).</li> </ul>	
	<p>3.5-4: Implementation of the proposed Guidelines could 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.</p> <p>3.5-5: Implementation of the proposed Guidelines could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.</p>	LTS	None Required.	NA
3.6 Cultural Resources	<p>3.6-1: Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.</p>	PS	<p><b>Mitigation Measure 3.5-4:</b> To reduce potential conflicts with adopted local policies or ordinances protecting biological resources, Contractors implementing actions in response to the proposed Guidelines shall Implement Mitigation Measures 3.5-2 and 3.5-3.</p> <p><b>Mitigation Measure 3.6-1a:</b> Before implementation of any construction-related activities associated with the proposed Guidelines, the need for an inventory and significance evaluation of architectural resources shall be assessed, based upon the type of activity and the potential for architectural resources to be present or disturbed. The assessment shall consist of a review of maps and aerial photos to determine whether existing buildings, dams, levees, roads, or other built features are present. If so, and if these features either are of unknown age or are known to be older than 45 years old, then an inventory and evaluation shall be completed by, or under the direct supervision of, a qualified architectural historian, defined as one who meets the U.S. Secretary of the Interior's Professional Qualifications Standards (SOI PQS) for Architectural History or History. This inventory and evaluation shall include the following:</p> <ol style="list-style-type: none"> <li>a. Map(s) and verbal description of the project area that delineates both the horizontal and vertical extents of potential direct and indirect effects —on architectural resources.</li> <li>b. A records search at the appropriate repository of the California Historical Resources Information System (CHRIS) for the project area and vicinity (typically areas within 0.25 or 0.5 mile, based on setting), to acquire records of previously recorded cultural resources and previously conducted cultural resources studies. This task can be performed by either the qualified archaeologist or the appropriate local CHRIS center staff.</li> <li>c. Background research on the history of the project area and vicinity for all actions determined to need additional historical architecture assessment.</li> </ol>	<p>LSM</p> <p>LSM</p>

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated



**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.6 Cultural Resources (cont.)			<p>d. If, after review, features of the built environment are determined to be less than 45 years old, inclusion in the description a summary statement of their age and references for this determination.</p> <p>e. If architectural resources (45 years of age or older) are determined to likely be present in or near the project area, an architectural field survey of the project area, unless previous architectural field surveys no more than two years old have been conducted for the project area, in which case a new field survey is not necessary. Any architectural resources identified in the project area during the survey shall be recorded on the appropriate California Department of Parks and Recreation (DPR) 523 forms (i.e., site record forms).</p> <p>f. An evaluation of any architectural resources identified in the project area for California Register eligibility (i.e., whether they qualify as historical resources, as defined in CEQA Guidelines Section 15064.5).</p> <p>g. An assessment of potential impacts on any historical resources identified in the project area. This shall include an analysis of whether potential impacts on the historical resource would be consistent with the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties and applicable guidelines.</p> <p>h. A technical report meeting the U.S. Secretary of the Interior's Standards for architectural history technical reporting. This report shall document the mitigation measures taken and any study results. The report shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency.</p> <p><b>Mitigation Measure 3.6-1b:</b> If potentially significant impacts on historical resources are identified through implementation of Mitigation Measure 3.6-1a, an approach for reducing such impacts shall be developed before implementation of the action and in coordination with interested parties (e.g., historical societies, local communities). Typical measures for reducing impacts include:</p> <ol style="list-style-type: none"> <li>Modification of the action to avoid impacts on historical resources.</li> <li>Documentation of historical resources, to the standards of and to be included in the <i>Historic American Building Survey, Historic American Engineering Record, or Historic American Landscapes Survey</i>, as appropriate. As described in the above standards, the documentation shall be conducted by a qualified architectural historian, defined above, and shall include large-format photography, measured drawings, written architectural descriptions, and historical narratives. The completed documentation shall be submitted to the U.S. Library of Congress.</li> <li>Relocation of historical resources in conformance with the <i>U.S. Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings</i>.</li> <li>Monitoring of construction-related and operational vibrations at historical resources.</li> <li>For historical resources that are landscapes, preservation of the landscape's historic form, features, and details that have evolved over time, in conformance with the <i>U.S. Secretary of the Interior's Guidance for the Treatment of Cultural Landscapes</i>.</li> </ol>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.6 Cultural Resources (cont.)	<p>3.6-2: Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.</p>	PS	<p>f. Development and implementation of interpretive programs or displays, and community outreach.</p> <p>Any technical report developed as part of this mitigation measure shall meet the U.S. Secretary of the Interior's Standards for architectural history technical reporting and shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency.</p> <p><b>Mitigation Measure 3.6-2a:</b> Before implementation of any construction-related activity that includes ground disturbance associated actions taken by Contractors in response to the proposed Guidelines, an archaeological records search and sensitivity assessment, and an inventory and significance evaluation of archaeological resources identified in the project area shall be conducted. The inventory and evaluation shall be done by or under the direct supervision of a qualified archaeologist, defined as one who meets the SOI PQS for Archeology, and shall include the following:</p> <ol style="list-style-type: none"> <li>Map(s) and verbal description of the project area that delineates both the horizontal and vertical extents of potential direct and indirect effects on archaeological resources.</li> <li>A records search at the appropriate CHRIS repository for the project area and vicinity (typically areas within 0.25 or 0.5 mile, based on setting) to acquire records of previously recorded cultural resources and previously conducted cultural resources studies. This task can be performed by either the qualified archaeologist or the appropriate local CHRIS center staff.</li> <li>Outreach to the NAHC, including a request of a search of the Sacred Lands File for the project area and a list of California Native American Tribes culturally and geographically affiliated with the project area, to determine whether any documented Native American sacred sites could be affected by the action.</li> <li>Consultation with California Native American Tribes pursuant to PRC Section 21080.3 to determine whether any indigenous archaeological resource or tribal cultural resources could be affected by the action. The CEQA lead agency shall consult with California Native American Tribes culturally and affiliated with the project area and who have requested to be notified by the CEQA lead agency regarding projects, pursuant to AB 52; this consultation shall consist of the CEQA lead agency providing written notification of the action to any such Tribes and follow-up consultation if any Tribes request, in writing, from the CEQA lead agency consultation on the action within 30 days of receiving the CEQA lead agency's initial notification. Consultation shall include discussion regarding the design of the action, cultural resources survey, protocols for construction monitoring, and any other Tribal concerns.</li> <li>Background research on the history, including ethnography and indigenous presence, of the project area and vicinity.</li> <li>An archaeological sensitivity analysis of the project area based on mapped geologic formations and soils, previously recorded archaeological resources, previous archaeological studies, and Tribal consultation.</li> </ol>	LSM

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.6 Cultural Resources (cont.)			<p><b>Mitigation Measure</b></p> <p>g. An archaeological field survey of project area shall be conducted. The field survey shall include, at a minimum, a pedestrian survey. If the archaeological sensitivity analysis suggests a high potential for buried archaeological resources in the project area, a subsurface survey shall also be conducted. If previous archaeological field surveys no more than two years old have been conducted for the project area, a new field survey is not necessary, unless their field methods do not conform to those required above (e.g., no subsurface survey was conducted but project area has high potential for buried archaeological resources). Any archaeological resources identified in the project area during the survey shall be recorded on the appropriate DPR 523 forms (i.e., site record forms).</p> <p>h. An evaluation of any archaeological resources identified in the project area for California Register eligibility (i.e., as qualifying as historical resources, as defined in CEQA Guidelines Section 15064.5) as well as whether they qualify as unique archaeological resources pursuant to PRC Section 21083.2. Such evaluation may require archaeological testing (excavation), potentially including laboratory analysis, and consultation with relevant California Native American Tribes (for indigenous resources).</p> <p>i. An assessment of potential impacts on any archaeological resources identified in the project area that qualify as historical resources (per CEQA Guidelines Section 15064.5) and/or unique archaeological resources (per PRC Section 21083.2). This shall include an analysis of whether the potential impacts would materially alter a resource's physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the California Register or a qualified local register.</p> <p>j. A technical report meeting the U.S. Secretary of the Interior's Standards for archaeological technical reporting. This report shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted to the NAHC.</p> <p><b>Mitigation Measure 3.6-2b:</b> If potentially significant impacts on archaeological resources that qualify as historical resources (per CEQA Guidelines Section 15064.5) and/or unique archaeological resources (per PRC Section 21083.2) are identified during an action implemented in response to the Guidelines, the Contractor implementing the action shall develop an approach for reducing such impacts, before implementing the action and in coordination with interested or consulting parties (e.g., California Native American Tribes [for indigenous resources], historical societies [for historic-era resources], local communities). Typical measures for reducing impacts include:</p> <ol style="list-style-type: none"> <li>Modify the action to avoid impacts on resources.</li> <li>Plan parks, green space, or other open space to incorporate the resources.</li> <li>Develop and implement a detailed archaeological resources management plan to recover the scientifically consequential information from archaeological resources before any excavation at the resource's location. Treatment for most archaeological resources consists of (but is not necessarily limited to): sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the</li> </ol>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.6 Cultural Resources (cont.)			<p>portion(s) of the resource to be affected by the action. The archaeological resources management plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.</p> <p>d. Develop and implement interpretive programs or displays and conduct community outreach. Any technical report developed as part of this mitigation measure shall meet the U. S. Secretary of the Interior's Standards for archaeological technical reporting and shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted to the NAHC.</p> <p><b>Mitigation Measure 3.6-2c:</b> Before any ground-disturbing construction activities related to actions implemented by Contractors in response to the Guidelines, an archaeologist meeting, or under the supervision of an archaeologist meeting, the SOI PQS for Archeology shall conduct a training program for all construction field personnel involved in the ground-disturbing activities. If a California Native American Tribe expresses interest, the CEQA lead agency shall invite the Tribe to participate in the training program. On-site personnel shall attend the training before the start of any ground-disturbing activities. The training shall outline the general archaeological sensitivity of the project area and the procedures to follow in the event that archaeological resources and/or human remains are inadvertently discovered during construction (see Mitigation Measures 3.6-2d and 3.6-2e). Documentation of the training attendance shall be maintained by the CEQA lead agency.</p> <p><b>Mitigation Measure 3.6-2d:</b> If archaeological resources are encountered during construction activities, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The CEQA lead agency and a qualified archaeologist, defined as one meeting the SOI PQS for Archeology, shall be immediately informed of the discovery. The qualified archaeologist shall inspect the discovery and notify the CEQA lead agency of their initial assessment. If the qualified archaeologist determines that the resource is or is potentially indigenous in origin, the CEQA lead agency shall consult with California Native American Tribes culturally and geographically affiliated with the project area to assess the find and determine whether it is potentially a tribal cultural resource.</p> <p>If the CEQA lead agency determines based on recommendations from the qualified archaeologist—and, if the resource is indigenous, from California Native American Tribes culturally and geographically affiliated with the project area—that the resource may qualify as a historical resource (per CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074), then the resource shall be avoided if feasible. If avoidance of an identified indigenous resource is not feasible, the lead agency shall consult with a qualified archaeologist, culturally affiliated California Native American Tribes, and other appropriate interested parties to determine treatment measures to minimize or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4.</p>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.6 Cultural Resources (cont.)			<p>Once treatment measures have been determined, the CEQA lead agency shall prepare and implement an archaeological (and/or tribal cultural) resources management plan that outlines the treatment measures for the resource. Treatment measures typically consist of the following steps:</p> <ol style="list-style-type: none"> <li>a. Determine whether the resource qualifies as a historical resource (per CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074) through analysis that could include additional historical or ethnographic research, evaluative testing (excavation), or laboratory analysis.</li> <li>b. If the resource qualifies as a historical resource (per CEQA Guidelines Section 15064.5) and/or unique archaeological resource (per PRC Section 21083.2), implement measures for avoiding or reducing impacts such as the following:               <ol style="list-style-type: none"> <li>i. Modify the action to avoid impacts on resources.</li> <li>ii. Plan parks, green space, or other open space to incorporate resources.</li> <li>iii. Recover the scientifically consequential information from the archaeological resource before any excavation at the resource's location. This typically consists of (but is not necessarily limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the resource to be affected by the action.</li> <li>iv. Develop and implement interpretive programs or displays.</li> </ol> </li> <li>c. If the resource qualifies as a tribal cultural resource (per PRC Section 21074), implement measures for avoiding or reducing impacts such as the following:               <ol style="list-style-type: none"> <li>i. Avoid and preserve the resource in place through measures that include but are not limited to the following:                   <ol style="list-style-type: none"> <li>a. Plan and construct the action to avoid the resource and protect the cultural and natural context.</li> <li>b. Plan green space, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria.</li> </ol> </li> <li>ii. Treat the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, through measures that include but are not limited to the following:                   <ol style="list-style-type: none"> <li>a. Protect the cultural character and integrity of the resource.</li> <li>b. Protect the traditional use of the resource.</li> <li>c. Protect the confidentiality of the resource.</li> </ol> </li> <li>iii. Implement permanent conservation easements or other interests in real property, with cultural appropriate management criteria for the purposes of preserving or using the resource or place.</li> </ol> </li> </ol>	

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2  
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.6 Cultural Resources (cont.)	<p>3.6-3: Implementation of the proposed Guidelines could disturb human remains, including those interred outside of dedicated cemeteries.</p>	PS	<p>Any technical report developed as part of this mitigation measure shall meet the U.S. Secretary of the Interior's Standards for archaeological technical reporting and shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted to the NAHC.</p> <p><b>Mitigation Measure 3.6-3:</b> If human remains are encountered during construction activities, all work shall immediately halt within 100 feet of the find and the CEQA lead agency shall contact the appropriate county coroner to evaluate the remains and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e)(1). If the coroner determines that the remains are Native American in origin, the appropriate county shall contact the NAHC, in accordance with HSC Section 7050.5(c) and PRC Section 5097.98. Per PRC Section 5097.98, the CEQA lead agency shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, of the location of the Native American human remains is not damaged or disturbed by further development activity until the CEQA lead agency has discussed and conferred, as prescribed in PRC Section 5097.98, with the most likely descendants and the property owner regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.</p> <p>Any technical report developed as part of this mitigation measure shall meet the U.S. Secretary of the Interior's Standards for archaeological technical reporting and shall be submitted to the NAHC and the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted only to the NAHC.</p>	LSM
3.7 Energy Resources	<p>3.7-1: Implementation of the proposed Guidelines could result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.</p> <p>3.7-2: Implementation of the proposed Guidelines could conflict with or obstruct a state or local plan for renewable energy or energy efficiency.</p>	LTS	None Required.	NA
3.8 Geology and Soils and Paleontology	3.8-1: Implementation of the proposed Guidelines could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to fault rupture, strong seismic ground shaking, seismic-related ground failure, or landslides.	LTS	None Required.	NA

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.8 Geology and Soils and Paleontology (cont.)	3.8-2: Implementation of the proposed Guidelines could result in substantial soil erosion or the loss of topsoil.	LTS	None Required.	NA
	3.8-3: Implementation of the proposed Guidelines could 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.	LTS	None Required.	NA
	3.8-4: Implementation of the proposed Guidelines could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LTS	None Required.	NA
3.9 Greenhouse Gas Emissions	3.9-1: Implementation of the proposed Guidelines could generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LTS	None Required.	NA
	3.9-2: Implementation of the proposed Guidelines could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	None Required.	NA
3.10 Hazards and Hazardous Materials	3.10-1: Implementation of the proposed Guidelines could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment, or that could be located within one-quarter mile of a school.	LTS	None Required.	NA
	3.10-2: Implementation of the proposed Guidelines could 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.	LTS	None Required.	NA

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.10 Hazards and Hazardous Materials (cont.)	3.10-3: Implementation of the proposed Guidelines could 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, could create a significant hazard to the public or the environment.	LTS	None Required.	NA
	3.10-4: Implementation of the proposed Guidelines could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LTS	None Required.	NA
	3.10-5: Implementation of the proposed Guidelines could expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires.	LTS	None Required.	NA
3.11 Hydrology and Water Quality	3.11-1: Implementation of the proposed Guidelines could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	LTS	None Required.	NA
	3.11-2: Implementation of the proposed Guidelines could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LTS	None Required.	NA
	3.11-3: Implementation of the proposed Guidelines could alter existing drainage patterns.	LTS	None Required.	NA
	3.11-4: Implementation of the proposed Guidelines in flood hazard, tsunami, or seiche zones could risk releases of pollutants due to project inundation.	LTS	None Required.	NA
	3.11-5: Implementation of the proposed Guidelines could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LTS	None Required.	NA

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated



**TABLE ES-2**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.12 Land Use and Planning	3.12-1: Implementation of the proposed Guidelines could conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LTS	None Required.	NA
3.13 Noise	3.13-1: Implementation of the proposed Guidelines could result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the actions carried out in response to the implementation of the proposed Guidelines, in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	PS	<p><b>Mitigation Measure 3.13-1:</b> The following measures shall be implemented during construction of any actions implemented by Contractors in response to the proposed Guidelines:</p> <ul style="list-style-type: none"> <li>• Noise- and vibration-generating activities shall comply with the applicable general plan and/or noise ordinances for the jurisdiction located within the vicinity of the project.</li> <li>• Construction equipment shall be located as far away as possible from noise-sensitive receptors to the extent feasible, to reduce noise levels below applicable local standards.</li> <li>• Construction equipment shall be maintained to manufacturers' recommended specifications, and all construction vehicles and equipment shall be equipped with appropriate mufflers and other approved noise control devices.</li> <li>• Idling of construction equipment shall be limited to the extent feasible to reduce the time that noise is emitted.</li> <li>• An individual traffic noise analysis of identified haul routes shall be conducted and mitigation, including but not limited to measures such as reduced speed limits, shall be provided at locations where noise standards cannot be maintained for noise-sensitive receptors.</li> <li>• The action shall incorporate the use of temporary noise barriers, such as acoustical panel systems, between construction activities and noise-sensitive receptors if it is concluded that they would be needed to ensure compliance with applicable noise standards and effective in reducing noise exposure to sensitive receptors.</li> </ul>	LSM
3.14 Transportation	3.13-2: Implementation of the proposed Guidelines could result in the generation of excessive groundborne vibration or groundborne noise levels.	PS	<b>Mitigation Measure 3.13-2:</b> Implement Mitigation Measure 3.13-1.	LSM
	3.14-1: Implementation of the proposed Guidelines could conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	LTS	None Required.	NA
	3.14-2: Implementation of the proposed Guidelines could conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS	None Required.	NA

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

**TABLE ES-2**  
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Issue Area	Impact Statement	Significance Prior to Mitigation Measures	Mitigation Measure	Significance After Mitigation Measures
3.14 Transportation (cont.)	3.14-3: Implementation of the proposed Guidelines could substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS	None Required.	NA
	3.14-4: Implementation of the proposed Guidelines could result in inadequate emergency access.	LTS	None Required.	NA
3.15 Tribal Cultural Resources	3.15-1: Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.	PS	<b>Implement Mitigation Measures 3.6-2a, 3.6-2b, 3.6-2c, 3.6-2d, and 3.6-3.</b>	LSM
3.16 Utilities and Service Systems	3.16-1: Implementation of the proposed Guidelines could require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	LTS	None Required.	NA
	3.16-2: Implementation of the proposed Guidelines would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	LTS	None Required.	NA
	3.16-3: Implementation of the proposed Guidelines could 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, and would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	LTS	None Required.	NA

NA: Not Applicable; LTS: Less than Significant; PS: Potentially Significant; LSM: Less than Significant with Mitigation Incorporated

# CHAPTER 1

---

## Introduction

### 1.1 Introduction

The Friant-Kern Canal plays a critical role in delivering water to more than 1 million acres of highly productive farmland and several cities and towns along the eastern rim of the San Joaquin Valley (Friant Water Authority 2018). Part of the Friant Division of the federal Central Valley Project (CVP), the 152-mile canal begins at Friant Dam on the San Joaquin River north of the city of Fresno, which created the reservoir known as Millerton Lake. Water from Millerton Lake (Millerton water) is the main source of water delivered through the Friant-Kern Canal; however, water from sources other than Millerton Lake (referred to herein as “Non-Millerton water”) is regularly introduced and conveyed. The Friant Water Authority (Friant), a joint powers authority, has been working with Friant Division long-term contractors (Friant Contractors) and the United States Department of the Interior, Bureau of Reclamation (Reclamation) to develop the proposed *Guidelines for Accepting Water into the Friant-Kern Canal* (proposed Guidelines) to ensure that the quality of water conveyed through the Friant-Kern Canal is protected for sustained domestic and agricultural use.

The proposed Guidelines would be applicable to all Non-Millerton water introduced to or diverted from the Friant-Kern Canal including but not limited to: groundwater pump-ins, surface water diversions and pump-ins, recaptured and recirculated San Joaquin River Restoration Program Restoration Flows, and water introduced at the Friant-Kern Canal–Cross Valley Canal (CVC) intertie and delivered via reverse flow on the Friant-Kern Canal. The proposed Guidelines define the water quality thresholds and required “leave behind” water associated with introduced Non-Millerton water and corresponding water quality, as well as the methodologies and tools for monitoring and forecasting water quality in the Friant-Kern Canal. The proposed Guidelines describe the Friant review process for applications to Reclamation to introduce Non-Millerton water into the Friant-Kern Canal; implementation procedures; and the responsibilities of water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the Friant-Kern Canal (referred to collectively as “Contractors”).

Implementation of the proposed Guidelines would not result in Friant making any physical modifications to the Friant-Kern Canal; however, in response to the proposed Guidelines, Contractors may need to take certain actions to ensure that a proposed introduction of Non-Millerton water meets the water quality thresholds of the Guidelines. These actions may include blending of water, changes to the timing of the introduction or discharge of Non-Millerton water, use of alternative water supplies, or construction and operation of small water treatment facilities at the source of the pump-in. In addition, Friant or Contractors may

need to construct and/or maintain facilities for monitoring and forecasting water quality (e.g., water quality monitoring stations). Potential Contractor actions in response to the proposed Guidelines, including general types of construction activities, construction timing, and operational considerations, are discussed in more detail in Chapter 2, *Project Description*.

Pursuant to the California Environmental Quality Act (CEQA), Friant is the lead agency and has prepared this draft Environmental Impact Report (Draft EIR) to analyze potentially significant impacts that may result from implementation of the proposed Guidelines.

## 1.2 Purpose of the Draft EIR

This Draft EIR has been prepared in conformance with CEQA (Public Resources Code [PRC] Section 21000 et seq.) and the *Guidelines for Implementing the California Environmental Quality Act* (CEQA Guidelines) (California Code of Regulations title 14, Section 15000 et seq.). As described in CEQA Guidelines Section 15121(a), an EIR is a public information document that objectively assesses and discloses potential environmental effects—in this case, the effects of the proposed Guidelines. This Draft EIR identifies the measures incorporated into the proposed Guidelines to improve the quality of water conveyed through the Friant-Kern Canal and discusses alternatives to the proposed Guidelines that could reduce or avoid any adverse environmental impacts. CEQA requires that lead, responsible, or trustee agencies consider the environmental consequences of projects over which they have discretionary authority.

The proposed Guidelines do not describe specific construction activities, operational considerations, or construction timing associated with any potential actions that may be implemented by Contractors to meet water quality thresholds in the proposed Guidelines. Therefore, this Draft EIR discusses (to the extent feasible) the environmental effects of general types of construction activities and operational considerations for the proposed Guidelines' requirements and potential Contractor actions resulting from implementation of the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

As the lead agency for the proposed Guidelines, Friant will use the information in this Draft EIR to: evaluate the proposed Guidelines' potential environmental impacts; determine whether any feasible mitigation measures and alternatives are necessary and available to reduce potentially significant environmental impacts; and approve, modify, or deny approval of the proposed Guidelines. This Draft EIR may also be used by Contractors, as responsible agencies under CEQA, in their discretionary approval processes within their jurisdictions to meet their obligations under CEQA.

## 1.3 Environmental Review and Approval Process

The preparation of an EIR involves multiple steps. The public is provided the opportunity to review and comment on the scope of the analysis, the content of the EIR, results and conclusions presented, and the overall adequacy of the document to meet the substantive requirements of CEQA. This section describes the steps in the environmental review process for the proposed Guidelines.

### 1.3.1 Notice of Preparation and Public Scoping Period

Friant issued a notice of preparation (NOP) on Tuesday, December 6, 2022, to satisfy the requirements of CEQA and CEQA Guidelines Section 15082 (State Clearinghouse #2022120093). The purpose of the NOP is twofold: (1) to notify the public, responsible agencies, trustee agencies, the Governor’s Office of Planning and Research, potentially affected public agencies, involved federal agencies, and tribes regarding Friant’s intent to prepare an EIR for the proposed Guidelines; and (2) to solicit input from the public and those agencies as to the scope and content of the environmental information to be included in the Draft EIR.

The issuance of the NOP began the 30-day public comment period, which closed at 5 p.m. on Monday, January 9, 2023. In accordance with PRC Section 21080.4(a) and CEQA Guidelines Section 15082(b), each responsible agency, trustee agency, and involved federal agency was requested to provide, in writing, the scope and content of the environmental information to be included in the Draft EIR related to its area of statutory responsibility. The NOP was also sent to public agencies, organizations, and individuals that requested receipt of Friant’s public notices, to invite them to provide input. The NOP and the current draft of the *Guidelines for Accepting Water into the Friant-Kern Canal* were also made available for review on Friant’s website at the following locations:

**NOP:** [https://friantwater.org/s/Friant\\_WQ\\_Guidelines\\_NOP\\_120622.pdf](https://friantwater.org/s/Friant_WQ_Guidelines_NOP_120622.pdf)

**Proposed Guidelines:** <https://friantwater.org/public-notice>

The NOP and the proposed Guidelines were also made available for review at the Friant Water Authority office at 854 N. Harvard Avenue, Lindsay, CA 93247.

A virtual public meeting was held during the 30-day NOP review period to solicit comments on the scope and content of the Draft EIR, and to provide information to the public, including a description of the proposed Guidelines. The meeting was held at 3:00 p.m. on Tuesday, December 13, 2022, via the Zoom web conference application. Written comments were accepted throughout the 30-day public NOP comment period and at the scoping meeting; verbal comments were recorded at the scoping meeting. Written comments were accepted via both U.S. Mail and email. One comment letter was received and is included in **Appendix A, Notice of Preparation**, which includes the NOP and the comment letter.

### 1.3.2 Notification of California Native American Tribes

Assembly Bill (AB) 52 requires lead agencies to notify California Native American tribes that are traditionally and culturally affiliated with the geographic area of an individual restoration project, if they have requested notice of projects proposed in that area. No California Native American Tribes have reached out to Friant to be consulted with on Friant projects as per PRC Sections 21080.3.1, 21080.3.2, and 21082.3. Therefore, no tribal consultation efforts outside of the Native American Heritage Commission (NAHC) correspondence were conducted.

### 1.3.3 Draft EIR

This Draft EIR is available to federal, state, and local agencies and interested organizations and individuals who may want to review and comment on the adequacy of the analysis. Publication of the Draft EIR marks the beginning of a 45-day public review period. The 45-day public review period for this Draft EIR is Friday May 12, 2023, through 5:00 p.m. on Monday June 26, 2023. During the public review period, written comments should be postmarked by Monday June 26, 2023, and mailed or emailed to:

Friant Water Authority  
c/o Ian Buck-Macleod  
854 N. Harvard Avenue  
Lindsay, CA 93247  
ibuckmacleod@friantwater.org

Please use “Guidelines for Accepting Water into the Friant-Kern Canal EIR Comments” in the subject line. Please also include the name of a contact person if submitting comments on behalf of an agency, tribal group, or organization. All comments received, including names and addresses, will become part of the official administrative record and may be available to the public.

A Notice of Availability for the Draft EIR was made available at the Fresno, Kern and Tulare County Clerks offices and published in The Fresno Bee and The Bakersfield Californian on Friday May 12, 2023. The Draft EIR is available for review on Friant’s website: <https://friantwater.org/public-notice>, and at the Friant Water Authority office at 854 N. Harvard Avenue, Lindsay, CA 93247.

During the 45-day review period, a virtual public meeting will be held on Tuesday May 30, 2023 from 3:00 p.m. to 5:00 p.m. via the Zoom web conference application. Information about the Draft EIR public meeting can be found on Friant’s website: <https://friantwater.org/public-notice>.

### 1.3.4 Final EIR and Mitigation Monitoring and Reporting Program

Written and verbal comments received on the Draft EIR during the public review period will be addressed in a response to comments document that, together with the Draft EIR and any changes to the Draft EIR made in response to comments received, will constitute the Final Environmental Impact Report (Final EIR). The Draft EIR and Final EIR together will compose the EIR for the proposed Guidelines.

As part of the approval process, Friant will prepare and adopt a mitigation monitoring and reporting program, as required by PRC Section 21081.6(a), for any mitigation measures in this Draft EIR.

### 1.3.5 Approval Process

Under CEQA Guidelines Section 15090(a), Friant must certify that the EIR has been completed in compliance with CEQA; that Friant has reviewed and considered the information in the EIR; and that the EIR reflects Friant’s independent judgment and analysis.

CEQA requires Friant to adopt appropriate findings as part of the approval of the proposed Guidelines, as set forth in CEQA Guidelines Section 15091. Under CEQA Guidelines Section 15092, a lead agency may approve or carry out a project subject to an EIR only if it determines the following:

- The project will not have a significant effect on the environment. OR
- The agency has eliminated or substantially lessened all significant effects on the environment where feasible. AND
  - Any remaining significant effects on the environment that are found to be unavoidable are acceptable due to overriding considerations, in which case it will adopt a statement of overriding considerations pursuant to CEQA Guidelines Section 15093.

After certification of the EIR, Friant will file a notice of determination in compliance with CEQA Guidelines Section 15094.

### 1.3.6 Trustee and Responsible Agencies

A “trustee agency” under CEQA is a public agency having jurisdiction by law over natural resources that may be affected by a project that are held in trust for the people of the state of California. In addition, under CEQA, “responsible agencies” are state and local public agencies, other than the lead agency, that have the authority to carry out or approve a project or are required to approve a portion of the project for which a lead agency is preparing or has prepared an EIR. Contractors (i.e., water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the Friant-Kern Canal) may be involved with implementing the proposed Guidelines (i.e., taking certain actions to comply with water quality thresholds).

## 1.4 Scope of the EIR

The EIR will analyze potentially significant impacts that may result from implementation of the proposed Guidelines (i.e., potential actions taken by Contractors to comply with water quality thresholds defined in the proposed Guidelines). The EIR will evaluate the full range of environmental issues contemplated for consideration under CEQA and the CEQA Guidelines including aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, energy, geology, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise and vibration, transportation, tribal cultural resources, utilities and service systems, and cumulative impacts. Environmental issues not contemplated for consideration due to the determination that there will be no impact include mineral resources, population and housing, public services, recreation, wildfire, and growth inducement.

## 1.5 Organization of the Draft EIR

This Draft EIR is organized as follows:

- **Executive Summary:** The Executive Summary provides a summary of the Draft EIR.
- **Chapter 1, *Introduction*:** This section provides a brief summary of the proposed Guidelines (i.e., the *Guidelines for Accepting Water to the Friant-Kern Canal*), the CEQA environmental review and approval process, the scope of the EIR, and the organization of this Draft EIR.
- **Chapter 2, *Project Description*:** This chapter describes the proposed Guidelines, including background on the development of the Guidelines, objectives of the proposed Guidelines per CEQA, and the study area. This chapter also describes the types of actions that could be taken by Contractors in response to the proposed Guidelines including general construction activities and operational considerations, and the anticipated required permits and approvals.
- **Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*:** The resource sections in this chapter evaluate the potential environmental impacts of the proposed Guidelines. Each section of Chapter 3 describes the existing environmental conditions (environmental setting), existing relevant regulations (regulatory setting), thresholds of significance, and analysis methodology and assumptions. Each resource section then evaluates anticipated changes to existing environmental conditions resulting from potential actions that Contractors may take in response to the Guidelines. For any potentially significant impact that could result, mitigation measures are presented, and the significance level with implementation of mitigation measures is determined.
- **Chapter 4, *Cumulative Impacts*:** This chapter describes the CEQA requirements for cumulative impacts, the geographic scope and time frame for the cumulative analysis, the existing conditions context for past activities, related projects and plans, and cumulative impact analysis.
- **Chapter 5, *Alternatives*:** This chapter describes the CEQA requirements for alternatives, alternatives to the proposed Guidelines, and alternatives eliminated from detailed analysis; provides a comparative analysis of impacts from the alternatives to the proposed Guidelines (greater than, equal to, or lesser than); and identifies the environmentally superior alternative.
- **Chapter 6, *Other CEQA Considerations*:** This chapter describes the significant unavoidable impacts and significant irreversible environmental changes, if applicable.
- **Chapter 7, *List of Preparers*:** This chapter lists the individuals who helped to prepare this Draft EIR and identifies the qualifications and affiliations of those individuals.
- **Chapter 8, *References*:** This chapter identifies the references used as sources of information in this Draft EIR.
- **Appendices** contain information that support the analyses presented in this Draft EIR.



# CHAPTER 2

---

## Project Description

### 2.1 Background

Friant is a California joint powers authority formed in 2004 by water agencies receiving water from the Friant Division of the federal CVP. Friant operates and maintains the Friant-Kern Canal under a contract with Reclamation. The Friant-Kern Canal stretches approximately 152 miles from Friant Dam on the San Joaquin River north of Fresno, which created the reservoir known as Millerton Lake, to the Kern River in Bakersfield, California. The canal is built in both concrete-lined and unlined earth sections. Millerton Lake, Friant Dam, and the Friant-Kern Canal are all components of the Friant Division of the CVP. The Friant-Kern Canal plays a primary role in accomplishing the CVP’s visionary goal—redistributing water from California’s precipitation-heavy regions in the north to the drier regions of the Southern Central and San Joaquin valleys. The Friant-Kern Canal is maintained and operated by Friant, delivering irrigation water to more than 1 million acres of farmland and drinking water to several cities and towns along the eastern rim of the San Joaquin Valley.

Friant Contractors have an expectation to receive high-quality Sierra Nevada water from Millerton Lake released from Friant Dam. However, introductions of other sources of water can cause changes to water quality in the Friant-Kern Canal. To ensure that the quality of water conveyed through the Friant-Kern Canal is protected for sustained domestic and agricultural use, Friant and Contractors<sup>1</sup> have cooperatively developed the proposed Guidelines. The proposed Guidelines apply to all water introduced into the Friant-Kern Canal other than directly from Millerton Lake to the headworks of the Friant-Kern Canal (“Non-Millerton water”).

#### 2.1.1 Development of the Guidelines

Friant has been working for many years with Friant Contractors and Reclamation to develop the proposed Guidelines and prepare for their implementation. In 2011, Reclamation proposed revisions to its 2008 *Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals* (2008 Policy); however, Reclamation never adopted the proposed revisions (Reclamation 2008). As a result, certain Friant Contractors who are disproportionately affected by changes to water quality in the Friant-Kern Canal due to the introduction of Non-Millerton water were dissatisfied with limited water quality measures required by Reclamation.

---

<sup>1</sup> “Contractors” are defined as water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the Friant-Kern Canal.

The 2008 Policy only defines water quality and management requirements for “Non-Project Water,” defined as water that has not been appropriated by Reclamation for the Friant Division of the CVP. Three types of Non-Project Water are identified: Type A, Type B, and Type C. Depending on the Non-Project Water type, varying levels of monitoring and limited management of that water are required under the 2008 Policy. In addition, the only water quality thresholds referenced in the 2008 Policy are Title 22 California Drinking Water Standards (Title 22).

Type A water demonstrates complete compliance with Title 22 and must be analyzed every year. Type B water, which includes floodwater and groundwater, generally complies with Title 22 but may exceed the Maximum Contaminant Level for certain constituents. Reclamation allows Type B water to be introduced into the Friant-Kern Canal over short intervals and requires regular in prism- (i.e., in-situ) monitoring in the Friant-Kern and Madera canals (Reclamation 2008). Type C water originates at the same source as CVP water but has not been fully appropriated by Reclamation and is considered to be physically the same as CVP water. There are no water quality analyses required to convey Type C water in the Friant-Kern Canal. An example of Type C water is CVC Contract supply. The 2008 Policy provides limited protections for water quality with a focus on domestic use water quality thresholds only. Specifically, Friant Contractors disproportionately affected by changes to Friant-Kern Canal water quality had concerns related to the limited requirements applied to Type B and Type C Non-Project Water, which are typically higher in salts and other constituents of concern and not of equivalent quality to Millerton Water.

Consecutive critical water years in 2014 and 2015 stressed water management in the Friant Division, and Friant Contractors began exploring options, such as new or expanded groundwater banking programs, to diversify their water portfolios and increase supply flexibility. Furthermore, in 2017, Friant reinitiated the study of expanding the Friant-Kern Canal Reverse-Flow Pump-Back Project (Pump-Back Project), with the intention of facilitating extensive coordination with Friant Contractors and other interested parties to develop a water quality management plan based on agronomic principles that would provide protections for Contractors. The Pump-Back Project proposes the construction and operation of permanent pump-back facilities at the check structures along the southern portion of the Friant-Kern Canal to facilitate conveyance and delivery of Non-Millerton water supplies introduced via the Friant-Kern Canal–CVC intertie, including water purchased from Reclamation pursuant to CVC contracts, recaptured San Joaquin River Restoration Program Restoration Flows, water in the California Aqueduct, water from banking projects, and other CVC supplies. Friant facilitated Pump-Back Project Steering Committee meetings in which proposed Pump-Back Project operations, project effects, and management actions were discussed. The ending consensus was that the 2008 Policy needed to be updated to include more robust water quality thresholds, as well as monitoring and mitigation that applied to all programs or projects introducing Non-Millerton water to the Friant-Kern Canal.

Friant established a “Friant-Kern Canal Water Quality Ad Hoc Committee” (Ad Hoc Committee) in 2018, which was charged with the task of preparing an update to Reclamation’s 2008 Policy, and which resulted in the proposed Guidelines described and analyzed in this Draft EIR. The Ad Hoc Committee is made up of Friant Contractors directors and district managers from Arvin-Edison Water Storage District (WSD), Delano-Earlimart Irrigation District (ID), Kern-Tulare

Water District (WD), Lindsay Strathmore ID, Lower Tule River ID, Pixley ID, Porterville ID, Shafter-Wasco ID, Saucelito ID, and Terra Bella ID. A “small group” of district managers from Arvin-Edison WSD, Delano-Earlimart ID, Lindsay Strathmore ID, Porterville ID, Saucelito ID, and Terra Bella ID were tasked to lead key analytical efforts to develop appropriate thresholds and mitigation for the exceedance of such thresholds and establish monitoring requirements.

Over the course of many meetings during a four-year period, the Ad Hoc Committee worked to balance concerns of water supply reliability and water quality and found common ground in wanting improved communications of Friant-Kern Canal water quality conditions to support planning. Some Friant Contractors depend on pump-in and reverse-flow pump-back programs to meet agency demands or want to ensure that additional water supplies, like banked groundwater, can be conveyed reliably in all water year types; others are concerned with disproportionate water quality impacts, long-term salt loading, and acute and chronic agronomic impacts.

The Ad Hoc Committee reached consensus on each component of the proposed Guidelines, including: a required amount of “leave behind” water, which is based on agronomic leaching requirements and applies to both existing and future pump-in programs; the proposed implementation of a forecasting model to inform agency planning; a robust monitoring plan; and water quality thresholds that are protective of the most sensitive crops within the Friant Division.

Friant staff presented draft proposed Guidelines in the summer of 2020 at Friant-wide workshops and to the Friant Board of Directors. In the summer of 2021, Friant staff presented to the Board and Ad Hoc Committee updates to the draft proposed Guidelines based on considerable coordination with Reclamation. The updates included updated descriptions of the proposed approval process for accepting water into the Friant-Kern Canal, implementation procedures, and responsibilities of water contractors requesting permission from Reclamation to introduce water into the Friant-Kern Canal.

Reclamation has indicated that it will not directly adopt the updated proposed Guidelines but will consider permitting Friant to implement the proposed Guidelines in a manner that is binding on all parties that desire to introduce Non-Millerton water into the Friant-Kern Canal. As such, participating Contractors on the Friant-Kern Canal will enter into a voluntary agreement to adopt and implement the proposed Guidelines (referred to herein as the “Cooperative Agreement”), which, upon such approval, will apply to all existing and future Friant-Kern Canal pump-in programs.

## 2.2 Objectives of the Guidelines

CEQA requires that an EIR contain a “statement of the objectives sought by the proposed project.” Under CEQA, “[a] clearly written statement of objectives will help the Lead Agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations. The statement of objectives should include the underlying fundamental purpose of the project” (CEQA Guidelines Section 15124[b]).

The objectives of the proposed Guidelines are to:

- Provide greater protection of the quality of water introduced to or received from the Friant-Kern Canal for sustained domestic and agricultural use.
- Define the water quality thresholds, including the “leave behind” water associated with introduced Non-Millerton water and corresponding water quality, as well as the methodologies and tools for monitoring and forecasting water quality in the Friant-Kern Canal.
- Guide the application review process, implementation procedures, and the responsibilities of water contractors and other parties authorized by Reclamation to introduce or receive Non-Millerton water into or from the Friant-Kern Canal.

## 2.3 Study Area

The study area includes: (1) the 152-mile Friant-Kern Canal; (2) the area within and adjacent to the Friant-Kern Canal right-of-way; and (3) areas within the Friant Contractors’ boundaries. The Friant-Kern Canal extends from Friant Dam near Fresno, California, to the Kern River in Bakersfield, California. It is located in the San Joaquin Valley of central California (**Figure 2-1**). The Friant-Kern Canal conveys water to augment irrigation capacity in Fresno, Tulare, and Kern counties, as well as to provide municipal water supplies.

## 2.4 Proposed Guidelines

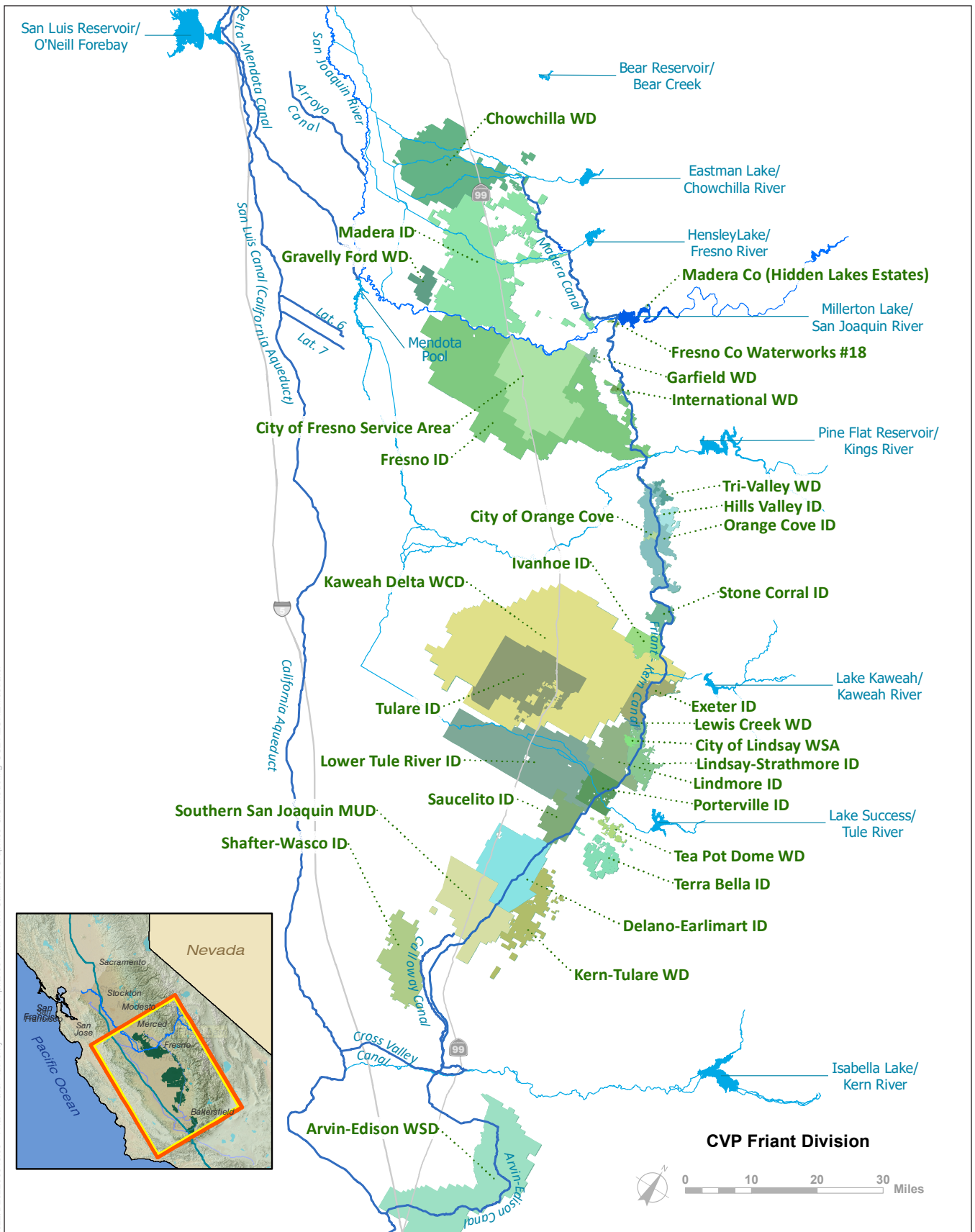
The proposed Guidelines outline the requirements for introducing Non-Millerton water into the Friant-Kern Canal, and methodologies and tools for monitoring, reporting, and forecasting water quality in the Friant-Kern Canal. The proposed Guidelines are applicable to all Non-Millerton water introduced or diverted into the Friant-Kern Canal, including but not limited to:

- Groundwater pump-ins (i.e., groundwater wells or previously banked water).
- Surface water diversions and pump-ins.
- Recaptured and recirculated San Joaquin River Restoration Program Restoration Flows.
- Water introduced at the Friant-Kern Canal–CVC intertie and delivered via reverse flow on the Friant-Kern Canal.

The proposed Guidelines include water quality constituent thresholds based on agronomic principles and a ledger mechanism<sup>2</sup> to determine the required amount of “leave behind” water for introducing water of lesser quality into the Friant-Kern Canal. The proposed Guidelines use the term “mitigation for impacted water quality” to meet the Water Quality Guideline requirements. In this context, “mitigation” has a different meaning than in CEQA Guidelines Section 15370. Therefore, in this Draft EIR, proposed Guidelines mitigation is referred to as a “leave behind” water. The proposed Guidelines are applicable to all Non-Millerton water “Put” (i.e., the introduction of water) into or to the “Take” (i.e., delivery of Friant Division Class 1, Class 2,

---

<sup>2</sup> The Water Quality Mitigation Ledger, referred to as the “ledger mechanism,” tracks and accounts for all inflows into and diversions from the Friant-Kern Canal to determine appropriate requirements for impacted water quality attributable to the introduced Non-Millerton water.



SOURCE: Friant Water Authority, 2019

Friant Water Authority - Friant-Kern Canal

**Figure 2-1**  
Study Area



Recovered Water Account (RWA [Paragraph 16b]), and Unreleased Restoration Flows supplies) of water from the Friant-Kern Canal. The proposed Guidelines also describe Friant’s application review process and procedures and the responsibilities of Contractors during implementation of the proposed Guidelines.

**Table 2-1** summarizes the proposed Guidelines and provides a reference to sections of the proposed Guidelines for additional information. The proposed Guidelines are included as **Appendix B**.

Under the proposed Guidelines, a Water Quality Advisory Committee composed of Friant Contractors involved in either introducing or receiving Non-Millerton water to or from the Friant-Kern Canal would be established to provide recommendations to Friant on operations and monitoring requirements of the Friant-Kern Canal. The Water Quality Advisory Committee would operate under an established charter and would appoint a Monitoring Subcommittee to assist Friant in the implementation of the proposed Guidelines. Attachment A of the proposed Guidelines presents the Friant-Kern Canal Water Quality Guidelines Water Quality Advisory Committee Draft Charter. Proposed Committee members include:

- Arvin-Edison WSD
- Delano-Earlimart ID
- Kern-Tulare WD
- Lindsay Strathmore ID
- Lower Tule River ID
- Pixley ID
- Porterville ID
- Saucelito ID
- Shafter Wasco ID
- South San Joaquin Municipal Utility District
- Terra Bella ID

The proposed Guidelines are subject to review and modification by Friant if any of the following conditions occurs:

- A future regulatory cost or equivalent fee is imposed on Friant Contractors and a portion of such fee can reasonably be attributed to the incremental difference of water quality conditions in the Friant-Kern Canal.
- When Friant Division Class 1 contract allocation is less than or equal to 25 percent, the Water Quality Advisory Committee convenes as outlined in Attachment A of the proposed Guidelines. In these years, the “leave behind” water would be accounted for as presented in the proposed Guidelines but would be deferred to a later date unless those responsible for the Put and Take mutually agree to the “leave behind” water in the critical year. All monitoring requirements would remain as presented in the proposed Guidelines.
- There is a significant regulatory change or scientifically based justification and three of the following five Friant Contractors agree and work with the Water Quality Advisory Committee to recommend a change: (1) Arvin-Edison WSD, (2) Shafter Wasco ID, (3) Delano-Earlimart ID, (4) South San Joaquin Municipal Utility District, and (5) Kern-Tulare WD.

Reclamation may also propose modifications to the proposed Guidelines in coordination with Friant and reserves the right to implement additional water quality requirements to protect water quality within the Friant-Kern Canal. Any proposed modification to the proposed Guidelines would be provided by Friant via written notice to all Contractors prior to adoption and implementation.

**TABLE 2-1  
PROPOSED GUIDELINES FOR ACCEPTING WATER INTO THE FRIANT-KERN CANAL**

Topic	Summary	Proposed Guidelines Reference
General Requirements for Discharge of Water into the Friant-Kern Canal	The general requirements include a determination of compliance with the proposed Guidelines, approval of the discharge facility, and any other discharge and conveyance requirements. The approval process is as follows: (1) Contractor submits project documentation and supporting data to Friant and Reclamation, (2) Friant completes proposed Guidelines compliance review and determination of Contractor actions, including monitoring and requirements for “leave behind” water, (3) Reclamation completes application and approval process, and (4) Contractor and Friant coordinate for implementation of actions.	Section A, including Figure 1, Approval Process Diagram
Water Quality Monitoring and Reporting Requirements	Non-Millerton water discharged into the Friant-Kern Canal must be correctly sampled, completely analyzed, and approved by Friant and Reclamation prior to its introduction into the Friant-Kern Canal. The proposed Guidelines describe water quality monitoring and reporting requirements, including: the methods (i.e., grab samples), frequency (i.e., continuously, every three years), water quality standards, and the short list of constituents of interest (refer to Appendix B, Table 1, Title 22 Water Quality Standards, <sup>1</sup> and Table 4, Water Quality Constituents Short List); check structure locations (refer to Appendix B, Table 2, Check Structure Locations for Real-Time Measurements of Electrical Conductivity); and exceedance thresholds (i.e., 80 percent; refer to Appendix B, Table 3, Friant-Kern Canal In-Prism Water Quality Thresholds). As part of the proposed Guidelines, monitoring equipment will be installed at each of the check structure locations. Requirements for impacted water quality are quantified through use of the Water Quality Mitigation Ledger, or ledger mechanism.	Section B and Attachments B (Monitoring Program Summary) and C (Agronomic Impacts and Mitigation)
Resolution of Disputes	The proposed Guidelines outline dispute resolution procedures in the event a Contractor is dissatisfied with the application or interpretation by Friant staff or consultants.	Section C, and Attachment D (Ledger Standard Operating Procedures)
Water Quality Forecasting and Communications	Water quality data will be evaluated using the Friant-Kern Canal Water Quality Model, a predictive, water quality forecast tool to assist Friant and Friant Contractors in making real-time operation decisions. Results will be reported and communicated via weekly summaries.	Section D
Implementation Responsibilities and Costs	Friant is responsible for several actions to ensure consistency across water quality sampling, interpretation, and coordination with Contractors, the Water Quality Advisory Committee, and the Monitoring Subcommittee. Costs for implementation and administration of the proposed Guidelines will be initially paid out from Friant’s Operation, Maintenance and Replacement budget and subsequently will be reimbursed by Contractors.	Section E and Attachment E (Friant-Kern Canal Water Quality Guidelines Cost Allocation)

## NOTES:

Contractors = collectively, water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the Friant-Kern Canal; Friant = Friant Water Authority; Friant Contractors = Friant Division long-term contractors; proposed Guidelines = *proposed Guidelines for Accepting Water into the Friant-Kern Canal*; Non-Millerton water = water from sources other than Millerton Lake, introduced into the Friant-Kern Canal; Reclamation = United States Department of the Interior, Bureau of Reclamation

<sup>1</sup> Title 22 Water Quality Standards are the Domestic Water Quality and Monitoring Regulations specified by the California Health and Safety Code (Sections 116270–116755), and California Code of Regulations (Section 6440 et seq.), as amended.

SOURCE: Data compiled by Environmental Science Associates in 2023.

## 2.4.1 Types of Potential Actions that May Result from Implementation of the Proposed Guidelines

As described above, the proposed Guidelines include water quality constituent thresholds based on agronomic principles and a ledger mechanism to determine the required amount of “leave behind” water for introducing water of lesser quality into the Friant-Kern Canal. This “leave behind” water represents additional surface water needed to support agricultural leaching and prevent constituent accumulation in the rootzone and potential agronomic impacts. For example, applying the ledger mechanism described in the proposed Guidelines, introducing 100 acre-feet (AF) of water with an electrical conductivity measurement of 400 microSiemens per centimeter would require 5 percent “leave behind” water, equivalent to 5 AF. The specific “leave behind” percentage and corresponding volume is determined from the rating curve look up based on the measured electrical conductivity of the Non-Millerton water being introduced and which takes into account an established baseline that assumes current, minimum leaching practices by water users (proposed Guidelines section B3).

In response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines with respect to existing programs and future projects. Potential actions that could be taken in response to the implementation of the proposed Guidelines are described further below.

***Blending of Water:*** Contractors may blend water prior to discharge into the Friant-Kern Canal to comply with water quality thresholds in the proposed Guidelines. “Blending of water” refers to the process of mixing higher quality water with a lower quality water at a calculated ratio. Blending of water may occur within existing Contractor facilities and would not likely require construction.

***Change in Timing or Amount of Introduced Water:*** Contractors may change the timing or amount of introduced water to comply with the water quality thresholds in the proposed Guidelines. This potential action could involve a shift in the point in time when water is introduced or an adjustment to the planned amount of water to be introduced into the Friant-Kern Canal to optimize in-prism water quality mixing.

***Small Water Treatment Facilities:*** Contractors may construct and operate small water treatment facilities to address constituent concentration exceedances and comply with proposed Guidelines requirements. “Water treatment” refers to any process that improves the quality of water to meet a specific end use. Most likely, water treatment would involve the installation of wellhead filters to target specific constituents, which involves modifying the pump infrastructure at the existing pump manifold location. In some cases, Contractors may opt for a more comprehensive small treatment system, which may require a building or structure (approximately the size of a shed) where water is purified or treated (e.g., through the use of specialized filters to remove chemicals) to comply with the proposed Guidelines. However, Contractor construction of small water treatment facilities would have a separate agency environmental review and approval process from the proposed Guidelines.



***Modification to Pump Configuration or Operation:*** If pumped and discharged groundwater is consistently exceeding the defined water quality thresholds in the proposed Guidelines at either the discharge location or in-prism, a Contractor may choose to modify its pumping configuration and operations. For example, if a certain pump is consistently discharging water exceeding a Title 22 constituent threshold and blending of water or a change in timing of the introduced water cannot help alleviate the exceedance, a Contractor may choose to drill a new well away from the constituent plume.

***Water Quality Monitoring Stations:*** Friant and/or Contractors may choose to construct or operate water quality monitoring stations within their own facilities or in the Friant-Kern Canal to better monitor discharged water quality and to have additional data points to support required measures of the proposed Guidelines. Water quality monitoring stations typically include the following types of structures: wall-mounted racks, free-standing racks, enclosed stations, compact stations, or floating platforms. These stations may also represent locations for collection of grab samples to be analyzed at approved laboratory facilities. Filtration, treatment, and additional monitoring may be implemented to target and reduce the impact of specific constituents of concern, or to reduce salt loading and minimize the required “leave behind” water for the introduced source. Installation or construction of a water quality monitoring station by a Contractor would have a separate environmental review and approval process from the proposed Guidelines.

***Alternative Water Supplies:*** An “alternative water supply” is defined as any supply in replacement of or in addition to a Contractor’s existing contracts or projects. Contractors may need to account for changes in water supply related to compliance with the proposed Guidelines. Supply may be affected by water quality threshold management or the required amount of “leave behind” water when introducing Non-Millerton water into the Friant-Kern Canal. Contractors could seek alternative water supplies, such as increasing groundwater pumping (that meets requirements defined in adopted Groundwater Sustainability Plans [GSPs]), and/or purchasing, exchanging, and transferring surface water supplies as part of Contractors’ overarching water portfolio management.

Implementation of the proposed Guidelines would not result in Friant making any substantial physical modifications to the Friant-Kern Canal. Discharge structures (i.e., flumes or weirs used to measure the flow of water) currently exist in the Friant-Kern Canal. A Contractor may need to construct and operate new discharge structures after implementation of the proposed Guidelines. However, construction of discharge structures would have a Reclamation and Friant environmental review and approval process separate from the proposed Guidelines. Therefore, the construction and operation of discharge structures are not discussed further in this Draft EIR.

## 2.4.2 General Types of Construction Activities and Operational Considerations Associated with Potential Actions

The precise locations and detailed characteristics of potential future Contractor actions that could be implemented in response to the proposed Guidelines are yet to be determined. Therefore, this section focuses on reasonably foreseeable types of construction activities that might be taken by

Contractors and operational considerations. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies.

This section generally describes the types of construction activities associated with potential actions and general construction timing. Operational considerations (e.g., activities to operate the constructed facilities) are also described generally.

## **Construction Activities**

Construction activities associated with potential Contractor actions could potentially include the general activities listed below.

### ***Establishment and Use of Staging Areas***

One or more small staging areas could be required for storage and distribution of construction materials and equipment. These small staging areas would be located on or near active construction sites and may be relocated to active work areas as construction progresses. Typically, staging areas are established in previously disturbed areas that provide parking for workers. Depending on the location of the potential Contractor action, establishing such areas may involve acquiring temporary easements from property owners.

### ***Use of Access and Haul Roads***

Access and haul routes would be designated for hauling materials to and from borrow sites, staging areas, and construction sites. Access routes would also be used for employee commuting. Typically, these routes consist of existing public roads near construction sites; however, new off-road haul routes may also be constructed between borrow sites, small staging areas, and construction sites. Construction of a water treatment facility may involve only a few trips per day for employee commutes and hauling of equipment and materials.

### ***Site Preparation***

Site preparation typically involves clearing the ground of structures, woody and herbaceous vegetation, and any debris, and/or using equipment such as backhoes, excavators, bulldozers, mowers, and dump trucks. Depending on the potential Contractor action, existing structures may need to be cleared and/or earthen material may be removed from the ground to prepare the site. The clearing operation may be followed by grubbing operations to remove trees and other vegetation, stumps, root balls, and belowground infrastructure. Soil and geotechnical bores may be conducted to evaluate and/or verify underlying conditions to ensure that those facilities are designed and constructed to address any site-specific seismic-related or soil stability issues and minimize the potential risk of structural failure. Any debris generated during clearing and grubbing operations can be disposed of by various means, depending on the type of material and local conditions. These materials may be hauled off-site to landfills (e.g., building demolition waste), delivered to recycling facilities (e.g., concrete), or sold (e.g., organic material to cogeneration facilities). Excess earthen materials, such as organic soils, vegetation, and excavated material, may be temporarily stockpiled before being re-spread at the site or used to reclaim borrow sites.

### ***Construction of Small Facilities***

Construction of small water treatment facilities, for example, could involve activities such as placement of concrete or other supporting structures, potentially adding a small area of impervious surface in the project footprint. Construction could also include the extension of electric distribution lines and placement of lighting and fencing around the perimeter of a constructed feature.

### ***Site Restoration and/or Demobilization***

Upon completion of construction activities, any material stripped from the soil surface during site preparation would be placed on appropriate facilities and in any temporarily disturbed areas where topsoil was removed. Temporarily disturbed areas would be stabilized, which may include activities such as decompaction and seeding with appropriate herbaceous native seed mixes (as appropriate).

Any remaining construction debris would be hauled to an appropriate waste facility. Equipment and materials would be removed from the site, and staging areas and any temporary access roads would be restored to pre-project conditions (e.g., decompacted, stabilized with an herbaceous seed mix, planted for restoration to native habitat, and returned to agricultural production). Noncommercial borrow sites would be restored or reclaimed by replacing topsoil that had been set aside and regraded to allow for continued uses such as farming, or the sites may be converted to other uses.

### ***Disposal of Excess Materials***

Excess organic materials consist of woody vegetation, grasses, and roots from borrow areas in construction sites; excavated material not meeting the designated criteria; and soil not used or unsuitable for the earthen structure under construction. Organic materials would be used to reclaim borrow areas and temporarily disturbed sites or could be provided to local farmers for incorporation into their land to improve soil quality.

### **Construction Timing and Personnel**

The amount of time needed to construct facilities associated with the proposed Guidelines would be of short duration, ranging from as short as a few days to as long as a couple of weeks. It is also assumed that because construction activities would be of limited size and duration, limited construction personnel would be required. Construction would usually occur only during daylight hours, but in rare cases, some activities may require continuous daytime and nighttime work (e.g., expedited actions). Construction may occur at any time of the year. However, various factors and regulations may influence construction timing. For example, activities associated with the canal system would need to be performed during the non-irrigation season (November through February) to not interfere with Friant's water deliveries. Construction on agricultural fields would be timed to be compatible with seasonal cultivation cycles. In addition, work windows may be limited to the dry season as part of other regulatory approvals. Construction timing may also be restricted to avoid and minimize effects on federally listed and state-listed threatened and endangered species. All construction for actions along the Friant-Kern Canal would comply with applicable timing restrictions.

## Operational Considerations

“Operational considerations” are defined as the activities, functions, duties, or labor associated with day-to-day operations of the potential actions. Implementation of the proposed Guidelines would include operations and maintenance activities similar to existing conditions. Operations and maintenance may include inspection of constructed facilities and/or evaluation of the effectiveness of actions taken to comply with the proposed Guidelines. As with construction activities, the proposed Guidelines do not detail the specific operational activities required to introduce water to or discharge water from the Friant-Kern Canal. Rather, the implementation criteria, status, and strategy are discussed, providing the context for day-to-day operations. Thus, activities specific to the implementation of the proposed Guidelines were assumed using the information presented in the proposed Guidelines and incorporating general information common to water quality monitoring and reporting.

As mentioned above, in response to the proposed Guidelines, Contractors may increase groundwater pumping and/or purchasing, exchanging, and transferring surface water supplies as part of Contractors’ overarching water portfolio management. Groundwater pumping would need to meet all requirements defined in adopted GSPs consistent with the Sustainable Groundwater Management Act (SGMA). In addition, purchasing, exchanging, and transferring surface water supplies would require compliance with State Water Resources Control Board (State Water Board) (e.g., water right petition for change) and Reclamation requirements (e.g., compliance with Section 3405[a] of the Central Valley Project Improvement Act), as applicable.

General operational activities necessary to support the functionality of the small facilities that may be constructed would primarily include regularly scheduled inspections and evaluation of facility performance. Staff resources would be designated to conduct inspections, drive to the sites once a month to inspect and assess the integrity of the constructed facility or facilities, maintain and clean facilities as needed, and perform repairs to ensure proper functioning. The following activities are applicable to the operation and maintenance of the types of potential actions described herein:

- Water quality testing for small water treatment facilities.
- Use of electricity for all processes and equipment and operational lights.
- Routine cleaning of constructed facilities.
- Vehicle trips by employees, contractors, or consultants.
- Use of lights as needed.
- Maintenance of access roads and vegetation.

## 2.5 Anticipated Required Permits and Approvals

Friant and Contractors have the authority to plan and implement the proposed Guidelines. Required permitting and regulatory review would be specific to potential Contractor actions and would be initiated through consultation with applicable governing agencies from federal, state, and/or local jurisdictions, as applicable at the time such actions are proposed.

## **CHAPTER 3**

---

# Environmental Setting, Impacts, and Mitigation Measures

This page intentionally left blank

## 3.1 Approach to the Analysis

### 3.1.1 Introduction and Approach to the Environmental Analysis

As discussed in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to implement actions to meet the water quality thresholds in the proposed Guidelines. Actions could include construction and operation of small water treatment facilities, modification to pump configurations or operations, blending of water, and/or changes in timing of the introduction of Non-Millerton water. In addition, Friant or Contractors might need to install facilities for monitoring and forecasting water quality (e.g., construction and maintenance of water quality monitoring stations). Further, introduction of water of lesser quality into the Friant-Kern Canal would require an amount of “leave behind” water that represents the additional surface water needed to support agricultural leaching and prevent constituent accumulation in the rootzone and potential agronomic impacts. As a result, Contractors might increase groundwater pumping or purchase surface water as part of the Contractor’s overarching water portfolio management.

The extent to which a Contractor might take an action in response to the proposed Guidelines, and precise locations and detailed characteristics of future actions are yet to be determined. There could be a range of actions undertaken to meet the requirements of the proposed Guidelines. This potential range is described in Chapter 2, subsection 2.4.1, *General Types of Actions that May Result from Implementation of the Proposed Guidelines*. Therefore, the analysis in this Draft EIR evaluates a range of potential effects in the proposed study area that could result from the construction and operation of these potential actions (see Chapter 2, subsection 2.4.2, *General Types of Construction Activities and Operational Considerations Associated with Potential Actions*) at a program-level of detail. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. See Chapter 1, *Introduction*, for more information on the use of the Draft EIR and the CEQA process.

Implementation of the proposed Guidelines could also result in Friant installing small water quality monitoring stations in the Friant-Kern Canal and this is also evaluated in this Draft EIR. However, implementation of the proposed Guidelines would not result in Friant making any substantial physical modifications to the Friant-Kern Canal; therefore, no associated impacts would occur.

This section discusses the resource topics that no effect would occur with implementation of the proposed Guidelines. It also presents the structure of the resource topics for which additional analysis is provided.

## 3.1.2 Environmental Issues Not Requiring Further Analysis

### Mineral Resources

There are no mines in the study area (DOC 2023). The study area does pass through a mineral resource zone in Tulare County and near a mineral resource zone in Kern County; no mineral resource zones are in the portions of the study area that passes-through Fresno County (Fresno County 2000, Tulare County 2012, Kern County 2023). However, due to their limited size and temporary nature, construction activities associated with potential actions taken by Contractors in response to the proposed Guidelines (such as the establishment of staging areas, use of access and haul roads, site preparation, construction of features, site restoration and/or demobilization, and disposal of excess materials) for potential action to meet the water quality thresholds in the proposed Guidelines (such as small water treatment facilities or water quality monitoring stations) would not be substantial enough to result in a loss of access to known mineral resource deposits in the study area, or make access more difficult. The implementation of the proposed Guidelines could result in Friant installing small water quality monitoring stations in the Friant-Kern Canal but would not result in Friant making any substantial physical modifications to the Friant-Kern Canal that could result in the loss of a known mineral resources or the availability of locally important mineral resource recovery sites. Therefore, the proposed Guidelines would have **no impact** on mineral resources and this resource is not discussed further.

### Population and Housing

Potential actions taken by Contractors in response to the proposed Guidelines include construction activities; however, those activities would be limited in size and duration and would require nominal construction personnel. Furthermore, operation and maintenance of such activities would not be anticipated to result in the need for new employees over current conditions. Because of the limited amount of work that would be required during construction, and because the proposed Guidelines would not require a substantial workforce, no new homes, businesses, or public roads would be constructed, and the proposed Guidelines would not have a significant effect on the local workforce. Furthermore, because potential actions would be anticipated to occur in the largely rural location of the Friant-Kern Canal and adjacent study area, they would not result in the demolition of homes or displacement of people, necessitating replacement homes elsewhere.

As stated in Section 1.1, *Introduction*, introducing Non-Millerton water into the Friant-Kern Canal provides a supplemental source of water to meet existing and new water demands for farms and residents in the Central Valley. However, population in the study area would develop consistent with the overall framework for growth and development planned in the existing General Plans for the study area (see Section 5.3, *Growth Inducing Impacts*, for a discussion of potential for direct or indirect unplanned population growth as a result of implementing the proposed Guidelines). Therefore, the proposed Guidelines would not remove an impediment to growth or result in population beyond that planned by local jurisdictions.

For these reasons, the proposed Guidelines would not displace existing people or housing. Therefore, **no impact** related to population and housing would occur and this resource is not discussed further.



## Public Services

As discussed in the *Population and Housing* section above, the proposed Guidelines would not involve construction of new facilities, housing, or other land uses that could increase the local population that could result in demand for governmental facilities and services, such as fire protection, police protection, schools, or parks over those that currently exist. Therefore, implementation of the proposed Guidelines would not affect response times or other performance objectives for public services and would not require construction of new or altered facilities that could result in a significant environmental impact. For these reasons, **no impact** on public services would occur and this resource is not discussed further.

## Recreation

As discussed in the *Population and Housing* section above, the proposed Guidelines would not involve an increase in population compared to current population. Therefore, there would be no increased use of recreational facilities that could result in a substantial deterioration or the need to construct new or expand existing recreational facilities. For these reasons, **no impact** on recreation would occur and this resource is not discussed further.

## Wildfire

The study area generally has a low potential for wildfire and the topography in the area is generally level. There are locations where the study area traverses through moderate and high Fire Hazard Severity Zones in State Responsibility Areas, although there are no areas in or near very high Fire Hazard Severity Zones (CAL FIRE 2023), which are the focus of the wildfire analysis in Appendix G of the CEQA Guidelines. Further, potential actions taken by Contractors in response to the proposed Guidelines would not involve the construction or habitation of occupied structures that could be exposed to wildfire risks. Therefore, the proposed Guidelines would have **no impact** on wildfire risks and this resource is not discussed further.

See Impact 3.10-6 in Section 3.10, *Hazards and Hazardous Materials*, for additional information on exposure of people or structures to potential risk involving wildland fires, such as through construction vehicles and equipment that could spark and ignite flammable vegetation or potential temporary on-site storage of fuels and/or other flammable construction chemicals.

### 3.1.3 Resource Topics Evaluated in the Draft EIR

This Draft EIR evaluates the physical environmental effects that have the potential to be affected by implementation of the proposed Guidelines for the following resource topics:

- Section 3.2, *Aesthetics*
- Section 3.3, *Agriculture and Forestry Resources*
- Section 3.4, *Air Quality*
- Section 3.5, *Biological Resources*
- Section 3.6, *Cultural Resources*

- Section 3.7, *Energy*
- Section 3.8, *Geology and Soils and Paleontology*
- Section 3.9, *Greenhouse Gas Emissions*
- Section 3.10, *Hazards and Hazardous Materials*
- Section 3.11, *Hydrology and Water Quality*
- Section 3.12, *Land Use and Planning*
- Section 3.13, *Noise*
- Section 3.14, *Transportation*
- Section 3.15, *Tribal Cultural Resources*
- Section 3.16, *Utilities and Service Systems*

### 3.1.4 Resource Section Format

Each of the resource topics addressed in this chapter describes the environmental setting, regulatory setting, methods of analysis, thresholds of significance, and impact analysis. Where required, potentially feasible mitigation measures are identified to lessen or avoid significant impacts.

The environmental setting and regulatory setting descriptions provide a point of reference for assessing the environmental impacts of implementing the proposed Guidelines. Consistent with CEQA Guidelines Section 15125, the physical environmental conditions as they existed at the time the NOP was published (i.e., December 6, 2022) are described in this Draft EIR and used as the baseline by which the proposed Guidelines are measured for environmental impacts.

The manner in which the environmental setting is described varies by resource area. For example, the environmental setting for the Noise analysis discusses acoustic fundamentals, the effects of noise on humans, and noise-sensitive land uses. However, the section does not provide information about individual projects or their locations relative to sensitive receptors (e.g., residences, library and schools, hospitals) because these locations are not known at this time.

The regulatory setting discussion presents relevant information about federal, State, regional, and/or local laws, regulations, plans, or policies that pertain to the environmental resources addressed in each section.

Following the regulatory setting is the discussion of impacts and mitigation measures. Within this discussion, a methods of analysis description presents the analytical methods and key assumptions used in the evaluation of the proposed Guidelines. This is followed by the thresholds of significance, which identify the standards used to determine the significance of effects of the proposed Guidelines. The thresholds of significance used for this analysis were derived from Appendix G of the CEQA Guidelines.

Any effects for a resource topic determined to not be impacted by the proposed Guidelines (i.e., no impact) are discussed under *Impacts Not Evaluated Further*. The impacts and mitigation

measures portion of each section includes impact statements, prefaced by a number in **boldfaced** type. An explanation of each impact is followed by a statement of significance. The subsection then includes any applicable mitigation measure(s) that would reduce an impact to a less-than-significant level and a statement of significance after mitigation.

Cumulative impacts are discussed in Chapter 4 of this Draft EIR. Chapter 5, *Other CEQA Considerations*, addresses growth-inducing impacts, significant unavoidable impacts on the environment, and significant irreversible environmental changes. Chapter 6, *Project Alternatives*, discusses a range of reasonable alternatives to the proposed Guidelines.

### 3.1.5 Definitions of Terms Used in this Draft EIR

This Draft EIR uses a number of terms that have specific meaning under CEQA. Among the most important of the terms used are those that refer to the significance of environmental impacts. The following terms are used to describe environmental effects of the proposed Guidelines:

- **Thresholds of Significance:** A set of criteria used by the lead agency to determine the level or threshold at which an impact would be considered significant. Standards of significance used in this Draft EIR include those standards provided in Appendix G of the CEQA Guidelines. In determining the level of significance, the analysis assumes that potential actions taken by Contractors in response to the proposed Guidelines would comply with relevant existing federal, state, and local regulations and ordinances.
- **Potentially Significant Impact:** The level of significance identified for an impact of the proposed Guidelines that may cause a substantial adverse change in the environment, depending on certain unknown conditions related to the proposed action or the affected environment. Potentially significant impacts are identified by comparing the evaluation of a project-related physical change to specified significance criteria.
- **Less-than-Significant Impact:** The level of significance identified when the physical change caused by the proposed Guidelines would not exceed the applicable significance criterion.
- **Significant and Unavoidable Impact:** The level of significance identified if the proposed Guidelines would result in a substantial adverse physical change in the environment that cannot be feasibly avoided or mitigated to a less-than-significant level.
- **Mitigation Measure:** An action that could be taken that would avoid or reduce the magnitude of a significant impact. CEQA Guidelines Section 15370 defines mitigation as:
  - Avoiding the impact altogether by not taking a certain action or parts of an action;
  - Minimizing impacts by limiting the degree of magnitude of the action and its implementation;
  - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
  - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
  - Compensating for the impact by replacing or providing substitute resources or environments.

This page intentionally left blank

## 3.2 Aesthetics

### 3.2.1 Introduction

This section discusses the aesthetics of the study area and evaluates the potential aesthetic impacts of implementing the proposed Guidelines. As discussed below, potential impacts include a change in a scenic vista, damage to scenic resources, degradation of visual character, and creation of a new source of light or glare. This environmental setting and evaluation of aesthetics impacts is based on review of existing published documents, including county general plans; information regarding other Friant projects or actions implemented by Contractors in the vicinity of the study area; and other information sources listed in Chapter 8, *References*.

No comments specifically addressing aesthetics were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.2.2 Environmental Setting

“Visual resources” include physical features that make up the visible landscape, including land, water, vegetation, geologic features, and built structures (e.g., buildings, roadways, bridges, levees). This section also addresses visual resources in the surrounding landscape that contribute to the visual character of the study area.

Identifiable features in the vicinity of the study area include the Friant-Kern Canal, Lake Woollomes, and the Kaweah River Complex, Kings River Complex, Sand Creek Complex, Deer Creek Complex, Tule River Complex, Little Dry Creek Complex, White River Complex, Lake Millerton, Poso Creek Complex, and Kern River Complex (Friant Water Authority 2023). Most features intersecting the Friant-Kern Canal are not public attractions; however, both Lake Millerton and Lake Woollomes provide recreational opportunities, including fishing, boating, and other activities.

The Friant-Kern Canal intersects two Eligible Scenic Highways (State Route 65 near Clovis and State Route 99 near Goshen) and one Officially Designated Scenic Highway (State Route 65 near Minkler/Kings Canyon National Park) (Caltrans 2019).

### Sensitive Viewers

Viewer sensitivity is one factor in assessing aesthetic impacts. It is a function of several influences:

- Visibility of the landscape
- Proximity of viewers to the visual resources
- Frequency and duration of views
- Number of viewers
- Types of individuals and groups of viewers
- Viewers’ expectations, as influenced by their values, awareness, and activity

The viewer's distance from landscape elements plays an important role in determining an area's visual quality. Landscape elements are considered higher or lower in visual importance based on their proximity to the viewer (USDA 1996). Generally, the closer a visual resource is to the viewer, the more dominant and thus the more visually important it is to the viewer.

## **Residents**

Much of the land adjacent to the Friant-Kern Canal and in the larger study area is agricultural land. Residents of communities in Fresno, Tulare, and Kern counties are potential viewers of visual resources within the study area.

Views are among many factors that influence residential location choice. Residents tend to have high visual sensitivity. People who live in the larger cities with higher population densities tend to have views consisting of greater built environments. Residents of smaller cities and towns tend to have more views of waterways and rural views. Residents living farther from given visual resources view these resources less frequently, and potentially from greater distances, which can reduce the visual importance of those resources to those people.

## **Workers and Commuters**

Workers and commuters using roadways and railways in the study area are potential viewers of visual resources. Most job opportunities in the rural portions of the study area are related to agriculture. Commuter towns or bedroom communities are residential suburbs inhabited largely by people who commute to a nearby city for work. These workers view the natural environment, built environment, and other aspects of the study area that contribute to its visual character. Commuters using roadways and railways may view these resources for less time, at greater speeds, and from greater distances than residents, workers, visitors to recreational areas, and other sensitive viewers. Workers and commuters generally have low visual sensitivity because their activities tend not to focus on visual surroundings.

## **Working Landscapes**

“Working landscapes” are lands on which resource management and/or cultivation activities occur in large areas, mostly without buildings or structures, such as agricultural, timber, or grazing lands. Working landscapes may contain natural contours, waterways, and other features or may alter these features while maintaining a primarily unbuilt visual context. A variety of features may define the visual character of a working landscape. The preservation, transformation, and general purpose or function of prominent features that are most noticeable in the landscape can affect the human perception of a working landscape. Working landscapes in the study area are generally associated with agricultural uses. The agricultural landscape, consisting of orchards, row crops, and pasturelands, is dominant aesthetically in the study area and defines rural areas of the study area and within the Central Valley.

## Light and Glare

For the purposes of the analysis in this Draft EIR, “light” (also known as “light pollution”) refers to unnatural nighttime lighting that may intrude into sky darkness when added to an area that currently contains little or no artificial lighting. “Glare” refers to unnatural light or reflected natural light that can be annoying or distracting.

Lighting and glare levels tend to be much lower in undeveloped areas, particularly when these areas are located far from developed areas. However, some crop harvesting practices in the study area may require 24-hour harvesting activities with more intense lighting on farm equipment. These lights are a normal part of the nighttime landscape in the area. Urban areas contain varied light sources, such as streetlights and car headlights, and skyglow may be present in more urbanized areas. “Skyglow” is an areawide illumination of the night sky from human-made light sources.

### 3.2.3 Regulatory Setting

This section discusses federal, state, and regional and local plans, policies, regulations, and laws, and ordinances pertaining to aesthetics.

#### Federal

No federal regulations associated with aesthetics are relevant to implementation of the proposed Guidelines.

#### State

##### ***California State Scenic Highway Program***

The California Department of Transportation manages the California Scenic Highway Program to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to the highways. Designation as a scenic highway is determined by views of the natural landscape, scenic quality, and the extent of visual intrusion. A city or county must nominate an eligible scenic highway for official designation and adopt a corridor protection program that includes zoning and planning policies to preserve its scenic quality.

#### Local

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address the conservation, protection, and maintenance of the scenic quality of the land and the landscape in the counties. General plan goals and policies also address reduction of light and glare, the protection of scenic resources within a state scenic highway, and historic resources. Applicable general plan goals and policies are presented in **Table 3.2-1**.

**TABLE 3.2-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—AESTHETICS**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Goal LU-B, Policy LU-B.11; Goal LU-C, Policies LU-C.1, LU-C.2, LU-C.4, LU-C.8, LU-C.9, and LU-C.10; Goal OS-D; Goal OS-K, Policies OS-K.1, OS-K.2, OS-K.3, and OS-K.4; Goal OS-L, Policies OS-L.1, OS-L.2, OS-L.3, OS-L.4, OS-L.5, OS-L.6, and OS-L.9
<b>Tulare County</b>	Goal LU-2, Policy LU-2.3; Goal LU-7, Policies LU-7.2, LU-7.4, LU-7.9, and LU-7.19; Goal SL-1, Policies SL-1.1, SL-1.2, and SL-1.3; Goal SL-2, Policies SL-2.1, SL-2.2, and SL-2.3; Goal SL-3, Policies SL-3.1 and SL-3.2; Goal ERM-1, Policies ERM-1.7 and ERM-1.15; Goal TC-1, Policy TC-1.12
<b>Kern County</b>	Goal 1.10.7, Policies 47 and 48; Goal 1.10.9, Policy 52; Goal 1.10.10, Policies 65 and 66; Goals 2.3.9, Policies 1, 2, and 3

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

### 3.2.4 Impacts and Mitigation Measures

#### Methods of Analysis

Aesthetic impacts associated with implementation of the proposed Guidelines were evaluated using a variety of resources. In general, the potential aesthetic, light, and glare impacts were evaluated on a qualitative basis. As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Measures taken by Friant include metering and water mixing; the exact locations of such operations are unknown.

#### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to aesthetics is considered significant if the proposed Guidelines would do any of the following:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. If the project is in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

#### Impacts and Mitigation Measures

Table 3.2-2 summarizes the impact conclusions presented in this section.



**TABLE 3.2-2  
 SUMMARY OF IMPACT CONCLUSIONS—AESTHETICS**

<b>Impact Statement</b>	<b>Impact Conclusion</b>
<b>3.2-1:</b> Implementation of the proposed Guidelines could have a substantial adverse effect on a scenic vista.	LTS
<b>3.2-2:</b> Implementation of the proposed Guidelines could substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	LTS
<b>3.2-3:</b> Implementation of the proposed Guidelines could, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. In an urbanized area, implementation of the proposed Guidelines could conflict with applicable zoning and other regulations governing scenic quality.	LTS
<b>3.2-4:</b> Implementation of the proposed Guidelines could create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	LTS

NOTES: LTS = Less than Significant

**Impact 3.2-1: Implementation of the proposed Guidelines could have a substantial adverse effect on a scenic vista.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. Therefore, implementation of potential actions could result in short-term construction activities that could temporarily interfere with scenic vistas. However, temporary construction effects on existing visual character are considered minor because of the short-term nature of the construction activities. Additionally, constructed facilities would have a limited size and are likely to be installed near existing water supply facilities (i.e., in developed or disturbed areas that are not actively farmed), given their purposes to monitor and/or treat water to meet the water quality thresholds. Given the limited size of potential facilities and the existing land uses in the study area, potential actions are not likely to have a substantial adverse effect on a scenic vista.

Operational and maintenance activities, such as water meter installation and water mixing, would be similar to existing conditions and would not significantly change the visual character of the Friant-Kern Canal or the surrounding viewsheds.

Therefore, impacts on scenic resources under the proposed Guidelines would be **less than significant**.

**Impact 3.2-2: Implementation of the proposed Guidelines could substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.**

Actions implemented by Contractors in response to the proposed Guidelines could occur near areas where the Friant-Kern Canal intersects eligible scenic highways (State Route 65 near Clovis

and State Route 99 near Goshen) or officially designated scenic highways (State Route 65 near Minkler/Kings Canyon National Park). While the precise locations and detailed characteristics of future actions that could be implemented in response to the proposed Guidelines are not known, features placed in or along the canal at these locations could potentially interfere with the scenic highways and other scenic resources that may be in the study area.

County goals and policies are in place in the study area to protect scenic resources such as trees, rock outcroppings, and historic buildings within a state scenic highway, as noted in subsection 3.2.3, *Regulatory Setting*. Construction activities and features and operational and maintenance activities would be implemented under the guidance of these general plan goals and policies. Given the limited size and scale of facilities and the general protection measures provided by local goals and policies, impacts would be **less than significant**.

**Impact 3.2-3: Implementation of the proposed Guidelines could, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. In an urbanized area, implementation of the proposed Guidelines could conflict with applicable zoning and other regulations governing scenic quality.**

Actions implemented by Contractors in response to the proposed Guidelines could include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. Therefore, implementation of potential actions could result in short-term construction activities that could temporarily degrade the existing visual character or quality of public views of the site and its surroundings. However, temporary construction effects on the existing visual character and quality of public views of the site and its surroundings are considered minor because of the short-term nature of the construction activities. As discussed under Impact 3.2-1, constructed facilities would have a limited size and are likely to be installed near existing water supply facilities. Given the limited size of potential facilities and the existing agricultural land uses in the study area (primarily agricultural), they are not likely to substantially degrade the existing visual character and quality of public views of the site and its surroundings.

Therefore, actions that could be implemented by Contractors in response to the proposed Guidelines would not conflict with existing zoning or other regulations governing scenic quality in urban areas, given the limited size of potential facilities and the largely rural location of the Friant-Kern Canal and adjacent study area.

Operational and maintenance activities and Friant actions (metering and water mixing) would be similar to existing conditions. Such activities would not substantially degrade the existing visual character and quality of public views of the site and its surroundings or conflict with applicable zoning and other regulations governing scenic quality. Therefore, this impact would be **less than significant**.

**Impact 3.2-4: Implementation of the proposed Guidelines could create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.**

The study area includes lands along the Friant-Kern Canal and within and adjacent to the Friant-Kern Canal right-of-way, largely consisting of agricultural areas from Friant Dam at the San Joaquin River near Fresno to the Kern River in Bakersfield. Therefore, most potential actions taken by Contractors, including construction and operation of small water treatment facilities, would likely occur away from residential areas and other areas with views and would typically take place during daylight hours. Some agricultural operations and crop harvesting practices in the study area may require nighttime lighting for operations and harvest; these lights are a normal part of the nighttime landscape in the area.

Given that the precise locations and detailed characteristics of potential future actions are yet to be determined, there is a potential for nighttime construction to occur. If needed, light sources during construction would likely be limited to temporary security lighting established to illuminate construction or staging areas. County goals and policies are in place in the study area to regulate sources of substantial light or glare, as noted in subsection 3.2.3, *Regulatory Setting*. Construction activities and features and operational and maintenance activities would be implemented under the guidance of these general plan goals and policies.

Given the limited size and scale of facilities and the general protection measures provided by local goals and policies, impacts would be **less than significant**.

---

This page intentionally left blank

## 3.3 Agriculture and Forestry Resources

### 3.3.1 Introduction

This section addresses agriculture and forestry resources in the study area and the potential effects that could occur as a result of implementing the proposed Guidelines. The environmental setting and evaluation of impacts on agricultural resources is based on a review of existing published documents, including county general plans. Data for the local and regional setting were compiled from publicly available sources published by state agencies, such as the California Department of Conservation (DOC) and California Department of Forestry and Fire Protection (CAL FIRE).

No comments specifically addressing aesthetics were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.3.2 Environmental Setting

The Farmland Mapping and Monitoring Program (FMMP) was established by the State of California in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The intent of NRCS (then named the Soil Conservation Service) was to produce agricultural resource maps based on soil quality and land use across the nation. DOC sponsors the FMMP and is also responsible for establishing agricultural easements in accordance with PRC Sections 10250–10255.

As part of the nationwide effort to map agricultural land uses, NRCS uses a series of definitions known as Land Inventory and Monitoring (LIM) criteria. The LIM criteria classify the land's suitability for agricultural production. "Suitability" relates to the physical and chemical characteristics of soils, as well as the actual land use. Maps of Important Farmland are derived from the NRCS soil survey maps using the LIM criteria and are available by county. The maps prepared by NRCS classify land into water and seven other categories:

- **Prime Farmland**—Land that has the best combination of features for producing agricultural crops. Prime Farmland must have been used for production of irrigated crops at some time during the four years prior to the FMMP's mapping date.
- **Farmland of Statewide Importance**—Land, other than Prime Farmland, with a good combination of physical and chemical characteristics for producing crops. Farmland of Statewide Importance must have been used for production of irrigated crops at some time during the four years prior to the mapping date.
- **Unique Farmland**—Land that has been used to produce specific crops with high economic value but does not meet the criteria for Prime Farmland or Farmland of Statewide Importance. These lands usually are irrigated, but they may include non-irrigated orchards or vineyards found in some climatic zones. Unique Farmland must have been used for crops at some time during the four years prior to the mapping date.

- **Farmland of Local Importance**—Land that either is currently producing crops, has the capability to produce crops, or is used to produce confined livestock, other than Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. It includes farmland of potential local importance.
- **Grazing Land**—Land on which existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing by livestock.
- **Other Lands**—Land that is not included in any of the other mapping categories and generally includes land in rural residential development; lands not suitable for livestock grazing; government lands; rights-of-way outside of urban and built-up areas; facilities for confined livestock or aquaculture; mines, borrow pits, or gravel pits; water bodies smaller than 40 acres; or other rural land uses not suitable for agricultural operations.
- **Urban and Built-Up Lands**—Land occupied by structures with a density of at least one dwelling unit per 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public utility structures, and other developed purposes.

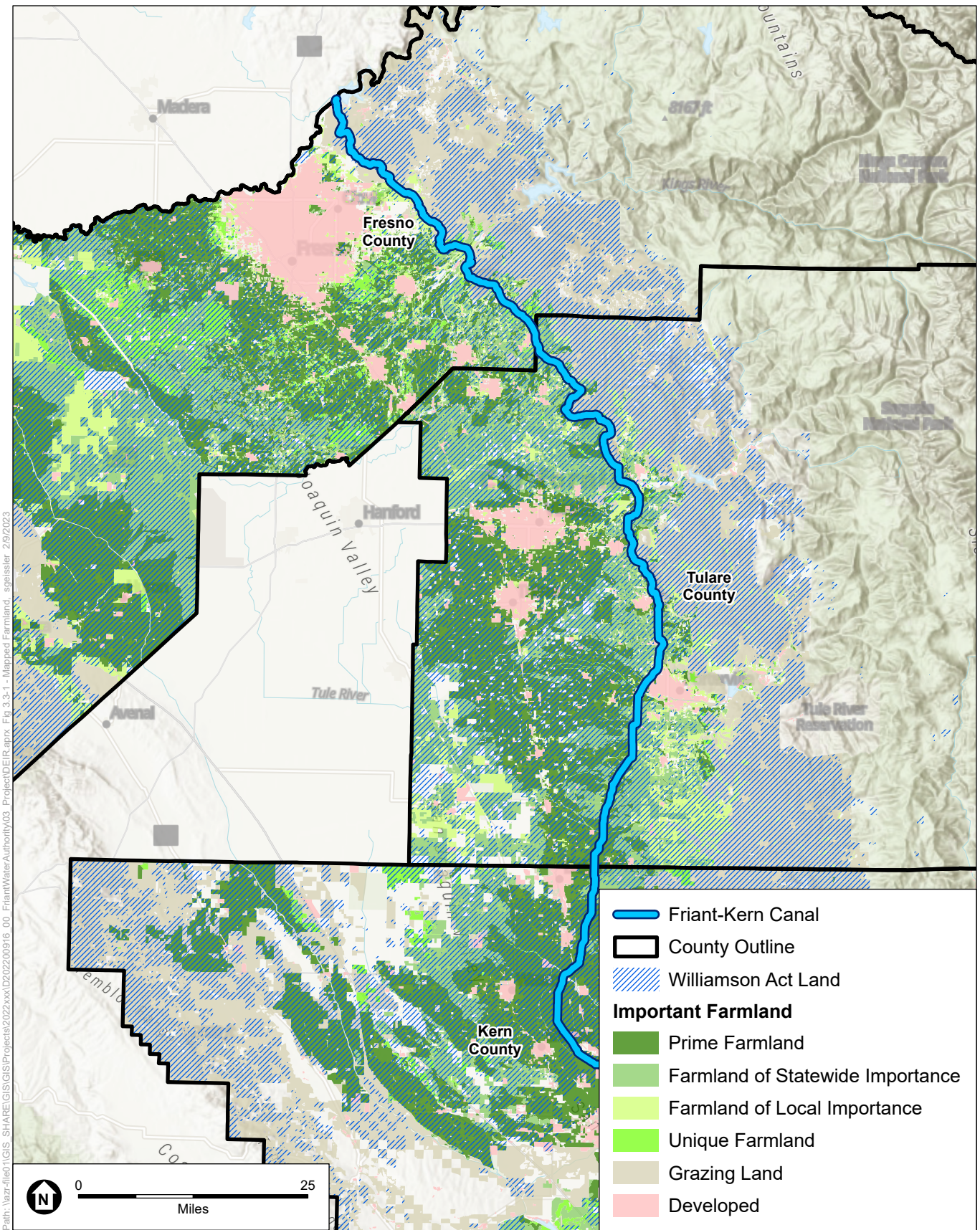
Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are collectively termed “Farmland” in CEQA Appendix G.

Much of the land adjacent to the Friant-Kern Canal and in the larger study area of the Friant-Kern Canal is agricultural land. Many of the lands are designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (**Figure 3.3-1**) and are used to produce a variety of crops like almonds, pistachios, tree fruits, and raisin grapes. Other agricultural uses include dairies, livestock grazing, agricultural industrial uses, and agricultural commercial uses. Various parcels in the study area are under Williamson Act contracts, which encourage continued agricultural or related open space uses and discourage conversion to nonagricultural uses.

The following definitions are used for the discussion of forestry resources:

- **Forestland**—Land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits (PRC Section 12220[g]).
- **Timberland**—Land, other than land owned by the federal government and land designated as experimental forestland, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees (PRC Section 4526).

The study area is not located in forested areas or areas zoned as forest land, timberland, or timberland zoned Timberland Production.



SOURCE: USDA, 2018; ESA, 2023

Friant Water Authority - Friant-Kern Canal

**Figure 3.3-1**  
Mapped Farmland

### 3.3.3 Regulatory Setting

Federal and state plans, policies, regulations, and laws, and regional or local plans, policies, regulations, and ordinances pertaining to agriculture and forestry resources are discussed in this section.

#### **Federal**

There are no applicable federal regulations pertaining to agriculture and forestry resources.

#### **State**

##### ***California Land Conservation Act of 1965 (Williamson Act)***

The California Land Conservation Act of 1965, commonly known as the Williamson Act (Government Code Section 51200 et seq.), enables local governments to enter into contracts with private landowners to promote the continued use of the relevant land in agricultural or related open space use. In return, landowners receive property tax assessments that are based on farming and open space uses instead of full market value. Local governments receive an annual subvention (subsidy) of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. State payments were significantly reduced several years ago and were halted when the state stopped subvention in the 2009–2010 fiscal year because of the state’s budget problems.

The Williamson Act empowers local governments to establish “agricultural preserves” consisting of lands devoted to agricultural uses and other compatible uses. Upon establishment of such preserves, the locality may offer to owners of included agricultural land the opportunity to enter into annually renewable contracts that restrict the land to agricultural use for at least 10 years (i.e., the contract continues to run for 10 years following the first date upon which the contract is not renewed). In return, the landowner is guaranteed a relatively stable tax rate, based on the value of the land for agricultural/open space use only and unaffected by its development potential. There are financial consequences to the landowner for early cancellation of a Williamson Act contract, and cancellations must go through a rigorous approval process.

Amendments to the Williamson Act resulted in the opportunity to create Farmland Security Zone (FSZ) lands. A county board of supervisors creates an FSZ upon request by a landowner or group of landowners. It is an enforceable contract between a private landowner and a county that restricts land to agricultural or open space uses. The minimum initial term is 20 years. Like a Williamson Act contract, FSZ contracts self-renew annually; thus, unless either party files a notice of nonrenewal, the contract is automatically renewed each year for an additional year. FSZs offer landowners greater property tax reduction. Land restricted by an FSZ contract is valued for property assessment purposes at 65 percent of its Williamson Act valuation or 65 percent of its Proposition 13 valuation, whichever is lower.

#### **Local**

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address the conservation and protection of



agricultural and forestry resources (Fresno County). Applicable general plan goals and policies are presented in **Table 3.3-1**. Other relevant local regulations are summarized below.

**TABLE 3.3-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—AGRICULTURE AND FORESTRY RESOURCES**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Agriculture and Land Use Element, Goal LU-A, Policies LU-A.1 through LU-A.3, LU-A.12 through LU-A.20; Open Space and Conservation Element, Goal OS-B, Policies OS-B.7 and OS-B.8; Right-to-Farm Notice
<b>Tulare County</b>	Agriculture Element, Goal AG-1, Policies AG-1.1 through AG-3, AG-1.10, AG-1.13, AG-1.14; Right-to-Farm Ordinance
<b>Kern County</b>	Land Use, Open Space, and Conservation Element, Goals Resource 2 and 5 and Policies Resource 7 and 12

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

***Fresno County***

**Right-To-Farm Notice**

It is the declared policy of Fresno County to preserve, protect, and encourage development of its agricultural land and industries for the production of food and other agricultural products. Residents of property in or near agricultural districts should be prepared to accept the inconveniences and discomfort associated with normal farm activities (County Ordinance Section 17.04.100).

***Tulare County***

**Right-To-Farm Ordinance**

It is the declared policy of Tulare County to conserve, enhance, and encourage agricultural operations within the county, and to minimize potential conflict between agricultural and nonagricultural land uses within the county (Ordinance Code Part 7, Chapter 29).

**3.3.4 Impacts and Mitigation Measures**

**Methods of Analysis**

This analysis of impacts on agriculture and forestry resources is qualitative and generally assesses the potential causes of farmland and forestland conversion and other related effects potentially resulting from the implementation of the proposed Guidelines and Contractor actions that could occur in response to the proposed Guidelines. As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Measures taken by Friant include metering and water mixing; the exact locations of such operations are unknown.

## Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to agriculture and forestry resources is considered significant if the proposed Guidelines would do any of the following:

- 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 nonagricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]).
- Result in the loss of forest land or conversion of forest land to non-forest use.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use.

## Impacts Not Evaluated Further

**Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production; or result in loss of forest land or conversion of forest land to non-forest use.** The study area is not located in forested areas or areas zoned as forest land, timberland, or timberland zoned Timberland Production. In addition, the proposed Guidelines would not affect, either directly or indirectly, forested areas inside or outside of the study area. Therefore, the proposed Guidelines would have **no impact** on forestry resources and this issue is not evaluated further in the Draft EIR.

## Impacts and Mitigation Measures

Table 3.3-2 summarizes the impact conclusions presented in this section.

**TABLE 3.3-2  
 SUMMARY OF IMPACT CONCLUSIONS—AGRICULTURE AND FORESTRY RESOURCES**

Impact Statement	Impact Conclusion
<b>3.3-1:</b> Implementation of the proposed Guidelines could convert Farmland to nonagricultural use or conflict with a Williamson Act contract or zoning for agricultural use.	LTS
<b>3.3-2:</b> Implementation of the proposed Guidelines could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use.	LTS

NOTES: LTS = Less than Significant

**Impact 3.3-1: Implementation of the proposed Guidelines could convert Farmland to nonagricultural use or conflict with a Williamson Act contract or zoning for agricultural use.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way in agricultural areas (i.e., in the study area); those activities would be of limited size and duration. Temporary construction activities associated with potential future actions (such as the establishment of staging areas, use of access and haul roads, site preparation, construction of features, site restoration and/or demobilization, and disposal of excess materials) are not likely to result in the permanent conversion of Farmland to nonagricultural use, given their limited size. They are also likely to be installed near existing water supply facilities (i.e., in developed or disturbed areas that are not actively farmed), given their purposes to monitor and/or treat water to meet the water quality thresholds.

The proposed Guidelines would serve agricultural and domestic interests by protecting water quality in the Friant-Kern Canal for sustained use. The requirements of the proposed Guidelines and the Contractor actions that could occur with implementation of the proposed Guidelines are considered consistent uses of agricultural zones. Therefore, the proposed Guidelines or Contractor actions would not conflict with a Williamson Act contract or zoning for agricultural use. Further, pursuant to Government Code Section 53091(e), the location or construction of facilities for the production, generation, storage, treatment, or transmission of water by a special district are not subject to the zoning ordinance of the counties in which the actions would be located.

Operational and maintenance activities would be similar to existing conditions and would not result in conversion of Farmland to nonagricultural use or conflict with a Williamson Act contract or zoning for agricultural use. Therefore, this impact would be **less than significant**.

**Impact 3.3-2: Implementation of the proposed Guidelines could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use.**

As stated in Impact 3.3-1, the proposed Guidelines would serve agricultural and domestic interests by protecting water quality for sustained use, and the requirements of the Guidelines and Contractor actions that may occur with implementation of the proposed Guidelines are considered consistent uses of agricultural zones. Implementation of Contractor actions to comply with the water quality thresholds is not likely to involve other changes in the existing environment that could result in the conversion of Farmland to nonagricultural use, given that the facilities would be of limited size (at most, the size of a shed). Also, they are likely to be installed near existing water supply facilities that are in developed or disturbed areas and that are not actively farmed. Operational and maintenance activities would be similar to existing conditions and would not result in other changes in the existing environment that could result in the conversion of Farmland to nonagricultural use. Therefore, this impact would be **less than significant**.

This page intentionally left blank

## 3.4 Air Quality

### 3.4.1 Introduction

This section addresses air quality in the study area and potential effects that could occur as a result of implementing the proposed Guidelines. The environmental setting and evaluation of impacts on air quality is based on the review of relevant air quality management plans and nonattainment status of criteria pollutants and provides a qualitative assessment of the emissions associated with the proposed Guidelines and potential actions taken by Contractors to comply with the water quality thresholds defined in the proposed Guidelines.

No comments specifically addressing air quality were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.4.2 Environmental Setting

Air quality in California is regulated by the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and locally by the Air Pollution Control Districts (APCD) or Air Quality Management Districts (AQMDs). The San Joaquin Valley Air Pollution Control District (SJVAPCD) regulates air quality within the study area and provides guidance for assessing and mitigation air quality impacts (SJVAPCD 2015).

In the San Joaquin Valley Air Basin (SJVAB), ozone (O<sub>3</sub>), inhalable particulate matter (PM<sub>10</sub>), and fine particulate matter (PM<sub>2.5</sub>) are pollutants of concern because ambient concentrations of these pollutants exceed the California Ambient Air Quality Standards (CAAQS). Additionally, ambient O<sub>3</sub> and PM<sub>2.5</sub> concentrations exceed the National Ambient Air Quality Standards (NAAQS), while carbon monoxide (CO) and PM<sub>10</sub> concentrations recently attained the NAAQS and are designated maintenance. **Table 3.4-1** summarizes the attainment status for Fresno, Tulare, and Kern counties.

Most of the study area supports agricultural land uses. Crop cycles, including land preparation and harvest, contribute to pollutant emissions, primarily particulate matter. Groundwater pumping with diesel and natural gas-fueled engines also emits air pollutants through exhaust. The primary pollutants emitted by diesel pumps are nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), CO, PM<sub>10</sub>, and PM<sub>2.5</sub>; NO<sub>x</sub> and VOCs are precursors to O<sub>3</sub> formation.

Sensitive receptors are locations where segments of the population susceptible to poor air quality, including children, elderly, and people with preexisting health problems, may reside or inhabit. Examples of sensitive receptors include residences, schools and school yards, park and playgrounds, daycare centers, nursing homes, and medical facilities. As discussed in Section 3.1, *Introduction and Approach to the Environmental Analysis*, this section does not provide information about individual Program measures, actions and activities, or their locations relative to sensitive receptors because these locations are not known at this time.

**TABLE 3.4-1  
 STATE AND FEDERAL ATTAINMENT STATUS**

County	O <sub>3</sub> CAAQS	PM <sub>2.5</sub> CAAQS	PM <sub>10</sub> CAAQS	O <sub>3</sub> NAAQS	PM <sub>2.5</sub> NAAQS	PM <sub>10</sub> NAAQS	CO NAAQS
Fresno	N	N	N	N <sup>2</sup>	N <sup>3</sup>	M	U
Tulare	N	N	N	N <sup>2</sup>	N <sup>3</sup>	M	U
Kern <sup>1</sup>	N	N	N	N <sup>2</sup>	N <sup>3</sup>	M	M <sup>4</sup>

NOTES:

- <sup>1</sup> Only the western portion of Kern County is in the SJVAB and is considered when evaluating the county's attainment status.
- <sup>2</sup> 8-hour O<sub>3</sub> classification for the San Joaquin Valley, CA = extreme - nonattainment (2015 NAAQS)
- <sup>3</sup> PM<sub>2.5</sub> classification for the San Joaquin Valley, CA = serious - nonattainment (2012 NAAQS)
- <sup>4</sup> Only the urbanized portion of Bakersfield is designated as a maintenance area in Kern County. All other areas are designated attainment or unclassified.

KEY:

- A = attainment (background air quality in the region is less than (has attained) the ambient air quality standards)
- CO = carbon monoxide
- M = maintenance (area formerly exceeded the ambient air quality standards (i.e., was designated nonattainment), but has since attained the standards)
- N = nonattainment (background air quality exceeds the ambient air quality standards)
- O<sub>3</sub> = ozone
- PM<sub>10</sub> = inhalable particulate matter
- PM<sub>2.5</sub> = fine particulate matter
- U = unclassified/attainment (area does not have enough monitors to determine the background concentrations; treated the same as attainment)

SOURCE: 17 California Code of Regulations §60200-60210; 40 CFR 81; CARB 2022; USEPA 2023

**Table 3.4-2** summarizes the health effects associated with criteria air pollutants. USEPA set NAAQS, and the local air districts set CEQA significance thresholds to reduce these health risks to acceptable levels.

**TABLE 3.4-2  
 CRITERIA POLLUTANTS AND THEIR EFFECTS ON HEALTH**

Pollutant	Characteristics	Health Effects	Major Sources
O <sub>3</sub>	Highly reactive photochemical pollutant created by the action of sunshine on O <sub>3</sub> precursors	<ul style="list-style-type: none"> <li>• Cough and chest tightness pain upon taking a deep breath</li> <li>• Worsening of wheezing and other asthma symptoms</li> <li>• Reduced lung function</li> <li>• Increased hospitalizations for respiratory causes</li> </ul>	Pollutants emitted from vehicles, factories, and other industrial sources; fossil fuels combustion; consumer products; and evaporation of paints
NO <sub>2</sub>	Reactive, oxidizing gas formed during combustion	<ul style="list-style-type: none"> <li>• Respiratory symptoms</li> <li>• Episodes of respiratory illness</li> <li>• Impaired lung function</li> </ul>	High-temperature combustion processes, such as those occurring in trucks, cars, and power plants
SO <sub>2</sub>	Colorless gas with pungent odor	<ul style="list-style-type: none"> <li>• Wheezing, shortness of breath, and chest tightness</li> <li>• Pulmonary symptoms and disease</li> <li>• Decreased pulmonary function</li> <li>• Increased risk of mortality</li> </ul>	Sulfur-containing fuel burned by locomotives, ships, and off-road diesel equipment, or industrial sources like petroleum refining and metal processing

**TABLE 3.4-2 (CONTINUED)**  
**CRITERIA POLLUTANTS AND THEIR EFFECTS ON HEALTH**

<b>Pollutant</b>	<b>Characteristics</b>	<b>Health Effects</b>	<b>Major Sources</b>
CO	Highly toxic odorless, colorless gas; formed by the incomplete combustion of fuels	<ul style="list-style-type: none"> <li>• Impairment of oxygen transport in the bloodstream</li> <li>• Aggravation of cardiovascular disease</li> <li>• Fatigue, headache, and dizziness</li> </ul>	Carbon-containing fuels like gasoline or wood
PM <sub>10</sub> and PM <sub>2.5</sub>	Small particles measuring 10 microns or less are termed PM <sub>10</sub> (fine particles less than 2.5 microns are termed PM <sub>2.5</sub> ); solid and liquid particles of dust, soot, aerosols, smoke, ash, and pollen and other matter that is small enough to remain suspended in the air for a long period	<ul style="list-style-type: none"> <li>• Increased risk of hospitalization for lung and heart-related respiratory illness</li> <li>• Increased risk of premature deaths</li> <li>• Reduced lung function</li> <li>• Increased respiratory symptoms and illness</li> </ul>	Burning fuels like gasoline, oil, and diesel or wood (PM <sub>2.5</sub> ) and windblown dust (PM <sub>10</sub> )
Pb	Soft resilient metal	<ul style="list-style-type: none"> <li>• Impaired blood formation and nerve conduction</li> <li>• Fatigue, anxiety, short-term memory loss, depression, weakness in extremities, and learning disabilities in children</li> <li>• Cancer</li> </ul>	Various industrial activities

### 3.4.3 Regulatory Setting

Federal and state plans, policies, regulations, and laws and regional or local plans, policies, regulations, and ordinances pertaining to air quality are discussed in this section.

#### **Federal**

##### ***Clean Air Act***

The USEPA is responsible for implementation of the federal Clean Air Act (CAA). The CAA was enacted in 1955 and was amended in 1963, 1965, 1967, 1970, 1977, 1990, and 1997. Under authority of CAA, USEPA established NAAQS for the following criteria pollutants: CO, lead (Pb), NO<sub>2</sub>, O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>.

CAA requires states to classify air basins (or portions thereof) as either “attainment” or “nonattainment” with respect to criteria air pollutants, based on whether the NAAQS have been achieved, and to prepare State Implementation Plans (SIPs) containing emission reduction strategies to maintain the NAAQS for those areas designated as attainment and to attain the NAAQS for those areas designated as nonattainment.

##### ***Clean Air Non-Road Diesel Rule***

To reduce emissions from off-road diesel equipment, the USEPA has established a series of emissions standards for new engines, in which manufacturers of off-road diesel engines are

required to provide engines meeting these emissions standards based on the model year the engine was manufactured in accordance with the following compliance schedule (USEPA 2004):

- Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category.
- Tier 2 standards were phased in from 2001 to 2006.
- Tier 3 standards were phased in from 2006 to 2008.
- Tier 4 standards, which require add-on emissions-control equipment to attain them, were phased in from 2008 to 2015.

Construction equipment used to construct the proposed action would be in compliance with these emissions standards.

## **State**

### ***California Clean Air Act***

The California Clean Air Act (CCAA) substantially added to the authority and responsibilities of the state's air pollution control districts. The CCAA establishes an air quality management process that generally parallels the federal process. The CCAA, however, focuses on attainment of the CAAQS that, for certain pollutants and averaging periods, are typically more stringent than the comparable NAAQS. The CCAA requires that the CAAQS be met as expeditiously as practicable but does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

The air quality attainment plan requirements established by the CCAA are based on the severity of air pollution problems caused by locally generated emissions. Upwind air pollution control districts are required to establish and implement emission control programs commensurate with the extent of pollutant transport to downwind districts.

CARB is responsible for developing emission standards for on-road motor vehicles and some off-road equipment in the state. In addition, CARB develops guidelines for the local districts to use in establishing air quality permit and emission control requirements for stationary sources subject to the local air district regulations.

## **Regional**

### ***San Joaquin Valley Air Pollution Control District Air Quality Management Plans***

The SJVAPCD has jurisdiction over the SJVAB, which includes O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> nonattainment areas. The air districts have adopted a series of air quality management plans to meet the CAAQS and NAAQS. These plans require, among other emissions-reducing activities, control technology for existing sources; control programs for area sources and indirect sources; a permitting system designed to ensure no net increase in emissions from any new or modified permitted sources of emissions; transportation control measures; sufficient control strategies to achieve a 5 percent or more annual reduction in emissions (or 15 percent or more in a 3-year



period) for volatile organic compound, nitrogen oxides, CO, and PM<sub>10</sub>; and demonstration of compliance with CARB’s established reporting periods for compliance with air quality goals.

**Local**

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address air quality (see **Table 3.4-3**).

**TABLE 3.4-3  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—AIR QUALITY**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Goal OS-G, Policies OS-G.1, OS-G.2, and OS-G.4.
<b>Tulare County</b>	Goal 1, Policies 1.3, 1.5 and 1.9; Goal 4, Policies 4.2 and 4.6
<b>Kern County</b>	Policies 19 and 20

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

**3.4.4 Impacts and Mitigation Measures**

**Methods of Analysis**

SJVAPCD published CEQA Guidelines (2015) to assist lead agencies with uniform procedures for addressing air quality impacts in environmental documentation. Impacts on air quality would be significant if implementing an alternative would cause the thresholds shown in the CEQA guidance documents to be exceeded; if these thresholds are exceeded, conflicts with applicable air quality plans (SJVACPD 2015) and contributions to air quality standard violations for applicable pollutants can be assumed.

As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Measures taken by Friant include metering and water mixing; the exact locations of such operations are unknown.

**Thresholds of Significance**

In accordance with Appendix G of the CEQA Guidelines, an impact related to air quality is considered significant if the proposed Guidelines would do any of the following:

- Conflict with or obstruct implementation of the applicable air quality plan.
- 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.
- Expose sensitive receptors to substantial pollutant concentrations.

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

## Impacts and Mitigation Measures

Table 3.4-4 summarizes the impact conclusions presented in this section.

**TABLE 3.4-4  
 SUMMARY OF IMPACT CONCLUSIONS—AIR QUALITY**

Impact Statement	Impact Conclusion
<b>3.4-1:</b> Implementation of the proposed Guidelines could conflict with or obstruct implementation of the applicable air quality plan.	LTS
<b>3.4-2:</b> Implementation of the proposed Guidelines could 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.	LTS
<b>3.4-3:</b> Implementation of the proposed Guidelines could expose sensitive receptors to substantial pollutant concentrations.	LTS
<b>3.4-4:</b> Implementation of the proposed Guidelines could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LTS

NOTES: LTS = Less than Significant

### **Impact 3.4-1: Implementation of the proposed Guidelines could conflict with or obstruct implementation of the applicable air quality plan.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal. Other actions, including blending water, changes to the timing of introduced water, or seeking alternative water supplies, would not require construction. Construction activities over these small footprints could include establishment and use of staging areas, access and haul roads (paved or unpaved), site preparation activities, construction or site restoration/demobilization which could result in short-term, temporary emission of criteria air pollutants currently designated nonattainment (e.g., O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> NAAQS and CAAQS). The amount of time needed for construction would range from as short as a few days to as long as a couple of months. Operational and maintenance-related pollution emissions would be similar to existing conditions and therefore would not be anticipated to result in any long-term or permanent emission of criteria air pollutants.

The SJVAPCD has adopted various air quality management plans to address pollutants currently designated nonattainment. As part of these plans, on-site control measures were adopted by Fresno, Kern and Tulare counties to attain and maintain air quality standards. These control measures were then promulgated in the rules and regulations. Therefore, any actions implemented by Contractors in response to the proposed Guidelines would be required to be constructed and operated in compliance with these existing rules and regulations, including the SJVAPCD air

quality management plans, and depending on the location of the action, Fresno, Tulare and/or Kern counties general plans. Additionally, the nature of the construction activities are small, short-term, and temporary. Therefore, the potential actions would be consistent with SJVAPCD's and state regulations and would not conflict with or obstruct implementation of the air quality plans and this impact would be **less than significant**.

**Impact 3.4-2: Implementation of the proposed Guidelines could 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.**

The study area is currently designated nonattainment for criteria air pollutants (e.g., O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> NAAQS and CAAQS). As described above, the potential actions that could be implemented by Contractors to comply with the proposed Guidelines could result in short-term, temporary construction activities that would temporarily emit pollutants (e.g., small water treatment facilities, water quality monitoring stations). Construction activities over these small footprints could include establishment and use of staging areas, use of access and haul roads (paved or unpaved), site preparation, construction, or site restoration/demobilization. Operational and maintenance-related pollutant emissions would be similar to existing conditions and therefore would not be anticipated to result in any long-term or permanent emission of criteria air pollutants.

Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Detailed characteristics of potential actions, including action footprint, duration of construction, construction equipment, number of construction workers, estimated haul trips, etc., would be used to quantify action-specific emissions using California Emissions Estimator Model (CalEEMod)<sup>1</sup> to determine whether emissions would be less than de minimis emission thresholds and less than SJVAPCD CEQA thresholds, and whether there is a considerable net increase of criteria pollutants (SJVACD 2015). However, given the types of potential actions anticipated to be implemented in response to the proposed Guidelines, it is anticipated that any emissions would not result in a cumulatively considerable net increase. Therefore, this impact would be **less than significant**.

**Impact 3.4-3: Implementation of the proposed Guidelines could expose sensitive receptors to substantial pollutant concentrations.**

The study area is located in a rural region of Fresno, Tulare, and Kern counties. As described in Chapter 2, *Project Description*, construction associated with potential actions that could be implemented by Contractors in response to the proposed Guidelines would be short in duration (few days to a couple of weeks), temporary, and involve small footprints (approximate size of a shed adjacent to the Friant-Kern Canal or a submersible station in the Friant-Kern Canal). Therefore, construction activities would not expose sensitive receptors to substantial pollutant concentrations. Operational and maintenance-related pollutant emissions would be similar to

---

<sup>1</sup> The California Emissions Estimator Model (CalEEMod) is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential direct and indirect criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects.

existing conditions and therefore would not be anticipated to result in any long-term or permanent emission of criteria air pollutants.

Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for proposed actions. Detailed characteristics of potential actions, including the proposed actions' locations, would be used to identify sensitive receptors in the actions' vicinity to determine whether exposure is substantial relative to existing conditions. However, given the types of potential actions anticipated to be implemented in response to the proposed Guidelines, it is anticipated that any emissions would not result in substantial pollutant concentrations. Therefore, this impact would be **less than significant**.

**Impact 3.4-4: Implementation of the proposed Guidelines could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.**

The study area is located in rural areas of Fresno, Tulare, and Kern counties. As described above, implementation of the proposed Guidelines and potential actions taken by Contractors to comply with the water quality thresholds as defined in the proposed Guidelines could result in short-term construction activities that would temporarily emit pollutants. Diesel equipment used as part of construction could generate near-field odors that are a nuisance and adversely affecting certain people in the vicinity of the action (e.g., residences within 0.5 miles of the Friant-Kern Canal where small water treatment facilities may be constructed). Operational and maintenance-related pollutant emissions would be similar to existing conditions and therefore would not be anticipated to result in an increase in odors over current conditions.

Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. As described above, detailed characteristics of potential actions would be used to quantify action-specific emissions and identify sensitive receptors. However, given the types of potential actions anticipated to be implemented in response to the proposed Guidelines and the rural locations of these potential actions, it is anticipated that any emissions would not create objectionable odors adversely affecting a substantial number of people. Therefore, this impact would be **less than significant**.

---

## 3.5 Biological Resources

### 3.5.1 Introduction

This section describes the terrestrial and aquatic biological resources that are known or have the potential to occur in the study area. Biological resources are common vegetation, wildlife, and fisheries resources; sensitive habitats; plant communities; and special-status plant, wildlife, and fish species. Whereas the animal species present in any given community are often determined by the plant assemblages present, the plant species present are typically a response to abiotic (non-living) factors such as climate, topography, hydrology, and soils.

The environmental setting and evaluation of impacts on biological resources is based on a review of existing published documents and data, including county general plans, information regarding other Friant projects in the vicinity of the study area, and information sources available from federal and state wildlife agencies. No comments specifically addressing biological resources were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.5.2 Environmental Setting

The study area includes the Tulare Basin and a small portion of the San Joaquin Basin located south of Millerton Lake. Annual grassland is the predominate natural community in the portion of the study area that overlaps with the San Joaquin Basin. Natural communities across the Tulare Basin are highly altered from agricultural practices. Common natural communities in the study area include dry scrubland, annual grassland, and disturbed areas dispersed across a largely agricultural landscape. Dry scrubland is dominated by chamise (*Adenostoma fasciculatum*), coyote brush (*Baccharis pilularis*), California buckwheat (*Eriogonum fasciculatum*), and bladderpod (*Peritoma arborea*). Grassland habitats are likely dominated by non-native species including wild oats (*Avena* spp.), brome (*Bromus* spp.), and wild barley (*Hordeum* spp.).

The study area has an inland Mediterranean climate type characterized by hot, dry summers and cool, rainy winters. Daily summer high temperatures often exceed 100 degrees Fahrenheit (°F); daily summer high temperatures average 95°F. Average high temperatures in the winter are in the 50s and the average daily low temperature in the winter is 45°F. The area receives an average of approximately 10 inches of rainfall per year. Rainfall during winter storms provides the majority of the precipitation, with convective rain showers occurring rarely during the summer.

The study area is located in the San Joaquin Valley subregion of the Great Central Valley region within the California Floristic Province (i.e., a geographic area, made of six regions, defined by the continuity of its vegetational, topographic, geologic, and climatic features) (Baldwin et al. 2012). This subregion extends from the northern border of Contra Costa and San Joaquin counties south to the northern border of Ventura and Santa Barbara counties. Land uses adjacent to the Friant-Kern Canal within the study area in Fresno, Tulare, and Kern Counties are almost entirely agricultural lands.

Agricultural areas could include irrigated row and field crops, orchards/vineyards, and irrigated hayfields. Irrigated row and field crops include vegetables. Orchards may include deciduous trees (e.g., nut crops) or evergreen trees (e.g., citrus).

Most irrigated row and field crops are grown in rows; however, the structure of these areas can be variable. In general, these crops have eliminated all aspects of natural habitat for native wildlife species and are often managed to minimize crop depredation by wildlife through fencing, trapping, and poisoning. Where such controls are less stringent, irrigated row and field crops may support populations of rodents such as California ground squirrel and rabbits. This habitat may also support rodent predators (including snakes, hawks, fox, and coyote), deer elk, raccoon, possum (*Didelphimorphia* sp.), insects, and a wide variety of birds and bats, both fruit-eating and insectivorous.

Orchards generally consist of trees planted in rows. Generally, orchards have little or no understory vegetation. Wildlife such as deer and rabbits may browse on the trees or vines, and squirrels and birds feed on fruit or nuts. Some wildlife (e.g., mourning dove and California quail) use the habitat for cover and nesting sites.

Vineyards are typically characterized by grapes planted in rows supported on trellises. Between rows of vines, herbaceous plants may be allowed to grow to function as cover for erosion purposes. Benefits to wildlife are generally similar to those described for deciduous orchards. However, deer and rabbits are known to browse on the vines, and squirrels and birds are known to feed on the fruit.

Sensitive natural communities in the region include valley/foothill riparian as well as wetlands. Trees typically associated with the valley/foothill riparian natural community include willows (*Salix* sp.), Fremont cottonwood (*Populus fremontii*), valley oak (*Quercus lobata*), and western sycamore (*Platanus racemosa*).

The valley/foothill riparian community supports a variety of common wildlife species. Many species of birds, mammals, reptiles, and amphibians depend on riparian habitats, such as woodpeckers, warblers, flycatchers, owls, and raptors. Other wildlife species that use riparian habitats include western fence lizard (*Sceloporus occidentalis*), Pacific tree frog (*Pseudacris regilla*), western toad (*Anaxyrus boreas*), bullfrog (*Rana catesbeiana*), western skink (*Eumeces skiltonianus*), western whiptail (*Cnemidophorus tigris*), southern alligator lizard (*Elgaria multicarinata*), racer (*Coluber constrictor*), gopher snake (*Pituophis catenifer*), king snake (*Lampropeltis* sp.), garter snake (*Thamnophis* sp.), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), opossum (*Didelphis virginiana*), black-tailed jackrabbit (*Lepus californicus*), western gray squirrel (*Sciurus griseus*), ringtail (*Bassariscus astutus*), river otter (*Lontra canadensis*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), beaver (*Castor canadensis*), mule deer (*Odocoileus hemionus*), and a number of bat species. Wetland natural communities support many species of waterfowl, such as mallard (*Anas platyrhynchos*), northern pintail (*A. acuta*), American widgeon (*A. americana*), and Canada goose (*Branta canadensis*), and a variety of wading birds and shorebirds.

## Special-Status Species

Special-status species are regulated under the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are classified under the following categories:

1. Species listed or proposed for listing as threatened or endangered under the FESA (Code of Federal Regulations [CFR] title 50, Section 17.12 [listed plants] and Section 17.11 [listed animals], and various notices in the *Federal Register* [FR] [proposed species]).
2. Species that are candidates for possible future listing as threatened or endangered under the FESA (*Federal Register* title 61 [61 FR], number 40, February 28, 1996).
3. Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (California Code of Regulations [CCR] title 14, Section 670.5 [14 CCR 670.5]).
4. Plants listed as rare or endangered under the Native Plant Protection Act (NPPA) (California Fish and Game Code, Section 1900 et seq.).
5. Animal species of special concern to the California Department of Fish and Wildlife (CDFW).
6. Animals fully protected under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
7. Species that meet the definitions of “rare” and “endangered” under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as rare or endangered even if not on one of the official lists (CEQA Guidelines, Section 15380).
8. Plants considered by California Native Plant Society (CNPS) and CDFW to be “rare, threatened or endangered in California” (California Rare Plant Ranks [CRPRs] 1A, 1B, and 2 in CNPS 2023).

Species recognized under these terms are collectively referred to as “special-status species.”

A list of special-status plant and wildlife species considered to potentially occur within the study area was developed using information queried from the U.S. Fish and Wildlife Service (USFWS) (USFWS 2023), CNPS (2023), and the California Natural Diversity Database (CNDDB) (CDFW 2023) (Appendix C, *Special-Status Plant and Wildlife Species Lists*). This list of species includes those species that can be found or are known to have occurred historically in the study area. These species were ranked by their likelihood of occurrence within the study area. These rankings were assigned based on the following criteria:

- *Unlikely*: The species’ required habitat is lacking.
- *Low*: The species’ required habitat either does not occur or is of very low quality such that no observations have occurred in or near the study area.
- *Moderate*: The species’ required habitat occurs in the study area and there are known occurrences nearby, but there are no recorded observations in the study area.

- *High*: The species has been documented in the study area in the past.

Only those special-status species determined to have at least moderate potential to occur in the study area are analyzed in detail in this Draft EIR.

### ***Invertebrates***

#### **Crotch's Bumble Bee**

Crotch's bumble bee (*Bombus crotchii*) is a state candidate species. It has a potential to occur in the study area within suitable habitat of grasslands and shrublands. Like most bumble bees, the Crotch's bumble bee nests primarily underground. The size of Crotch's bumble bee colonies has not been well documented. Little is known about the overwintering sites of the Crotch's bumble bee, but queens likely overwinter in soft soil or under debris or thatch and leaf litter.

#### **Vernal Pool Fairy Shrimp**

Vernal pool fairy shrimp (*Branchinecta lynchi*) is federally listed as threatened. It inhabits primarily vernal pools but also occurs in other wetlands that provide habitat similar to vernal pools: alkaline rain-pools, ephemeral drainages, rock outcrop pools, ditches, stream oxbows, stock ponds, vernal swales, and seasonal wetlands. It has also been detected in disturbed vernal pools. The vernal pool fairy shrimp is threatened primarily by habitat loss and fragmentation from the expansion of agricultural and developed lands.

#### **Conservancy Fairy Shrimp**

Conservancy fairy shrimp (*Branchinecta conservatio*) is federally listed as endangered. It occurs in turbid vernal pools ranging from large, playa-type vernal pools to long-inundation, smaller vernal pools. The Conservancy fairy shrimp is threatened primarily by habitat loss and fragmentation resulting from expansion of agricultural and developed land.

#### **Vernal Pool Tadpole Shrimp**

Vernal pool tadpole shrimp (*Lepidurus packardii*) is federally listed as endangered. It occurs in a wide variety of seasonal habitats: vernal pools, ponded clay flats, alkaline pools, ephemeral stock ponds, and roadside ditches. Habitats where vernal pool tadpole shrimp have been observed range in size from small, clear, vegetated vernal pools to highly turbid pools and large winter lakes. The vernal pool tadpole shrimp is threatened primarily by habitat loss and fragmentation from the expansion of agricultural and developed lands.

### ***Amphibians and Reptiles***

The study area overlaps with the range of multiple special-status amphibians and reptiles whose habitat requirements and protection status are summarized below.

#### **Western Spadefoot**

Western spadefoot (*Spea hammondi*) is a California species of special concern whose suitable habitat includes slow-moving creeks, floodplains, or pools for breeding and nearby terrestrial areas of open vegetation and sandy soils for digging burrows.



### **California Glossy Snake**

California glossy snake (*Arizona elegans occidentalis*) is a California species of special concern. It inhabits arid scrubs, rocky washes, grasslands, and chaparral. These snakes are nocturnal and hide underground during the daytime under rocks or in burrows.

### **Northern California Legless Lizard**

Northern California legless lizard (*Anniella pulchra*) is a California species of special concern. It is found in scattered locations in the San Joaquin Valley. This species is associated with sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces.

### **Bakersfield Legless Lizard**

Bakersfield legless lizard (*Anniella grinnelli*) is a California species of special concern. This species occurs in Kern County and is assumed to have habitat requirements similar to those of *A. pulchra*.

### **Coast Horned Lizard**

Coast horned lizard (*Phrynosoma blainvillii*) is a California species of special concern. Although coast horned lizards prefer sandy loam areas and alkali flats, they can also inhabit exposed gravelly sandy substrates vegetated with scattered shrubs or annual grassland, or clearings in riparian woodlands (Jennings and Hayes 1994).

### **San Joaquin Coachwhip**

San Joaquin coachwhip (*Masticophis flagellum ruddocki*) is a California species of special concern. It is believed to inhabit the burrows of any number of small mammal species in open, dry vegetation with little to no tree cover in such habitats as valley grassland and saltbush scrub associations.

## **Birds**

Three special-status species of birds may occur in the study area: Swainson's hawk (*Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*), and burrowing owl (*Athene cunicularia*). The areas surrounding the Friant-Kern Canal may provide foraging habitat for Swainson's hawk, burrowing owl, and tricolored blackbird. The habitat requirements and regulatory statuses of these species are summarized below.

### **Swainson's Hawk**

The Swainson's hawk is state-listed as a threatened species in California. It nests in the Central Valley, Klamath Basin, and some mountain areas, where it prefers stands of trees in agricultural environments, oak savanna, riparian areas, or juniper-sage flats. In the San Joaquin Valley, it typically nests in riparian trees in isolated clusters, often near rural residences or agricultural fields. Swainson's hawk forages in crop fields in the Central Valley, as well as grasslands, rangelands, and fallow agricultural fields.

### **Burrowing Owl**

The burrowing owl is a California species of special concern. In California's Central Valley, the burrowing owl is a year-round resident of open spaces such as grasslands and agricultural fields. Nests are generally found in the abandoned burrows of small mammals such as ground squirrels; however, they can dig their own burrows in soft soil, and they occasionally use culverts and other artificial structures. Breeding occurs from March to August, peaking in April to May. Burrowing owls forage on insects and small mammals, and also consume reptiles, birds, and carrion. Open grassland in the study area is potential habitat for burrowing owls, especially in areas with short grass that are undisturbed.

### **Tricolored Blackbird**

Tricolored blackbird is state-listed as threatened. It is a colonial nesting bird that is largely restricted to California. In recent history, this species has concentrated its breeding colonies within the agricultural fields of the Central Valley. The species often exploits the combination of resources available around dairies in California; for example, triticale, a hybrid of wheat and rye often grown as silage for dairies, provides robust structure for nesting and is associated with plentiful food resources.

### **Mammals**

#### **San Joaquin Kit Fox**

San Joaquin kit fox (*Vulpes macrotis mutica*) is federally listed as endangered and state-listed as threatened. It occurs in open grasslands and scrub and makes dens where there are loose-textured soils. Threats include loss and fragmentation of habitat and the introduction of barriers to dispersal, such as highways and canals. Marginal foraging and denning habitat for San Joaquin kit fox may be present along portions of the study area.

#### **Tipton Kangaroo Rat**

Tipton kangaroo rat (*Dipodomys nitratooides nitratooides*), which is federally listed and state-listed as endangered, is known to occur regionally and may use the terraced floodplain and scattered woody shrubs.

#### **American Badger**

American badger (*Taxidea taxus*) is a California species of special concern. It is associated with drier open shrub, forest, and herbaceous habitats with friable soils. Its distribution is currently fragmented throughout the San Joaquin Valley.

### **Plants**

Several special-status plant species have been identified as having potential to be present within the study area. Suitable habitats for Alkali mariposa-lily (*Calochortus striatus*), California satintail (*Imperata brevifolia*), Mason's neststraw (*Stylocline masonii*), recurved larkspur (*Delphinium recurvatum*), and subtle orache (*Atriplex subtilis*) are present within the study area. Rare plant surveys have not been conducted within the area of analysis; thus, the potential for these species to occur has been identified based on analysis of habitat suitability, range, and database occurrences.

## **Fish**

The Kern brook lamprey (*Lampetra hubbsi*), a state-listed species of concern, is known to inhabit the Friant-Kern Canal where ammocoetes (larvae) occupy sand/mud substrates occurring within canal-associated siphons. The species has been documented within the Friant-Kern Canal.

### **3.5.3 Regulatory Setting**

#### **Federal**

##### ***Endangered Species Act of 1973, as amended***

The FESA and subsequent amendments (United States Code [USC] title 16, Sections 1531–1543 [16 USC 1531–1543]) provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. In addition, the FESA defines species as threatened or endangered and provides regulatory protection for listed species. The FESA also provides a program for the conservation and recovery of threatened and endangered species as well as the conservation of designated critical habitat that USFWS determines is required for the survival and recovery of these listed species.

FESA Section 9 lists prohibited actions. The definition of “take” includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Although unauthorized take of a listed species is prohibited, take may be allowed when it is incidental to an otherwise legal activity. Section 9 prohibits take of listed species of fish, wildlife, and plants without special exemption. The definition of “harm” includes significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns related to breeding, feeding, or shelter. “Harass” is defined as actions that create the likelihood of injury to listed species by disrupting normal behavioral patterns related to breeding, feeding, and shelter significantly.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit.

##### ***Migratory Bird Treaty Act***

The Migratory Bird Treaty Act (MBTA) (16 USC 703–711) is the domestic law that affirms and implements a commitment by the United States to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. Unless and except as permitted by regulations, the MBTA makes it unlawful at any time, by any means, or in any manner to intentionally pursue, hunt, take, capture, or kill migratory birds anywhere in the United States. The law also applies to disturbance and removal of nests occupied by migratory birds or their eggs during the breeding season, whether intentional or incidental.

##### ***Bald and Golden Eagle Protection Act of 1940***

The federal Bald and Golden Eagle Protection Act of 1940 (16 USC 668) protects bald eagles and golden eagles (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this act. Take of bald and golden eagles includes to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb”

(16 USC 668c). “Disturb” means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior (72 FR 31132, June 5, 2007; 50 CFR 22.3)].

### **Clean Water Act of 1972**

The Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the structure for regulating discharges of pollutants to waters of the United States. The CWA is the primary federal law for protecting the quality of the nation’s surface waters: lakes, rivers, and coastal wetlands.

### **Clean Water Act Section 401**

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may discharge a pollutant into waters of the United States (defined below under *Clean Water Act Section 404*) must obtain certification from the state in which the discharge would originate. If appropriate, the applicant must obtain certification from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect a state’s water quality—including projects that require approval by a federal agency, such as issuance of a Section 404 permit, described below—must also comply with CWA Section 401.

### **Clean Water Act Section 402**

Pursuant to CWA Section 402, the State Water Board has adopted the General Construction Activity Storm Water Permit. This general permit applies to stormwater discharges from any construction activity that would disturb at least one acre of total land area, including clearing, grading, excavation, reconstruction, and dredging and filling activities. The general permit requires the site owner to notify the state, prepare and implement a storm water pollution prevention plan, and monitor the plan’s effectiveness.

Minor (i.e., *de minimis*) discharge activities regulated by an individual or general permit under the National Pollutant Discharge Elimination System (NPDES), such as discharges resulting in construction dewatering, also require the General Order for Dewatering and Other Low Threat Discharge to Surface Waters Permit (CWA Section 402). Project applicants/proponents should apply for this permit at the same time they apply for the NPDES permit.

### **Clean Water Act Section 404**

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. The term “waters of the United States” refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands. Before proceeding with proposed activities, applicants must obtain a permit from the U.S. Army Corps of Engineers (USACE) for all discharges of dredged or fill material into waters of the United States, including wetlands. Waters of the United States are under the jurisdiction of USACE and USEPA.

To comply with CWA Section 404, a project must first comply with several other environmental laws and regulations. USACE cannot issue an individual permit or verify the use of a general nationwide permit until the project has met the requirements of the National Environmental Policy Act (NEPA), the FESA, and the National Historic Preservation Act (NHPA). In addition, USACE cannot issue or verify any permit until a water quality certification, or a waiver of certification has been issued under CWA Section 401.

## **State**

### ***California Endangered Species Act***

The CESA (Fish and Game Code Section 2050 et seq.) establishes state policy to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. For projects that would affect a listed species under both the CESA and the FESA, compliance with the FESA would satisfy the CESA if CDFW determines that the federal incidental take authorization is “consistent” with the CESA under Fish and Game Code Section 2080.1. Before a project results in a take of a species listed under the CESA, a take permit must be issued under Section 2081(b).

### ***Fish and Game Code Sections 2080 and 2081***

Section 2080 of the Fish and Game Code states:

No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the [State Fish and Game] Commission determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act.

Pursuant to Section 2081, CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or memoranda of understanding, if the take is incidental to an otherwise lawful activity, impacts of the authorized take are minimized and fully mitigated, the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and the project operator ensures adequate funding to implement the measures required by CDFW. CDFW makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

### ***Fish and Game Code Sections 3503, 3503.5, and 3513***

Under these sections of the Fish and Game Code, a project operator is not allowed to conduct activities that would result in the take, possession, or destruction of any birds of prey; the take or possession of any migratory nongame bird; the take, possession, or needless destruction of the nest or eggs of any raptors or nongame birds; or the take of any nongame bird pursuant to Fish and Game Code Section 3800, whether intentional or incidental.

### **Fully Protected Species**

Certain species are considered “fully protected,” meaning that the California Fish and Game Code explicitly prohibits all take of individuals of these species except for scientific research.

Section 5050 lists fully protected amphibians and reptiles, Section 5515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals. A species can be protected under the California Fish and Game Code but not be fully protected. For instance, mountain lion (*Puma concolor*) is protected under Section 4800 et seq. but is not a fully protected species.

### **Species of Special Concern**

CDFW maintains lists of candidate-endangered species and candidate-threatened species. California candidate species are afforded the same level of protection as listed species. California also designates “species of special concern,” which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species or fully protected species but may be added to official lists in the future. CDFW intends the species of special concern list to be a management tool for consideration in future land use decisions.

### **California Environmental Quality Act Guidelines Section 15380**

In addition to the protections provided by specific federal and state statutes, CEQA Guidelines Section 15380 provides that a species not listed on the federal or state list of protected species nonetheless may be considered rare or endangered for purposes of CEQA if the species can be shown to meet certain specified criteria:

- (A) When its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or
- (B) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or
- (C) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered “threatened” as that term is used in the FESA.

### **Native Plant Protection Act**

The NPPA (Fish and Game Code Sections 1900–1913) requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of endangered or rare plants from the wild and require notifying CDFW at least 10 days in advance of any change in land use in areas that support listed plants.

### **California Rare Plant Ranking System**

CDFW works in collaboration with CNPS to maintain a list of plant species native to California that have low numbers or limited distribution or are otherwise threatened with extinction. These species are categorized by rarity in the California Rare Plant Rank, or CRPR. This information is

published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts on populations of CRPR species may receive consideration under CEQA review. The system ranks rare plants using the following definitions:

- **Rank 1A:** Plants presumed extirpated in California and either rare or extinct elsewhere.
- **Rank 1B:** Plants rare, threatened, or endangered in California and elsewhere.
- **Rank 2A:** Plants presumed extirpated in California, but more common elsewhere.
- **Rank 2B:** Plants rare, threatened, or endangered in California, but more common elsewhere.
- **Rank 3:** Plants about which more information is needed—a review list.
- **Rank 4:** Plants of limited distribution—a watch list.

In general, plants with CRPR 1A, 1B, or 2 are considered to meet the criteria of CEQA Guidelines Section 15380 (discussed above). In addition, plants with CRPR Rank 1A, 1B, or 2 meet the definitions of California Fish and Game Code Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA).

## Local

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions has a general plan with goals and policies that address the protection of biological resources. Applicable general plan goals and policies are presented in **Table 3.5-1**. Other applicable local regulations are summarized below.

**TABLE 3.5-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—BIOLOGICAL RESOURCES**

General Plan	Goals and Policies
<b>Fresno County</b>	Policies OS-A.19, OS-A.20, OS-A.25, OS-A.26; Goal OS-D, Policies OS-D.5, OS-D.6, OS-D.7, OS-D.8; Goal OS-E, Policies OS-E.2, OS-E.5, OS-E.6, OS-E.10, OS-E.13, OS-E.14, OS-E.15, OS-E.16, OS-E.17, OS-E.18; Goal OS-F, Policies OS-F.3 and OS-F.5
<b>Tulare County</b>	ERM-1.1, ERM-1.2, ERM-1.4, ERM-1.6, ERM-1.7
<b>Kern County</b>	Policies 27, 28, 29, 30; Implementation Measures Q, R, S

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

### ***Pacific Gas and Electric Company San Joaquin Valley Operation and Maintenance Habitat Conservation Plan***

The Pacific Gas and Electric Company (PG&E) San Joaquin Valley Operation and Maintenance Habitat Conservation Plan (O&M HCP) protects 23 wildlife and 42 plant species within nine counties of the San Joaquin Valley. This habitat conservation plan (HCP) covers routine operations and maintenance activities, as well as minor new construction, on any PG&E gas and electrical transmission and distribution facilities, easements, private access routes, or lands owned by PG&E (PG&E 2006).

## 3.5.4 Impacts and Mitigation Measures

### Methods of Analysis

The analysis of environmental impacts on biological resources focuses on the potential for substantial adverse effects on biological resources as a result of implementation of the proposed Guidelines. Impacts were evaluated in terms of how potential construction activities, construction features, and operation and maintenance of the types of actions that could be taken by Contractors in response to the proposed Guidelines could affect existing biological resources. As described in Section 3.1, *Approach to the Analysis*, because the precise locations and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

“Permanent impacts” are those that would continue through the life of an action as a result of the environmental conditions created by that action (e.g., conversion of land due to installation of a structure). “Temporary impacts” are those that would be short term (e.g., disturbance associated with noise of construction equipment that would cease once construction is complete).

The approach to assessing biological resources impacts was qualitative and conservative. The impact analysis relies on the use of existing quantitative and qualitative data including but not limited to existing reports, desktop (versus field) surveys, open access databases, and maps. Significance determinations assume that any activities undertaken pursuant to the proposed Guidelines would comply with all relevant federal, state, and local ordinances and regulations described in the regulatory setting.

### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to biological resources is considered significant if the proposed Guidelines would do any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW, USFWS, or the National Marine Fisheries Service (NMFS).
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community or critical habitat identified in local or regional plans, policies, or regulations or by CDFW, USFWS, or NMFS.
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.



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

## Impacts Not Evaluated Further

**Conflict with the provisions of an adopted HCP, natural community conservation plan, or other approved local, regional, or state HCP.** The PG&E O&M HCP (PG&E 2006) covers specific PG&E activities throughout nine counties in the San Joaquin Valley. It complies with the FESA and the CESA, and outlines steps on minimizing, avoiding, and compensating for possible direct, indirect, and cumulative adverse effects on threatened and endangered species and critical habitat that could result from PG&E operation and maintenance activities in the San Joaquin Valley. Although the study area lies within the boundaries of the PG&E O&M HCP, the construction activities that could be conducted by Contractors in response to the proposed Guidelines are not covered activities under the PG&E O&M HCP, which is applicable only to PG&E facilities. Therefore, no impact would occur, and this issue is not evaluated further in this Draft EIR.

## Impacts and Mitigation Measures

Table 3.5-2 summarizes the impact conclusions presented in this section.

**TABLE 3.5-2  
 SUMMARY OF IMPACT CONCLUSIONS—BIOLOGICAL RESOURCES**

<b>Impact Statement</b>	<b>Impact Conclusion</b>
<b>3.5-1:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.	LSM
<b>3.5-2:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS.	LSM
<b>3.5-3:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.	LSM
<b>3.5-4:</b> Implementation of the proposed Guidelines could 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.	LTS
<b>3.5-5:</b> Implementation of the proposed Guidelines could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	LSM
NOTES: LTS = Less than Significant; LSM = Less than Significant with Mitigation	

**Impact 3.5-1: Implementation of the proposed Guidelines could result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries. Construction of such facilities could adversely affect special-status species, either through direct mortality or injury (e.g., from heavy machinery crushing wildlife or plants) or through the loss of suitable habitat for special-status species. This effect could be temporary, if such habitat is restored to pre-action conditions following the completion of construction (e.g., staging areas or haul routes); or the effect could be permanent, if no such restoration activities are possible (e.g., it would not be possible to restore habitat in the footprint where a permanent new water quality treatment facility is constructed). Because future facilities would be relatively small, ground disturbance would be limited to the construction footprint; however, construction work could result in other types of disturbance. Examples include excess noise that could disturb the normal behavior patterns of wildlife, or spillover of any nighttime construction lighting that could disturb the resting or food-seeking patterns of wildlife. Construction activities that are sited on or adjacent to the Friant-Kern Canal (e.g., installation of new water quality monitoring stations within the canal) would have a much-reduced potential to affect special-status wildlife, because local wildlife are likely accustomed to human activity (e.g., from ongoing inspections and maintenance activities by employees, contractors, and consultants, and from farming operations in adjacent agricultural areas).

Special-status plants could be affected by the construction of new water quality treatment facilities. Habitat disturbance could result from the clearing of vegetation within haul routes and in equipment staging areas and from general site grading and contouring to prepare the areas for installation of structures. This groundwork could bury, crush, or remove an individual or cluster of special-status plants.

Construction activities may also contribute to an increased accumulation of fugitive dust on leaves, which impedes a plant's ability to photosynthesize. In addition, the use of heavy construction equipment increases the potential for an accidental spill of contaminants (e.g., fuels or lubricants), which could degrade conditions where special-status plants are found. Many of the areas around the Friant-Kern Canal are developed for agricultural production, which typically results in most if not all the land being disturbed. The presence of previously disturbed areas decreases the likelihood of effects on special-status plant species, which are generally associated with areas that either are undeveloped or have been previously restored.

Water quality monitoring stations would be installed within the Friant-Kern Canal to measure key water quality parameters. Installation of these features would not be expected to adversely affect Kern brook lamprey, because these water quality stations would not result in dewatering of the

canal and the potential for entrainment or entrapment into water quality sampling units is expected to be extremely small.

General operational activities necessary to support the functionality of constructed facilities would primarily include regularly scheduled inspections and evaluation of facility performance. The level of activity associated with operations and maintenance would be similar to existing conditions and thus is not expected to contribute to any further disturbance of special-status species or their habitats. As such, a less-than-significant impact on special-status plant and wildlife species is anticipated from Contractors' operations and maintenance activities implemented in response to the proposed Guidelines.

This analysis conservatively assumes that construction activities associated with actions implemented by Contractors in response to the proposed Guidelines could directly or indirectly affect any special-status species identified within the study area, including both plants and wildlife species. During project-level planning, when the specific location and design of the action is defined, other data sources would need to be used to more specifically evaluate which special-status species could be affected by construction. These data sources may include but are not limited to:

- (1) Reconnaissance and/or protocol-level surveys of the site where the action would occur.
- (2) Professional knowledge of local biologists, including those connected to the agency authorizing the action.
- (3) Relevant environmental documents and reports for similar projects or other nearby projects.
- (4) Species lists available from USFWS, CDFW, and CNPS.

For special-status plant species, localized information about soil conditions, elevations, types and locations of natural communities present, local precipitation patterns, disturbance regimes (e.g., vegetation could be regularly disked or mowed), and local hydrology could be assessed to refine which specific special-status plant species could be present within affected work areas. Consideration of these additional data would substantially reduce the number of special-status plant and wildlife species considered to have the potential to occur within the footprint of a given action. Therefore, this impact would be **potentially significant**.

### **Mitigation Measures**

The following measures to avoid or minimize disturbance of special-status species shall be implemented for Contractor actions implemented in response to the proposed Guidelines:

**Mitigation Measure 3.5-1a:** One botanical survey shall be conducted prior to construction activities to determine the presence or absence of special-status plant species within the construction footprint, including staging and haul routes. The surveys shall be conducted in general accordance with the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFW 2018) and shall be timed to appropriately coincide with the blooming period in all suitable habitat located within any anticipated disturbance areas.

**Mitigation Measure 3.5-1b:** In the event that special-status plant species are found during the botanical surveys, the locations of the special-status plants shall be marked and a 50-foot buffer shall be established as avoidance areas both in the field, using flagging, staking, fencing, or similar devices, and on construction plans.

**Mitigation Measure 3.5-1c:** If non-listed, special-status plants are identified during botanical surveys and complete avoidance is not practicable, coordination with CDFW and/or USFWS shall be conducted as appropriate to develop the conservation plan. No take of state-listed species shall occur without an Incidental Take Permit (ITP) from CDFW.

**Mitigation Measure 3.5-1d:** To avoid special-status wildlife habitat, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- To the extent practicable, site(s) shall be identified that avoid habitats of special-status species (which may include foraging, sheltering, migration, and rearing habitat in addition to breeding or spawning habitat).
- Buffers around special-status species habitats shall be established to exclude effects of construction activities. The size of the buffer shall be in accordance with USFWS and CDFW protocols for the applicable special-status species.
- To the extent practicable, construction activities shall be scheduled to avoid special-status species' breeding, spawning, or migration locations during the seasons or active periods that these activities occur.
- Where impacts on special-status species are unavoidable, impacts shall be compensated for by restoring or preserving in-kind suitable habitat on-site or off-site, or by purchasing restoration or preservation credits.

**Mitigation Measure 3.5-1e:** To protect wildlife, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- ***Avoidance of Vegetation Disturbance.*** Sites shall be selected that will minimize, to the greatest extent feasible, the amount of soil and upland vegetation disturbance during construction and use methods creating the least disturbance to vegetation. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed shall be limited to the extent of all temporary and permanent impacts as defined by the final project design.
- ***Environmental Awareness Training.*** Prior to engaging existing or new personnel in construction activities, new construction personnel shall participate in environmental awareness training conducted by an agency-approved biologist or resource specialist. Construction personnel will be informed about the identification, potential presence, legal protections, and avoidance and minimization measures relevant to special-status species that potentially occur on the site.
- ***Environmental Monitoring.*** A qualified biologist shall ensure that all applicable protective measures are implemented during construction. The qualified biologist shall have authority to stop any work if they determine that any permit requirement is not fully implemented. The qualified biologist will prepare and maintain a

monitoring log of construction site conditions and observations, which will be kept on file by the lead agency.

- **Work Area and Speed Limits.** All construction work and materials staging shall be restricted to designated work areas, routes, staging areas, temporary interior roads, or the limits of existing roadways.
  - Prior to start of work, brightly colored fencing or flagging or other practical means shall be erected to demarcate the limits of the activities within 100 feet of sensitive natural communities and habitat areas (e.g., any aquatic features), including designated staging areas; ingress and egress corridors; stockpile areas, soil, and materials; and equipment exclusion zones. Flagging or fencing shall be maintained in good repair for the duration of construction activities.
  - Vehicles shall obey posted speed limits and will limit speeds to 20 miles per hour within the study area on unpaved surfaces and unpaved roads to reduce dust and soil erosion and avoid harm to wildlife.
- **Daily Removal of Food Trash.** All food trash shall be properly contained within sealed containers, removed from the work site, and disposed of daily to prevent attracting wildlife to construction sites.

**Mitigation Measure 3.5-1f:** To protect nesting birds, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- To the extent practicable, vegetation removal shall be scheduled to avoid the breeding season for nesting raptors and other special-status birds (generally February 1 through August 31, depending on the species). Removal of vegetation outside of the nesting season is intended to minimize the potential for delays in vegetation removal due to active nests.
- If work is to occur during the breeding season for nesting birds, a qualified biologist shall conduct a minimum of one pre-construction survey for nesting migratory birds and raptors within the project area for all construction-related activities that will occur during the nesting season. The pre-construction survey shall be conducted no more than 15 days prior to the initiation of construction in a given area and will be phased based on the construction schedule. If an active nest is found, a construction-free buffer zone (250 feet for migratory birds, 500 feet for raptors) shall be established around the active nest site. If establishment of the construction-free buffer zone is not practicable, appropriate conservation measures (as determined by a qualified biologist and approved by CDFW) shall be implemented. These measures may include but are not limited to consulting with CDFW to establish a different construction-free buffer zone around the active nest site, conducting daily biological monitoring of the active nest site, and delaying construction activities in the vicinity of the active nest site until the young have fledged.
- If burrowing owls are detected within the project area during the non-breeding season and maintaining a 150-foot, no-disturbance buffer is not practicable, a qualified biologist shall submit an exclusion and passive-relocation plan to CDFW for approval. The exclusion and passive-relocation plan will generally follow the guidelines outlined in Appendix E of the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). If occupied burrows are detected during the breeding season and

maintaining a 250-foot no-disturbance buffer is not practicable, CDFW will be consulted to determine and approve alternative measures to minimize the potential for disturbance to occupied burrows and nesting activities. Measures may include but are not limited to continuous biological monitoring by a qualified biologist until it has been determined that the young have fledged and are no longer reliant on the nest or parental care for survival or construction is complete. No direct disturbance of burrows with eggs or young can be conducted without written authorization from CDFW and USFWS.

- For construction activities that occur between February 1 and August 31, a qualified biologist shall conduct pre-construction surveys for raptors. The pre-construction surveys will include the project footprint and a minimum of a 0.50-mile radius where access is permitted around the construction area in suitable nesting habitat (i.e., large trees). The preconstruction surveys shall be conducted no more than 10 days before ground disturbance in a given area and will be phased based on the construction schedule. If nesting raptors are detected, an appropriate no-disturbance buffer (initially set at 500 feet for raptors; reductions in the standard buffer for raptors may be allowed where circumstances suggest the birds will not abandon the active nest with a reduced buffer size. A qualified biologist will determine whether reducing the buffer is likely to substantially increase disturbance of nesting birds, taking into account the presence or absence of dense vegetation, topography, or structures that would block project activities from view; the life history and behavior of the bird species in question; and the nature of the proposed activity. If a reduced buffer is implemented, the biologist shall monitor bird behavior in relation to work activities. At a minimum, the biologist will monitor the baseline behavior of the birds for at least 30 minutes prior to the commencement of the work activity and for at least one hour immediately following the initiation of the work activity, when response by the nesting birds to the novel activity is expected to be greatest) shall be established and monitored by a qualified biologist. Buffers shall be maintained until a qualified biologist has determined that the young have fledged and are no longer reliant on the nest or parental care for survival.
- If construction results in permanent loss of alfalfa fields (high-quality foraging habitat for Swainson's hawk), this loss shall be mitigated; at a minimum of a 1:1 ratio. Mitigation shall occur in coordination with CDFW and may consist of but is not limited to purchasing mitigation credits from a CDFW-approved mitigation bank, obtaining conservation easements with appropriate provisions to maintain the land as suitable foraging habitat in perpetuity, establishing new alfalfa fields, or implementing other habitat conservation measures as approved by CDFW.

**Mitigation Measure 3.5-1g:** To protect special-status amphibians and reptiles, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- If western spadefoot is encountered during construction activities, it will be allowed to move out of harm's way of its own volition, or a qualified biologist will relocate it to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.
- Prior to moving equipment at the start of a day, construction personnel shall inspect underneath parked vehicles and heavy machinery for amphibians or reptiles. If any are found, they will be allowed to move out of the construction area under their own

volition, or a qualified biologist will relocate the organism(s) to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.

**Mitigation Measure 3.5-1h:** To protect Crotch's bumble bee, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- If construction activities will involve conversion of grassland or shrublands, a survey for Crotch's bumble bee shall be conducted prior to construction activities during the Crotch's bumble bee active period (i.e., March to July).
- The survey will be a visual survey conducted by a qualified biologist who will search for Crotch's bumble bee activity and the presence of ground nests. If an active ground nest is observed, it shall be avoided. If avoidance of the active nest is not possible, CDFW will be consulted for approval of alternative measures to protect the Crotch's bumble bee.

**Mitigation Measure 3.5-1i:** To protect San Joaquin kit fox, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- Before the start of ground-disturbing activities within suitable habitat areas for San Joaquin kit fox (i.e., alkali desert scrub, annual grassland, pasture, barren) an approved biologist shall conduct preconstruction surveys in accordance with USFWS' *Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during Ground Disturbance* (USFWS 2011). Preconstruction surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox.
- If a natal/pupping den is discovered within the work area or within 200-foot buffer of the work area boundary, the USFWS shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization from USFWS. If the preconstruction survey reveals an active natal/pupping den, the Contractor shall contact the Service immediately to obtain the necessary take authorization. No construction work shall be allowed within 200 feet of the newly discovered natal/pupping den without written approval from the Service.

**Mitigation Measure 3.5-1j:** To protect Tipton kangaroo rat, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- Before the start of construction, the approved biologist shall conduct a habitat assessment to determine presence of special-status small mammal species burrows or their signs. If no observations, burrows, or signs of special-status small-mammal species are detected, no further measures will be required.
- If burrows and signs of special-status small mammal species are observed, the approved biologist will conduct protocol-level surveys in accordance with *Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats* (USFWS 2013)
- If signs of Tipton kangaroo rat are detected during the survey, the Contractor, under the supervision of the approved biologist, shall establish non-disturbance exclusion zones (using wildlife exclusion fencing [e.g., a silt fence or similar material]). The non-disturbance exclusion fence with one-way exit/escape points shall be placed to exclude the Tipton kangaroo rat from the construction area.

**Mitigation Measure 3.5-1k:** To protect American badger, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- No more than 30 days before the start of construction activities, a qualified biologist shall conduct pre-construction surveys for American badgers within suitable habitat on the project site. If a potentially active den is found in a construction area, a burrow probe shall be used to determine the presence of badgers, or the den openings may be monitored with tracking medium or an infrared-beam camera for three consecutive nights to determine current use. Potential (inactive) dens within the limits of disturbance shall be blocked or excavated to prevent use during construction. If American badgers or active dens are detected during these surveys, the following measures shall be implemented.
- Disturbance of any American badger dens shall be avoided to the extent practicable. American badger dens are used for shelter, escape, cover, and reproduction, and are thus vital to the survival of American badgers. If present, occupied badger dens shall be flagged, and ground-disturbing activities avoided, within 50 feet of the occupied den during the nonbreeding season (July 1 through February 14). Dens determined to be occupied during the breeding season (February 15 through June 30) shall be flagged, and ground-disturbing activities avoided, within 200 feet to protect adults and nursing young. Buffers may be modified by a qualified biologist with the written concurrence of CDFW.
- If avoidance of an active non-maternity den is not feasible, badgers shall be relocated by slowly excavating the burrow (either by hand or with mechanized equipment under the direct supervision of a qualified biologist) before or after the rearing season (February 15 through June 30). Any passive relocation of American badgers shall occur only under the direction of a qualified biologist.

**Significance after Mitigation:** Implementing Mitigation Measures 3.5-1(a) through 3.5-1(k), or equally effective measures, would reduce potential impacts on special-status species because either habitat for special-status species would be avoided through siting of Contractor actions, or potential effects on species would be greatly minimized through implementation of minimization strategies (or would be offset through the purchase of off-site compensatory mitigation credits or through on-site restoration actions). Therefore, this impact would be **less than significant with mitigation incorporated**.

**Impact 3.5-2: Implementation of the proposed Guidelines could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries. Construction activities could include site preparation involving removal of existing structures and facilities (e.g., distribution boxes, wells, ditches, standpipes, and pipes) and clearing of areas for establishment of new staging areas and potentially off-road haul routes. Ground and/or surface water disturbance could result in



temporary damage to, or the permanent removal of sensitive natural communities located in and adjacent to the construction site. Affected sensitive natural communities could include seasonal wetlands, vernal pools, riparian forest and scrub, oak woodlands, and other sensitive communities.

A temporary loss of sensitive natural communities could result from clearing vegetation for equipment staging areas and access routes. Additionally, construction equipment increases the potential for accidental spills of contaminants (e.g., fuels or lubricants), which could degrade sensitive habitats such as riparian forest, oak woodlands, and wetlands. A permanent loss of sensitive natural communities could result if permanently constructed structures are placed in areas where sensitive natural communities are currently located. Much of the sensitive natural communities within the study area have historically been converted as part of large-scale agricultural development within the San Joaquin Valley, increasing the likelihood that they could be avoided.

Water quality monitoring stations to be installed within the Friant-Kern Canal would not result in any loss of sensitive natural communities. These stations may include wall-mounted racks, freestanding racks, enclosed stations, compact stations, or floating platforms, but would be limited to the confines of the canal channel, which is not a sensitive natural community.

General operational activities necessary to support the functionality of constructed facilities would primarily include regularly scheduled inspections and evaluation of facility performance. The level of activity associated with operations and maintenance would be similar to existing conditions and thus would not contribute to conversion or further degradation of existing sensitive natural communities.

Proposed small water treatment facilities would be the approximate size of a shed; therefore, given the minimal construction footprint associated with these facilities, the potential to affect sensitive natural communities is also commensurately reduced. Nonetheless, given that the precise locations and detailed characteristics of future actions that may be implemented by Contractors in response to the proposed Guidelines are yet to be determined, there still remains a potential for such actions to result in the conversion of existing acreages of sensitive natural communities. Therefore, the impact would be **potentially significant**.

## Mitigation Measures

**Mitigation Measure 3.5-2:** To avoid or minimize disturbance of sensitive natural communities, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- ***Avoidance of Sensitive Natural Communities.*** The proponent of the action will select sites that will avoid sensitive natural communities, including riparian habitats, by doing the following:
  - To the maximum extent practicable, project elements shall be designed to avoid effects on sensitive natural communities.
  - Flagging or fencing shall be installed by a qualified biologist around any sensitive natural community to be avoided by construction.

- Flagging or fencing shall remain in place throughout the duration of the construction activities and will be inspected and maintained regularly by a qualified biologist until completion of construction activities. Fencing shall be removed when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.
- Where impacts on sensitive natural communities other than waters of the United States or state are unavoidable, impacts shall be compensated for by restoring and/or preserving in-kind sensitive natural communities on-site, or off-site at a nearby site, or by purchasing in-kind restoration or preservation credits from a mitigation bank.
- **Restoration of Temporarily Affected Areas.** For any areas temporarily affected by construction activities, the following measures shall be implemented:
  - Prepare a restoration plan for sites with temporary impacts, for review by CDFW.
  - Minimize soil disturbance and stockpile topsoil for later use in any areas to be graded.
  - Amend soil as necessary before installing replacement plants.
  - Use only native plant species for revegetation.
- **Preservation of Large Trees.** Existing native vegetation shall be retained as practicable, with special focus on the retention of shade-producing and bank-stabilizing trees and brush with greater than 6-inch-diameter branches or trunks. If large trees must be removed, compensation shall be implemented within 12 months of removal of such large trees. Compensation shall be implemented through one of three mechanisms or some combination thereof: (1) replacement via replanting at a minimum ratio of 1:1 based on a diameter-at-breast-height (DBH) basis, (e.g., planting six 1-inch DBH trees for a single, removed 6-inch DBH tree); (2) permanent preservation of large, native trees, which could include, but not be limited to, establishment of a conservation easement on lands that support native trees; or (3) contribution to the respective, established, approved tree conservation fund where the tree impact occurred.
- **Avoidance of Excessive Soil Compaction.** Wherever possible, vegetation disturbance and soil compaction shall be minimized by using low-ground-pressure equipment with a greater reach than other equipment, or that exerts less pressure per square inch on the ground.
- **Materials and Methods of Native and Invasive Vegetation Removal.** If riparian vegetation is removed with chain saws or other power equipment, machines that operate with vegetable-based bar oil will be used, if practicable. All invasive plant species (e.g., those rated as invasive by the California Invasive Plant Council or local problem species) shall, if feasible, be removed using locally and routinely accepted agricultural practices. Stockpiling of invasive plant materials is prohibited during the flood season.
- **Revegetation of Disturbed Areas.** All temporarily disturbed areas shall be de-compacted and seeded/planted with a mix of native riparian, wetland, and/or upland plant species suitable for the area. The proponent of the action shall develop a

revegetation plan, including (as applicable) a schedule; plans for grading of disturbed areas to pre-construction contours; a planting palette with plant species native to the study area; invasive species management; performance standards; and maintenance requirements (e.g., watering, weeding, and replanting).

Plants for revegetation shall come primarily from active seeding and planting; natural recruitment may also be proposed if site conditions allow for natural recruitment to reestablish vegetation and avoid potential negative risks associated with erosion and impacts on water quality. Plants imported to the restoration areas will come from local stock, and to the extent possible, from local nurseries. Only native plants (genera) will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for restoration planting or seeding.

- ***Revegetation Materials and Methods.*** Following the completion of work, site contours shall be returned to preconstruction conditions or redesigned to provide increased biological and hydrological functions.
  - Any area barren of vegetation as a result of implementation of an action shall be restored to a natural state by mulching, seeding, planting, or other means with native trees, shrubs, willow stakes, erosion control native seed mixes, or herbaceous plant species.
  - Where disturbed, topsoil shall be conserved for reuse during restoration to the extent practicable.
  - Native plant species comprising a diverse community structure (plantings of both woody and herbaceous species, if both are present) that follow a CDFW-approved plant palette shall be used for revegetation of disturbed and compacted areas, as appropriate.
  - Irrigation may also be required to ensure the survival of shrubs, trees, or other vegetation.
  - Soils that have been compacted by heavy equipment shall be de-compacted, as necessary, to allow for revegetation.
- ***Materials and Methods of Revegetation Erosion Control.*** If erosion control fabrics are used in revegetated areas, they shall be slit in appropriate locations to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics shall be used.
- ***Revegetation Monitoring and Reporting.*** All revegetated areas shall be maintained and monitored for a minimum of two years after replanting is complete and until success criteria are met, to ensure that the revegetation effort is successful. The standard for success is 60 percent absolute cover compared to an intact, local reference site. If an appropriate reference site cannot be identified, success criteria will be developed for review and approval by CDFW on a project-by-project basis based on the specific habitat affected and known recovery times for that habitat and geography. A summary report of the monitoring results and recommendations at the conclusion of each monitoring year shall be prepared.

**Significance after Mitigation:** With implementation of Mitigation Measure 3.5-2 or equally effective measures, construction areas associated with new water treatment facilities implemented by Contractors in response to the proposed Guidelines would be

protective of existing sensitive natural community resources, both by avoidance of such resources through project siting and through restoration of temporarily affected areas. Therefore, this impact would be **less than significant with mitigation incorporated**.

**Impact 3.5-3: Implementation of the proposed Guidelines could result in a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries. Construction of these potential future actions could directly affect wetlands and waters depending on where they are sited, and/or could indirectly affect wetlands associated with potential siltation, chemical spills, or other discharges into waterways during construction. Habitat disturbance and permanent wetland loss could result from construction activities including general grading, recontouring, and removal of existing facilities (e.g., power poles, utility lines, and piping). "Permanent habitat loss" means that the loss of acreage of a particular habitat type would persist into perpetuity unless it is actively replaced. Wetlands could also be affected during construction work as a result of disturbance from vehicle access and equipment staging. Additionally, wetlands could be indirectly affected by construction activities, such as through accidental spills of contaminants (e.g., fuels or lubricants) from heavy machinery. There also would be an increased potential for erosion and sediment runoff associated with construction-related ground disturbance, which could result in the discharge of fill into wetland features. Because the precise location and characteristics of potential future actions are yet to be determined, the impact of construction on wetlands and other waters would be **potentially significant**.

Installation of water quality monitoring stations within the Friant-Kern Canal would not result in any impacts on wetlands or other waters because these stations would be limited to the confines of the canal, which is not a jurisdictional wetland or other water feature.

General operational activities necessary to support the functionality of constructed facilities would primarily include regularly scheduled inspections and evaluation of facility performance. The level of activity associated with operations and maintenance would be similar to existing conditions and would not contribute to conversion or further degradation of existing sensitive natural communities. As such, there would be a **less-than-significant** impact on wetlands and other waters specifically anticipated from operations and maintenance of the potential Contractor actions.

### **Mitigation Measures**

**Mitigation Measure 3.5-3:** To avoid or minimize disturbance to wetlands and waters, Contractors implementing actions in response to the proposed Guidelines shall implement the following measures:

- **Avoidance of Jurisdictional Wetlands and Other Waters.** Sites shall be selected that shall avoid, minimize, and if necessary, compensate for reduction in area and/or habitat quality of wetlands and jurisdictional waters, through the following measures:
  - To the maximum extent practicable, elements of Contractor actions shall be designed to avoid effects on wetlands and other waters, including rivers, streams, vernal pools, and seasonal wetlands.
  - Flagging or fencing shall be installed by a qualified biologist around any jurisdictional wetland or other aquatic feature to be avoided by construction.
  - Flagging or fencing shall remain in place throughout the duration of construction and will be inspected and maintained regularly by a qualified biologist until completion of the project. Fencing shall be removed when all construction equipment is removed from the site, the area is cleared of debris and trash, and the area is returned to natural conditions.
  - Staging areas, access roads, and other facilities shall be placed to avoid and limit disturbance to waters of the state and other aquatic habitats (e.g., streambank or stream channel, riparian habitat) as much as possible. When possible, existing ingress or egress points shall be used and/or work shall be performed from the top of the creek banks or from barges on the waterside of the stream or levee bank, or dry gravel beds.
  - Wetlands and other waters of the United States, and waters of the state that would be removed, lost, and/or degraded shall be replaced, restored, or enhanced on a “no net loss” basis (in accordance with all permits secured from and related requirements imposed by USACE and State Water Board).

**Significance after Mitigation:** Both federal and state permitting would require compensatory mitigation for all permanent loss of wetlands. With implementation of Mitigation Measure 3.5-3 or equally effective measures, construction areas associated with new water treatment facilities implemented by Contractors in response to the proposed Guidelines would further ensure protection of existing wetland and other aquatic resources. Therefore, this impact would be **less than significant with mitigation incorporated**.

**Impact 3.5-4: Implementation of the proposed Guidelines could 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.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors’ boundaries. Water quality monitoring stations would be installed within the Friant-Kern Canal to measure key water quality parameters such as water level, water velocity, water temperature, and environmental data to assess the state of water quality and to comply with water quality thresholds in the proposed Guidelines. Wildlife

corridors for terrestrial wildlife species could be affected during installation of new small water treatment facilities located adjacent to or near the Friant-Kern Canal or other areas within Contractors' boundaries. Installation of these facilities would not affect the movement of Kern brook lamprey ammocoetes that may occupy the feature because these features would not disrupt the conveyance of water moving through the canal.

The installation of new small water treatment facilities could affect the ability of wildlife to move between areas that are important for different life history functions, such as reproduction and feeding behaviors. Most of the impacts from construction on the movement of wildlife would be temporary. There could be a longer-term impact on local and migratory movement of wildlife if existing vegetation within a wildlife migratory corridor is permanently removed. The small scale of development associated with the individual new water treatment facilities greatly reduces the likelihood that they would have a substantive effect on migration and movement of terrestrial wildlife. Generally, wildlife would be able to move around the site of the action, because the areas to be developed would not span entire widths of known existing migration or movement corridors.

General operational activities necessary to support the functionality of constructed facilities would primarily include regularly scheduled inspections and evaluation of facility performance. The level of activity associated with operations and maintenance would be similar to existing conditions and would not adversely affect migration or movement conditions for wildlife.

Given the above considerations, Contractor actions implemented in response to the proposed Guidelines would have a **less-than-significant impact** on movement and migration of wildlife.

**Impact 3.5-5: Implementation of the proposed Guidelines could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.**

Cities, counties, and local districts may adopt local policies or ordinances for the conservation of biological resources. These policies or ordinances may mandate the local protection of special-status species, waterways, native trees, or other selected resources. Depending on the specific location and design of the potential Contractor actions that may be taken to comply with the proposed Guidelines, such actions could potentially conflict with local policies and ordinances. For example, as described in Chapter 2, *Project Description*, site preparation may include grubbing operations that would entail the removal of trees and other vegetation. The county general plans call for maintaining open space and minimizing the removal of vegetation in wetland and riparian areas, which could occur as a consequence of construction of the new small water treatment facilities constructed by Contractors to comply with the proposed Guidelines. Therefore, the impact related to the potential for a conflict with local policies protecting biological resources would be **potentially significant**.

**Mitigation Measures**

**Mitigation Measure 3.5-4:** To reduce potential conflicts with adopted local policies or ordinances protecting biological resources, Contractors implementing actions in response to the proposed Guidelines shall Implement Mitigation Measures 3.5-2 and 3.5-3.

**Significance after Mitigation:** With implementation of Mitigation Measures 3.5-2 and 3.5-3 or equally effective measures, impacts associated with projects constructed and operated by Contractors in response to the proposed Guidelines would comply with general plan policies and ordinances to reduce impacts on biological resources protected by the county general plans. Therefore, this impact would be **less than significant with mitigation incorporated**.

---

This page intentionally left blank



## 3.6 Cultural Resources

### 3.6.1 Introduction

This section examines the potential impacts of the proposed Guidelines on cultural resources. Although tribal cultural resources are discussed separately in Section 3.15, *Tribal Cultural Resources*, this section provides the associated regulatory context because some of the same mitigation measures for reducing impacts on cultural resources also apply to tribal cultural resources.

Comments addressing cultural resources were received in response to the NOP. Comments submitted in response to the NOP were also considered in development of the impact analysis. The California Native American Heritage Commission provided details on some cultural resource regulations pertaining to the proposed Guidelines and requested that the NAHC be contacted for a Sacred Lands File search and list of California Native American Tribes for the study area. See Appendix A for NOP comment letters.

The CEQA Guidelines (14 CCR 15000 et seq.) define the term “historical resource” as follows:

- A resource listed in or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (California Register) (PRC Section 5024.1).
- A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g).
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency’s determination is supported by substantial evidence in light of the whole record (14 CCR 15064.5).

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and PRC Section 15064.5 apply. If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines (PRC Section 15000 et seq.), the site may be treated in accordance with the provisions of PRC Section 21083, pertaining to unique archaeological resources.

The term “indigenous,” rather than “prehistoric,” is used as a synonym for “Native American–related” (except when quoting). “Pre-contact” is used as a chronological adjective to refer to the period before the arrival of Euroamericans in the subject area. “Indigenous” and “pre-contact” are often but not always synonymous: The former term refers to a cultural affiliation and the latter is chronological.

This section also includes the key terms defined below.

- **Architectural Resource.** This resource type includes historic-era buildings, structures (e.g., bridges, canals, roads, utility lines, railroads), objects (e.g., monuments, boundary markers), and districts. Residences, cabins, barns, lighthouses, military-related features, industrial buildings, and bridges are some examples of architectural resources.
- **Archaeological Resource.** This resource type consists of indigenous, or pre-contact, and historic-era archaeological resources:
  - *Indigenous archaeological resources* consist of village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Associated artifacts include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs). Indigenous sites that were occupied into the historic era can have both pre-contact and historic-era artifacts.
  - *Historic-era archaeological resources* consist of townsites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military and industrial land uses. Associated artifacts include stone, concrete, or adobe footings and walls; artifact-filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If a resource is considered a ruin (e.g., a building lacking structural elements, a structure lacking a historic configuration), it is classified as an archaeological resource.

## 3.6.2 Environmental Setting

The following provides a summary of pre-contact setting, ethnographic setting, and historic-era water development resources in the study area. Additional details for pre-contact and regional historic setting are provided in Appendix D, *Cultural and Tribal Cultural Resources Supplemental Setting Information*. Descriptions of indigenous resources, including additional information on the study area’s ethnographic setting, are presented in Section 3.15, *Tribal Cultural Resources*.

### Pre-contact Period

Categorizing the pre-contact period into cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given time frame, thereby creating a regional chronology. Rosenthal et al. (2007) provide a framework for the interpretation of the California Central Valley’s pre-contact archaeological record and have divided human history in the region into three basic periods: *Paleo-Indian* (13,550–10,550 years before present [BP]), *Archaic* (10,550–900 BP), and *Emergent* (900–300 BP). The Archaic period is subdivided into three sub-periods: *Lower Archaic* (10,550–7550 BP), *Middle Archaic* (7550–2550 BP), and *Upper Archaic* (2550–900 BP) (Rosenthal et al. 2007). Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods. The following summary of the

region's prehistory is derived principally from Rosenthal et al. (2007), Moratto (1984 [2004]), and Fredrickson (1993 [1994]).

## **Ethnographic Setting**

The study area is in a location historically attributed to the Yokuts, a Penutian-speaking people (Heizer and Elsasser 1980:15). At the time of European contact, the Central Valley was occupied by the Yokuts, who spoke a language from the California Penutian family of languages. The Yokuts entered the San Joaquin Valley sometime before 600 BP, perhaps by force, as indicated by skeletal remains with fatal wounds inflicted by projectile points. Historically, Yokuts have been divided into three cultural-geographical groupings: Northern Valley, Southern Valley, and Foothills (Arkush 1993; Wallace 1978a, 1978b). The study area overlaps the territories of the Northern Valley and Southern Valley groups.

The traditional territory of the Northern Valley Yokuts is defined roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east. The southern boundary is located approximately where the San Joaquin River bends northward and the northern boundary is roughly halfway between the Calaveras and Mokelumne rivers. Populations were concentrated along waterways and on the more hospitable east side of the San Joaquin River (Wallace 1978b). The Southern Valley Yokuts territory included Tulare, Buena Vista, and Kern lakes and the lower portions of the Kings, Kaweah, Tule, and Kern rivers (Wallace 1978a).

## **Historic Setting**

### ***Water Development***

Water in California and all aspects of its use and management have been of paramount concern since the state's inception. California Surveyor-General John A. Brewster recognized a need for a coordinated state water policy as early as 1856 (Jackson and Pisani 1983). In 1874, USACE Colonel Barton S. Alexander, chief engineer to the Military Division of the Pacific, concluded that large-scale irrigation was possible, and that much land could be reclaimed from swamps in the Sacramento–San Joaquin Delta (Delta) for use in agriculture. Shortly after the report by the Alexander Commission, in 1878, the California Legislature established the Office of State Engineer with the responsibility for water planning in California.

In 1919, Robert S. Marshall, chief hydrographer of the U.S. Geological Survey, presented a statewide plan, sometimes referred to as the “Marshall Plan.” The plan included a huge dam and reservoir on the Sacramento River, two major canals and lesser canals, aqueducts, tunnels, and storage reservoirs, all supplying water from Northern California to the Central Valley and even Southern California. Few people took Marshall's plan seriously and it would be more than a decade before a large-scale water conveyance project would be undertaken at the state level (JRP and Caltrans 2000).

### **Central Valley Project**

Enacted in 1933, the California Central Valley Project Act authorized the sale of \$170 million in revenue bonds to build the CVP. The Central Valley Project Act provided for dams, reservoirs, canals, pumping plants, and power plants in an extensive system to improve utilization of the

Sacramento, San Joaquin, and other rivers. The act authorized several facilities, including Kennett Dam (now Shasta Dam), the Contra Costa Conduit, the San Joaquin Pumping System, Friant Dam, the Madera Canal, and the Friant-Kern Canal. The CVP was designed to provide irrigation and flood control, improve river navigability, and control saltwater intrusion into freshwater areas (Autobee n.d.; Stene n.d.).

No funds could be obtained to begin construction of the CVP, however, because the nationwide Great Depression of the early 1930s made revenue bonds unmarketable. Subsequently, federal authorization and financing was arranged for construction of the CVP. In 1935, President Franklin D. Roosevelt issued an executive allocation of \$20 million (later reduced to \$4.2 million) under the Emergency Relief Appropriation Act (Stene n.d.). Initial construction was conducted by USACE, with Reclamation completing the majority of the work. Construction of the initial units began in October 1937 with the Contra Costa Canal, which workers completed in its entirety in 1948, although the first delivery of water was made in 1940. Work began on Shasta Dam, a keystone of the CVP, in 1938 and was completed in 1945. Storage of water at the reservoir began in January 1944, and the first power from the power plant was delivered in June 1944 (JRP and Caltrans 2000).

Throughout the late 1940s and 1950s, the government authorized new divisions of the CVP. USACE built several dams in California under the Flood Control Act of 1944, including several that they integrated into the CVP. USACE completed Folsom Dam in 1956, turning over operation and maintenance to Reclamation after completion. The CVP became a conglomeration of various federal and state government agencies by the end of the 1960s. Congress integrated more USACE projects into the CVP during the 1960s and 1970s. Although the 1960s marked the end of the period of large dam construction, USACE continued to operate and maintain several dams in the Central Valley, with Reclamation entering into contracts for releasing the surplus water for irrigation, as USACE specialized in flood control, not irrigation (Stene n.d.).

By 1955, about 4.5 million acres of land in the valley were irrigated with deliveries through federal CVP canals—a little more than half the irrigated land in California and about one-seventh of that in the continental United States. The CVP did not serve some potential customers among the farmers of the San Joaquin Valley, who either were outside the CVP service area or could not qualify for water under the terms of the acreage limitations associated with federal reclamation projects (JRP and Caltrans 2000). Primarily because Southern Californians objected to being included in the system, the CVP did not extend to Southern California.

The CVP extends about 400 miles, from the Cascade Range near Redding in the north to the Tehachapi Mountains near Bakersfield in the south. The CVP includes 18 dams and 22 reservoirs on the Trinity, Sacramento, American, Stanislaus, and San Joaquin rivers with a combined storage capacity of 11 million acre-feet (maf). The CVP system is divided into the following units or divisions: the Auburn-Folsom South Unit of the American River Division, Delta Division, Folsom and Sly Park units of the American River Division, Friant Division, New Melones Unit of the East Side Division, Sacramento Canals Unit of the Sacramento River Division, San Felipe Division, San Luis Unit of the West San Joaquin Division, and Shasta/Trinity River divisions (Autobee n.d.). The CVP has long-term agreements to deliver water to more than 250 contractors

in California. The CVP delivers an annual average of 5 maf of water for farming and 600,000 AF of water for municipal and industrial use. The CVP generates about 4.5 million kilowatt-hours (kWh) in an average water year (Reclamation 2021).

### **Friant-Kern Canal**

The Friant-Kern Canal was originally constructed between 1945 and 1951 as part of the Friant Division of the CVP. The canal has been previously recorded as an architectural resource, designated P-15-013728/P-54-004614. Reclamation previously determined the Friant-Kern Canal eligible for listing in the National Register of Historic Places (National Register), with concurrence from the California State Historic Preservation Officer, as an individual resource under Criteria A and C for its association with the CVP; for the transformation of land use it enabled in the counties it served; and for its size and scale that demonstrated the magnitude of the engineering and construction feat accomplished by the CVP, as well as Reclamation engineer Harry McBirney's important contributions to canal standardization. The canal is also listed in the California Register, eligible under Criteria 1 and 3 for the same reasons for its National Register eligibility under Criteria A and C (Norby and Wee 2019; Polanco 2019).

## **3.6.3 Regulatory Setting**

### **State**

#### ***California Environmental Quality Act***

CEQA (PRC Section 21000 et seq.) is the principal statute governing environmental review of projects occurring in California. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on the environment, including a significant effect on historical resources or unique archaeological resources. Under CEQA (PRC Section 21084.1), a project that may cause a substantial adverse change in the significance of a historical resource or unique archaeological resource is a project that may have a significant effect on the environment.

The California Office of Historic Preservation (OHP), an office of the California Department of Parks and Recreation, oversees adherence to CEQA regulations and maintains the California Historical Resource Inventory. Typically, a resource must be more than 50 years old to be considered a potential historical resource. OHP advises recording any resource 45 years or older, because there is commonly a five-year lag between identification of a resource and the date that planning decisions are made.

#### **Historical Resources**

The CEQA Guidelines (14 CCR 15000 et seq.) recognize that any of the following is a historical resource:

- A resource listed in or eligible for listing in the California Register.
- A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g).

- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and 14 CCR 15064.5 apply. If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of PRC Section 21083, pertaining to unique archaeological resources.

### **Unique Archaeological Resources**

As defined in PRC Section 21083.2, a "unique archaeological resource" is 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:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The CEQA Guidelines note that if an archaeological resource is not a unique archaeological resource, historical resource, or tribal cultural resource, the effects of the project on those cultural resources shall not be considered a significant effect on the environment (14 CCR 15064.5[c][4]).

### **Tribal Cultural Resources**

Impacts on tribal cultural resources are also considered under CEQA (PRC Section 21084.2). CEQA recognizes that California Native American Tribes have expertise with regard to their tribal history and practices. PRC Section 21074(a) defines a "tribal cultural resource" as any of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:
  - Included or determined to be eligible for inclusion in the California Register.
  - Included in a local register of historical resources, as defined in PRC Section 5020.1(k).
- 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 [PRC] Section 5024.1.

In applying these criteria, the lead agency would consider the significance of the resource to a California Native American Tribe.

A cultural landscape that meets the criteria of PRC Section 21074(a) is also a tribal cultural resource if the landscape is geographically defined in terms of the size and scope. A historical resource as described in PRC Section 21084.1, a unique archaeological resource as defined in PRC Section 21083.2, or a non-unique archaeological resource as defined in PRC Section 21083.2 may also be a tribal cultural resource under CEQA if it meets the criteria identified in PRC Section 21074(a).

CEQA requires lead agencies to analyze the impacts of projects on tribal cultural resources separately from impacts on archaeological resources (PRC Sections 21074 and 21083.09) because tribal cultural resources have cultural values beyond their ability to yield data important to prehistory or history. Tribal consultation pursuant to PRC Section 21080.3.1 applies to projects for which an NOP or notice of negative declaration/mitigated negative declaration was filed on or after July 1, 2015 and for which the CEQA lead agency has received formal requests from California Native American Tribes to be notified of that agency's projects subject to review under CEQA, and such California Native American Tribes respond in writing within 30 days of receiving the project notification from the CEQA lead agency. Because Friant has not received any such formal requests, consultation pursuant to PRC Section 21080.3.1 does not apply to the proposed Guidelines.

### ***California Register of Historical Resources***

The California Register is “an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1[a]). The criteria for eligibility for the California Register are based upon the criteria for listing in the National Register (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a cultural resource must be significant at the local, state, and/or federal level under one or more of the following four criteria:

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

A resource eligible for the California Register must be of sufficient age and retain enough of its historic character or appearance (integrity) to convey the reason for its significance. Additionally,

the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the National Register (and those formally determined eligible for the National Register).
- California Registered Historical Landmarks from No. 770 onward.
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Resources Commission for inclusion in the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register).
- Individual historic resources.
- Historic resources contributing to historic districts.
- Historic resources designated or listed as local landmarks, or designated under any local ordinance, such as a historic preservation overlay zone.
- Tribal cultural resources.

### ***California Public Resources Code Section 5097***

PRC Section 5097.99, as amended, states that no person shall obtain or possess any Native American artifacts or human remains that are taken from a Native American grave or cairn. Any person who knowingly or willfully obtains or possesses any Native American artifacts or human remains is guilty of a felony, which is punishable by imprisonment. Any person who removes, without authority of law, any such items with an intent to sell or dissect or with malice or wantonness is also guilty of a felony, which is punishable by imprisonment. PRC Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor.

### ***California Native American Historic Resource Protection Act***

The California Native American Historic Resource Protection Act of 2002 imposes civil penalties, including imprisonment and fines up to \$50,000 per violation, for persons who unlawfully and maliciously excavate upon, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be listed in the California Register.

### ***California Health and Safety Code Section 7050.5***

Section 7050.5 of the California Health and Safety Code (HSC) protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (reiterated in 14 CCR 15064.59[e]) also identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery.



## Local

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address cultural and historic resources, including protection of important historical and archeological and cultural sites and their attributing environment. Applicable general plan goals and policies are presented in **Table 3.6-1**.

**TABLE 3.6-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—CULTURAL RESOURCES**

General Plan	Goals and Policies
<b>Fresno County</b>	Open Space and Conservation Element, Goal OS-J, Policies OS-J.1 to OS-J.3
<b>Kern County</b>	General Provisions, Policy 25, Implementation Measures K, L, N, and O
<b>Tulare County</b>	Environmental Resources Management Element, Goal ERM-6, Policies ERM-6.1 to ERM-6.4, ERM-6.6 to ERM-6.9

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

## 3.6.4 Impacts and Mitigation Measures

### Methods of Analysis

As described in Section 3.1, *Approach to the Analysis*, because the precise locations and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

### Historical Resources

Impacts on historical resources are assessed by identifying any activities that would affect them, such as new construction, demolition, or substantial alteration. Individual properties and districts identified as historical resources under CEQA include those that are significant because of their association with important events, people, or architectural styles or master architects, or for their informational value (California Register Criteria 1, 2, 3, and 4) and that retain sufficient historic integrity to convey their significance. Criterion 4 is typically applied to the evaluation of archaeological resources and not to architectural resources. Historical resources may include architectural resources and archaeological resources.

Once a resource has been identified as significant, it must be determined whether the impacts of the project would “cause a substantial adverse change in the significance” of the resource (14 CCR 15064.5[b]). A “substantial adverse change in the significance” of a historical resource means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired” (14 CCR 15064.5[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource’s physical characteristics that convey its historical significance and that

justify its inclusion in (or eligibility for inclusion in) the California Register or a qualified local register (14 CCR 15064.5[b][2]). Therefore, material impairment of historical resources constitutes a significant impact.

### ***Archaeological Resources***

The significance of most pre-contact and historic-era archaeological sites is typically assessed relative to California Register Criterion 4. This criterion stresses the importance of the information potential contained within an archaeological site, rather than the significance of the site as a surviving example of a type or its association with an important person or event. Archaeological resources may qualify as historical resources under the definition provided in 14 CCR 15064.5(a). Alternatively, they may be assessed under CEQA as unique archaeological resources. “Unique archaeological resources” are defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions (PRC Section 21083.2).

A substantial adverse change in the significance of an archaeological resource is assessed similarly to such changes to other historical resources; that is, a “substantial adverse change in significance” means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired” (14 CCR 15064.5[b][1]). As stated previously, a historical resource is materially impaired when a project demolishes or materially alters the resource’s physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the California Register or a qualified local register (14 CCR 15064.5[b][2]). Therefore, material impairment of archaeological resources that are considered historical resources or unique archaeological resources would be a significant impact.

### ***Human Remains***

Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and HSC Section 7050.5. For the purposes of this analysis, intentional disturbance, mutilation, or removal of interred human remains without following the notification and consultation procedures outlined in PRC Section 5097.89 and HSC Section 7050.5 would be a significant impact.

### **Thresholds of Significance**

In accordance with Appendix G of the CEQA Guidelines, an impact related to cultural resources is considered significant if the proposed Guidelines would do any of the following:

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.
- Disturb any human remains, including those interred outside of formal cemeteries.

The following analysis describes archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5 and as unique archaeological resources as defined in PRC Section 21083.2(g).

### Impacts Not Evaluated Further

**Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5; or disturbance of human remains.**

Operational and maintenance-related activities associated with actions that could be implemented by Contractors in response to the proposed Guidelines would be similar to existing conditions with respect to archaeological resources and human remains. Therefore, these are not the types of activities with potential to cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5, or with potential to affect human remains, and there would be **no impact** on archaeological resources, pursuant to CEQA Guidelines Section 15064.5, or human remains. As such, potential operational and maintenance-related impacts from the proposed Guidelines on archaeological resources and human remains are not evaluated further in this Draft EIR.

### Impacts and Mitigation Measures

Table 3.6-2 summarizes the impact conclusions presented in this section.

**TABLE 3.6-2  
 SUMMARY OF IMPACT CONCLUSIONS—CULTURAL RESOURCES**

Impact Statement	Impact Conclusion
<b>3.6-1:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	LSM
<b>3.6-2:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	LSM
<b>3.6-3:</b> Implementation of the proposed Guidelines could disturb human remains, including those interred outside of dedicated cemeteries.	LSM

NOTES: LSM = Less than Significant with Mitigation

**Impact 3.6-1: Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.**

The following discussion focuses on architectural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed under Impact 3.6-2.

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located within or adjacent to the Friant-Kern Canal right-of-way, or installation

of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries.

The exact details, including precise locations, of any construction-related activities associated with actions that could be implemented by Contractors in response to the proposed Guidelines have yet to be determined. However, some operational and maintenance-related activities (installation, maintenance, and removal of water quality monitoring stations) would occur within the Friant-Kern Canal, an architectural resource (P-15-013728/P-54-004614) that qualifies as a historical resource, as it is listed in the California Register, eligible under Criteria 1 and 3. Therefore, there is at least one historical resource (the Friant-Kern Canal), pursuant to CEQA Guidelines Section 15064.5, in the study area.

As noted previously, construction of small water treatment facilities could occur within or adjacent to the Friant-Kern Canal right-of-way, or elsewhere within Contractors' boundaries. Construction activities could involve ground disturbance, vibration, and introduction of new visual elements, all of which could result in potential impacts on architectural resources. However, because the precise locations and characteristics of potential future actions are uncertain, it is not known whether impacts on historical resources would occur.

Construction of these small water treatment facilities could result in significant impacts on historical resources in several ways:

- Construction could introduce new elements to a historic setting associated with historical resources or could physically alter historical resources.
- Ground-disturbing construction activities could alter existing landscapes.
- Vibration generated during construction work could physically damage or alter nearby architectural resources that have the potential to qualify as historical resources.

If construction activities were to result in either a direct impact (e.g., physical modification, damage, or destruction) or an indirect impact (e.g., alteration to setting, including visual) on any architectural resources that qualify as historical resources as defined in CEQA Guidelines Section 15064.5, the impact would be potentially significant.

Operational and maintenance-related impacts associated with actions that could be implemented by Contractors in response to the proposed Guidelines, including operation of small water treatment facilities, would be less than significant because they would be similar to existing similar facilities. There may be operation and maintenance activities associated with the installation, maintenance, and removal of water quality monitoring stations within a historical resource, the Friant-Kern Canal (P-15-013728/P-54-004614), through the use of wall-mounted racks, freestanding racks, enclosed stations, compact stations, or floating platforms. Although these proposed activities would occur within the Friant-Kern Canal, as stated previously, these activities already occur in the canal and do not result in direct or indirect impacts that constitute a substantial adverse change in the significance of the resource (i.e., they do not alter the resource's ability to convey its significance under California Register Criteria 1 and 3). Therefore, operational and maintenance-related activities associated with actions taken by Contractors in

response to the proposed Guidelines would not cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5, and the impact would be less than significant.

Construction activities associated with actions that could be implemented by Contractors in response to the proposed Guidelines have the potential to affect historical (i.e., architectural) resources. However, the exact details, including precise locations, of any such activities have yet to be determined. Therefore, it is not known whether such actions would affect architectural resources. Factors necessary to identify specific impacts on historical resources include the design, footprint, and type of the actions and the precise locations of construction activities. If any construction activities were to affect architectural resources that qualify as historical resources as defined in CEQA Guidelines Section 15064.5, the impact would be **potentially significant**.

### Mitigation Measures

**Mitigation Measure 3.6-1a:** Before implementation of any construction-related activities associated with the proposed Guidelines, the need for an inventory and significance evaluation of architectural resources shall be assessed, based upon the type of activity and the potential for architectural resources to be present or disturbed. The assessment shall consist of a review of maps and aerial photos to determine whether existing buildings, dams, levees, roads, or other built features are present. If so, and if these features either are of unknown age or are known to be older than 45 years old, then an inventory and evaluation shall be completed by, or under the direct supervision of, a qualified architectural historian, defined as one who meets the U.S. Secretary of the Interior's Professional Qualifications Standards (SOI PQS) for Architectural History or History. This inventory and evaluation shall include the following:

- a. Map(s) and verbal description of the project area that delineates both the horizontal and vertical extents of potential direct and indirect effects —on architectural resources.
- b. A records search at the appropriate repository of the California Historical Resources Information System (CHRIS) for the project area and vicinity (typically areas within 0.25 or 0.5 mile, based on setting), to acquire records of previously recorded cultural resources and previously conducted cultural resources studies. This task can be performed by either the qualified archaeologist or the appropriate local CHRIS center staff.
- c. Background research on the history of the project area and vicinity for all actions determined to need additional historical architecture assessment.
- d. If, after review, features of the built environment are determined to be less than 45 years old, inclusion in the description a summary statement of their age and references for this determination.
- e. If architectural resources (45 years of age or older) are determined to likely be present in or near the project area, an architectural field survey of the project area, unless previous architectural field surveys no more than two years old have been conducted for the project area, in which case a new field survey is not necessary. Any architectural resources identified in the project area during the survey shall be

recorded on the appropriate California Department of Parks and Recreation (DPR) 523 forms (i.e., site record forms).

- f. An evaluation of any architectural resources identified in the project area for California Register eligibility (i.e., whether they qualify as historical resources, as defined in CEQA Guidelines Section 15064.5).
- g. An assessment of potential impacts on any historical resources identified in the project area. This shall include an analysis of whether potential impacts on the historical resource would be consistent with the *U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties* and applicable guidelines.
- h. A technical report meeting the U.S. Secretary of the Interior's Standards for architectural history technical reporting. This report shall document the mitigation measures taken and any study results. The report shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency.

**Mitigation Measure 3.6-1b:** If potentially significant impacts on historical resources are identified through implementation of Mitigation Measure 3.6-1a, an approach for reducing such impacts shall be developed before implementation of the action and in coordination with interested parties (e.g., historical societies, local communities). Typical measures for reducing impacts include:

- a. Modification of the action to avoid impacts on historical resources.
- b. Documentation of historical resources, to the standards of and to be included in the *Historic American Building Survey*, *Historic American Engineering Record*, or *Historic American Landscapes Survey*, as appropriate. As described in the above standards, the documentation shall be conducted by a qualified architectural historian, defined above, and shall include large-format photography, measured drawings, written architectural descriptions, and historical narratives. The completed documentation shall be submitted to the U.S. Library of Congress.
- c. Relocation of historical resources in conformance with the *U.S. Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*.
- d. Monitoring of construction-related and operational vibrations at historical resources.
- e. For historical resources that are landscapes, preservation of the landscape's historic form, features, and details that have evolved over time, in conformance with the *U.S. Secretary of the Interior's Guidance for the Treatment of Cultural Landscapes*.
- f. Development and implementation of interpretive programs or displays, and community outreach.

Any technical report developed as part of this mitigation measure shall meet the U.S. Secretary of the Interior's Standards for architectural history technical reporting and shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency.

**Significance After Mitigation:** Implementation of Mitigation Measure 3.6-1a would require for construction-related activities an assessment of whether architectural resources that may qualify as historical resources, pursuant to CEQA Guidelines

Section 15064.5, would be affected by these activities. If any historical resources that would be affected by the activities are identified through implementation of Mitigation Measure 3.6-1a, Mitigation Measure 3.6-1b would require modification of the proposed activities to avoid the historical resources or, if avoidance is not feasible, documentation or relocation of the historical resources that would be affected, and/or construction monitoring of the activities, and/or development of interpretive programs associated with the historical resources that would be affected. Implementation of Mitigation Measures 3.6-1a and 3.6-1b, or equally effective measures, would reduce any potential impacts on historical resources associated with construction of projects by Contractors in response to the proposed Guidelines to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation incorporated**.

**Impact 3.6-2: Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.**

Construction of small water treatment facilities by Contractors in response to the proposed Guidelines could involve ground disturbance. However, because the precise locations and characteristics of potential future actions are uncertain, it is not known whether impacts on archaeological resources would occur. Construction of the water treatment facilities could partially or completely destroy archaeological resources, resulting in a significant impact. If construction were to result in an impact on any archaeological resources, as defined in CEQA Guidelines Section 15064.5, the impact would be **potentially significant**.

Construction activities associated with actions that could be implemented by Contractors in response to the proposed Guidelines are the types of activities that have the potential to affect archaeological resources. However, the exact details, including precise locations, of any such activities have yet to be determined. Therefore, it is not known whether such actions would affect archaeological resources. Factors necessary to identify specific impacts on archaeological resources include the design, footprint, and type of action and the precise location of construction. If any construction work were to affect archaeological resources as defined in CEQA Guidelines Section 15064.5, the impact would be **potentially significant**.

**Mitigation Measure 3.6-2a:** Before implementation of any construction-related activity that includes ground disturbance associated actions taken by Contractors in response to the proposed Guidelines, an archaeological records search and sensitivity assessment, and an inventory and significance evaluation of archaeological resources identified in the project area shall be conducted. The inventory and evaluation shall be done by or under the direct supervision of a qualified archaeologist, defined as one who meets the SOI PQS for Archeology, and shall include the following:

- a. Map(s) and verbal description of the project area that delineates both the horizontal and vertical extents of potential direct and indirect effects on archaeological resources.
- b. A records search at the appropriate CHRIS repository for the project area and vicinity (typically areas within 0.25 or 0.5 mile, based on setting) to acquire records of previously recorded cultural resources and previously conducted cultural resources studies. This task can be performed by either the qualified archaeologist or the appropriate local CHRIS center staff.

- c. Outreach to the NAHC, including a request of a search of the Sacred Lands File for the project area and a list of California Native American Tribes culturally and geographically affiliated with the project area, to determine whether any documented Native American sacred sites could be affected by the action.
- d. Consultation with California Native American Tribes pursuant to PRC Section 21080.3 to determine whether any indigenous archaeological resource or tribal cultural resources could be affected by the action. The CEQA lead agency shall consult with California Native American Tribes culturally and affiliated with the project area and who have requested to be notified by the CEQA lead agency regarding projects, pursuant to AB 52; this consultation shall consist of the CEQA lead agency providing written notification of the action to any such Tribes and follow-up consultation if any Tribes request, in writing, from the CEQA lead agency consultation on the action within 30 days of receiving the CEQA lead agency's initial notification. Consultation shall include discussion regarding the design of the action, cultural resources survey, protocols for construction monitoring, and any other Tribal concerns.
- e. Background research on the history, including ethnography and indigenous presence, of the project area and vicinity.
- f. An archaeological sensitivity analysis of the project area based on mapped geologic formations and soils, previously recorded archaeological resources, previous archaeological studies, and Tribal consultation.
- g. An archaeological field survey of project area shall be conducted. The field survey shall include, at a minimum, a pedestrian survey. If the archaeological sensitivity analysis suggests a high potential for buried archaeological resources in the project area, a subsurface survey shall also be conducted. If previous archaeological field surveys no more than two years old have been conducted for the project area, a new field survey is not necessary, unless their field methods do not conform to those required above (e.g., no subsurface survey was conducted but project area has high potential for buried archaeological resources). Any archaeological resources identified in the project area during the survey shall be recorded on the appropriate DPR 523 forms (i.e., site record forms).
- h. An evaluation of any archaeological resources identified in the project area for California Register eligibility (i.e., as qualifying as historical resources, as defined in CEQA Guidelines Section 15064.5) as well as whether they qualify as unique archaeological resources pursuant to PRC Section 21083.2. Such evaluation may require archaeological testing (excavation), potentially including laboratory analysis, and consultation with relevant California Native American Tribes (for indigenous resources).
- i. An assessment of potential impacts on any archaeological resources identified in the project area that qualify as historical resources (per CEQA Guidelines Section 15064.5) and/or unique archaeological resources (per PRC Section 21083.2). This shall include an analysis of whether the potential impacts would materially alter a resource's physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the California Register or a qualified local register.
- j. A technical report meeting the U.S. Secretary of the Interior's Standards for archaeological technical reporting. This report shall be submitted to the appropriate



CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted to the NAHC.

**Mitigation Measure 3.6-2b:** If potentially significant impacts on archaeological resources that qualify as historical resources (per CEQA Guidelines Section 15064.5) and/or unique archaeological resources (per PRC Section 21083.2) are identified during an action implemented in response to the Guidelines, the Contractor implementing the action shall develop an approach for reducing such impacts, before implementing the action and in coordination with interested or consulting parties (e.g., California Native American Tribes [for indigenous resources], historical societies [for historic-era resources], local communities). Typical measures for reducing impacts include:

- a. Modify the action to avoid impacts on resources.
- b. Plan parks, green space, or other open space to incorporate the resources.
- c. Develop and implement a detailed archaeological resources management plan to recover the scientifically consequential information from archaeological resources before any excavation at the resource's location. Treatment for most archaeological resources consists of (but is not necessarily limited to): sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the resource to be affected by the action. The archaeological resources management plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.
- d. Develop and implement interpretive programs or displays and conduct community outreach.

Any technical report developed as part of this mitigation measure shall meet the U.S. Secretary of the Interior's Standards for archaeological technical reporting and shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted to the NAHC.

**Mitigation Measure 3.6-2c:** Before any ground-disturbing construction activities related to actions implemented by Contractors in response to the Guidelines, an archaeologist meeting, or under the supervision of an archaeologist meeting, the SOI PQS for Archeology shall conduct a training program for all construction field personnel involved in the ground-disturbing activities. If a California Native American Tribe expresses interest, the CEQA lead agency shall invite the Tribe to participate in the training program. On-site personnel shall attend the training before the start of any ground-disturbing activities. The training shall outline the general archaeological sensitivity of the project area and the procedures to follow in the event that archaeological resources and/or human remains are inadvertently discovered during construction (see Mitigation Measures 3.6-2d and 3.6-2e). Documentation of the training attendance shall be maintained by the CEQA lead agency.

**Mitigation Measure 3.6-2d:** If archaeological resources are encountered during construction activities, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The CEQA lead agency and a qualified archaeologist, defined as one meeting the SOI PQS for Archeology, shall be immediately informed of the discovery. The qualified archaeologist shall inspect the discovery and notify the CEQA lead agency of their initial assessment. If the qualified archaeologist determines that the resource is or is potentially indigenous in origin, the CEQA lead agency shall consult with California Native American Tribes culturally and geographically affiliated with the project area to assess the find and determine whether it is potentially a tribal cultural resource.

If the CEQA lead agency determines based on recommendations from the qualified archaeologist—and, if the resource is indigenous, from California Native American Tribes culturally and geographically affiliated with the project area—that the resource may qualify as a historical resource (per CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074), then the resource shall be avoided if feasible. If avoidance of an identified indigenous resource is not feasible, the lead agency shall consult with a qualified archaeologist, culturally affiliated California Native American Tribes, and other appropriate interested parties to determine treatment measures to minimize or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4.

Once treatment measures have been determined, the CEQA lead agency shall prepare and implement an archaeological (and/or tribal cultural) resources management plan that outlines the treatment measures for the resource. Treatment measures typically consist of the following steps:

- a. Determine whether the resource qualifies as a historical resource (per CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074) through analysis that could include additional historical or ethnographic research, evaluative testing (excavation), or laboratory analysis.
- b. If the resource qualifies as a historical resource (per CEQA Guidelines Section 15064.5) and/or unique archaeological resource (per PRC Section 21083.2), implement measures for avoiding or reducing impacts such as the following:
  - i. Modify the action to avoid impacts on resources.
  - ii. Plan parks, green space, or other open space to incorporate resources.
  - iii. Recover the scientifically consequential information from the archaeological resource before any excavation at the resource's location. This typically consists of (but is not necessarily limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the resource to be affected by the action.
  - iv. Develop and implement interpretive programs or displays.
- c. If the resource qualifies as a tribal cultural resource (per PRC Section 21074), implement measures for avoiding or reducing impacts such as the following:

- i. Avoid and preserve the resource in place through measures that include but are not limited to the following:
  - a. Plan and construct the action to avoid the resource and protect the cultural and natural context.
  - b. Plan green space, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria.
- ii. Treat the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, through measures that include but are not limited to the following:
  - a. Protect the cultural character and integrity of the resource.
  - b. Protect the traditional use of the resource.
  - c. Protect the confidentiality of the resource.
- iii. Implement permanent conservation easements or other interests in real property, with cultural appropriate management criteria for the purposes of preserving or using the resource or place.

Any technical report developed as part of this mitigation measure shall meet the U.S. Secretary of the Interior's Standards for archaeological technical reporting and shall be submitted to the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted to the NAHC.

**Significance After Mitigation:** Implementation of Mitigation Measure 3.6-2a would require for construction work an assessment of whether such work would affect archaeological resources that may qualify as historical resources, pursuant to CEQA Guidelines Section 15064.5, or unique archaeological resources, pursuant to PRC Section 21083.2. If any such resources that would be affected are identified through implementation of Mitigation Measure 3.6-2a, Mitigation Measure 3.6-2b would require that the action be modified to avoid the archaeological resources or, if avoidance is not feasible, that an archaeological resources management plan for the affected archaeological resources be developed and implemented. Additionally, implementation of Mitigation Measure 3.6-2c would require a cultural resources awareness training for construction personnel involved in ground-disturbing activities, and Mitigation Measure 3.6-2d would require implementation of a protocol for assessment and treatment of any potential archaeological resources identified during construction activities. Implementation of Mitigation Measures 3.6-2a to 3.6-2d, or equally effective measures, would reduce any potential impacts on archeological resources, pursuant to CEQA Guidelines Section 15064.5, associated with construction of actions by Contractors in response to the proposed Guidelines to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation incorporated**.

**Impact 3.6-3: Implementation of the proposed Guidelines could disturb human remains, including those interred outside of dedicated cemeteries.**

Construction of the small water treatment facilities by Contractors in response to the proposed Guidelines could involve ground disturbance. However, because precise locations and characteristics of future projects are uncertain, it is not known whether impacts on human remains, including any associated with archaeological resources, would occur. If construction were to disturb or damage any human remains, the impact would be **potentially significant**.

Construction activities associated with actions that could be implemented by Contractors in response to the proposed Guidelines are the types of activities that have the potential to affect human remains, including any associated with archaeological resources. However, the exact details, including precise locations, of any such activities have yet to be determined. Therefore, it is not known whether such actions would affect human remains. Factors necessary to identify specific impacts on archaeological resources include the design, footprint, and type of action and the precise location of construction activities. If any construction activities were to affect human remains, the impact would be **potentially significant**.

**Mitigation Measures**

**Mitigation Measure 3.6-3:** If human remains are encountered during construction activities, all work shall immediately halt within 100 feet of the find and the CEQA lead agency shall contact the appropriate county coroner to evaluate the remains and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e)(1). If the coroner determines that the remains are Native American in origin, the appropriate county shall contact the NAHC, in accordance with HSC Section 7050.5(c) and PRC Section 5097.98. Per PRC Section 5097.98, the CEQA lead agency shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, of the location of the Native American human remains is not damaged or disturbed by further development activity until the CEQA lead agency has discussed and conferred, as prescribed in PRC Section 5097.98, with the most likely descendants and the property owner regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

Any technical report developed as part of this mitigation measure shall meet the U.S. Secretary of the Interior's Standards for archaeological technical reporting and shall be submitted to the NAHC and the appropriate CHRIS repository for the project area upon approval by the CEQA lead agency unless the document contains information that any California Native American Tribes involved in its development determine should not be filed with the CHRIS, in which case the report shall be submitted only to the NAHC.

**Significance After Mitigation:** Implementation of Mitigation Measure 3.6-2a would require for construction-related activities an assessment of whether archaeological resources would be affected by these activities; such archaeological resources could include human remains. If any such resources that would be affected by the activities are identified through implementation of Mitigation Measure 3.6-2a, Mitigation Measure 3.6-2b would require modification of the activities to avoid the archaeological resources, which may include human remains, or, if avoidance is not feasible, development and implementation of an archaeological resources management plan for the archaeological resources, including any associated human remains, that would be affected. Additionally,

implementation of Mitigation Measure 3.6-2c would require a cultural resources awareness training, including protocol for inadvertent discovery of human remains, for construction personnel involved in ground-disturbing activities, and Mitigation Measure 3.6-2d would require implementation of a protocol for assessment and treatment of any potential archaeological resources, which may include human remains, identified during construction activities. Mitigation Measure 3.6-3 would require implementation of a protocol for assessment and treatment of any potential human remains identified during construction activities. Implementation of Mitigation Measures 3.6-2a through 3.6-2d and 3.6-3, or equally effective measures, would reduce any potential impacts on human remains associated with construction of projects by Contractors in response to the proposed Guidelines to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation incorporated**.

---

This page intentionally left blank

## 3.7 Energy

### 3.7.1 Introduction

This section addresses energy resources in the study area and potential effects that could occur as a result of implementing the proposed Guidelines.

The environmental setting and evaluation of impacts on energy is based on the review of existing published data and provides a qualitative assessment of energy use associated with the proposed Guidelines and potential Contractor actions that may be implemented to meet the water quality thresholds defined in the proposed Guidelines.

No comments specifically addressing energy were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.7.2 Environmental Setting

#### Electricity

Electric services within Fresno, Tulare, and Kern counties are provided by Eastside Power Authority, PG&E, and Southern California Edison. In 2021, residential and non-residential electricity was approximately 8,378 million kWh in Fresno County, 4,878 million kWh in Tulare County, and 15,009 million kWh in Kern County (CEC 2022a). Power generation facilities consist primarily of solar and wind facilities, with other minor coal, gas, and hydro facilities (CEC 2022b). Transmission lines traverse these counties largely in a north-south orientation, with a majority of the transmission lines owned and operated by Southern California Edison, PG&E, and Los Angeles Department of Water and Power (CEC 2022c).

#### Natural Gas

The total natural gas consumption in the U.S. in 2021 was approximately 30.5 trillion cubic feet, with California accounting for less than 2.09 million cubic feet or less than 0.01 percent of the total U.S. consumption (U.S. Energy Information Administration 2022). Statewide, natural gas usage is predominantly for electricity generation (approximately 45 percent). Residential, industrial, and commercial uses account for 21, 25, and 9 percent, respectively (CEC 2023a). California produces approximately 10 percent of the total natural gas that is used in the state, with the remainder being imported from five interstate pipelines (CEC 2023a). In 2021, the total consumption of gas (residential and non-residential) was approximately 318 million Therms in Fresno County, 168 million Therms in Tulare County, and 1,866 million Therms in Kern County (CEC 2022d).

#### Gasoline and Diesel Fuel

Gasoline is the most used transportation fuel in California. The CEC estimates that approximately 13.8 billion gallons of gasoline were sold in 2021 (CEC 2023b). Diesel fuel is the second most used transportation fuel in California, accounting for approximately 17 percent of the total fuel sales (CEC 2023c).

### 3.7.3 Regulatory Setting

State plans, policies, regulations, and laws and regional or local plans, policies, regulations, and ordinances pertaining to energy are discussed in this section.

#### **Federal**

##### ***Energy Policy and Conservation Act***

The Energy Policy and Conservation Act (EPCA) creates a comprehensive approach to federal energy policy. The primary goals of EPCA are to increase energy production and supply, reduce energy demand, provide energy efficiency, and give the executive branch additional powers to respond to disruptions in energy supply.

#### **State**

##### ***Warren-Alquist Act***

The 1975 Warren-Alquist Act (PRC Section 25000 et seq.) established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Warren-Alquist Act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. This law also was the driving force behind the creation of Appendix F to the CEQA Guidelines.

##### ***California Environmental Quality Act, Appendix F: Energy Conservation***

Appendix F was created “[i]n order to assure that energy implications are considered in project decisions.” CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see PRC Section 21100(b)(3)).

##### ***State of California Integrated Energy Policy***

Section 25301(a) of the PRC requires the CEC to develop an integrated energy plan for electricity, natural gas, and transportation fuels at least every 2 years. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. An overarching goal of the resulting Integrated Energy Policy Report is to achieve the statewide targets for greenhouse gas emissions reduction, while improving overall energy efficiency (CEC 2023d).

##### ***Renewables Portfolio Standard***

The State of California adopted standards to increase the percentage that retail sellers of electricity, including investor-owned utilities and community choice aggregators, must provide from renewable resources. The standards are referred to as the *renewables portfolio standard* (RPS) (CPUC 2021). Qualifying renewables under the RPS include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. The California Public Utilities Commission and the CEC jointly implement the RPS. California’s Renewable Portfolio Standard is further discussed in Section 3.9, *Greenhouse Gas Emissions*.



### ***Executive Orders S-14-08 and S-21-09***

In November 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which expanded the State of California's RPS to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the RPS by signing Executive Order S-21-09, which directed the California Air Resources Board under its Assembly Bill 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

### ***Senate Bill 350***

Senate Bill (SB) 350, known as the Clean Energy and Pollution Reduction Act of 2015, was enacted on October 7, 2015. It provides a new set of objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

- (1) Increase the procurement of electricity from renewable sources from 33 percent to 50 percent by December 31, 2030.
- (2) Double retail customers' energy efficiency savings in final end uses of electricity and natural gas through energy efficiency and conservation.

### ***Senate Bill 100 and Executive Order B-55-18***

On September 10, 2018, Governor Edmund G. Brown Jr. signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also created new standards for the RPS goals established by SB 350 in 2015. Specifically, this law increases the percentage of energy that must come from renewable sources, for both investor-owned and publicly owned utilities, from 50 percent to 60 percent by 2030. Incrementally, these energy providers also must have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, because many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

On the same day he signed SB 100, Governor Brown signed Executive Order B-55-18, which identified a new statewide goal to achieve carbon neutrality (net-zero greenhouse gas emissions) by 2045 and maintain net negative emissions thereafter.

### ***Energy-Efficient Building Standards***

The Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations Title 24, Part 6) include requirements for lighting, insulation, ventilation, and mechanical systems in nonresidential buildings (CEC 2018). The California Green Building Standards Code, also known as the CALGreen Code (California Code of Regulations Title 24, Part 11), is a statewide regulatory code for all buildings. The CALGreen Code is intended to encourage more sustainable and environmentally friendly building practices, require the use of low-pollution-emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment (CBSC 2019).

## Local

The project area includes lands in Fresno, Tulare and Kern counties. Each of these jurisdictions have General Plans with goals and policies that address energy resources, including encouraging use of alternative sources of energy and compliance with Title 24 standards. Applicable general plan goals and policies are presented in **Table 3.7-1**. The Fresno County General Plan does not include goals and policies related to the proposed Guidelines that address energy resources.

**TABLE 3.7-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—ENERGY**

General Plan	Goals and Policies
Fresno County	N/A
Tulare County	Goal ERM-4, Policy ERM-4.1, ERM-4.3, ERM-4.6, and ERM-4.8
Kern County	1.9 Resource Goal 6, Policy 16

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

### 3.7.4 Impacts and Mitigation Measures

#### Methods of Analysis

Energy associated with construction and operations of the potential actions implemented by Contractors in response to the proposed Guidelines. The construction process could result in an increase in energy consumption associated with implementation of the proposed Guidelines. However, as described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for proposed actions, including consideration of applicable and/or relevant energy implications as outlined in CEQA Appendix F: Energy Conservation

#### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to energy is considered significant if the proposed Guidelines would do any of the following:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

#### Impacts and Mitigation Measures

**Table 3.7-2** summarizes the impact conclusions presented in this section.

**TABLE 3.7-2  
SUMMARY OF IMPACT CONCLUSIONS—ENERGY**

Impact Statement	Impact Conclusion
<b>3.7-1:</b> Implementation of the proposed Guidelines could result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.	LTS
<b>3.7-2:</b> Implementation of the proposed Guidelines could conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LTS
NOTES: LTS = Less than Significant	

**Impact 3.7-1: Implementation of the proposed Guidelines could result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal. It is also possible that some actions could occur in areas within Contractors’ boundaries. Other actions, including blending of water, changes to the timing of introduced water, or seeking alternative water supplies, would not require construction.

Construction activities over these small footprints could require the use of fuels (primarily gasoline and diesel) for operation of construction equipment (dozers, excavators, and trenchers), construction vehicles (dump and delivery trucks), and construction worker vehicles. Direct energy use could also include the use of electricity required to power construction equipment (e.g., electric power tools), or indirect energy use associated with the extraction, manufacturing, and transportation of raw materials needed to make construction materials. The amount of time needed for construction would likely range from as short as a few days to a couple of weeks. Therefore, energy use for construction of potential actions would be temporary and minimal compared to the total amount of direct and indirect energy used in the study area.

As described in Chapter 2, *Project Description*, to account for the “leave behind” water that a Contractor is required to provide when introducing Non-Millerton water to the Friant-Kern Canal in compliance with the proposed Guidelines, the Contractor could seek alternative water supplies as part of the Contractor’s overarching water portfolio management. However, given the requirements of the proposed Guidelines, it is assumed that any additional operational energy demand or changes to pumping associated with extraction, conveyance, or delivery of alternatives supplies would be similar to existing conditions, and would not be anticipated to result in a substantial increase in energy use over existing conditions.

General operation and maintenance activities necessary to support the functionality of potential Contractor actions and associated constructed facilities could require use of electricity for all processes, equipment, and operational lights. However, these activities would be similar to

existing conditions and would not be anticipated to result in a substantial increase in energy use over existing conditions.

Once specific actions are proposed by Contractors, the impacts will be more fully evaluated in future project-level CEQA documents by the lead agencies for the proposed actions. Given the nature of construction and operations of potential Contractor actions, it is anticipated that energy use would be efficient and minimal and would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, this impact would be **less than significant**.

**Impact 3.7-2: Implementation of the proposed Guidelines could conflict with or obstruct a state or local plan for renewable energy or energy efficiency.**

As discussed above, energy use for construction of potential Contractor actions would be temporary and minimal compared to the total amount of direct and indirect energy used in the study area. Energy use for operations and maintenance would not be anticipated to result in a substantial increase in energy use over existing conditions and would be efficient. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. However, given the types of potential actions anticipated to be implemented in response to the proposed Guidelines, they are not anticipated to conflict with or obstruct state and local plans for renewable energy or energy efficiency. This impact would be **less than significant**.

---

## 3.8 Geology and Soils and Paleontology

### 3.8.1 Introduction

This section describes the geology, soils, and paleontological resources in the study area and evaluates the potential for implementation of the proposed Guidelines to affect geologic, soils, and paleontological resources. As discussed below, potential impacts include the area being subject to geology, geologic hazards, and soils (i.e., seismic ground shaking, liquefaction, landslides, and expansive soils) and the potential to encounter and disturb significant paleontological resources.

No comments specifically addressing geology, soils and paleontology were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.8.2 Environmental Setting

#### Geologic Setting

The Friant-Kern Canal and overall study area is located in the Great Valley geomorphic province and is bordered on the east by the Sierra Nevada geomorphic province and on the west by the Coast Ranges geomorphic province (Reclamation and Friant Water Authority 2019). The Great Valley, an alluvial floodplain of two major rivers—the San Joaquin and Sacramento Rivers—and their tributaries, is approximately 50 miles wide and 400 miles long. The Great Valley province is divided into two parts, the Sacramento Valley, drained by the Sacramento River in the north, and the San Joaquin Valley, drained by the San Joaquin River in the south. The study area is located in the San Joaquin Valley. Snowmelt from the Sierra Nevada feeds the San Joaquin River and its major tributaries (SJRRP 2011). The geology of the Great Valley generally consists of marine and continental deposits underlain by metamorphic and igneous rocks. The geology of the San Joaquin Valley consists mainly of Jurassic to recent marine, alluvial, and lake deposits that are several thousand feet thick (SJRRP 2011).

The Central Valley floor is divided into several geomorphic land types: dissected uplands; low alluvial fans and plains; river channels, floodplains, and deltas; and lake bottoms. The study area is primarily composed of alluvial fans and plains and river floodplains and channels. Alluvial fans and plains are unconsolidated continental deposits that extend from the edges of the valley toward the valley floor. The alluvial plains are relatively flat with little topographic relief and have been developed into extensive agricultural lands (DWR 2012).

#### Paleontological Resources

Paleontological resources include fossil remains, fossil localities, and formations that have produced fossil material in other nearby areas. These resources are limited, nonrenewable, sensitive scientific and educational resources protected by federal environmental laws and regulations. Paleontological resources include fossils preserved either as impressions of soft (fleshy) or hard (skeletal) parts; mineralized remains of skeletons, tracks, or burrows; other trace fossils; coprolites (fossilized excrement); seeds or pollen; and other microfossils from terrestrial,

aquatic, or aerial organisms (County of Fresno 2009). A paleontological study was not conducted for the study area because it is not a known fossil-bearing area based on a thorough search of the geological literature. Fossils found in and near the San Joaquin Valley are related to the ice age Lake Corcoran, which once inundated the valley. This Pleistocene lake provided aquatic and terrestrial habitat for ice age species, many of which are now extinct. In general, most fossil sites are found towards the western San Joaquin Valley, where conditions for fossil preservation are better than fossil sites in the eastern side where the study area is located (County of Fresno 2009; Harden 1998).

## Seismic Activity

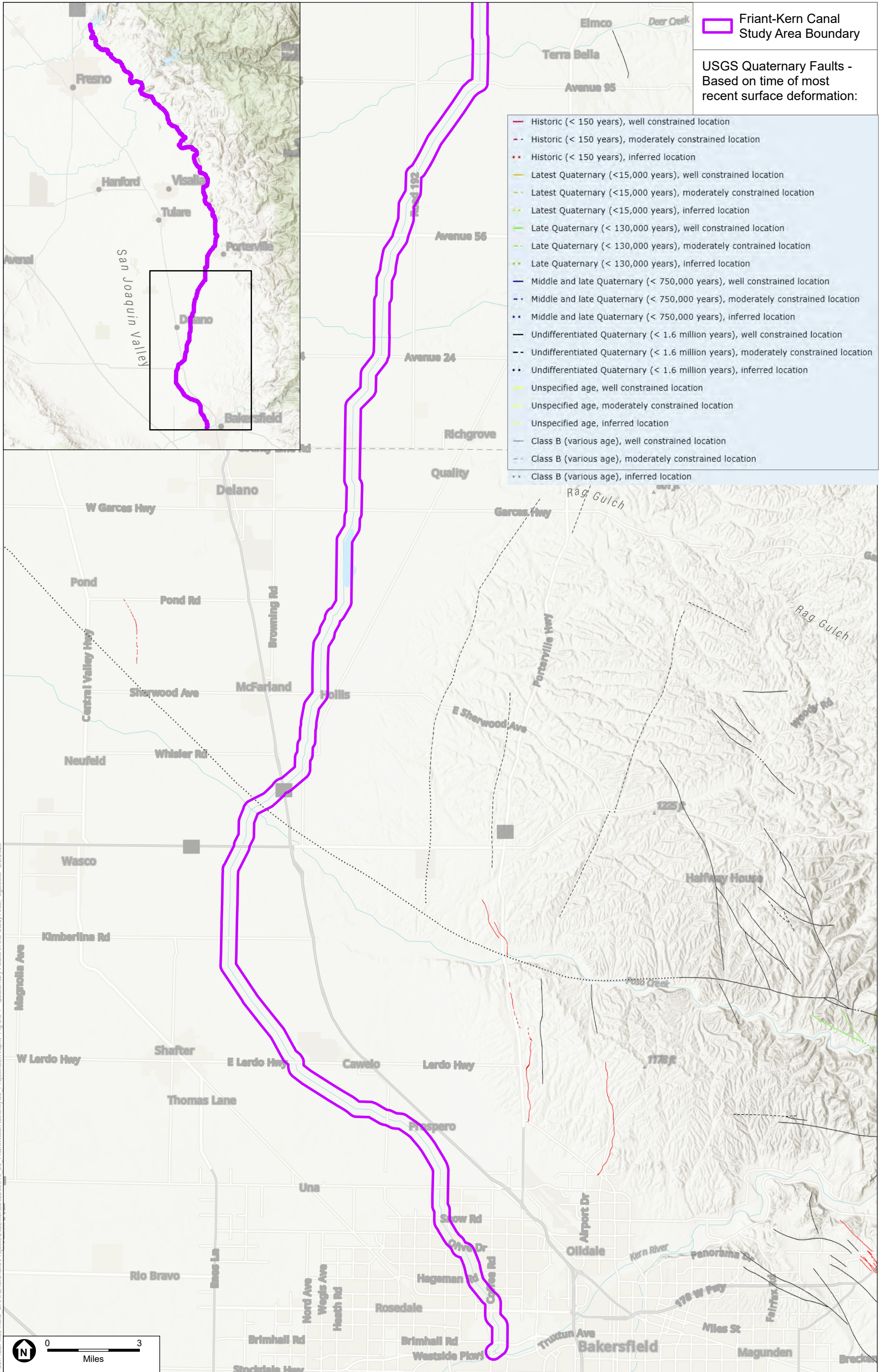
Fresno, Tulare, and Kern counties are characterized as a low-severity zone for ground shaking from a seismic event (Reclamation and Friant Water Authority 2019). The portion of the study area that is located in Kern County intersects a moderately active seismic area (USGS 2023), despite the area being characterized as a low-severity zone for ground shaking.

The Alquist-Priolo Earthquake Fault Zoning Act was signed into California law in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. **Figure 3.8-1** displays the fault activity in the study area, including the mapped Alquist-Priolo fault zones. The study area intersects the Poso Creek fault near Wasco (USGS 2023); this is not an active fault and the study area is not in a mapped Alquist-Priolo fault zone. Seismic ground-shaking can cause soils and unconsolidated sediments to compact and settle.

## Liquefaction and Lateral Spreading

Liquefaction is a phenomenon in which unconsolidated, water-saturated sediments become unstable due to the effects of strong seismic shaking. During an earthquake, these sediments can behave like a liquid, potentially causing severe damage to overlying structures. Lateral spreading is a variety of minor landslide that occurs when unconsolidated liquefiable material breaks and spreads due to the effects of gravity, usually down gentle slopes. Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore-pressure buildup or liquefaction in a shallow underlying deposit during an earthquake. The occurrence of this phenomenon depends on many complex factors, including the intensity and duration of ground shaking, particle-size distribution, and density of the soil.

The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structure slabs due to sand boiling, and buckling of deep foundations due to ground settlement. Dynamic settlement (i.e., pronounced consolidation and settlement from seismic shaking) may also occur in loose, dry sands above the water table, resulting in the settlement of and possible damage to overlying structures. In general, a relatively high potential for liquefaction exists in loose, sandy soils that are within 50 feet of the ground surface and are saturated (below the groundwater table). Lateral spreading can move blocks of soil, placing strain on buried pipelines that can lead to leaks or pipe failure.



Path: \\az-friant\GIS\SHARE\GIS\Projects\2022\0016\_00\_FriantWaterAuthority\03\_Project\DEIR.aprx Fig 3.8-1 - Quaternary Faults in the Study Area\_splsheet 2/2/2023

SOURCE: USGS; ESA, 2023

Friant Water Authority - Friant-Kern Canal

**Figure 3.8-1**  
Quaternary Faults  
in the Study Area



This page intentionally left blank



Although the potential for earthquake ground-shaking hazards is low in most of the San Joaquin Valley, some liquefaction risk is assumed in areas where unconsolidated sediments and a high-water table coincide (California Seismic Safety Commission 2003).

## **Landslides**

Landslides are a type of downslope movement in which rock, soil, and other debris are displaced due to the effects of gravity. The potential for material to detach and move downslope depends on multiple factors, including the type of material, water content, and steepness of terrain. Generally, earthquake-induced landslides occur within deposits of a moderate to high landslide potential, when ground shaking triggers slope failures during or as a result of a nearby earthquake. The study area is not at high risk for landslides, given that there are no landslides that have occurred in or near the study area, and the study area does not intersect with any areas at high-risk for landslides (California Department of Conservation 2023a).

## **Soils**

Soils in the San Joaquin Valley are generally described as alluvium. The Fresno County, Kern County and Tulare County soil surveys show that the study area intersects nine soil classifications (California Department of Conservation 2023b). The dominant soil classifications in the study area are comprised of marine and nonmarine (continental) sedimentary rocks.

Mechanical erosion is the geological process in which earthen materials are worn away and transported by natural forces such as wind or water. Factors that increase the likelihood of erosion and runoff include land use, soil type and texture, landscape, and weather. The study area is relatively flat with little topographic relief and primarily consists of the existing Friant-Kern Canal; barren, ruderal, or agricultural land; and roadways. The study area consists primarily of alluvial soil, which is loamy. These soils include a roughly even mixture of clay, silt, and sand. Loamy and sandy soils drain well and are susceptible to erosion (California Department of Conservation 2023c).

### **3.8.3 Regulatory Setting**

Federal and state plans, policies, regulations, and laws and regional or local plans, policies, regulations and ordinances pertaining to geology, soils, and paleontology are discussed in this section.

#### **Federal**

##### ***U.S. Geological Survey Quaternary Faults***

The U.S. Geological Survey (USGS) maintains a database of Quaternary fault and fold parameters. The database is periodically updated to reflect the latest data available and current understanding of fault behaviors. These fault parameters were used to develop the National Seismic Hazard Maps.

### ***U.S. Geological Survey National Seismic Hazard Maps***

USGS provides probabilistic seismic hazard maps for the 48 conterminous states. These maps depict contour plots of peak ground acceleration and spectral accelerations at selected frequencies for various ground motion return periods. As noted previously, the maps were developed for a reference site condition with an average shear-wave velocity of about 2,500 feet per second in the top 100 feet. The USGS National Seismic Hazard Maps are updated periodically and have been adopted by many building and highway codes as the minimum design requirements.

### ***U.S. Geological Survey Landslide Hazard Program***

USGS provides information regarding the causes of ground failure and mitigation strategies to reduce long-term losses from landslide hazards. The information is useful for understanding the nature and scope of ground failures and for improving the mitigation strategies.

### ***Federal Regulatory Design Codes for Buildings, Highways, and Other Structures***

Federal standards for minimum design regulate the construction of any buildings and other structures and include the following:

- American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures, ASCE-7-10, 2013
- USACE (CESPK-ED-G), Geotechnical Levee Practice, SOP EDG-03, 2004
- USACE Design and Construction of Levees, EM 1110-2-1913, 2000
- USACE Engineering and Design, Earthquake Design and Evaluation for Civil Works Projects, ER 1110-2-1806, 2016
- USACE Engineering and Design—Earthquake Design and Evaluation of Concrete Hydraulic Structures, EM 1110-2-6053, 2007
- USACE Engineering and Design—Response Spectra and Seismic Analysis for Concrete Hydraulic Structures, EM 1110-2-6050, 1999
- USACE Engineering and Design—Stability Analysis of Concrete Structures, EM 1110-2-2100, 2005
- USACE Engineering and Design—Structural Design and Evaluation of Outlet Works, EM 1110-2-2400, 2003
- USACE Engineering and Design—Time-History Dynamic Analysis of Concrete Hydraulic Structure, EM 1110-2-6051, 2003
- USACE Slope Stability, EM 1110-2-1902, 2003
- U.S. Department of the Interior and USGS Climate Change and Water Resources Management: A Federal Perspective, Circular 1331

These standards establish the minimum design criteria and construction requirements, including design, for concrete and steel structures, levees, buildings, pumping stations, excavation and shoring, grading, and foundations.

### ***National Earthquake Hazards Reduction Act (U.S. Code Title 42 Section 7704)***

In 1977, the U.S. Congress enacted the Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) to “reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program.” The National Earthquake Hazards Reduction Program was also enacted in 1977, to accomplish the goals of the act. The Earthquake Hazards Reduction Act and National Earthquake Hazards Reduction Program were amended in 1990 to refine the description of agencies’ responsibilities, program goals, and objectives. The Earthquake Hazards Reduction Act was amended as the National Earthquake Hazards Reduction Program Act. The four general goals of the National Earthquake Hazards Reduction Program are:

- Develop effective practices and policies to reduce losses of life and property from earthquakes and accelerate their implementation.
- Improve techniques for reducing seismic vulnerabilities of facilities and systems.
- Improve earthquake hazards identification and risk assessment methods, and their use.
- Improve the understanding of earthquakes and their effects.

The National Earthquake Hazards Reduction Program Act designates the Federal Emergency Management Agency as the program’s lead agency. Other supporting agencies include the National Institutes of Standards and Technology, the National Science Foundation, and USGS.

## **State**

### ***Liquefaction and Landslide Hazard Maps (Seismic Hazards Mapping Act)***

The Seismic Hazards Mapping Act of 1990 (PRC Sections 2690 to 2699.6) was enacted following the Loma Prieta earthquake to reduce threats to public health and safety by identifying and mapping known seismic hazard zones in California. The act directs the California Geological Survey (formerly known as the California Division of Mines and Geology) to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground shaking. The maps assist cities and counties in fulfilling their responsibilities for protecting public health and safety.

As of April 2019, more than 100 official seismic hazard zone maps showing areas prone to liquefaction and landslides had been published in California, and more maps are scheduled for publication. Most mapping has been performed in Southern California and the San Francisco Bay Area.

A development permit review is required for sites in the mapped seismic hazard zones. Site-specific geologic investigations and evaluations are carried out to identify the extent of hazards,

and appropriate mitigation measures are incorporated in the development plans to reduce potential damage.

### ***Alquist-Priolo Earthquake Fault Zones***

The Alquist-Priolo Earthquake Fault Zoning Act (then called the Alquist-Priolo State Special Studies Zone Act) was enacted in 1972 (PRC Section 2621 et seq.). Similar to the Seismic Hazards Mapping Act, the Alquist-Priolo Act's main purposes are to identify known active faults in California and to prevent the construction of buildings for human occupancy on the surface trace of active faults.

### ***California Geological Survey***

The California Geological Survey assists in the identification of fault locations and other geological hazards.

### ***California Building Code***

The California Building Code (CBC), which is codified in title 24 of the California Code of Regulations, part 2, establishes minimum standards related to structural strength, means of egress to facilities (entering and exiting), and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The California Building Standards Commission administers title 24 and, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in title 24 or they are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, repair, location, maintenance, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures throughout California.

Chapter 18 of the CBC covers the requirements of geotechnical investigations, including expansive soils (Section 1803); excavation, grading, and fills (Section 1804); load-bearing of soils (Section 1806); as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions

## **Local**

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address geology and soils and paleontology, including those that minimize the loss of life, injury, and property damage due to seismic and geologic hazards. Applicable general plan goals and policies are presented in **Table 3.8-1**.

**TABLE 3.8-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—GEOLOGY, SOILS, AND PALEONTOLOGY**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Historical, Cultural and Geological Resource Element, Goal OS-J, Policies OS-J.9 through OS-J.13; Seismic and Geological Hazards Element, Goal HS-D, Policies HS-D.1 through HS-D.5 and Policies HS-D.7 through HS-D.15.
<b>Tulare County</b>	Geologic and Seismic Hazards Element, Goal HS-2, Policies HS-2.1 through HS-2.8; Environmental Protection Element, Goal FGMP-8, Policy FGMP-8.10.
<b>Kern County</b>	Safety Element, Goals 3 and 4, 4.2 Policies 1 and 3, 4.5 Policies 1 through 3.

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

### 3.8.4 Impacts and Mitigation Measures

#### Methods of Analysis

Maps of geologic resources and hazards were consulted to identify potential geologic hazards in the study area. As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

#### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to geology, soils, or paleontology is considered significant if the proposed Guidelines would do any of the following:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault.
  - Strong seismic ground shaking.
  - Seismic-related ground failure, including liquefaction.
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil.
- 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.
- 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.
- 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.

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

## Impacts Not Further Evaluated

### **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.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors’ boundaries. None of the proposed actions would involve construction of habitable structures that could require the use of septic tanks. Therefore, **no impact** would occur associated with soils adequate for supporting septic tanks or alternative wastewater disposal systems, and therefore this issue is not evaluated further in this Draft EIR.

See Impact 3.16-1 in Section 3.16, *Utilities and Service Systems*, for a discussion of wastewater that may be generated during construction activities.

**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.** The soil conditions throughout the study area vary widely. Soil expansion generally occurs in fine-grained clayey sediments, which could be present within the study area. However, no new homes or businesses are proposed that would pose substantial direct or indirect risks to life or property due to potential effects of expansive soils on such occupancies. There would be **no impact**, and therefore this issue is not evaluated further in this Draft EIR.

## Impacts and Mitigation Measures

Table 3.8-2 summarizes the impact conclusions presented in this section.

**TABLE 3.8-2  
 SUMMARY OF IMPACT CONCLUSIONS—GEOLOGY AND SOILS AND PALEONTOLOGY**

<b>Impact Statement</b>	<b>Impact Conclusion</b>
<b>3.8-1:</b> Implementation of the proposed Guidelines could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to fault rupture, strong seismic ground shaking, seismic-related ground failure or landslides.	LTS
<b>3.8-2:</b> Implementation of the proposed Guidelines could result in substantial soil erosion or the loss of topsoil	LTS
<b>3.8-3:</b> Implementation of the proposed Guidelines could 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.	LTS
<b>3.8-4:</b> Implementation of the proposed Guidelines could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	LTS

NOTES: LTS = Less than Significant

**Impact 3.8-1: Implementation of the proposed Guidelines could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to fault rupture, strong seismic ground shaking, seismic-related ground failure or landslides.**

The study area is located in a moderately active seismic area, however the risk of ground failure due to fault rupture is considered low because no active faults are known to cross the study area. Seismic-related liquefaction is not expected for most of the study area due to the deep groundwater table. Any localized areas with shallow groundwater (for example, at stream crossings) that may be susceptible to soil liquification are not known. As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located within or adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within the Contractors' boundaries. However, because potential water treatment facilities would be small it is assumed that any required excavation would be minor and would not encounter shallow groundwater, and therefore would not be subject to liquefaction associated with a seismic event.

The study area is not located in or near areas at-risk for landslides, nor would any actions involve the construction of habitable structures; therefore, actions taken by Contractors in response to the proposed Guidelines would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides.

Given the small footprint of potential actions, such as small water treatment facilities, the nearly-seismically-inactive area, and the fact that the study area is not located in or near areas at-risk for landslides, any impacts related to the risk of loss, injury, or death due to fault rupture, strong seismic ground shaking, seismic-related ground failure or landslides would be **less than significant**.

**Impact 3.8-2: Implementation of the proposed Guidelines could result in substantial soil erosion or the loss of topsoil.**

Construction of small water treatment facilities by Contractors in response to the proposed Guidelines could involve ground-disturbance activities such as the mobilization of equipment and materials, preparation of staging areas, site preparation, construction of features, site restoration and/or site demobilization, and disposal of excess materials. However, because such facilities would be small (size of a small shed), ground disturbance associated with construction activities would be minor and associated soil erosion and potential loss of top soil would also be minor. Further, disturbance of one acre or more during construction would be subject to the requirements of the NPDES General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities (Construction General Permit) (discussed in the Sections 3.10, *Hazards and Hazardous Materials*, and 3.11, *Hydrology and Water Quality*). The NPDES permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which would include best management practices (BMPs) designed to control and reduce soil erosion. The BMPs may include dewatering procedures, stormwater runoff quality control measures,

watering for dust control, and the construction of silt fences. Operational and maintenance activities would be similar to existing conditions and also would not result in substantial soil erosion or loss of topsoil. Therefore, this impact would be **less than significant**.

**Impact 3.8-3: Implementation of the proposed Guidelines could 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.**

As discussed in Impact 3.8-1 above, implementation of actions by Contractors in response to the proposed Guidelines could be located in areas subject to the potential effects of unstable soil. However, as discussed in Impact 3.8-1, new features would not require extensive construction, or any soil-excitation. The study area is not located in any known landslide-prone areas and is located in relatively stable soil. Any new features that are proposed in areas determined to be susceptible to geotechnical hazards (e.g., liquefaction or landslide) therefore would not be subject to the damaging effects of these hazards. Therefore, the impact of the proposed Guidelines related to unstable geologic or soil conditions would be **less than significant**.

**Impact 3.8-4: Implementation of the proposed Guidelines could directly or indirectly destroy a unique paleontological resource or site or unique geologic features.**

The majority of the study area historically supported dry land farming and is currently predominately used as irrigated agricultural land, resulting in a highly disturbed landscape. Although the study area is not a known fossil-bearing area, the locations and details of potential actions implemented by Contractors in response to the proposed Guidelines are not currently known so it cannot conclusively be stated that no subsurface paleontological resources are present. However, construction activities could not require soil excavation. However, because potential water treatment facilities would be small and any required excavation would be minor, the potential to destroy a unique paleontological resource or a unique geologic feature would be minimal. If it is determined that the potential exists for an action to encounter and destroy significant paleontological resources, the appropriate steps would be followed to ensure that a professional paleontologist is retained to prepare a paleontological resource management plan (or similar) to avoid a potentially significant impact. Given that the potential actions could require shallow excavation and that the majority of the study area is already located in a highly disturbed landscape, the impact of the proposed Guidelines would be **less than significant**.

---



## 3.9 Greenhouse Gas Emissions

### 3.9.1 Introduction

This section addresses greenhouse gas (GHG) emissions and climate change in the study area and potential effects that could occur as a result of implementing the proposed Guidelines.

The environmental setting and evaluation of impacts on GHG emissions and climate change is based on the review of the relevant air pollution control district programs and GHG emissions thresholds and provides a qualitative assessment of the emissions associated with the types of potential Contractor actions that may be implemented to comply with the water quality thresholds established in the proposed Guidelines.

No comments specifically addressing GHG emissions were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.9.2 Environmental Setting

“Global warming” and “climate change” are terms commonly used to describe the increase in the average temperature of the earth’s near-surface air and oceans since the mid–20th century. Natural processes and human actions have been identified as affecting the climate. The Intergovernmental Panel on Climate Change (IPCC) has concluded that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward (IPCC 2021).

However, increasing GHG concentrations in the atmosphere resulting from human activity since the 19th century, such as fossil fuel combustion, deforestation, and other activities, are believed to be a major factor in climate change. GHGs in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space—a phenomenon referred to as the “greenhouse effect.” Some GHGs occur naturally and are necessary for keeping the earth’s surface habitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have trapped solar radiation and decreased the amount that is reflected into space, intensifying the natural greenhouse effect and resulting in an increase in global average temperature.

Carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons are the principal GHGs. When concentrations of these gases exceed historical concentrations in the atmosphere, the greenhouse effect is intensified. CO<sub>2</sub>, methane, and nitrous oxide occur naturally and are also generated by human activity. Emissions of CO<sub>2</sub> are largely byproducts of fossil fuel combustion, while methane results from off-gassing, natural gas leaks from pipelines and industrial processes, and incomplete combustion associated with agricultural practices, landfills, energy providers, and other industrial facilities. Nitrous oxide emissions are also largely attributable to agricultural practices and soil management. CO<sub>2</sub> sinks include vegetation and the ocean, which absorb CO<sub>2</sub> through sequestration and dissolution, and are two of the largest reservoirs of CO<sub>2</sub> sequestration. Other human generated GHGs include fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which

have much higher potential for heat absorption than CO<sub>2</sub> and are byproducts of certain industrial processes.

CO<sub>2</sub> is the reference gas for climate change, as it is the GHG emitted in the highest volume. The effect of each GHG on global warming is the product of the mass of their emissions and their global warming potential (GWP). The GWP of a gas indicates how much the gas is predicted to contribute to global warming relative to the amount of warming that would be predicted to be caused by the same mass of CO<sub>2</sub>. In emissions inventories, GHG emissions are typically reported as metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e). CO<sub>2</sub>e is calculated as the product of the mass emitted of a given GHG and its specific GWP. Methane and nitrous oxide have much higher GWPs than CO<sub>2</sub>, but CO<sub>2</sub> is emitted in higher quantities and accounts for the majority of GHG emissions in CO<sub>2</sub>e, both from commercial developments and from human activity in general.

Agricultural practices, dominant in the study area, remain a significant source of GHG emissions. CARB estimates that agriculture is responsible for the emissions of 32 million MTCO<sub>2</sub>e, making it the fifth largest source of California's GHG emissions (LAO 2021). Agricultural emissions represent the sum of emissions from agricultural energy use (from pumping and farm equipment), agricultural residue burning, agricultural soil management (the practice of using fertilizers, soil amendments, and irrigation to optimize crop yield), enteric fermentation (fermentation that takes place in the digestive system of animals), histosols (soils that are composed mainly of organic matter) cultivation, manure management, and rice cultivation. About 70 percent of the emissions from the agricultural sector are methane emissions from livestock (LAO 2021).

### 3.9.3 Regulatory Setting

Federal and state plans, policies, regulations, and laws, and regional or local plans, policies, regulations, and ordinances pertaining to GHG emissions are discussed in this section. Refer to Section 3.4, *Air Quality*, for regulations related to air quality and Section 3.7, *Energy*, for regulations related to energy.

#### Federal

##### ***U.S. Environmental Protection Agency “Endangerment” and “Cause or Contribute” Findings***

The U.S. Supreme Court held that the United States Environmental Protection Agency (USEPA) must consider the regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency et al.*, 12 states and cities, including California, together with several environmental organizations sued to require the USEPA to regulate GHGs as pollutants under the Clean Air Act (CAA) (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant, and the USEPA had the authority to regulate GHGs.

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The current and projected concentrations of the six key GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding:** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

### **Vehicle Emissions Standards**

In 1975, Congress enacted the Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the USEPA and National Highway Traffic Safety Administration (NHTSA) are responsible for establishing additional vehicle standards. In August 2012, standards were adopted for model years 2017 through 2025 for passenger cars and light-duty trucks. By 2025, vehicles are required to achieve both 54.5 miles per gallon (mpg) (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO<sub>2</sub> per mile. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle (USEPA 2012). Notably, the State of California harmonized its vehicle efficiency standards through 2025 with the federal standards.

In January 2017, USEPA issued its Mid-Term Evaluation of the GHG emissions standards, finding that it would be practical and feasible for automakers to meet the model years 2022–2025 standards through a number of existing technologies. In August 2018, the USEPA revised its 2017 determination, and issued a proposed rule that maintains the 2020 Corporate Average Fuel Economy (CAFE) and CO<sub>2</sub> standards for model years 2021 through 2026. The estimated CAFE and CO<sub>2</sub> standards for model year 2020 are 43.7 mpg and 204 grams of CO<sub>2</sub> per mile for passenger cars and 31.3 mpg and 284 grams of CO<sub>2</sub> per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. On February 7, 2019, the State of California, joined by 16 other states and the District of Columbia, filed a petition challenging the USEPA’s proposed rule to revise the vehicle emissions standards, arguing that the USEPA had reached erroneous conclusions about the feasibility of meeting the existing standards. In August 2020, a decision was made by the Second Circuit Court of Appeals to vacate the rule, and the USEPA’s existing CAFE standards will remain unchanged.

## **State**

### ***California Environmental Quality Act Guidelines—Greenhouse Gas Emissions***

On March 18, 2010, the California Natural Resources Agency (CNRA) adopted amendments to the CEQA Guidelines to include provisions for evaluating the significance of GHG emissions. The amended guidelines give the lead agency leeway in determining whether GHG emissions should be evaluated quantitatively or qualitatively but requires that the following factors be considered when assessing the significance of impacts from GHG emissions (Section 15064.4):

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting

- Whether the project emissions exceed a threshold of significance that the lead agency determines apply to the project
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions

The amended guidelines also specify that Lead Agencies must analyze potentially significant impacts associated with placing projects in locations susceptible to hazardous conditions (e.g., floodplains, coastlines, and wildfire risk areas), including those that could be affected by climate change (Section 15126.2(a)).

Furthermore, the guidelines also suggest measures to mitigate GHG emissions, including implementing project features to reduce emissions, obtaining carbon offsets to reduce emissions, or sequestering GHG.

### ***Assembly Bill 117 and Senate Bill 790***

In 2002, the California Legislature enacted (AB 117, enabling public agencies and joint power authorities to form a community choice aggregation (CCA). SB 790 strengthened the law by creating a “code of conduct” to which the incumbent utilities must adhere in their activities relative to CCAs. A CCA allows a city, county, or group of cities and counties to pool demand for electricity and purchase or generate power on behalf of customers within their jurisdictions to provide local choice. CCAs work with Pacific Gas and Electric Company (PG&E) to deliver power to its service area. The CCA is responsible for the generation of electricity (procuring or developing power) while PG&E is responsible for electric delivery, power line maintenance, and monthly billing.

### ***Senate Bills 1078 and 107***

SB 1078 (chapter 516, Statutes of 2002) required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (chapter 464, Statutes of 2006) changed the target date to 2010.

### ***Assembly Bill 32 and Senate Bill 32***

In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multi-year program to reduce GHG emissions in California (CARB 2018). AB 32 required the California Air Resources Board (CARB) to develop a Scoping Plan that describes the approach to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first approved by CARB in 2008 and must be updated at least every five years, described in more detail below. This reduction was to be accomplished by enforcing a statewide cap on GHG emissions that would be phased in starting in 2012. The Scoping Plan is described in more detail below.

The California Global Warming Solutions Act of 2016: emissions limit, or SB 32, expanded upon AB 32 to reduce GHG emissions. It established a new climate pollution reduction target of 40 percent below 1990 levels by 2030, and included provisions to ensure that the benefits of state

climate policies would reach disadvantaged communities. SB-32 was contingent on the passing of AB-197, which increases legislative oversight of CARB and is intended to ensure CARB must report to the Legislature. AB-197 also passed and was signed into law in 2016.

### **Climate Change Scoping Plan**

As mentioned, a specific requirement of AB 32 was to prepare a Scoping Plan for achieving the maximum technologically feasible and cost-effective reduction of GHG emissions by 2020. CARB developed and approved the initial Scoping Plan in 2008 (2008 Scoping Plan), outlining the regulations, market-based approaches, voluntary measures, policies, and other emissions reduction programs that would be needed to meet the 2020 statewide GHG emissions limit and initiate the transformations needed to achieve the state’s long-range climate objectives (CARB 2008).

CARB approved the Final 2013 Scoping Plan Update in May 2014 that builds upon the initial Scoping Plan with new strategies and recommendations. This update highlights California’s progress toward meeting the “near-term” 2020 GHG emission reduction goals defined in the initial Scoping Plan and evaluated how to align the State’s “longer-term” GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

CARB approved the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan Update) in December 2017. The 2017 Scoping Plan Update outlines the proposed framework of action for achieving the 2030 target of a 40 percent reduction in GHG emissions relative to 1990 levels (CARB 2017). The 2017 Scoping Plan Update builds upon and integrates efforts already underway to reduce the State’s GHG, criteria pollutant, and toxic air contaminant emissions, including the Low Carbon Fuel Standard (described further in Section 3.7, *Energy*) and Renewables Portfolio Standard (RPS). The cornerstone of the 2017 Scoping Plan Update is an expansion of the cap-and-trade program to meet the aggressive 2030 GHG emissions goal and ensure the achievement of the 2030 limit set forth by Executive Order B-30-15. Through a combination of data synthesis and modeling, CARB determined that the target statewide 2030 emissions limit is 260 million metric tons of carbon dioxide equivalents (MMTCO<sub>2</sub>e). In the 2017 Scoping Plan Update, CARB recommends statewide targets of no more than 6 metric tons (MT) CO<sub>2</sub>e per capita by 2030 and no more than 2 MTCO<sub>2</sub>e per capita by 2050.

CARB acknowledges that because the statewide per-capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the state, it is appropriate for local jurisdictions to derive evidence-based local per-capita goals based on local emissions sectors and growth projections. To demonstrate how a local jurisdiction can achieve its long-term GHG goals at the community plan level, CARB recommends developing a geographically specific GHG reduction plan (i.e., climate action plan [CAP]) consistent with the requirements of CEQA Section 15183.5(b). A so-called “CEQA-qualified” GHG reduction plan, once adopted, can provide local governments with a streamlining tool for project-level environmental review of GHG emissions, provided there are adequate performance metrics for determining project consistency with the plan. Absent conformity with such a plan, CARB recommends “that projects incorporate design features and GHG reduction measures, to the degree feasible, to minimize GHG emissions. Achieving no net additional increase in GHG emissions, resulting in no

contribution to GHG impacts, is an appropriate overall objective for new development.” The recent 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279 (CARB 2022). The actions and outcomes in the plan will achieve: significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

### ***Renewables Portfolio Standard***

The State of California adopted standards to increase the percentage that retail sellers of electricity, including investor-owned utilities and community choice aggregators, must provide from renewable resources. The standards are referred to as the *renewables portfolio standard* (RPS) (CPUC 2021). Qualifying renewables under the RPS include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. The California Public Utilities Commission and the CEC jointly implement the RPS.

#### **Senate Bills 1078 and 107**

SB 1078 (chapter 516, Statutes of 2002) required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (chapter 464, Statutes of 2006) changed the target date to 2010.

#### **Senate Bill X 1-2**

SB X 1-2, signed by Governor Brown in April 2011, enacted the California Renewable Energy Resources Act. The law obligated all California electricity providers, including investor-owned and publicly owned utilities, to obtain at least 33 percent of their energy from renewable resources by 2020.

#### **Senate Bill 350**

SB 350, the Clean Energy and Pollution Reduction Act of 2015 (chapter 547, Statutes of 2015), was signed by Governor Brown on October 7, 2015. SB 350 tightened the standards of the RPS program by requiring that the percentage of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased from 33 percent to 50 percent by December 31, 2030. The law requires the state Energy Resources Conservation and Development Commission (better known as the California Energy Commission) to establish annual targets for statewide energy efficiency savings and demand reduction, to achieve a cumulative doubling of statewide energy efficiency savings by the existing electricity and natural gas final end uses of retail customers by January 1, 2030.

#### **Senate Bill 100**

On September 10, 2018, Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also created new standards for the RPS goals established by SB 350 in 2015. Specifically, the law increased the percentage of energy that both investor-owned and

publicly owned utilities must obtain from renewable sources from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, because many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

## Regional

### **San Joaquin Valley Air Pollution Control District Programs**

The SJVAPCD is the local agency that is primarily responsible for regulating emissions from stationary sources. It also develops plans and implements control measures as required by state and federal requirements. To assist the lead agency with analyzing GHG emission and climate change impacts under CEQA, the SJVAPCD adopted two policies:

- “Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency” (SJVAPCD 2009a)
- “Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA” (SJVAPCD 2009b)

The SJVAPCD has not adopted a quantitative threshold for evaluating the significance of GHG emissions; however, the SJVAPCD’s guidance document for Valley land-use agencies (SJVAPCD 2009b) would be most relevant for assessing GHG-related impacts from the proposed restoration activities. In this guidance document, the SJVAPCD relies on the implementation of best performance standards (BPS), defined as the most effective achieved-in-practice means of reducing or limiting GHG emissions from a GHG emissions source, for evaluating a project’s significance. Projects implementing BPS would be determined to have less than significant individual and cumulative impacts on global climate change.

## Local

The project area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have General Plans with goals and policies that address GHG emissions and climate change. Applicable general plan goals and policies are presented in **Table 3.9-1**. Other applicable local regulations, including Tulare County’s CAP are summarized below.

**TABLE 3.9-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—GHG EMISSIONS AND CLIMATE CHANGE**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Goal OS-G, Policy OS-G.14.
<b>Tulare County</b>	Goal AQ-1, Policies AQ-1.7 and AQ-1.8.
<b>Kern County</b>	General Provisions Goal 1, Policy 21.

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

### **Tulare County Climate Action Plan**

Tulare County adopted the Tulare County CAP in August 2012 and updated the plan in 2018 to incorporate new baseline and future year inventories to reflect the latest information and updates to the county's strategy to address the SB 23 2030 target. The CAP is a guiding document for actions to reduce GHG emissions and adapt to the potential effects of climate change, and for use in CEQA compliance.

The CAP follows a four-step process recommended by the Institute for Local Government, including identification of a baseline year (2007) and emissions inventory; projected future year inventories (2020 and 2030); and provision of policies, regulations, and programs that would achieve reductions by the target years. The policies, regulations, and programs considered in the CAP include those by federal, state, and local governments. The following provides a summary of CAP actions (Tulare County 2018):

- Identifies sources of GHG emissions caused by activities within the unincorporated areas of Tulare County and estimates how these emissions may change over time.
- Establishes a reduction target of reducing Tulare County's GHG emissions to demonstrate consistent with AB 32 (2006) and SB 32 (2016) and CARB Scoping Plan targets.
- Provides energy use, transportation, land use, water conservation, and solid waste strategies to bring Tulare County's GHG emissions levels to the reduction target.
- Mitigates the impacts of Tulare County activities on climate change (by reducing GHG emissions consistent with the direction of the State of California via AB 32, SB 32, Governor's Executive Order S-03-05, and the 2009 amendments to the CEQA Guidelines to comply with SB 97 (2008). The CEQA Guidelines encourage the adoption of policies or programs as a means of addressing comprehensively the cumulative impacts of projects. (See CEQA Guidelines, Sections 15064(h)(3) and 15130(c).)
- Allows the GHG emissions inventory and CAP to be updated every five years and to respond to changes in science, effectiveness of emission reduction measures and federal, state, regional, or local policies to further strengthen the County's response to the challenges of climate change.
- Provides substantial evidence that the emission reductions estimated in the CAP are feasible.
- Serves as the threshold of significance within the County of Tulare for climate change impacts, by which all applicable developments within the County will be reviewed.
- Proposed development projects that are consistent with the emission reduction and adaptation measures included in the CAP and the programs that are developed as a result of the CAP, would be considered to have a less than significant cumulative impact on climate change and emissions consistent with CEQA Guidelines Section 15064(h)(3) as amended to comply with SB 97.



## 3.9.4 Impacts and Mitigation Measures

### Methods of Analysis

Intended to assist lead agencies in addressing GHG impacts for CEQA purposes, the SJVAPCD has provided guidance for evaluating the significance of GHG emission, however the determination of significant impacts is ultimately within the purview of the lead agency. The SJVAPCD guidance on assessing significance relies on BPS and demonstration of GHG reductions compared to business-as-usual conditions. Currently, BPS have not been established for construction projects.

Numerical bright-line thresholds identify the point at which additional analysis and mitigation of project-related GHG emission impacts would be necessary. Some air resource districts, but not SJVAPCD, have adopted bright-line thresholds that have been developed for commercial projects, residential projects, and stationary sources. Commercial and residential bright-line thresholds are typically based on a market capture rate or a gap analysis, which is tied back to AB 32 reduction targets (1990 levels by 2020). These bright-line thresholds reflect local or regional land use conditions, particularly residential and commercial density and access to transit. For example, the Sacramento Metropolitan Air Quality Management District (SMAQMD) adopted a threshold of 1,100 MTCO<sub>2</sub>e for construction and operation of land use development projects, such as new residential and commercial projects (SMAQMD 2020). A stationary source bright-line threshold of 10,000 MTCO<sub>2</sub>e has been adopted by multiple air districts and other agencies as part of the permitting process, including the South Coast Air Quality Management District (SCAQMD 2019) and Bay Area Air Quality Management District (BAAQMD 2022).

No bright-line threshold has been formally adopted by SJVAPCD for use in the SJVAB. As discussed in the SMAQMD Guide to Air Quality Assessment in Sacramento County, the recommended thresholds were developed to ensure at least 90 percent of new GHG emissions would be reviewed and assessed for mitigation, thereby contributing to GHG emissions reduction goals set by AB 32, SB 32, the Scoping Plan, and Executive Orders. The SJVAPCD has allowed the use of SMAQMD CEQA modeling tools to be used in CEQA and Indirect Source Review assessments. As such, the SMAQMD bright-line threshold may be considered a tool for evaluating the significance of GHG emissions. Further, SMAQMD's CEQA Guidance indicates that lead agencies may choose to amortize construction emissions over the life of the project.

Direct GHG emission impacts will include both construction and operational activities. Because impacts from construction activities occur over a relatively short-term period, they contribute a relatively small portion of the overall lifetime project GHG emissions. In addition, GHG emission reduction measures for construction equipment are relatively limited. Therefore, a standard practice is to amortize construction emissions over the anticipated lifetime of a project, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. Amortized construction emissions are calculated by dividing the construction emissions by the assumed life of the project (typically 50 years) and then added to annual operation emissions. This value would then be compared to the CEQA significance threshold of 1,100 MTCO<sub>2</sub>e per year adopted by the SMAQMD.

For purposes of this analysis, the action-specific threshold is set at 1,100 MTCO<sub>2</sub>e per year consistent with the SMAQMD threshold. However, because the precise location and characteristics of potential Contractor actions is uncertain, this section does not provide numerical estimates of GHG emissions nor does it compare those estimates to the CEQA significance thresholds of 1,100 MTCO<sub>2</sub>e per year. Instead, this impact analysis is programmatic, focusing on the types of reasonably foreseeable changes due to implementation of potential actions by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

## Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to GHG emissions is considered significant if the proposed Guidelines would do any of the following:

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

## Impacts and Mitigation Measures

Table 3.9-2 summarizes the impact conclusions presented in this section.

**TABLE 3.9-2  
 SUMMARY OF IMPACT CONCLUSIONS – GREENHOUSE GAS EMISSIONS**

Impact Statement	Impact Conclusion
<b>3.9-1:</b> Implementation of the proposed Guidelines could generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LTS
<b>3.9-2:</b> Implementation of the proposed Guidelines could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS
NOTES: LTS = Less than Significant	

### **Impact 3.9-1: Implementation of the proposed Guidelines could generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors’ boundaries. Other actions, including blending of water or changes to the timing of introduced water, would not require construction. Construction activities for installation of the small water treatment facilities would involve a small footprints

but could still involve establishment and use of staging areas, access and haul roads (paved or unpaved), site preparation activities, construction or site restoration/demobilization. Construction equipment exhaust, haul trips, and construction worker commuting associated with these construction activities could generate GHG emissions. Operational and maintenance-related emissions would be similar to existing conditions and therefore would not be anticipated to result in an increase in any long-term or permanent GHG emissions.

As described above, the SJVAPCD has not established a specific quantitative GHG emissions increase for which a project would have a significant impact on the environment. However, the SMAQMD has an approved quantitative threshold for GHG emissions of 1,100 MTCO<sub>2</sub>e/year. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Detailed characteristics of potential actions including project footprint, duration of construction, construction equipment, number of construction workers, estimated haul trips, etc., would be used to quantify GHG emissions using CalEEMod<sup>1</sup> to determine whether emissions would be less than the 1,100 MTCO<sub>2</sub>e threshold (i.e., the action-specific threshold selected to be consistent with the SMAQMD threshold) and to determine whether the potential actions would generate GHG emissions that may have a significant impact on the environment. Operational and maintenance-related emissions would also be quantified to ensure additional electricity demand (e.g., for operation of small water treatment facilities) does not increase GHG emissions under existing conditions. However, given the types of potential actions implemented by Contractors in response to the proposed Guidelines, it is anticipated that any emissions would not generate substantial GHG emissions beyond the approved quantitative threshold. Therefore, this impact would be **less than significant**.

**Impact 3.9-2: Implementation of the proposed Guidelines could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.**

As described above, implementation of potential actions by Contractors to comply with the proposed Guidelines could directly emit GHG emissions as a result of short-term, temporary construction activities. The quantitative significance threshold developed by SMAQMD is considered sufficient to meet the state's GHG emission reduction goals as outlined in the applicable plans, policies and regulations and reduction goals set by AB 32, SB 32, the Scoping Plan, and Executive Orders (refer to subsection 3.9.3, *Regulatory Setting*).

Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Detailed characteristics of potential actions would be used to quantify GHG emissions to determine whether the action would generate GHG emissions that may conflict with an applicable GHG plan, policy, or regulation. Operational and maintenance-related emissions should also be

---

<sup>1</sup> The California Emissions Estimator Model (CalEEMod) is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential direct and indirect criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects.

quantified to ensure additional electricity demand (e.g., for operation of small water treatment facilities) does not increase GHG emissions under existing conditions.

However, given the types of potential actions anticipated to be implemented in response to the proposed Guidelines, it is anticipated that emission estimates would not generate a substantial GHG emissions beyond the approved quantitative threshold, and thus implementation would not conflict with the applicable GHG plan, policy, or regulation or GHG reduction goals. This impact would be **less than significant**.

---

## 3.10 Hazards and Hazardous Materials

### 3.10.1 Introduction

This section addresses potential hazards, hazardous materials, and public safety effects of implementing the proposed Guidelines.

No comments specifically addressing hazards and hazardous materials were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.10.2 Environmental Setting

Much of the land adjacent to the Friant-Kern Canal and in the study area is agricultural land. Current and past land use activities are potential indicators of hazardous material storage and use.

#### Hazardous Materials

Hazardous materials include chemicals and other substances defined as hazardous by federal and state laws and regulations. Hazards and hazardous materials are generally characterized by chemical and physical properties that cause a substance to be considered hazardous including toxicity, ignitability, corrosivity, and reactivity. Hazardous materials also include waste chemicals and spilled materials.

The State Water Board and Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) have an ongoing program to establish water quality objectives to protect beneficial uses of surface water and groundwater. Existing programs have focused on hazardous substances from landfills, waste disposal sites, fuel storage, and industrial facilities. Information from these programs is used by these agencies to establish cleanup programs to protect groundwater quality.

Various hazardous materials are present throughout the study area. Agricultural operations and industries use many types of hazardous materials, such as from fuels and solvents. Fuels, chemicals, and other hazardous materials are also transported via roadways and railways. At typical construction sites, materials that could be considered hazardous include fuels, motor oil, grease, various lubricants, solvents, soldering equipment, and glues.

Hazardous waste sites associated with agricultural production activities may include storage facilities and agricultural ponds or pits that are contaminated with fertilizers, pesticides, herbicides, or insecticides; leaking underground storage tanks that contained petroleum products and other materials; leaking or abandoned pesticide storage containers; drainage water that contains fertilizers and pesticides; military bases and military cleanup sites; land disposal sites; and brownfield sites. Brownfield sites are defined as “a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant” (USEPA 2023).

For the purposes of this analysis, an area within approximately 0.5 miles of the Friant-Kern Canal was reviewed for the presence of known hazardous waste cleanup sites. There are 40 known hazardous waste cleanup sites on the Cortese list compiled pursuant to Government Code Section 65962.5 within approximately 0.5 miles of the Friant-Kern Canal (State Water Resources Control Board 2023). Twenty-six of the sites are categorized as leaking underground storage tank (LUST) cleanup sites, twelve are classified as cleanup program (i.e., non-federally owned) sites, and two are classified as military cleanup sites. The majority of these sites are located in urban areas and/or on airports.

Of the 40, five are designated as an active site (State Water Resources Control Board 2023). The five sites, their proximity to the Friant-Kern Canal, and the potential contaminants of concern are detailed in **Table 3.10-1**. The primary concerns associated with the contaminants at each of these sites include aquifer or well contamination. Other concerns include soil and air contamination. Cases that have been closed by the pertinent regulatory agencies are considered to pose a low threat to human health and groundwater quality.

**TABLE 3.10-1  
 HAZARDOUS WASTE CLEANUP SITES WITHIN 0.5 MILES OF THE FRIANT-KERN CANAL**

Site Name	Distance to/from Friant-Kern Canal	Potential Contaminants of Concern
Mount Owen Rifle Range	0.11 miles	Chromium, Copper, Diesel, Explosives (UXO, MEC), Heating Oil, Kerosene, Lead, Mercury (Elemental), Munitions Debris (MD), Other Metal
Park Blvd Gas	0.47 miles	Gasoline
Golden Valley Citrus, Inc. (Former Seville Olive Processing Facility)	0.50 miles	Other Inorganic/Salt
Styrotek, Inc.	0.09 miles	Tetrachloroethylene (PCE), Trichloroethylene (TCE), Vinyl Chloride
Sunland Refining Corporation	0.21 miles	Crude Oil, Gasoline, MTBE/TBA/Other Fuel Oxygenates

SOURCE: State Water Resources Control Board 2023

## Disease Vectors

A “disease vector” is a carrier of disease organisms. The vector may be purely mechanical, as when houseflies spread enteric organisms; or it may be biological, wherein the disease organism multiplies or undergoes change within the vector, as when viruses develop in mosquitoes.

In California, the West Nile virus, St. Louis encephalitis, and western equine encephalomyelitis are the three most important viral mosquito-borne diseases. The viruses that cause these diseases are maintained in nature through a mosquito-bird-mosquito cycle. Typically, water bodies with poor circulation, continual slow-changing water levels, higher temperatures, and higher organic content produce greater numbers of mosquitoes. Most adult mosquitoes remain close to their point of origin, and their ability to travel is heavily dependent on physical phenomena such as wind. Some mosquitoes feed on mammals and other animal hosts, and others feed on fruits and plant nectars. County vector control districts provide mosquito and other vector control.

## Valley Fever

Valley fever—sometimes called “San Joaquin Valley fever” or “desert rheumatism”—is an infection caused by a soil-dwelling fungus (*Coccidioides*) that, when inhaled, can affect the lungs, causing respiratory symptoms including cough, fever, chest pain, and tiredness. Kern County has one of the highest reported rates of valley fever in the state (more than 100 reported cases per 100,000 population), with Fresno and Tulare counties reporting slightly fewer cases (40 to 90 reported cases per 100,000 population) (CDC 2020).

## Airports

The main areas of concern related to airport hazards are overflight safety, airspace protection, flight patterns, and land use compatibility. There are five airports within 2 miles of the study area (Harris Ranch Airport, Peg Field-42CN, Eckert Field, Meadows Field Airport, and Minter Field Airport).

## Schools

There are 15 schools and childcare facilities that are within a quarter-mile of the study area.

## Fire Hazard Zones

The study area generally has a low potential for wildfire and the topography in the area is generally level. However, there are locations where the Friant-Kern Canal and adjacent study area traverse through moderate and high Fire Hazard Severity Zones in State Responsibility Areas (CAL FIRE 2023).

## 3.10.2 Regulatory Setting

Federal and state plans, policies, regulations, and laws, and regional or local plans, policies, regulations, and ordinances pertaining to hazards and hazardous materials are discussed in this section.

### Federal

#### ***Comprehensive Environmental Response, Compensation, and Liability Act***

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (U.S. Code title 42, Section 9601 et seq.) enacted prohibitions and requirements for closed and abandoned hazardous waste sites. CERCLA also established the liability of persons responsible for releases of hazardous waste at these sites and created a trust fund to provide for cleanup when no responsible party could be identified. The Superfund Amendments and Reauthorization Act of 1986 amended CERCLA to add new enforcement authorities and governance of hazardous substances. Title III of the Superfund Amendments and Reauthorization Act authorized the Emergency Planning and Community Right-to-Know Act.

#### ***Resource Conservation and Recovery Act***

The Resource Conservation and Recovery Act (RCRA) (U.S. Code title 42, Section 6901 et seq.) was enacted in 1974 as the first step in regulating the potential health and environmental

problems associated with disposal of solid hazardous and nonhazardous waste. The Hazardous and Solid Waste Act (1984) amended the RCRA to address gaps in the area of highly toxic wastes. The 1986 RCRA amendments enabled the U.S. Environmental Protection Agency (USEPA) to address environmental problems that could result when underground tanks store petroleum and other hazardous substances. RCRA also set forth a framework for management of nonhazardous solid wastes.

RCRA Section 3006 provides USEPA with the authority to authorize state hazardous waste programs. Once authorized, the state program operates in lieu of the federal program, although USEPA retains enforcement authority even after a state program has been authorized.

### ***Toxic Substances Control Act***

The Toxic Substances Control Act of 1976 (U.S. Code title 15, Section 2601 et seq.) regulates and controls harmful chemicals and toxic substances in commercial use. This law gives the USEPA the ability to track the 75,000 industrial chemicals currently produced in, imported into, and disposed of in the United States, and can require reporting or testing of those that may pose an environmental or human health hazard. Specific chemicals regulated under the Toxic Substances Control Act include polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint.

### ***Clean Air Act***

Regulations under the CAA (Code of Federal Regulations title 40, part 68) are designed to prevent accidental releases of hazardous materials. The regulations require facilities storing a threshold quantity or greater of listed regulated substances to develop a risk management plan, including hazard assessments and response programs to prevent accidental releases of listed chemicals. Section 112(r)(5) of the CAA discusses the regulated substances. These substances are listed in Code of Federal Regulations title 40, part 68.130.

### ***Clean Water Act***

The Spill Prevention, Control, and Countermeasure program, established as part of the Clean Water Act, is designed to prevent or contain the discharge or threatened discharge of oil into navigable waters or adjoining shorelines. Under the Clean Water Act, a facility must prepare a written spill prevention, control, and countermeasure plan if the facility stores oil that would pose a threat to navigable waters if released (Code of Federal Regulations title 40, part 112). The Spill Prevention, Countermeasure, and Control rule applies if a facility has any of the following:

- A single aboveground oil storage tank with a capacity greater than 660 gallons
- Total petroleum storage (including aboveground storage tanks, oil-filled equipment, and drums) greater than 1,320 gallons
- Underground storage capacity greater than 42,000 gallons

Section 402(p) of the Clean Water Act established the NPDES, a framework for regulating contaminants in stormwater discharges.



### ***Safe Drinking Water Act***

In 1974, the Safe Drinking Water Act was enacted to protect public health by regulating the nation's public drinking water supply. This law authorizes the USEPA to set national health-based standards to protect against both naturally occurring and human-made contaminants that may be found in drinking water. The USEPA, state regulatory agencies, and water systems managers work together to make sure that these standards are met.

The Safe Drinking Water Act was amended in 1986 and 1996. The law requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater wells. The USEPA protects groundwater sources of drinking water, in part through the Underground Injection Control Program. This program regulates the substances (including hazardous and radioactive substances) that can be injected or placed into the ground above or below a drinking water source.

### ***Title 40—Protection of Environment, Chapter I—Environmental Protection Agency (Continued) CFR Part 68—Chemical Accident Prevention Provisions***

CFR part 68 sets forth the list of regulated substances and thresholds; the petition process for adding or deleting a substance from this list; the requirements that owners or operators of stationary sources must meet to prevent accidental releases; and the state accidental-release prevention programs approved under Section 112(r) of the CAA. The California Accidental Release Prevention Program is the state's adaptation of this federal regulation. The list of federally regulated flammable substances and their threshold quantities is available from USEPA.

### ***Occupational Safety***

The U.S. Occupational Safety and Health Administration's (OSHA's) Hazard Communication Standard (Code of Federal Regulations title 29, part 1910.1200) requires that workers be informed of the hazards associated with the materials they handle. In the workplace, manufacturers must appropriately label containers, material safety data sheets must be available, and employers must properly train workers. Workers at hazardous waste sites must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response regulations (Code of Federal Regulations title 29, part 1910.120). In California, OSHA has delegated the authority to administer OSHA regulations to the State of California.

## **State**

### ***Hazardous Waste Control Law***

The Hazardous Waste Control Law empowers the California Department of Toxic Substances Control (DTSC) to administer the state's hazardous waste program and implement the federal program in California. This law includes regulations on underground storage tanks. DTSC manages the regulation and permitting of businesses that handle hazardous materials and waste.

### ***Health and Safety Code Sections 25500 and 25531***

Section 25500 of the Health and Safety Code regulates business and area plans related to the inventory, handling, and release or threatened release of hazardous materials. Section 25531

implements the federal regulations under the CAA for the prevention of accidental releases of regulated substances, with certain state-specific amendments.

### ***Porter-Cologne Water Quality Control Act***

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act), described in Section 3.11.3, *Regulatory Setting*, of Section 3.11, *Hydrology and Water Quality*, requires that the state's waters be maintained at the highest reasonable quality. It authorizes the Regional Water Boards to supervise cleanup efforts at spill sites that have affected groundwater.

### ***California Hazardous Substance Account Act***

The California Hazardous Substance Account Act (Health and Safety Code, division 20, chapter 6.8), the state's equivalent to CERCLA, was adopted in 1999. This law requires past and present owners and operators to assume liability for the remediation of hazardous waste sites in California. The regulations also provide the following:

- Response authority for releases of hazardous substances, including spills and hazardous waste disposal sites.
- Compensation for medical expenses and lost wages or business income resulting from injuries caused by exposure to releases of hazardous substances.
- Funds for the State of California to ensure payment of its 10 percent share of the costs mandated pursuant to Section 104[c](3) of CERCLA (U.S. Code title 42, Section 9604[c][3]).

Like the 1996 CERCLA amendments, the California Land Reuse and Revitalization Act of 2004 was enacted to encourage site cleanup (Health and Safety Code Sections 25395.60 to 25395.105). This law encourages the development and redevelopment of urban properties and provides processes that ensure remediation to protect public health, safety, and the environment. The law also relieves innocent owners, bona fide prospective purchasers, and owners of property adjacent to contaminated sites of the liabilities and responsibilities that should be borne by those who caused or contributed to the contamination.

Section 25356.1 of the Health and Safety Code requires DTSC or the regional water board to prepare or approve a remedial action plan for any site where hazardous substances were released to the environment if the site is listed as a Superfund site. The regional water board makes decisions regarding cleanup and abatement goals and objectives for the protection of water quality (Water Code Section 13307).

### ***Government Code Section 65962.5, Cortese List***

The provisions in Section 65962.5 of the California Government Code are commonly referred to as the "Cortese List," after the legislator who authored and enacted the legislation. The list, or a site's presence on the list, has bearing on the local permitting process, and on compliance with CEQA. The list is developed with input from the California Department of Public Health, State Water Board, California Department of Resources Recycling and Recovery (CalRecycle), and DTSC.

### ***Hazardous Waste Program***

The State of California is authorized to administer a hazardous waste program equivalent to the federal RCRA program. Generation, transportation, treatment, storage, and disposal of characteristic and listed hazardous wastes are regulated under the Health and Safety Code Sections 25100 to 25250.28.

As part of the regulation of hazardous wastes, Health and Safety Code Sections 25250 through 25250.28 regulate PCBs in used oil and prohibit recycling or reuse of used oil if the oil contains PCBs at a level of 5 parts per million or greater.

### ***California Solid Waste***

Solid waste in California is regulated under California Code of Regulations title 14, division 7, and title 27, division 2. These regulations establish minimum standards for the handling and disposal of solid wastes. Both the State Water Board and CalRecycle have oversight and approval authority over local enforcement agencies that permit and take enforcement action on solid waste management facilities. Public Resources Code Sections 43200–43219, 43020, 43020.1, 43021, 43030, 43101, and 43103 created and govern the local enforcement agencies.

### ***Control of Pesticides***

Similar to USEPA’s Federal Insecticide, Fungicide, and Rodenticide Act program, the California Legislature enacted the Food and Agriculture Code to promote and protect the agricultural industry, and to protect public health, safety, and welfare. Sections 11401–14155 of the Food and Agriculture Code regulate pest control operations, application of pesticides, and applicators, and restrict the use of some pesticides.

### ***Water Code***

Water Code division 7, chapter 5 requires the State Water Board and DTSC to establish policies and procedures for investigating, remediating, and abating the effects of a discharge of a hazardous substance that creates or threatens to create contamination, pollution, or a nuisance. The policies and procedures must be consistent with the policies and procedures established under Health and Safety Code Section 25355.7. The policies and procedures are established in State Water Board Resolution No 92-49.

### ***State Board Resolution No. 92-49***

The State Water Board adopted Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges, under Water Code Section 13304. This resolution establishes policies and detailed procedures for investigating and remediating discharges (releases) that cause or threaten to cause soil or water pollution or a nuisance when waste or fluid migrates from waste management units. The resolution also requires coordination among other agencies including DTSC, USEPA, and local governments.

### ***Certified Unified Program Agencies***

The Unified Program (CalEPA 2023) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of multiple

environmental and emergency response programs. The California Environmental Protection Agency and other state agencies set the standards for their programs, and local governments implement the standards. These local implementing agencies are called certified unified program agencies. The certified unified program agencies for Fresno, Tulare and Kern counties in the study area are the Fresno County HazMat Compliance Program, the Tulare County Division of Environmental Health, and Kern County Public Health, respectively. For each county, certified unified program agencies regulate and oversee the following:

- Hazardous materials business plans
- California accidental release prevention plans or federal risk management plans
- The operation of aboveground storage tanks and underground storage tanks
- Universal waste and hazardous waste generators and handlers
- On-site treatment of hazardous waste
- Inspections, permitting, and enforcement
- Proposition 65 reporting
- Emergency response

### ***California Occupational Safety and Health Administration (Cal/OSHA) Regulations***

Cal/OSHA sets forth regulations for the disturbance of asbestos-containing construction materials (ACCMs), including removal operations for all types of ACCMs. Cal/OSHA requires contractors and employers that remove ACCMs to be registered and consultants and technicians who conduct sampling and/or removal to be certified. In addition, the agency has developed standards for general industry and the construction industry hazardous waste operations and emergency response. Cal/OSHA ensures that employers have controls to reduce and monitor exposure levels of hazardous materials, an informational program describing any exposure during operations and the inspection of drums and containers prior to removal or opening. Decontamination procedures and emergency response plans must be in place before employees begin working in hazardous waste operations.

### ***California Accidental Release Prevention Program***

The California Accidental Release Prevention Program (CalARP) (California Code of Regulations title 19, division 2, chapter 4.5) replaced the California Risk Management and Prevention Program as of January 1, 1997. The CalARP program encompasses both the federal “Risk Management Program” established in the Code of Federal Regulations title 40, part 68) and the State of California program (California Code of Regulations title 19, division 2, chapter 4.5).

The main objective of the CalARP program is to prevent accidental releases of those substances determined to potentially pose the greatest risk of immediate harm to the public and the environment, and to minimize the consequences if releases do occur. These substances, called *regulated substances*, include both flammable and toxic hazardous materials listed on the Federal Regulated Substances for Accidental Release Prevention and State of California Regulated Substances lists. Businesses that handle regulated substances in industrial processes above threshold quantity levels are subject to CalARP program requirements.

The CalARP program requires businesses to have planning activities intended to minimize the possibility of an accidental release by encouraging engineering and administrative controls. It is further intended to mitigate the consequences of an accidental release, by requiring owners or operators of facilities to develop and implement an accident prevention program.

**California Highway Patrol and Department of Transportation**

The California Highway Patrol and California Department of Transportation (Caltrans) regulate container types and issue licenses to transport hazardous waste on public roads.

**Local**

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address hazards and hazardous materials, including those addressing minimizing the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes. Applicable general plan goals and policies are presented in **Table 3.10-2**. Other applicable local regulations are summarized below.

**TABLE 3.10-2  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—HAZARDS AND HAZARDOUS MATERIALS**

General Plan	Goals and Policies
<b>Fresno County</b>	Hazardous Materials Element, Goal HS-F, Policies HS-F.3 and HS-F.6; Airport Hazards, Goal HS-E, Policies HS-E.1-HS-E.3; Airport Land Use Compatibility Plan
<b>Tulare County</b>	Health and Safety Element, Goal HS-1, Policies HS-1.2, HS-1.3, and HS-1.11; Goal HS-4, Policies HS-4.1, HS-4.4, and HS-4.7; Goal HS-3, Policies HS-3.1 and HS-3.2; Goal TC-3, Policy TC-3.4; Goal HS-B, Policies HS-B.1-HS-B.3; Airport Land Use Compatibility Plan
<b>Kern County</b>	Safety Element, Goals 1 through Goal 4; 4.9 Policy 2; Public Facilities and Services Goals 5 and 10; Airport Land Use Compatibility Plan

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

**Airport Land Use Compatibility Plans**

Article 3.5 of the California Public Utilities Code requires each county to create an airport land use commission and for this commission to prepare and adopt an airport land use plan (ALUP) for each public-use airport in the county. The plans are intended to protect and promote the safety and welfare of residents, businesses, and airport users near the public use airports, while supporting the continued operation of these facilities.

**3.10.3 Impacts and Mitigation Measures**

**Methods of Analysis**

Hazard and hazardous material impacts are evaluated in terms of how typical construction and operation of actions could impact existing hazards and hazardous materials. As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions

taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

Permanent impacts are considered those that would continue through the life of an action taken by a Contractor in response to the proposed Guidelines (e.g., operation of new water treatment facility). Temporary impacts are considered those that would be temporary in nature (e.g., construction-related activities).

Regulatory agency databases of hazardous materials sites compiled pursuant to Government Code Section 65962.5 were reviewed to identify documented releases of hazardous materials in soil and groundwater for the purposes of this analysis within 0.5 miles of the Friant-Kern Canal within the study area. Databases included the State Water Board's GeoTracker database (2023) and DTSC's EnviroStor database (2023).

## Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to hazards and hazardous materials is considered significant if the proposed Guidelines would do any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous material.
- 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.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- 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.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires.

## Impacts Not Evaluated Further

**Result in a safety hazard or excessive noise for people residing or working in the study area within 2 miles of an airport.** As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed

Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors’ boundaries. These actions would be of limited size, and construction activities would be of short-term duration and would require nominal construction personnel. Furthermore, no occupied structures would be constructed. Therefore, there would be no people residing or working in the study area that would be exposed to a safety hazard or excess noise levels.

## Impacts and Mitigation Measures

Table 3.10-3 summarizes the impact conclusions presented in this section.

**TABLE 3.10-3  
 SUMMARY OF IMPACT CONCLUSIONS—HAZARDS AND HAZARDOUS MATERIALS**

Impact Statement	Impact Conclusion
<b>3.10-1:</b> Implementation of the proposed Guidelines could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment, or that could be located within one-quarter mile of a school.	LTS
<b>3.10-2:</b> Implementation of the proposed Guidelines could 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.	LTS
<b>3.10-3:</b> Implementation of the proposed Guidelines could 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, could create a significant hazard to the public or the environment.	LTS
<b>3.10-4:</b> Implementation of the proposed Guidelines could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LTS
<b>3.10-5:</b> Implementation of the proposed Guidelines could expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires.	LTS
NOTES: LTS = Less than Significant	

**Impact 3.10-1: Implementation of the proposed Guidelines could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment, or that could be located within one-quarter mile of a school.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a small shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors’ boundaries. Other types of actions, including blending of water or changes to the timing of introduced water, would not require construction. Temporary construction activities associated with potential future actions could

include establishment of staging areas, use of access and haul roads, site preparation, and site restoration and/or demobilization.

A limited amount of hazardous materials (motor oil, gasoline, diesel fuel, solvents, and degreasers) could be used and stored on-site during construction activities. The use, storage, handling, or disposal of hazardous materials could result in accidental releases of small quantities and could expose people and the environment to hazardous materials. In addition, if construction activities were to occur within 0.25 mile of an existing or proposed school (which exist in the study area), it could expose school occupants and school site users to the effects of accidental hazardous material spills.

Operational and maintenance activities would be similar to existing conditions and would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Since actions would be of limited size and construction activities would be short-term and intermittent, the likelihood of creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials in the study area during construction is low. As discussed in subsection 3.10.3, *Regulatory Setting*, numerous laws and regulations govern the transport, use, storage, handling and disposal of hazardous materials to reduce the potential hazards associated with these activities. Cal/OSHA is responsible for developing and enforcing workplace safety standards, including the handling and use of hazardous materials. Transport of hazardous materials is regulated by the federal Department of Transportation and Caltrans. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release of hazardous materials. In addition, the federal Clean Water Act prohibits discharges of stormwater from construction projects unless the discharge is in compliance with an NPDES permit (discussed in Section 3.11, *Hydrology and Water Quality*). The State Water Board and the Regional Water Quality Control Boards are the NPDES permitting authorities in California. The State Water Board has adopted a Statewide General Permit for Stormwater Discharges Associated with Construction Activity (Construction General Permit, Order 2009-0009-DWQ) that applies to construction sites involving one or more acres of soil disturbance. The General Permit requires, among other actions, implementation of mandatory BMPs, including implementation of pollution/sediment/spill control plans, training, sampling, and monitoring for non-visible pollutants.

Compliance with existing regulatory requirements would minimize risk of accidental release of hazardous materials to a **less-than-significant level**.

**Impact 3.10-2: Implementation of the proposed Guidelines could 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.**

As discussed in Impact 3.10-1, actions taken by Contractors in response to the proposed Guidelines could require the use, transport, storage, and disposal of small amounts of hazardous materials during construction activities. The use of such materials would be subject to BMPs and



would not result in reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Regarding potential releases of hazardous materials into the environment, Valley fever fungi are known to be present year-round in soils in the study area. Construction activities that may occur with implementation of actions by Contractors in response to the proposed Guidelines could involve soil-disturbing activities that could release fungal spores into the area. Soil disturbance by activities such as excavation and the movement of equipment throughout construction areas could release fungal spores into the air, thus exposing persons, particularly higher risk populations, to these pathogenic fungi. However, because potential water treatment facilities would be small (size of a small shed), ground disturbance associated with construction activities would be minor and would generate less dust than the intensive, agricultural operations that routinely occur throughout the region. As discussed under Impact 3.4-1 in Section 3.4, Air Quality, actions implemented by Contractors in response to the proposed Guidelines would be required to be constructed and operated in compliance with applicable rules and regulations consistent with SJVAPCD and State regulations that address fugitive dust.

Operational and maintenance activities would be similar to existing conditions and would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Therefore, this impact would be **less than significant**.

**Impact 3.10-3: Implementation of the proposed Guidelines could 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, could create a significant hazard to the public or the environment.**

The provisions in Government Code Section 65962.5, commonly referred to as the Cortese List, require DTSC to compile and maintain a list of hazardous waste and substances sites, including State Water Board LUST sites, active cease-and-desist orders and cleanup and abatement orders, and certain solid waste disposal sites and hazardous waste facilities. As discussed in subsection 3.10.2, *Environmental Setting*, there are five hazardous materials sites within 0.5 miles of the Friant-Kern Canal. Other sites might be located in other parts of the study area, including within the Contractor boundaries. If actions implemented by Contractors in response to the proposed Guidelines are located on or near hazardous materials sites that have been included on the Cortese List, then the risk of creating a significant hazard to the public or environment would increase, as contaminated soil and/or groundwater could be exposed during ground-disturbing activities.<sup>1</sup>

The previously discussed laws governing the use, transportation, storage, and disposal of hazardous materials would apply to actions proposed on or near Cortese List sites. In addition,

---

<sup>1</sup> California Public Resources Code Section 21065 defines a project as an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment; therefore, this discussion is referring to the potential for Contractor actions in response to the proposed Guidelines to involve construction activities that could exacerbate existing contaminated soil and/or groundwater.

sites listed on the Cortese List are under the jurisdiction of a regulatory agency (e.g., Central Valley Regional Water Board, Fresno/Tulare/Kern County, or a local agency). As such, the overseeing regulatory agency requires the owners/operators of listed sites to bring their sites into compliance. This includes requiring sites with spills or releases to soil and/or groundwater to investigate and clean up their sites to levels that no longer pose risks to people or the environment. The listings on the Cortese List are public records. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. This evaluation will include review of the current status of nearby sites on the Cortese List and the proposed actions would comply with the overseeing regulatory agency requirements, if any.

Compliance with applicable existing federal, state, and local laws and regulations would ensure that any impacts would be **less than significant**.

**Impact 3.10-4: Implementation of the proposed Guidelines could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.**

As noted in Section 3.14, *Transportation*, actions implemented by Contractors in response to the proposed Guidelines may include construction activities that could temporarily increase vehicular traffic in the study area, but this increase would be limited given the small scale of the water treatment facilities or water quality monitoring stations that may be constructed. Although this traffic could affect emergency access, the construction-related increase in vehicle traffic would be minor and would not substantially affect response times. It is not anticipated that construction work would occur within public roadways, meaning that emergency vehicle access would be preserved. Operational and maintenance activities would be similar to existing conditions and would not result in inadequate emergency access. Therefore, implementation of the proposed Guidelines would not impair or physically interfere with an adopted emergency response or evacuation plan and this impact would be **less than significant**.

**Impact 3.10-5: Implementation of the proposed Guidelines could expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires.**

The study area generally has a low potential for wildfire and the topography in the area is generally level. There are locations where the study area traverses through moderate and high Fire Hazard Severity Zones in State Responsibility Areas, although there are no areas in or near very high Fire Hazard Severity Zones (CAL FIRE 2023). Further, actions that would be implemented by Contractors in response to the proposed Guidelines would not involve the construction or habitation of occupied structures that could be exposed to wildfire risks.

Construction activities, including the use of construction equipment and the possible temporary on-site storage of fuels and/or other flammable construction chemicals, could pose an increased fire risk resulting in injury to workers or the public. However, construction activities would be of limited size and duration. Additionally, construction activities would be required to comply with State and local regulations for fire protection, such as the California Fire Code, and chemical

manufacturer requirements, which would minimize the potential for fire hazards. Therefore, impacts associated with risk of exposure of people would be minimal and this impact would be **less than significant**.

---

This page intentionally left blank

## 3.11 Hydrology and Water Quality

### 3.11.1 Introduction

This section addresses hydrology and water quality in the study area and analyzes the potential effects of implementing the proposed Guidelines.

The environmental setting and evaluation of impacts on hydrology and water quality is based on the review of relevant plans (e.g., water quality control plans [basin plans] and sustainable groundwater management plans). This section presents a qualitative assessment of potential impacts associated with implementation of the proposed Guidelines and potential Contractor actions that might be taken to comply with the water quality thresholds established in the proposed Guidelines.

No comments specifically addressing hydrology and water quality were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.11.2 Environmental Setting

#### **Surface Water**

The study area is in the Tulare Lake Hydrologic Region, an essentially closed basin situated in the topographic horseshoe formed by the Diablo and Temblor ranges to the west, by the San Emigdio and Tehachapi mountains to the south, and by the Sierra Nevada to the east and southeast (Central Valley Regional Water Board 2018). Surface water from the Tulare Lake Hydrologic Region drains north into the San Joaquin River only during years of extreme rainfall. **Figure 3.11-1** presents the surface water features in the study area.

The Kings, Kaweah, Tule, and Kern rivers, which drain the west face of the Sierra Nevada, are of excellent quality and provide the bulk of the surface water supply native to the Tulare Lake Basin (Basin). Imported surface supplies enter the Basin through the San Luis Canal/California Aqueduct System, Friant-Kern Canal, and Delta-Mendota Canal. Imported surface water supplies contribute to salt accumulation in the Basin, making it important to monitor and manage water quality, particularly salinity, to sustain beneficial use of water supplies (Central Valley Regional Water Board 2018).

#### ***Surface Water Conveyance Facilities***

##### **Friant-Kern Canal**

The Friant-Kern Canal, the main feature in the study area, is a 152-mile canal that begins at Millerton Lake near Fresno and terminates at the Kern River near Bakersfield. Part of the CVP, the canal is owned by Reclamation and operated and maintained by Friant. The Friant-Kern Canal has a maximum design conveyance capacity of 5,300 cubic feet per second (cfs), gradually decreasing to 2,500 cfs to accommodate conveyance for downstream water demand. The actual capacity is likely less for several reasons: inaccurate design roughness assumptions, increased canal surface roughness with age, vegetation present in canal sections, changes in water delivery

patterns, localized seepage through embankments, and regional land subsidence. Areas of the Friant-Kern Canal and adjacent land have subsided (Friant Water Authority 2023a). Generally, water in the Friant-Kern Canal is supplied from Millerton Lake, which has a storage volume of 524 thousand acre-feet (taf), a surface area of 4,905 acres, and an elevation of 580.6 feet above mean sea level at the top of active storage (State Water Board 2022).

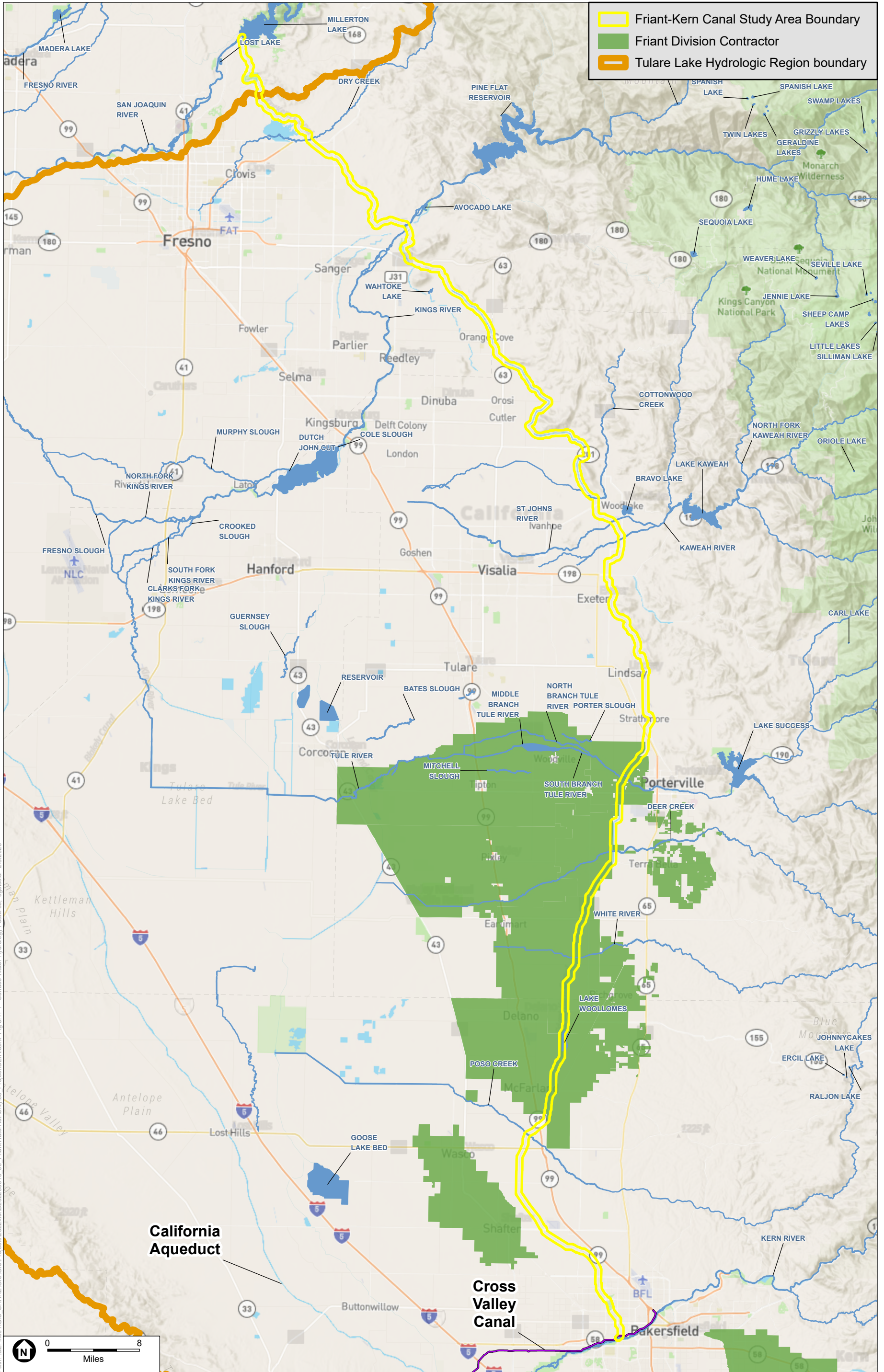
As water flows south through the Friant-Kern Canal, numerous Friant Contractors take water through turnouts located on either side of the canal. Some Friant Contractors or other entities occasionally pump groundwater or floodwater into the system. Check structures along the canal are essential for its operation. These structures house radial gates that maintain the water level in the upstream canal segments to provide enough head to maintain submergence of turnouts. Real-time measurements of electrical conductivity are also measured at these check structures (see Table 2 in Appendix B, *Proposed Guidelines*, for a list of the check structures).

Along the downstream end of the Friant-Kern Canal, several check structures allow water to be pumped north. The upstream flow is accomplished by pumps at the checks that lift water over the check to the upstream section of the canal. The upstream flow in the Friant-Kern Canal has been used historically to move Cross Valley Canal Contract water from the Cross Valley Canal to Friant Contractors or Cross Valley Canal Contractors (Lower Tule River Irrigation District 2016). Reverse-flow pumps are also used to convey flows from groundwater pump-in projects.

### **Cross Valley Canal**

The Cross Valley Canal is a 17-mile canal, constructed in the mid-1970s, that is privately owned and operated by Kern County Water Agency. The Cross Valley Canal allows water to be conveyed between the California Aqueduct (south of the town of Tumpán) and the Friant-Kern Canal (near the southern end), for delivery to seven Cross Valley Canal Contractors located on the east side of the southern San Joaquin Valley (Reclamation 1994; Friant Water Authority 2023b). The Cross Valley Canal also conveys supply from Kern Fan groundwater pump-in programs for delivery to Friant Contractors. Water in the canal can flow either east or west. In 2008, an intertie was constructed to connect the Cross Valley Canal and the Friant-Kern Canal. The pump station at the Intertie can convey up to 500 cfs of flow between the two canals, in either direction (Reclamation 2007; Lower Tule River Irrigation District 2016).

Cross Valley Canal Contract supplies originate in the Delta and then flow through State Water Project (SWP) facilities (i.e., the California Aqueduct) to the headworks of the Cross Valley Canal. Utilizing the Intertie and reverse-flow pumps in the Friant-Kern Canal, water may be directly delivered to Kern-Tulare WD; more commonly, however, water is delivered to Cross Valley Canal Contractors via water exchanges with Arvin-Edison WSD. The types of exchanges are varied and may involve one or more agencies. For example, Cross Valley Canal Contract exchange water is delivered to Arvin-Edison WSD through the Cross Valley Canal and an amount of Arvin-Edison WSD's Friant Division supply is delivered to Cross Valley Canal Contractors from Millerton Lake, as is presently the arrangement for the County of Fresno (Lower Tule River Irrigation District 2016).



SOURCE: Atlas WMA (i03 WaterDistricts); ESA, 2023

Friant Water Authority - Friant-Kern Canal

**Figure 3.11-1**  
Surface Water Hydrology Features



This page intentionally left blank



The Cross Valley Canal is also used to convey groundwater pump-in supplies from Rosedale–Rio Bravo WSD and West Kern WSD to the Intertie for delivery to Friant Contractors. These districts have programs and agreements with Friant Contractors to maximize beneficial use of surface water supplies and bank water when supplies exceed demand, and to extract and deliver these supplies during drier year types when there is a demand deficit.

### **Surface Water Use**

The Friant Division of the CVP was designed and is operated to support conjunctive water management in an area subject to groundwater overdraft. Friant Division facilities include Friant Dam and Millerton Lake, and the Madera and Friant-Kern canals, which convey water north and south, respectively, to agricultural and urban water contractors (Reclamation and DWR 2005). Historically, the Friant Division has delivered an average of about 1.3 maf of water annually (Reclamation 1994). The Cross Valley Canal improves the management of water supplies in the central and lower San Joaquin Valley by conveying water between the California Aqueduct and the Friant-Kern Canal (Lower Tule River Irrigation District 2016).

**Table 3.11-1** lists Friant Contractors, including Cross Valley Canal Contractors. Reclamation employs a two-class system of water allocation to support conjunctive water management (Reclamation and DWR 2005):

- *Class 1 supplies*, which are based on a firm water supply, are generally assigned to municipal and industrial (M&I) and agricultural water users that have limited access to quality groundwater. During operations, the first 800 taf of annual water supply are allocated as Class 1 water.
- *Class 2 water* is a supplemental supply and is delivered directly for agricultural use or for groundwater recharge, generally in areas that have historically used groundwater and experience groundwater overdraft. Total Class 2 contracts equal approximately 1.4 maf.

In addition to Class 1 and Class 2 water deliveries, water can be provided in accordance with Section 215 of the Reclamation Reform Act of 1982, which authorizes delivery of “unstorage” water that would otherwise be released in accordance with flood management criteria or unmanaged flood flows (Reclamation and DWR 2005).

In addition to the Class 1, Class 2, and conjunctive management aspects of Friant Division operations, a program of transfers between districts takes place annually. This program provides opportunities to improve water management within the Friant Division service area. In wet years, water surplus to one district’s demand can be transferred to other districts with the ability to recharge or bank groundwater. Conversely, in dry years, water can be transferred or returned to districts with little or no groundwater supply, thereby providing an ongoing groundwater banking program within the Friant Division (Reclamation and DWR 2005).

**TABLE 3.11-1  
 FRIANT DIVISION LONG-TERM CONTRACTORS**

Contract Type/Contractor	Maximum Contract Quantity (acre-feet)		
	Class 1	Class 2	Cross-Valley
<b>FRIANT DIVISION CONTRACT</b>			
<b>Madera Canal Agricultural</b>			
Chowchilla WD	55,000	160,000	–
Madera ID	85,000	186,000	–
<b>San Joaquin River Agricultural</b>			
Gravelly Ford WD	–	14,000	–
<b>Friant-Kern Canal Agricultural</b>			
Arvin-Edison WSD	40,000	311,675	–
Delano-Earlimart ID	108,800	74,500	–
Exeter ID	11,100	19,000	–
Fresno ID	–	75,000	–
Hills Valley ID	1,250	–	–
Garfield WD	3,500	–	–
International WD	1,200	–	–
Ivanhoe ID	6,500	500	–
Kaweah Delta WCD	1,200	7,400	–
Kern-Tulare WD	–	5,000	–
Lewis Creek WD	1,200	–	–
Lindmore ID	33,000	22,000	–
Lindsay-Strathmore ID	27,500	–	–
Lower Tule River ID	61,200	238,000	–
Orange Cove ID	39,200	–	–
Porterville ID	15,000	30,000	–
Saucelito ID	21,500	32,800	–
Shafter-Wasco ID	50,000	39,600	–
Southern San Joaquin MUD	97,000	45,000	–
Stone Corral ID	10,000	–	–
Tea Pot Dome WD	7,200	–	–
Terra Bella ID	29,000	–	–
Tri-Valley WD	400	–	–
Tulare ID	30,000	141,000	–
<b>Total Friant Division Agricultural</b>	<b>735,750</b>	<b>1,401,475</b>	–

**TABLE 3.11-1 (CONTINUED)  
 FRIANT DIVISION LONG-TERM CONTRACTORS**

Contract Type/Contractor	Maximum Contract Quantity (acre-feet)		
	Class 1	Class 2	Cross-Valley
<b>FRIANT DIVISION CONTRACT (cont.)</b>			
<b>Friant Division M&amp;I</b>			
City of Fresno	60,000	–	–
City of Orange Cove	1,400	–	–
City of Lindsay	2,500	–	–
Fresno County Waterworks District No. 18	150	–	–
Madera County	200	–	–
<b>Total Friant Division M&amp;I</b>	<b>64,250</b>	–	–
<b>Total Friant Division Contracts (Agricultural and M&amp;I)</b>	<b>800,000</b>	<b>1,401,475</b>	–
<b>CROSS VALLEY CANAL EXCHANGE CONTRACT</b>			
Fresno County	–	–	3,000
Tulare County	–	–	5,308
Hills Valley ID	–	–	3,346
Kern-Tulare WD	–	–	40,000
Lower Tule River ID	–	–	31,102
Pixley ID	–	–	31,102
Rag Gulch WD	–	–	13,300
Tri-Valley WD	–	–	1,142
<b>Total Cross-Valley Canal Exchange</b>	–	–	<b>128,300</b>
NOTES: ID = irrigation district; M&I = municipal and industrial; MUD = municipal utility district; WCD = water conservation district; WD = water district; WSD = water storage district SOURCE: Reclamation and DWR 2005, Table 2-1.			

**Surface Water Quality**

As mentioned above, Friant Contractors receive water from Millerton Lake (formed by Friant Dam) through the Friant-Kern Canal. Water quality within Millerton Lake is generally high quality, with low turbidity, high dissolved oxygen, and low concentrations of chlorophyll-a, arsenic, and other constituents. However, Millerton Lake is listed as impaired in CWA Section 303(d) for mercury (State Water Board 2022). Reverse-flow operations in the Friant-Kern Canal, which move water from the Cross Valley Canal to Friant Contractors or Cross Valley Canal Contractors, introduce water containing a higher total dissolved solids concentration than Millerton water into the Friant-Kern Canal. In addition to gravity flow and reverse-flow operations on the Friant-Kern Canal, water quality is influenced by the introduction of local sources of water including surface water diversions and groundwater pump-ins. Surface water diversions from local tributaries are assumed to have water quality similar or equivalent to Millerton water. Pumped groundwater quality varies by location and tends to have higher concentrations of salinity than the Friant-Kern Canal (Reclamation 2021).

**Table 3.11-2** presents key water quality parameters for the Friant-Kern Canal, California Aqueduct (before the diversion into the Cross Valley Canal), and the Cross Valley Canal. As shown in Table 3.11-2, water quality in the Cross Valley Canal is of higher quality than the water in the California Aqueduct. California Aqueduct water quality, measured at Check 21, is considered representative of Delta water quality, while water quality in the Cross Valley Canal is influenced not only by California Aqueduct water but also by Kern River diversions and other pump-in programs where flow is being introduced and conveyed.

## **Groundwater**

### ***San Joaquin Valley Groundwater Basin***

The study area is located within a portion of the San Joaquin Valley Groundwater Basin that lies within the Tulare Lake Hydrologic Region (**Figure 3.11-2**). The San Joaquin Valley Groundwater Basin extends over the southern two-thirds of the Central Valley regional aquifer system and has an area of approximately 13,500 square miles, extending from just north of Stockton in San Joaquin County to Kern County in the south. The aquifer system in most of the San Joaquin Valley Groundwater Basin mostly comprises unconsolidated alluvial and lacustrine sediments, derived from parent materials of the Coast Ranges and the Sierra Nevada. A significant hydrogeologic feature in the basin is the Corcoran Clay. This clay layer divides the aquifer system into two distinct zones, an upper unconfined to semi-confined aquifer and a lower confined aquifer (DWR 2020).

There are five groundwater subbasins within the study area: Madera (5-022.06), Kings (5-022.08), Kaweah (5-022.11), Tule (5-022.13), and Kern County (5-022.14) (Figure 3.11-2). Groundwater inflow includes water from precipitation, recharge from stream and river channels, managed recharge in basins, canal losses, deep percolation of applied water, release of water from compression of aquitards, and subsurface inflows. Groundwater outflows occur from groundwater pumping, evapotranspiration, and subsurface outflow. As part of the Sustainable Groundwater Management Act (SGMA) basin prioritization, DWR has identified each of these subbasins as being in critically overdrafted condition. The respective subbasins, including the groundwater sustainability agencies (GSAs) that prepared the groundwater sustainability plans (GSPs) under SGMA, are briefly described below. Refer to subsection 3.11.3, *Regulatory Setting*, for a description of SGMA.

#### **Madera Groundwater Subbasin**

The Madera Groundwater Subbasin is approximately 614 square miles and consists of land overlying the alluvium in Madera County. The subbasin is bounded on the south by the San Joaquin River, on the west by the eastern boundary of the Columbia Canal Service area, on the north by the south boundary of the Chowchilla Subbasin, and on the east by the crystalline bedrock on the Sierra Nevada foothills. Major streams in the area include the San Joaquin and Fresno rivers. Average annual precipitation is 11 inches throughout the majority of the subbasin (DWR 2004a). The Madera Subbasin GSP was jointly prepared by the four GSAs in the area: City of Madera GSA, Madera County GSA, Madera Irrigation District GSA, and Madera Water District GSA (Madera Subbasin Coordination Committee 2020).

**TABLE 3.11-2  
KEY WATER QUALITY PARAMETERS**

Constituent	Friant-Kern Canal <sup>1,2</sup>		California Aqueduct (before diversion to Cross Valley Canal) <sup>3</sup>		Cross Valley Canal <sup>4</sup>	
	Range	Average	Range	Average	Range	Average
Bicarbonate (mg/L)	11.0–48.0	22.7	–	–	42.0–120.0	80.1
Boron (mg/L)	0.0–1.0	0.0	0.1–0.6	0.2	0.0–0.2	0.1
Calcium (mg/L)	1.6–16.0	4.0	7.0–70.0	20.2	11.0–42.0	21.9
Chloride (mg/L)	0.5–8.7	1.9	10.0–157.0	73.1	14.0–150.0	43.2
EC (µmhos/cm)	20.1–175.0	43.3	115.0–883.0	475.4	198.0–713.0	334.5
Magnesium (mg/L)	0.3–7.3	0.8	3.0–25.0	12.8	0.5–19.0	5.5
Nitrate (mg/L)	0.0–4.4	0.4	0.2–7.2	2.5	0.1–17.0	4.2
pH	6.6–9.5	7.3	5.5–9.0	7.7	7.5–9.3	8.2
Sodium (mg/L)	1.4–18.0	3.5	8.0–112.0	52.7	0.4–100.0	36.4
TDS (mg/L)	11.0–94.0	24.4	67.0–593.0	268.1	110.0–730.0	183.3

NOTES:

µmhos/cm = micromhos per centimeter; AEWSD = Arvin-Edison Water Storage District; EC = electrical conductivity; mg/L = milligrams per liter; TDS = total dissolved solids

1 Sample taken at terminus of Friant-Kern Canal; data from 2011–2020 provided by AEWSD; periods of indicated mixing with Cross Valley Canal excluded; based on 45 counts of data.  
2 Water quality data for the Friant-Kern Canal also represents water quality data for the Tule River, which represents a local supply for both Lower Tule River Irrigation District and Porterville Irrigation District.

3 Water quality data from Check 21 of the California Aqueduct before diversion to Cross Valley Canal, 1968–2020.

4 Water quality data from AEWSD Cross Valley Canal, Pumping Plant 6 or 6B Forebay; data from 2011–2020; periods of indicated mixing with Friant-Kern Canal or Kern River excluded.

SOURCE: Friant Water Authority, 2023.

### **Kings Groundwater Subbasin**

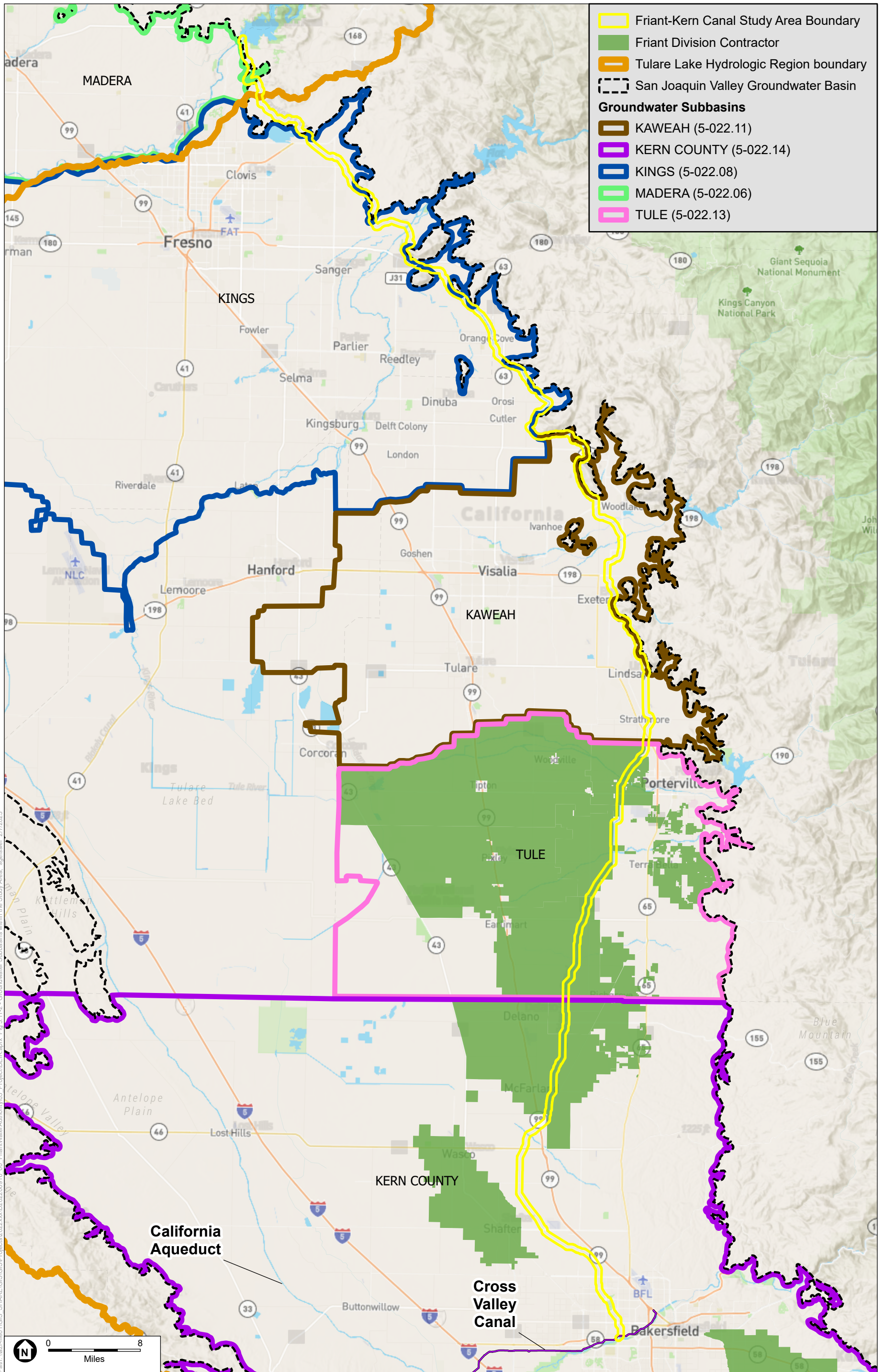
The Kings Groundwater Subbasin is approximately 1,530 square miles and is bounded on the north by the San Joaquin River. The northwest corner of the subbasin is formed by the intersection of the east line of the Farmers WD within the San Joaquin River. The west boundary of the Kings Subbasin is the eastern boundary of the Delta-Mendota and Westside subbasins. The southern boundary runs easterly along the northern boundary of Empire West Side ID, the southern fork of the Kings River, the southern boundary of Laguna ID, the northern boundary of Kings County WD, the southern boundaries of Consolidated and Alta IDs, and the western boundary of Stone Corral ID. The eastern boundary of the subbasin is the alluvium-granitic rock interface of the Sierra Nevada foothills. The San Joaquin and Kings rivers are the two principal rivers within or bordering the subbasin. Fresno Slough and the James Bypass are along the western edge of the subbasin and connect the Kings River with the San Joaquin River. Average annual precipitation values range from 7 to 10 inches, increasing eastward (DWR 2006a). The Kings Subbasin consists of seven GSAs that have coordinated the development and implementation of GSPs for their respective areas (North Kings Groundwater Sustainability Agency 2021).

### **Kaweah Groundwater Subbasin**

The Kaweah Groundwater Subbasin is approximately 696 square miles and lies between the Kings Groundwater Subbasin on the north, the Tule Groundwater Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Kings River Conservation District on the west. The subbasin generally comprises lands in the Kaweah Delta Water Conservation District. Major rivers and streams in the subbasin include the Kaweah and St. Johns rivers. The Kaweah River is the primary source of recharge to the area. Average annual precipitation is 7–13 inches, increasing eastward (DWR 2004b). A GSP was prepared under the Kaweah Subbasin Coordination Agreement with Mid-Kaweah GSA and East Kaweah GSA to sustainably manage groundwater resources in the subbasin (Greater Kaweah Groundwater Sustainability Agency 2022).

### **Tule Groundwater Subbasin**

The Tule Groundwater Subbasin is about 733 square miles and is generally bounded on the west by the Tulare County line, excluding those portions of the Tulare Lake Subbasin WSD and the area west of the Homeland Canal. This boundary is shared with the Tulare Lake Groundwater Subbasin. The northern boundary of the subbasin follows the northern boundaries of Lower Tule ID and Porterville ID and is shared with the Kaweah Groundwater Subbasin. The eastern boundary is at the edge of the alluvium and crystalline bedrock of the Sierra Nevada foothills, and the southern boundary is the Tulare-Kern County line and is shared with the Kern County Groundwater Basin. The west-flowing Tule River, Deer Creek, and the White River are the major drainages in the subbasin that empty into the Tulare lakebed. Annual average precipitation is 7–11 inches, increasing eastward (DWR 2004c). The Tule Subbasin has six GSAs that have been working together to coordinate subbasin-wide activities, including preparation of the Eastern Tule GSP (Eastern Tule Groundwater Sustainability Agency 2018).



SOURCE: Atlas WMA (103 WaterDistricts); ESA, 2023

Friant Water Authority - Friant-Kern Canal

**Figure 3.11-2**  
Groundwater Subbasins  
within the Study Area

This page intentionally left blank



### **Kern County Groundwater Subbasin**

The Kern County Groundwater Subbasin is approximately 3,040 square miles and is bounded on the north by the Kern County line and the Tule Groundwater subbasin, on the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi Mountains, and on the southwest and west by the marine sediments of the San Emigdio Mountains and Coast Ranges. Principal rivers and streams include the Kern River and Poso Creek. Active faults include the Edison, Pond-Poso, and White Wolf faults. Average precipitation values range from 5 inches at the subbasin interior to 9–13 inches at the subbasin margins to the east, south, and west (DWR 2006b). Six GSAs have prepared respective GSPs for areas within the Kern County Subbasin, including the Kern Groundwater Authority GSA (Kern Groundwater Authority 2022).

### **Groundwater Use**

Groundwater supports beneficial uses such as agricultural irrigation, municipal and domestic water supply, industrial service supply, industrial process supply, wildlife habitat, water contact recreation, and non-contact water recreation. Because of the closed nature of the Tulare Lake Hydrologic Region, there is little subsurface outflow (Central Valley Regional Water Board 2018). From the 1920s until the mid-1960s, the use of groundwater for irrigation of crops in the San Joaquin Valley increased rapidly, causing land subsidence throughout the Tulare Lake Hydrologic Region (Ireland et al. 1984). DWR has prioritized the southern portion of the San Joaquin Valley as having a high potential for subsidence (DWR 2017).

DWR's most recent groundwater update reports that the Tulare Lake Hydrologic Region uses more than twice the volume of groundwater than any other region in the state, averaging about 8.1 maf annually. The region is divided into 23 groundwater basins, seven of which have been designated as critically overdrafted (DWR 2020). Over the last 50 years, each successive drought period has resulted in an increase in groundwater pumping that has caused the water table to drop significantly. As described above, the five groundwater subbasins that coincide with the study area are critically overdrafted, meaning that a continuation of present water management practices would likely result in significant adverse overdraft-related environmental, social, or economic impacts (DWR 2021).

### **Groundwater Quality**

Groundwater quality conditions vary across the study area and by depth. Salinity, measured as total dissolved solids (TDS), along with boron, chloride, and sodium are the primary constituents of concern for agricultural beneficial uses, and nitrate and organic compounds are primary constituents of concern for municipal beneficial uses. Salinity, if accumulated at critical concentrations and not managed properly at the rootzone depth, can cause impacts on agricultural production. Because of the closed nature of these subbasins, any incremental addition of constituent mass to the groundwater aquifer contributes to long-term salt and nitrate loading in the subbasins (DWR 2020).

### **Flood Hazard**

Flood management features exist along the Friant-Kern Canal to convey floodwater, prevent overflow, and mitigate flood risk (Friant 2022a). The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) were reviewed for the study area (FEMA 2023) to identify flood hazard zones in the area of potential future actions. The majority of the western

side of the Friant-Kern Canal is designated on FEMA’s current FIRM as within Zone X, an area determined to be outside the 0.2-percent-annual-chance floodplain. The segment of the Friant-Kern Canal that crosses under Orange Belt Drive is designated as within Zone AO, an area subject to a 1-percent-annual-chance flood with flood depths of 1–3 feet, usually sheet flow on sloping terrain (average depths determined). The segment of the Friant-Kern Canal that crosses underneath Porterville Creek is designated as within Zone 100-IC, an area where the 1-percent-annual-chance flooding is contained within the channel banks and the channel is too narrow to show to scale. The segment of the Friant-Kern Canal that crosses underneath the Tule River is designated as within Zone A, an area subject to the 1-percent-annual-chance flood (no base flood elevations determined) and within Zone AE, an area subject to the 1-percent-annual-chance flood (base flood elevations determined). The southernmost portion of the existing Friant-Kern Canal from traverses an area that is designated as within Zone A (Friant 2019; FEMA 2023).

### 3.11.3 Regulatory Setting

Federal and state plans, policies, regulations, and laws and regional or local plans, policies, regulations, and ordinances pertaining to hydrology and water quality are discussed in this section.

#### **Federal**

##### ***Federal Emergency Management Agency–Related Laws and Regulations***

FEMA establishes and maintains minimum federal standards for floodplain management in the United States and its territories. The agency has a major role in managing and regulating floodplains. FEMA establishes minimum requirements for local communities’ management of “floodplain areas,” which are defined as lowland and relatively flat areas adjoining inland and coastal waters that are subject to flooding. FEMA also helps develop the FIRMs, which delineate the Special Flood Hazard Areas and the risk premium zones applicable to the community for flood insurance purposes. A “Special Flood Hazard Area” is defined as the area that will be inundated by the flood event having a 1 percent chance of being equaled or exceeded in any given year. The 1-percent-annual-chance flood is also referred to as the “base flood” or the “100-year flood” (FEMA 2020).

##### ***Clean Water Act***

The CWA is the primary federal law that protects the quality of the nation’s surface waters, including lakes, rivers, and wetlands. It consists of the Federal Water Pollution Control Act of 1972 and subsequent amendments (USEPA 2023a). The following are the key sections of the CWA pertaining to water quality regulation, as discussed in more detail below:

- Section 303—listing of impaired water bodies.
- Section 401—water quality certification.
- Section 402—NPDES permits for stormwater discharge, including the State Water Board’s municipal stormwater permitting system and General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit).
- Section 404—discharge of dredged and fill materials into waters of the United States. See Section 3.5, *Biological Resources*, for additional information.

### **Section 303**

CWA Section 303(d) requires states to develop lists of water bodies that do not attain water quality objectives after point-source dischargers (municipalities and industries) have implemented the required levels of treatment. Section 303(d) requires that the state develop a “total maximum daily load” (TMDL) for each listed pollutant. The TMDL is the amount of the pollutant that the water body can receive and still comply with water quality objectives, and a plan to reduce loading of a specific pollutant from various sources to achieve compliance. USEPA must either approve a TMDL prepared by the state or disapprove the state’s TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. It is anticipated that the problems that led a given pollutant to be placed on the Section 303(d) list will have been remediated after implementation of the TMDL (USEPA 2023b).

### **Section 401**

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification for the discharge. The certification must be obtained from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require approval by a federal agency, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

To obtain water quality certification, potential impacts must be evaluated in light of water quality standards and CWA Section 404 criteria governing the discharge of dredged and fill materials into waters of the United States. The federal government delegates authority for water pollution control under CWA Section 401 to the states (and in California, ultimately to the regional water boards).

### **Section 402**

CWA Section 402 establishes the NPDES permit program to regulate discharges of pollutants into waters of the United States. An NPDES permit sets specific discharge limits for point sources that discharge pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. The NPDES program controls two types of nonpoint-source discharges: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint-source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. Regional water boards in California are responsible for implementing the NPDES permit system (see the discussion of state regulations below).

## **State**

### ***Porter-Cologne Water Quality Control Act***

The Porter-Cologne Act established the State Water Board and divided the state into nine regions, each overseen by a regional water board. The State Water Board holds authority over statewide water resources allocation and water quality protection for both surface waters and groundwaters. The State Water Board allocates water rights, adjudicates water right disputes, develops statewide

water protection plans, establishes water quality standards, and guides the nine regional water boards. The regional water boards have primary responsibility for coordinating and controlling water quality within their respective jurisdictional boundaries. Under the Porter-Cologne Act, “water quality objectives” are limits or levels of water quality constituents or characteristics established for the protection of beneficial uses.

The Porter-Cologne Act requires the regional water boards to establish water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives, and an antidegradation policy also constitute water quality standards under the federal CWA. The water quality objectives provide requirements for water quality control.

For Contractor actions implemented under the proposed Guidelines, should USACE determine that only nonfederal waters are present in the area of an action, no federal CWA permit would be required. However, regardless of federal jurisdiction, a permit, or waste discharge requirements, would be required for impacts on any waters of the state. The waste discharge requirements would be issued by the Central Valley Regional Water Board. Under the Porter-Cologne Act, discharges to all waters of the state, including all wetlands and other waters of the state (including but not limited to isolated wetlands), are subject to state regulation.

A discharger whose action would disturb one or more acres of soil, or would disturb less than one acre but would be part of a larger common plan of development that in total would disturb one or more acres, must obtain coverage under the Construction General Permit (Order No. 2009-009-DWQ). Construction activity subject to this permit includes clearing, grading, grubbing, and disturbances to the ground such as stockpiling or excavation; however, it does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a SWPPP.

Limited Threat General Order No. R5-2022-0006 applies to discharges of limited-threat wastewater to waters of the United States for clean or relatively pollutant-free wastewaters that pose little or no threat to water quality, such as well development water, construction dewatering, pipeline/well testing, and water supply systems.

### ***Water Quality Control Plans***

Under the Porter-Cologne Act, waters of the state fall under jurisdiction of the State Water Board and the nine regional water boards. “Waters of the state” means any surface water or groundwater, including saline waters, within the boundaries of the state (Water Code Section 13050[e]). The State Water Board and regional water boards have been delegated federal authority to implement the requirements of the federal CWA in California—including issuing NPDES permits—under the Porter-Cologne Act.

However, the requirements of the Porter-Cologne Act are even broader than those of the CWA. The Porter-Cologne Act requires the regional water boards to prepare and periodically update water quality control plans, also known as “basin plans.” Each basin plan establishes water quality objectives sufficient to ensure that the designated beneficial uses of surface water and groundwater are reasonably protected and identifies actions to control nonpoint and point sources of pollution.

Any person who discharges or proposes to discharge any waste that could affect the quality of the waters of the state must file a “report of waste discharge” with the appropriate regional water board. “Waste” includes any and all waste substances associated with human habitation, of human or animal origin, or from any producing, manufacturing, or processing operation (Water Code Section 13050[d]). Upon receipt of a report of waste discharge, the regional water board may issue “waste discharge requirements,” which are designed to ensure compliance with applicable water quality objectives and other requirements of the basin plan.

A public review process is conducted every three years to identify and prioritize the actions needed to address water quality concerns and maintain the effectiveness of the basin plan. Amendments to basin plans may include site-specific water quality objectives for a single constituent, basin-wide control programs for a suite of potential pollutants, and/or policy recommendations and strategies for addressing emerging contaminants and/or climate change.

**Water Quality Control Plan for the Tule Lake Basin**

The applicable basin plan for the study area is the Tule Lake Basin Plan (Central Valley Regional Water Board 2018). “Water quality concerns” are defined in this basin plan as existing or potential water quality problems (i.e., impairments of beneficial uses or degradations of water quality) associated with typical Basin discharge activities that include agricultural irrigation and associated support activities, municipal and industrial point-source discharges, and runoff from residential and industrial areas. Water quality objectives established for the Tule Lake Basin Plan to protect the beneficial uses of surface and groundwater are summarized in **Table 3.11-3** and **Table 3.11-4**, respectively.

**TABLE 3.11-3  
 TULARE LAKE BASIN PLAN PARAMETERS AND SURFACE WATER QUALITY OBJECTIVES**

<b>Parameter</b>	<b>Water Quality Objective</b>
Chemical constituents	Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.
Oil and grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
Sediment	The suspended sediment load and suspended sediment discharge rate of waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Settleable material	Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
Suspended material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Turbidity	Where natural turbidity is between 0 and 5 NTU, increases shall not exceed 1 NTU. Where natural turbidity is between 5 and 50 NTU, increases shall not exceed 20 percent. Where natural turbidity is equal to or between 50 and 100 NTU, increases shall not exceed 10 NTU. Where natural turbidity is greater than 100 NTU, increases shall not exceed 10 percent.

NOTES:

NTU = nephelometric turbidity units

Other parameters and objectives are listed in the Tule Lake Basin Plan; those listed in this table are the only ones under consideration for the proposed *Guidelines for Accepting Water into the Friant-Kern Canal*.

SOURCE: Central Valley Regional Water Board 2018

**TABLE 3.11-4  
 TULARE LAKE BASIN PLAN GROUNDWATER QUALITY OBJECTIVES**

<b>Parameter</b>	<b>Water Quality Objective</b>
Bacteria	In groundwater designated for the municipal and domestic supply (MUN) beneficial use, the concentration of total coliform organisms over any 7-day period shall be less than 2.2/100 mL.
Chemical constituents	Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.
Pesticides	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.
Radioactivity	Radionuclides shall not be present in ground waters in concentrations that are deleterious to human, plant, animal, or aquatic life, or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.
Nitrate	Development and implementation of a Nitrate Control Program is proposed for the control and permitting of nitrate discharges to groundwater in the Tulare Lake Basin and applies to all groundwater basins that are designated with the municipal and domestic supply (MUN) beneficial use. For implementation of the Nitrate Control Plan, the Tule Groundwater Subbasin is Priority 1; the Kern County Groundwater Subbasin is Priority 2.
Salinity	<p>Limitations are proposed based on the applicable water quality objective that protects the most sensitive beneficial use and based on the application of the Antidegradation Policy. The Central Valley Regional Water Board may use its discretion to continue to authorize previously allocated use of assimilative capacity in groundwater subject to the following provisions: The Central Valley Regional Water Board will limit new or expanded allocations of salinity related assimilative capacity. If a permittee has previously received an allocation of assimilative capacity, and the allocation was granted with the support of an antidegradation study or analysis, then the Regional Water Board may consider continuing the previously approved allocation of assimilative capacity.</p> <p>When the most salinity sensitive beneficial use is agricultural supply (AGR) or municipal and domestic supply (MUN), the Central Valley Regional Water Board will apply the associated narrative and range in numeric objectives. A conservative, numeric value of 700 <math>\mu\text{S/cm}</math> EC (as a monthly average) for EC is proposed to protect the AGR beneficial use. This value is for use only as indicated here for the Conservative Permitting Approach and shall not be considered a water quality objective. For protection of a MUN beneficial use, the Central Valley Water Board recommends a numerical value of 900 <math>\mu\text{S/cm}</math> EC (as an annual average).</p>
Tastes and Odors	Ground waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.
Toxicity	Ground waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s).

NOTES:

$\mu\text{S/cm}$  = microsiemens per centimeter; Central Valley Regional Water Board = Central Valley Regional Water Quality Control Board; EC = electrical conductivity; mL = milliliters

Other parameters and objectives are listed in the Tulare Lake Basin Plan; those listed in this table are the only ones under consideration for the proposed *Guidelines for Accepting Water into the Friant-Kern Canal*.

SOURCE: Central Valley Regional Water Board 2018

**State Water Resources Control Board Decision 1641**

State Water Board Decision 1641 presents the current water right requirements to implement the Delta’s flow-dependent objectives. In State Water Board Decision 1641, the State Water Board assigned responsibilities to Reclamation and DWR for meeting these requirements. These responsibilities require that the CVP and SWP be operated to protect water quality, and that Reclamation and/or DWR will ensure that the flow-dependent water quality objectives are met in the Delta (State Water Board 2000).

### ***Safe Drinking Water Act***

As mandated by the Safe Drinking Water Act (Public Law 93-523), enacted in 1974, USEPA regulates contaminants of concern to the domestic water supply. “Contaminants of concern” are defined as those that pose a public health threat or alter the aesthetic acceptability of the water. These types of contaminants are regulated by USEPA’s primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs.

USEPA has delegated responsibility for California’s drinking water program to the California Department of Public Health, which is accountable to USEPA for implementing the program and for adopting standards and regulations at least as stringent as those developed by USEPA. Title 22 of the California Code of Regulations (article 16, Section 64449) defines “secondary drinking water standards,” which are established primarily for reasons of consumer acceptance (i.e., taste) rather than for health issues.

### ***Sustainable Groundwater Management Act***

In 2014, Governor Edmund G. Brown Jr. signed the SGMA into law to establish a statewide goal for achieving long-term groundwater sustainability by 2042. The SGMA emphasizes local management and requires local and regional authorities to form GSAs (DWR 2021).

The purpose of the SGMA is to quantify the water stored in groundwater basins to ensure that annual withdrawals are sustainable. The SGMA’s goals are to develop regulations to revise groundwater basin boundaries, adopt regulations for evaluating and implementing GSPs, identify basins subject to critical conditions and overdraft, identify water available for groundwater replenishment, and document best practices for sustainable groundwater management.

The State Water Board and DWR oversee implementation of the SGMA. DWR acts as a facilitator and evaluator, assisting with groundwater data management, supporting local GSAs with GSP development, and evaluating GSPs once they are developed. The State Water Board is authorized to enforce the SGMA and ensure that basins comply with the law’s requirements (Downing 2018). Multiple GSPs have been developed for the groundwater subbasins in the study area to comply with the SGMA (see subsection 3.11.2).

### ***Central Valley Salinity Alternatives for Long-term Sustainability***

Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) is a collaborative initiative among business, government, and community organizations to address nitrate and salt accumulation affecting water supplies. CV-SALTS investigates salt and nitrate water quality challenges in the Central Valley and develops and recommends policies and actions to improve quality and efficiency for all users. The program includes representatives from growers, dairies, industries, local communities, government agencies, environmental and community organizations, and the Central Valley Regional Water Board. The Nitrate Control Program aims to provide safe drinking water, reduce nitrate impacts on water supplies, and restore groundwater quality, and the Salt Control Program seeks to develop and implement long-term solutions for managing salt in the Central Valley (CV-SALTS 2023).

## Local

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address hydrology and water quality, including those that address protection of surface water and groundwater quality (e.g., use of best management practices and coordination with the Regional Water Board). Applicable general plan goals and policies are presented in **Table 3.11-5**.

**TABLE 3.11-5  
APPLICABLE GENERAL PLAN GOALS AND POLICIES—HYDROLOGY AND WATER QUALITY**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Goal OS-A; Policies OS-A.25, OS-A.26, and OS-A.27
<b>Tulare County</b>	Section 11.2, Policies WR-2.3 and WR-2.4
<b>Kern County</b>	Goal General Provisions 1, Policy Surface Water and Groundwater 34 and 44

SOURCES: Fresno County 2000; Kern County 2009; Tulare County 2012

### 3.11.4 Impacts and Mitigation Measures

#### Methods of Analysis

This impact analysis evaluates the potential for construction and operation of Contractor actions that might be taken to comply with water quality thresholds in response to the proposed Guidelines to affect hydrology and water quality. It also considers potential effects of the required “leave behind” water and water quality threshold management required in the proposed Guidelines.

As described in Section 3.1, *Approach to the Analysis*, because the precise locations and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

#### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to hydrology and water quality is considered significant if the proposed Guidelines would do any of the following:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:



- Result in a substantial erosion or siltation on- or off-site.
- Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- 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.
- Impede or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk releases of pollutants due to project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

## Impacts and Mitigation Measures

Table 3.11-6 summarizes the impact conclusions presented in this section.

**TABLE 3.11-6  
 SUMMARY OF IMPACT CONCLUSIONS—HYDROLOGY AND WATER QUALITY**

Impact Statement	Impact Conclusion
<b>3.11-1:</b> Implementation of the proposed Guidelines could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	LTS
<b>3.11-2:</b> Implementation of the proposed Guidelines could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LTS
<b>3.11-3:</b> Implementation of the proposed Guidelines could alter existing drainage patterns.	LTS
<b>3.11-4:</b> Implementation of the proposed Guidelines in flood hazard, tsunami, or seiche zones could risk releases of pollutants due to project inundation.	LTS
<b>3.11-5:</b> Implementation of the proposed Guidelines could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LTS
NOTES: LTS = Less than Significant	

### **Impact 3.11-1: Implementation of the proposed Guidelines could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors’ boundaries.

Temporary construction activities associated with potential future actions could also include establishment of staging areas, use of access and haul roads, site preparation, construction of

features, site restoration and/or demobilization, and disposal of excess materials. These activities could involve minor excavation, grading, or other ground-disturbing activities that could expose and disturb small areas. The construction period would be of short duration, ranging from as little as a few days to as much as a couple of weeks. Operational and maintenance-related activities would be similar to existing conditions, and thus would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Other actions, including blending water, making changes to the timing or volume of introduced water, or seeking alternative water supplies, would not require construction; thus, they would not result in construction activities that would degrade surface or groundwater quality.

As described in Chapter 2, *Project Description*, the proposed Guidelines include water quality constituent thresholds based on agronomic principles and a ledger mechanism to determine the required “leave behind” water for introducing water of lesser quality into the Friant-Kern Canal. **Table 3.11-7** presents the water quality thresholds described in the proposed Guidelines for seasonal management periods (see Table 3 in Appendix B, *Proposed Guidelines*). Implementation of the proposed Guidelines would provide additional water quality monitoring, reporting, and forecasting requirements, further protecting surface and groundwater quality.

**TABLE 3.11-7  
 FRIANT-KERN CANAL IN-PRISM WATER QUALITY THRESHOLDS**

Management Period	Salinity Threshold Expressed as EC (µS/cm)	Chloride Threshold (mg/L)	Boron Threshold (mg/L)	Turbidity (NTU)	Total Suspended Solids (ppm)	SAR Threshold	Sodium Threshold (mg/L)
Period 1 March 1–June 30	1,000	102	0.4	40	20	3	69
Period 2 July 1–August 31	500	55	0.4	40	20	3	69
Period 3a September 1–February 28	1,000	102	0.4	40	20	3	69
Period 3b September 1–February 28	1,000	123	0.4	40	20	3	69

NOTES:

µS/cm = microsiemens per centimeter (1 µS/cm = 1 µmhos/cm = 1/1,000 dS/m); EC = electrical conductivity of applied water; mg/L = milligrams per liter; NTU = nephelometric turbidity units; ppm = parts per million; SAR = sodium adsorption ratio

See Table 3 of the Proposed Guidelines for additional details relating to the development of these thresholds, and Table 4 for the constituent water quality threshold shortlist.

SOURCE: Appendix B, *Proposed Guidelines*, Table 3.

Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Detailed characteristics of potential actions, including the actions’ locations, footprints, and areas of potential disturbance, would be used to determine the impacts of specific actions, and to determine the applicability of the NPDES permits and identify required temporary and permanent stormwater and erosion control best management practices described in a SWPPP to protect surface and groundwater quality. However, given the types of potential actions anticipated in response to the proposed Guidelines, it is anticipated that surface and groundwater quality

standards would not be violated, and surface and groundwater quality would not be degraded. Additionally, the proposed Guidelines would require that water quality be monitored according to the in-prism water quality thresholds, further ensuring that there would not be a violation of existing water quality standards (i.e., basin plans) that would otherwise substantially degrade surface and groundwater quality. The proposed Guidelines would serve agricultural and domestic interests by protecting water quality in the Friant-Kern Canal for sustained use; therefore, the proposed Guidelines may improve water quality in the study area. The impact would be **less than significant**.

**Impact 3.11-2: Implementation of the proposed Guidelines could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries. New facilities could introduce new impervious surfaces; however, because footprints would be small, there would not be substantial interference with groundwater recharge. Further, any excavation associated with construction of these small facilities would be minor and would not be anticipated to reach groundwater in the shallow aquifer (groundwater is well below the depth of any minor foundation that may be constructed); therefore, dewatering would not be anticipated to be required.

Other actions, including blending water, making changes to the timing or volume of introduced water, or seeking alternative water supplies, would not require construction. Operational and maintenance-related activities associated with potential actions would be similar to existing conditions, and thus would not substantially decrease groundwater supplies or interfere with groundwater recharge.

As described in Chapter 2, *Project Description*, to account for the "leave behind" water<sup>1</sup> that a Contractor may be required to provide, the Contractor may seek alternative water supplies as part of the Contractor's overarching water portfolio management. Additionally, implementation of the proposed Guidelines, and water quality threshold management required for Non-Millerton water introduced into the Friant-Kern Canal, could reduce water supply deliveries via the Cross Valley Canal Intertie (approximately 400 AF total on average), resulting in Contractors needing to seek alternative water supplies as part of Contractors' overarching water portfolio management (Friant 2022b).

Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. If a Contractor chose to utilize groundwater as an alternative supply, and depending on the location of the

---

<sup>1</sup> For example, applying the ledger mechanism described in the proposed Guidelines, introducing 100 AF of water with an electrical conductivity measurement of 400 microSiemens would require 5 percent "leave behind" equivalent to 5 AF.

Contractor, the conditions of the groundwater basin, and the volume of water needed to meet water demand, increased groundwater pumping could decrease groundwater supplies. However, groundwater pumping would need to meet all SGMA requirements as guided by the subbasin's GSP and require avoidance of undesirable results<sup>2</sup> as defined by the applicable GSPs for the subbasin(s) in the study area. Therefore, potential increased groundwater pumping associated with implementation of the proposed Guidelines would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the proposed Guidelines would impede sustainable groundwater management of the basin. Therefore, this impact would be **less than significant**.

**Impact 3.11-3: Implementation of the proposed Guidelines could alter existing drainage patterns.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries. Other actions, including blending water, making changes to the timing or volume of introduced water, or seeking alternative water supplies, would not require construction and would not alter existing drainage patterns.

Construction activities over these small footprints could include establishment and use of staging areas and access and haul roads (paved or unpaved), site preparation activities, and construction site restoration/demobilization. These activities could result in minor excavation, grading, and other ground-disturbing activities that would expose and disturb soils. New facilities could introduce new impervious surface cover that could alter drainage patterns; however, because footprints would be small, any associated increase in runoff or change in drainage patterns would not be anticipated to result in substantial erosion or siltation on- or off-site, increase the rate or amount of surface runoff, create or contribute runoff water, or impede or redirect flood flows. Operational and maintenance-related activities would be similar to existing conditions, and thus would not alter existing drainage patterns.

Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. However, as discussed previously, given the types of potential actions anticipated to be implemented in response to the proposed Guidelines, it is anticipated that the existing drainage pattern would not be altered. Therefore, this impact would be **less than significant**.

**Impact 3.11-4: Implementation of the proposed Guidelines in flood hazard, tsunami, or seiche zones could risk releases of pollutants due to project inundation.**

The study area is not located in a tsunami or seiche zone but is designated on FEMA's current FIRM as being within several flood hazard areas: Zone A, Zone AO, Zone AE, Zone X, and Zone

---

<sup>2</sup> Undesirable results include chronic lowering of groundwater levels, reduction of groundwater storage, degraded water quality, and land subsidence.

IO-IC (FEMA 2023). Construction-related activities for potential Contractor actions could require the use of fuels and lubricants, and construction staging areas could contain small amounts of these types of pollutants. New facilities could introduce new impervious surfaces; however, because footprints would be small, there would not be an additional increase in flooding as a result of implementation of the proposed Guidelines. Operational and maintenance-related activities would be similar to existing conditions and would not include the storage or use of contaminants; therefore, inundation of any constructed facilities associated with potential Contractor actions caused by flooding would not cause a release of pollutants due to project inundation.

Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. However, as discussed previously, given the types of potential actions anticipated to be implemented in response to the proposed Guidelines, it is anticipated that small amounts of fuels and lubricants would be used and would not risk releases of pollutants due to project inundation. Additionally, implementation of a state required SWPPP would further reduce the potential for a release of pollutants. Furthermore, any impervious surface cover would be minimal and would not contribute to increased flooding. Therefore, this impact would be **less than significant**.

**Impact 3.11-5: Implementation of the proposed Guidelines could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.**

As discussed above in Impacts 3.11-1 and 3.11-3, the types of potential actions implemented by Contractors in response to the proposed Guidelines are not anticipated to violate any water quality standards that would otherwise degrade surface and groundwater quality or impede sustainable groundwater management of the basin. Therefore, implementation of the proposed Guidelines would not be anticipated to conflict with or obstruct implementation of the applicable water quality control plan (i.e., the Tulare Lake Basin Plan) or the GSPs for the applicable subbasin(s) in the study area.

Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. The proposed Guidelines would serve agricultural and domestic interests by protecting water quality in the Friant-Kern Canal for sustained use; therefore, the proposed Guidelines may improve water quality and contribute toward sustainable groundwater management in the study area. Therefore, this impact would be **less than significant**.

This page intentionally left blank

## 3.12 Land Use and Planning

### 3.12.1 Introduction

This section discusses land use and planning in the study area and evaluates the potential impacts of the proposed Guidelines and potential actions that Contractors may need to take to comply with the proposed Guidelines. The environmental setting and evaluation of impacts on land use and planning is based on a review of existing published documents and data, including county general plans, information regarding other Friant projects in the vicinity of the study area, and other information sources listed in Chapter 8, *References*.

No comments specifically addressing land use and planning were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.12.2 Environmental Setting

The study area is located in Fresno, Tulare, and Kern counties. Land use zoning designations in the study area were identified through the use of Geographic Information System (GIS) data available from the counties in the study area (County of Fresno 2023; County of Kern 2022; Tulare County Resource Management Agency 2018) and by reviewing their respective zoning ordinances (County of Fresno 2018; Kern County 2017; Tulare County 2023). In addition, approximately 8 miles of the Friant-Kern Canal in the study area passes through the City of Porterville, which has its own zoning designations. The zoning designations identified within the study area are defined as follows:

- **Agricultural/Rural Conservation (AC) (Porterville in Tulare County)**—This designation is intended to preserve agricultural and resource conservation areas.
- **Exclusive Agricultural (AE) (Fresno, Tulare, and Kern counties)**—This designation is intended to apply primarily to rural areas of the counties generally characterized as having extensive or intensive agricultural land uses.
- **Limited Agricultural (AL) (Fresno County)**—This designation is intended to protect the general welfare of the agricultural community by limiting intensive uses in agricultural areas where such uses may be incompatible with, or injurious to, other less intensive agricultural operations. The AL designation is also intended to reserve and hold certain lands for future urban use by permitting limited agriculture and by regulating those more intensive agricultural uses that, by their nature, may be injurious to nonagricultural uses in the vicinity or inconsistent with the express purpose of reservation for future urban use.
- **Open Conservation (O) (Fresno County)**—This designation is intended to provide for permanent open spaces in the community and to safeguard the health, safety, and welfare of the people by limiting developments in areas where police and fire protection, protection against flooding by stormwater, and dangers from excessive erosion are not possible without excessive costs to the community.
- **Right-of-Way (Miscellaneous [Z]) (Tulare County)**—This designation is defined as an easement that allows a land use, such as a road or irrigation canal, to pass through land otherwise dedicated to another use.

- **Recreational (R-E) (Fresno County)**—This designation is intended to provide for the proper development of recreational areas of the County of Fresno.
- **Rural Residential (R-A) (Tulare County)**—This designation applies to lands of one to 10 acres used primarily for residential use, with small-scale agricultural activities as a secondary use.
- **Rural Residential (R-R) (Fresno County)**—This designation is intended to create or preserve rural or very-large-lot residential homesites where a limited range of agricultural activities may be conducted.
- **Rural Settlement (RS) (Fresno County)**—This designation is intended to provide for small, specified, unincorporated settlements by permitting a mixture of uses while protecting the rural character of the settlement area and the surrounding agricultural environment.
- **Single Family Residential (R-1-C) (Fresno County)**—This designation is intended to provide for the development of single-family residential homes at urban standards, not more than one dwelling unit permitted on any lot, except within Planned Developments.
- **Trailer Park Residential (T-P) (Fresno County)**—This designation is intended to provide for the accommodation of residential trailers at a standard consistent with the protection of the health, safety, and welfare of the community.

Fresno County land uses adjacent to the Friant-Kern Canal are primarily agricultural lands zoned as AE composed of different parcel sizes (i.e., less than 10 acres, 20-acre minimum, and 40-acre minimum) and AL composed of different parcel sizes (i.e., 640, 320, 160, 80, 40, and 20 acres). Residential, recreational, open conservation, and rural settlement land uses are infrequent in the study area, although they do occur.

In Tulare County, the reach of the Friant-Kern Canal in the study area is mapped as being almost entirely through agricultural lands zoned as AE composed of different parcel sizes (i.e., less than 10 acres, 20-acre minimum, and 40-acre minimum). Other zoning designations within the study area include rights-of-way having zoning designations Miscellaneous (Z) and R-A. Where it passes near the unincorporated community of Strathmore, the Friant-Kern Canal is used to delineate the community's eastern boundary (i.e., its urban development boundary). It similarly forms much of the southwestern urban development boundary of Porterville, where it passes through the city's AC zone. Rural residential and commercial (i.e., agricultural/industrial) land uses are infrequent in the study area, although they do occur.

Kern County land uses consist predominantly of natural resources, open space, and productive farmland. Similar to Tulare County, land uses in Kern County adjacent to the Friant-Kern Canal are zoned for intensive agriculture (i.e., AE zoning) (County of Kern Planning Department 2016).



### 3.12.3 Regulatory Setting

Federal and state plans, policies, regulations, and laws, and regional or local plans, policies, regulations, and ordinances pertaining to land use and planning are discussed in this section.

#### Federal

There are no applicable federal regulations pertaining to land use.

#### State

##### **State of California General Plan Guidelines and Zoning Law**

The Governor’s Office of Planning and Research provides a statewide regulatory document, the *State of California General Plan Guidelines*, for preparing long-term general plan documents in accordance with state law (Government Code Section 65040.2). All California cities and counties must have a comprehensive general plan that guides planning and development decisions and must consider a long-term perspective (Government Code Section 65300). Generally, the general plan must also cover all territory within the boundaries of the affected jurisdiction; for cities, all public and private land within the city limits must be covered, while all counties must include all unincorporated areas (OPR 2017).

The *State of California General Plan Guidelines* also explain the required components for a general plan. Plan text consists of goals in a range of categories that set the direction of a general plan concept and express community values. These goals are shaped by objectives, principles, standards, and in some cases, plan proposals, which in turn prepare specific policies to develop the changes that a jurisdiction seeks to achieve (OPR 2017).

The State Zoning Law (Government Code Section 65800 et seq.) establishes that zoning ordinances—laws that define allowable land uses in a specific zone district—must be consistent with the applicable general plan and any applicable specific plans.

#### Local

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address land use and planning. Applicable general plan goals and policies are presented in **Table 3.12-1**.

**TABLE 3.12-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—LAND USE AND PLANNING**

General Plan	Goals and Policies
<b>Fresno County</b>	Agriculture and Land Use Element, Goal LU-A, Policies LU-A.1 through LU-A.3, LU-A.12 through LU-A.20; Goal LU-C, Policies LU-C.1, LU-C.2, LU-C.4, LU-C.8 through LU-C.10
<b>Tulare County</b>	Land Use Element, Goal LU-1, Policies LU-1.2 and LU-1.3, LU-1.6 and LU-1.7; LU-1.10; Goal LU-2, Policies LU-2.1, LU-2.3
<b>Kern County</b>	Land Use, Open Space, and Conservation Element, Goals Resource 2 through 4 and Policies Resource 3 and 12

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

## 3.12.4 Impacts and Mitigation Measures

### Methods of Analysis

Land use and planning impacts were evaluated by reviewing existing environmental studies, data, and information for other Friant projects in the vicinity of the study area. As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. Permanent impacts are considered those that would continue through the life of an action as a result of the environmental conditions created by that action (e.g., new water treatment facility). Temporary impacts are considered those that would be temporary in nature (e.g., construction-related activities).

### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to land use and planning is considered significant if the proposed Guidelines would do any of the following:

- Physically divide an established community.
- 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.

### Impacts Not Evaluated Further

**Physically divide an established community.** Implementation of the proposed Guidelines and actions taken by Contractors in response to the proposed Guidelines could include construction and operation of small water treatment facilities or water quality monitoring stations. These facilities would be anticipated to be limited in size and would likely be installed near existing water supply facilities, given their purposes to monitor and/or treat water to comply with the water quality thresholds. Therefore, they would not physically divide an established community. Therefore, **no impact** related to this issue would occur and this issue is not evaluated further in this Draft EIR.

### Impacts and Mitigation Measures

Table 3.12-2 summarizes the impact conclusions presented in this section.

TABLE 3.12-2  
SUMMARY OF IMPACT CONCLUSIONS—LAND USE AND PLANNING

Impact Statement	Impact Conclusion
3.12-1: Implementation of the proposed Guidelines could conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LTS
NOTE: LTS = Less than Significant	

**Impact 3.12-1: Implementation of the proposed Guidelines could conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.**

Land uses in the study area are primarily agricultural and rural residential. The proposed Guidelines are consistent with these uses because they are intended to protect water quality in the Friant-Kern Canal for sustained use and would serve agricultural and domestic interests. Facilities associated with actions taken by Contractors in response to the proposed Guidelines also would not conflict with land uses because they would be of limited size (at the most being the size of a shed) and construction activities would be short-term and temporary. Operational and maintenance activities would be similar to existing conditions. Therefore, the proposed Guidelines are considered consistent with the land uses in the study area and would not 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. Further, pursuant to Government Code Section 53091(e), the location or construction of facilities for the production, generation, storage, treatment, or transmission of water by a special district is not subject to the zoning ordinance of the county in which the project would be located. This impact would be **less than significant**.

---

This page intentionally left blank.

## 3.13 Noise

### 3.13.1 Introduction

This section describes acoustic fundamentals and noise-sensitive land uses in the study area, and the potential noise and vibration impacts of the types of actions that may occur with implementation of the proposed Guidelines.

The environmental setting and evaluation of noise impacts is based on a review of existing published documents, including county general plans; information regarding other Friant projects in the vicinity of the study area; and other information sources listed in Chapter 8, *References*. See Section 3.5, *Biological Resources*, for potential noise impacts on special-status species.

No comments specifically addressing noise and vibration were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.13.2 Environmental Setting

#### Noise

Acoustics is the scientific study of the perception and properties of sound waves. **Table 3.13-1** presents definitions of the acoustics terms used to establish the environmental setting and examine the potential noise impacts of the proposed Guidelines and potential actions Contractors may take to comply with the proposed Guidelines.

Noise is typically defined as unwanted sound. High noise levels are known to have adverse effects on people, including hearing loss, communication interference, sleep interference, physiological responses, and annoyance. The noise environment typically includes background noise generated from both close and distant noise sources as well as sound from individual local sources.

The primary contributor to background noise and vibration in the vicinity of the study area is vehicular traffic. Railroad and aeronautical noise sources also exist around the study area and are included in the background ambient noise and vibration conditions.

The predominant land use in and near the study area is related to agricultural actions. Actions associated with land preparation, harvesting, and transporting of crops also contribute to the existing noise and vibration environment in and near the study area. Heavy off-road equipment used for agricultural actions typically include tractors, harvesters, bailers, tillers, and seeders. Overflights for crop spraying also occur in agricultural areas. Airports within two miles of the study area include Harris River Ranch Airport, Peg Field, Eckert Field, Meadows Field Airport and Minter Field Airport.

**TABLE 3.13-1  
 ACOUSTICS TERMS**

Term	Definition
Noise	Sound that is loud, disagreeable, unexpected, or unwanted.
Decibel (dB)	A measurement of sound levels. The decibel scale was developed to relate to the range of human hearing. A decibel is logarithmic and cannot be directly summed. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a 100-fold increase in acoustical energy.
A-weighted decibel (dBA)	An adaptation of the decibel measurement reflecting that the human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed, identified as A through E. There is a strong correlation between the way humans perceive sound and A-weighted sound levels. For this reason, A-weighted sound levels are used to predict community response to noise from the environment, including noise from transportation and stationary sources, and are expressed as A-weighted decibels. All sound levels discussed in this section are A-weighted decibels unless otherwise noted.
Equivalent noise level ( $L_{eq}$ )	The average noise level during a specified time period; that is, the equivalent steady-state noise level in a stated period of time that would contain the same acoustic energy as the time-varying noise level during the same period (i.e., average noise level).
Maximum noise level ( $L_{max}$ )	The highest instantaneous noise level during a specified time period.
Minimum noise level ( $L_{min}$ )	The lowest instantaneous noise level during a specified time period.
Day-night noise level ( $L_{dn}$ )	The 24-hour $L_{eq}$ with a 10 dB penalty applied during the noise-sensitive hours from 10 p.m. to 7 a.m., which are typically reserved for sleeping.
Community noise equivalent level (CNEL)	Similar to the $L_{dn}$ described above with an additional 5 dB penalty applied during the noise-sensitive hours from 7 p.m. to 10 p.m., which are typically reserved for evening relaxation activities.
Single-event noise level (SEL)	Sounds that occur in an irregular or non-repetitive manner, which makes them difficult to anticipate; these are usually measured by $L_{max}$ noise levels.

SOURCE: Caltrans 2013

Generally, any place where quiet is an essential element of a land use’s intended purpose would qualify as a noise-sensitive receptor. Such noise-sensitive receptors include outdoor concert pavilions and historic monuments with significant outdoor use. Places where people normally sleep, like residences, hotels, and hospitals, are also considered noise-sensitive receptors. For these types of receptors, nighttime sensitivity to noise must be considered. Various institutional land uses where excessive noise could interfere with speech, meditation, and concentration also qualify as noise-sensitive receptors. These land uses include schools, libraries, theaters, churches, cemeteries, monuments, and museums. Parks may also be considered noise-sensitive receptors, but this classification depends on their use. For example, a park used primarily for active recreation would not be considered a noise-sensitive receptor (Federal Transit Administration 2018).

Excessive and chronic (long-term) exposure to elevated noise levels can result in auditory and non-auditory effects on humans. Auditory effects are the temporary or permanent hearing loss caused by loud noises. Exposure to noise can cause physical damage to the auditory system, resulting in gradual or extreme hearing loss. Sustained exposure to moderately high noise levels

over a period of time can cause gradual hearing loss, whereas a short period of sudden exposure to extremely high noise levels can cause extreme hearing loss. Both of these hearing changes can result in the permanent loss of hearing.

The degree to which noise results in annoyance, nuisance, and dissatisfaction in humans is highly variable and can be influenced by multiple non-auditory factors. The human response to noise varies depending on individual characteristics such as sensitivity, location, time of day, location, and length of exposure.

As discussed in Section 3.1, *Introduction and Approach to the Environmental Analysis*, this section does not provide information about individual Contractor actions or their locations relative to noise-sensitive receptors because these locations are not known at this time.

## Ground Vibration

Vibration is the periodic oscillation of a medium or object relative to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous (e.g., operating factory machinery) or transient (e.g., explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (Federal Transit Administration 2018; Caltrans 2013). PPV and root-mean-square vibration velocity are normally described in inches per second.

PPV is appropriate for evaluating the potential for building damage but is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the body responds to average vibration amplitude. The root mean square of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the root-mean-square velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (Federal Transit Administration 2018).

The typical background vibration-velocity level in residential areas is approximately 50 VdB. Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, the typical background vibration-velocity level, to 100 VdB, the general threshold at which minor damage can occur in fragile buildings. Construction of actions can generate sufficient ground vibration to pose a risk to nearby structures. Constant or transient vibration can weaken structures, crack facades, and disturb occupants (Federal Transit Administration 2018).

Construction of actions can be transient, random, or continuous. Transient construction vibration is generated by blasting, impact pile driving, and wrecking balls. Continuous vibration results from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment.

### 3.13.3 Regulatory Setting

This section discusses federal, state, regional, and local plans, policies, regulations, and laws, and ordinances pertaining to noise and vibration impacts.

#### **Federal**

##### ***U.S. Environmental Protection Agency Office of Noise Abatement***

The USEPA Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. The Office of Noise Abatement and Control subsequently enforced the Federal Noise Control Act of 1972, which established programs and for identifying and addressing the effects of noise on public health, welfare, and the environment.

In 1981, agency administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to state and local governments. However, federal action is essential for dealing with major noise sources in commerce, control of which requires nationally uniform treatment. Congress has directed the USEPA to coordinate the programs of all federal agencies related to noise research and noise control.

##### ***U.S. Department of Transportation***

To address the human response to groundborne vibration, the Federal Transit Administration (FTA) set forth guidelines identifying maximum-acceptable vibration criteria for different types of land uses. These guidelines include the following maximum-acceptable vibration limits (Federal Transit Administration 2018):

- 65 VdB, referenced to 1 microinch per second and based on the root-mean-square velocity amplitude, for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities).
- 80 VdB for residential uses and buildings where people normally sleep.
- 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices).

#### **State**

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate the noise levels of motor vehicles, sound transmission through buildings, occupational noise, and noise insulation. Though not adopted by law, the *State of California General Plan Guidelines 2003*, published by the California Governor's Office of Planning and Research, provides guidance for actions' compatibility in



areas of specific noise exposure. Acceptable and unacceptable community noise exposure limits for various land use categories have been identified to help guide new land use decisions in California communities. Many local jurisdictions use these guidelines to derive local noise standards and guidance.

Generally, residential uses (e.g., mobile homes) are considered acceptable in areas where exterior noise levels do not exceed 60 dBA L<sub>dn</sub>. Residential uses are normally unacceptable in areas where exterior noise levels exceed 70 dBA L<sub>dn</sub> and conditionally acceptable where levels are in the range of 55–70 dBA L<sub>dn</sub>. Schools are normally acceptable in areas with exterior noise levels up to 70 dBA L<sub>dn</sub> and normally unacceptable where with levels exceed 70 dBA L<sub>dn</sub>. Commercial uses are normally acceptable in areas with exterior noise levels up to 70 dBA community noise equivalent level. Day-night noise levels between 67.5 and 77.5 dBA for commercial uses are conditionally acceptable, depending on the noise insulation features and noise reduction requirements. The guidelines also present adjustment factors that may be used to determine noise acceptability standards that reflect the particular community’s noise control goals, sensitivity to noise, and assessment of the relative importance of noise pollution.

**California Department of Transportation**

In 2020, Caltrans published the *Transportation and Construction Vibration Guidance Manual*. The manual provides general guidance on vibration issues associated with construction and operation relative to human perception and structural damage.

**Local**

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address noise and vibration, including protection of sensitive receptors and compliance with applicable noise ordinances. Applicable general plan goals and policies are presented in **Table 3.13-2**.

**TABLE 3.13-2  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—NOISE AND VIBRATION**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Health and Safety Element, Goal HS-G, Policies HS-G.1, HS-G.4 through HS-G.6, HS-G.8
<b>Tulare County</b>	Noise Element, Goal HS-8, Policies HS-8.2, HS-8.3, HS-8.6, HS-8.8, HS-8.10 through HS-8.15, HS-8.17 through HS-8.19
<b>Kern County</b>	Noise Element, Noise Sensitive Areas Goals 1 and 2, Policies 1 through 4, 6 and 7

SOURCES: Fresno County 2000; Kern County 2009; Tulare County 2012

Noise ordinances establish limits that may be enforced by applying penalties or taking other actions. A noise ordinance generally must not be exceeded, whereas general plan standards are guidance to be considered during project development and may not represent strict limits, depending on the particular circumstances of the project.

## 3.13.4 Impacts and Mitigation Measures

### Methods of Analysis

Noise and vibration impacts are evaluated by how specific actions could introduce temporary or permanent noise and vibration sources near noise-sensitive receptors (for example, residences) and the potential for noise levels to exceed applicable local ordinances and to constitute a substantial permanent increase in ambient noise levels.

As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to noise and vibration is considered significant if the proposed Guidelines would cause any of the following:

- 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.
- Generation of excessive groundborne vibration or groundborne noise levels.
- 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 2 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.

### Impacts Not Evaluated Further

**For actions located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use airport that could expose people residing or working in the action's area to excessive noise levels.** As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a small shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries. Construction of actions could occur in the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport or public use airport. However, given the limited size and short-term and temporary duration of potential actions and the rural nature of the study area, people working in the study area would not be exposed to excessive noise levels. The proposed Guidelines and potential actions taken by Contractors to comply with the proposed Guidelines would not include occupied structures; therefore, exposure of excessive noise levels to the people residing in the area of an action would not occur. Operational and

maintenance actions would be similar to existing conditions and would not expose people residing or working in the action's area to excessive noise levels. Therefore, the proposed Guidelines would have no impact due to excess noise in the study area and this issue is not further evaluated in this Draft EIR.

## Impacts and Mitigation Measures

Table 3.13-3 summarizes the impact conclusions presented in this section.

**TABLE 3.13-3  
SUMMARY OF IMPACT CONCLUSIONS—NOISE AND VIBRATION**

Impact Statement	Impact Conclusion
<b>3.13-1:</b> Implementation of the proposed Guidelines could result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the actions carried out in response to the implementation of the proposed Guidelines, in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LSM
<b>3.13-2:</b> Implementation of the proposed Guidelines could result in the generation of excessive groundborne vibration or groundborne noise levels.	LSM
NOTES: LSM = Less than Significant with Mitigation	

**Impact 3.13-1: Implementation the proposed Guidelines could result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the actions carried out in response to the implementation of the proposed Guidelines, in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a small shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries. Construction activities could include the use of haul trucks and heavy equipment. Construction activities and movement of equipment would involve temporary noise sources. For example, noise could be generated by the mobilization of equipment and materials, use of staging areas and access and haul roads, site preparation, construction of features, site restoration and/or demobilization, and disposal of excess materials.

Typical construction-related equipment could include compressors, graders, trenchers, tractors, excavators, and work trucks. Temporary increases in noise from construction equipment would contribute to the noise environment in the immediate vicinity of the activity. Noise levels would fluctuate depending on the particular type, number, and duration of equipment used (e.g., power tools, generators, dump trucks, graders). Depending on the types and models of equipment used for construction, typical noise levels for these kinds of construction equipment would range from approximately 80 to 95 dBA maximum noise level at 50 feet (FTA 2018). The highest levels of

noise would be generated during simultaneous operation of multiple pieces of construction equipment.

Given the limited size of potential actions (such as small water treatment facilities approximately the size of a small shed or water quality monitoring stations such as wall-mounted racks, free-standing racks, enclosed stations, compact stations, or floating platforms) and because noise associated with construction activities would be short-term and intermittent, actions in response to the implementation of the proposed Guidelines are not likely to result in the generation of a substantial temporary or permanent increase in ambient noise levels in the study area in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Operational and maintenance activities would be similar to existing conditions and would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the study area.

Because actions would be of limited size and noise associated with construction of actions would be short-term and intermittent, the generation of a substantial temporary increase in ambient noise levels in the study area during construction is not likely. Furthermore, actions within the canal's rights-of-way and/or adjacent to it would likely occur away from residential areas and other sensitive receptors and would typically take place during daylight hours. However, as discussed above, actions could be implemented within the Contractor's boundaries. Because the precise locations and detailed characteristics of potential future actions are yet to be determined, some construction-related activities could occur close to receptors and/or at night; and therefore, this impact would be **potentially significant**.

### **Mitigation Measures**

**Mitigation Measure 3.13-1:** The following measures shall be implemented during construction of any actions implemented by Contractors in response to the proposed Guidelines:

- Noise- and vibration-generating activities shall comply with the applicable general plan and/or noise ordinances for the jurisdiction located within the vicinity of the project.
- Construction equipment shall be located as far away as possible from noise-sensitive receptors to the extent feasible, to reduce noise levels below applicable local standards.
- Construction equipment shall be maintained to manufacturers' recommended specifications, and all construction vehicles and equipment shall be equipped with appropriate mufflers and other approved noise control devices.
- Idling of construction equipment shall be limited to the extent feasible to reduce the time that noise is emitted.
- An individual traffic noise analysis of identified haul routes shall be conducted and mitigation, including but not limited to measures such as reduced speed limits, shall

be provided at locations where noise standards cannot be maintained for noise-sensitive receptors.

- The action shall incorporate the use of temporary noise barriers, such as acoustical panel systems, between construction activities and noise-sensitive receptors if it is concluded that they would be needed to ensure compliance with applicable noise standards and effective in reducing noise exposure to sensitive receptors.

**Significance After Mitigation:** Implementing Mitigation Measure 3.13-1, or equally effective measures, would reduce the potential impact related to a temporary increase in ambient noise levels from construction of actions implemented by Contractors in response to the proposed Guidelines to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation incorporated**.

**Impact 3.13-2: Implementation of the proposed Guidelines could result in the generation of excessive groundborne vibration or groundborne noise levels.**

Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. Construction vibration can be transient, random, or continuous. Increases in groundborne vibration levels attributable to the proposed Guidelines would be from potential construction-related activities associated with implementation of Contractor actions taken to meet the water quality thresholds in the proposed Guidelines. Construction may require the use of various off-road and construction equipment such as bulldozers, haul trucks, and jackhammers. These types of equipment or processes could generate groundborne vibration at levels ranging from 0.035 to 1.518 inches per second PPV at 25 feet and 79–112 VdB at 25 feet (FTA 2018) and could expose sensitive receptors to elevated vibration levels. Vibration levels typically tend to dissipate rapidly as distance increases from the vibration source. The use of major groundborne vibration-generating construction equipment, such as pile drivers, would not be required.

Groundborne noise levels ranging from 25 to 40 dBA are the approximate threshold of perception for many humans ranging from inaudible to excessive for quiet sleeping areas; 35–50 dBA is the approximate dividing line between barely perceptible and distinctly perceptible, ranging from tolerable for sleeping areas to excessive in most quiet occupied areas; and 45–60 dBA ranges from excessive for sleeping areas to excessive even for infrequent events for some activities (FTA 2018). A noise level increase of 10 dBA or more is considered substantial. Construction activities would typically take place during daylight hours when construction-related noise increases would be smaller than those during nighttime hours.

Given the limited size of actions, the short-term and intermittent nature of construction activities, and the fact that most actions would likely occur far from residential areas and other sensitive receptors during the day (as discussed in Impact 3.13-1), construction activities are not likely to result in the generation of excessive groundborne vibration or groundborne noise levels.

Operational and maintenance activities would be similar to existing conditions and would not result in the generation of excessive groundborne vibration or groundborne noise levels in the study area.

Because actions would be of limited size and vibration associated with construction activities would be short-term and intermittent, the temporary generation of excessive groundborne vibration or groundborne noise levels in the study area during construction is not likely. However, given that some construction-related activities may occur close to receptors and/or at night, this impact would be **potentially significant**.

### **Mitigation Measures**

**Mitigation Measure 3.13-2:** Implement Mitigation Measure 3.13-1.

**Significance After Mitigation:** Given that the use of major groundborne vibration-generating construction equipment would not be required, implementing Mitigation Measure 3.13-1, or equally effective measures, would reduce the potential impact related to exposure of noise-sensitive receptors to excessive groundborne vibration or noise levels from construction of actions implemented by Contractors in response to the proposed Guidelines to a less-than-significant level because construction equipment would be located as far away as possible from noise-sensitive receptors to the extent feasible, construction equipment would be maintained to manufacturers' recommended specifications, and idling of construction equipment would be limited to the extent feasible. Therefore, this impact would be **less than significant with mitigation incorporated**.

---

## 3.14 Transportation

### 3.14.1 Introduction

This section discusses transportation, traffic, and circulation (referred to herein as “transportation”) in the study area and the changes that could occur as a result of implementing the proposed Guidelines. It discusses the potential for disruption to transportation, such as disruption of vehicle movement and circulation as a result of construction activities. It also discusses potential long-term changes to the operability and function of transportation facilities.

The environmental setting and evaluation of impacts on traffic is based on a review of existing published documents, including from the Federal Highway Administration, Caltrans, and county general plans; and other sources of information that are listed in Chapter 8, *References*.

No comments specifically addressing transportation were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.14.2 Environmental Setting

Most of the roads in the study area are narrow, county-owned, undivided two-lane collectors and local roads that are used primarily for access to agricultural lands and rural residential areas. State highways that cross the Friant-Kern Canal are State Routes 168 and 180 in Fresno County, State Routes 65 and 190 in Tulare County, and State Routes 99 and 155 in Kern County.

Roads in the study area have low pedestrian and bicycle activity. There are a limited number of dedicated bicycle paths, lanes, or routes and dedicated pedestrian facilities in the study area. Because of the rural nature of the area through which the Friant-Kern Canal passes, bicycle and pedestrian use of local and arterial roads is often shared with motor vehicle traffic.

### 3.14.3 Regulatory Setting

Federal and state plans, policies, regulations, and laws and regional or local plans, policies, regulations, and ordinances pertaining to transportation, traffic, and circulation are discussed in this section.

#### **Federal**

##### ***U.S. Department of Transportation***

The U.S. Department of Transportation administers numerous laws and regulations that regulate California roads and interstate commerce. The department is responsible for planning and coordinating federal restoration projects while setting safety regulations for all major modes of transportation.

## State

### **California Department of Transportation**

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways, and for implementing federal highway standards for interstate highways.

Caltrans manages the California Scenic Highway Program to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to the highways. Designation as a scenic highway is determined by views of the natural landscape, scenic quality, and the extent of visual intrusion. A city or county must nominate an eligible scenic highway for official designation and adopt a corridor protection program that includes zoning and planning policies to preserve its scenic quality.

### **Senate Bill 743 and Section 15064.3(a) of the CEQA Guidelines**

SB 743 was enacted by the California Legislature and signed into law in the fall of 2013. This legislation led to a significant change in the way that transportation impacts are measured under CEQA. Effective July 1, 2020, automobile delay and the traditional level of service (LOS) methodology used to assess a project's impact on such delay may no longer be used to determine the transportation impacts of land development projects under CEQA, and the new methodology is vehicle miles traveled (VMT) (Tulare County 2020). Specifically, Section 15064.3(a) of the CEQA Guidelines calls for evaluation of a project's transportation impacts in terms of VMT, which refers to the amount and distance of automobile travel attributable to a project. VMT is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person.

Statewide guidance for the implementation of SB 743 written by the Governor's Office of Planning and Research (OPR) in December 2018, the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR Technical Guidelines), explains that the term "automobile" in CEQA Guidelines Section 15064.3(a) "refers to on-road passenger vehicles, specifically cars and light trucks" (OPR 2018). The OPR Technical Guidelines provide a screening criterion that could be used to determine whether a VMT analysis is warranted for "small projects," which are defined as projects that would generate fewer than 110 trips per day and may generally be assumed to cause less-than-significant transportation impacts.

## Local

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address transportation, including development of efficient roadway and highway systems. Applicable general plan goals and policies are presented in **Table 3.14-1**.



**TABLE 3.14-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—TRANSPORTATION**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Transportation and Circulation Element, Goal TR-A, Policies TR-A.3 through A.5, Policies TR-A.7 and A.8; Goal TR-B, Policies TR-B.1 and TR-B.2; Goal TR-C, Policy TR-C.1; Goal TR-D, Policy TR-D.5; Goal TR-E, Policy TR-E.4
<b>Tulare County</b>	Transportation and Circulation Element, Goal TC-1, Policies TC-1.14 through TC-1.16
<b>Kern County</b>	Circulation Element, Highway Plan Goal 5, Future Growth Policy 4, 6

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

### 3.14.4 Impacts and Mitigation Measures

#### Methods of Analysis

Transportation impacts from implementation of the proposed Guidelines or potential Contractor actions in response to implementation of the proposed Guidelines are evaluated in terms of how typical construction and operation could affect existing traffic, including congestion on area roads and intersections, and roadway capacity. As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

Permanent impacts are considered those that would continue through the life of an action taken by a Contractor as a result of the environmental conditions created by the action (e.g., construction of new water treatment facility). Temporary impacts are considered those that would be temporary in nature (e.g., construction-related activities).

#### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to transportation is considered significant if the proposed Guidelines would do any of the following:

- Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.

## Impacts and Mitigation Measures

Table 3.14-2 summarizes the impact conclusions presented in this section.

**TABLE 3.14-2**  
**SUMMARY OF IMPACT CONCLUSIONS—TRANSPORTATION**

Impact Statement	Impact Conclusion
<b>3.14-1:</b> Implementation of the proposed Guidelines could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	LTS
<b>3.14-2:</b> Implementation of the proposed Guidelines could conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS
<b>3.14-3:</b> Implementation of the proposed Guidelines could substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS
<b>3.14-4:</b> Implementation of the proposed Guidelines could result in inadequate emergency access.	LTS

NOTE: LTS = Less than Significant

### **Impact 3.14-1: Implementation of the proposed Guidelines could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.**

In response to implementation of the proposed Guidelines, Contractors may take certain actions requiring construction activities that could include mobilization of off-road equipment and materials and transportation of construction personnel. These activities would add temporary and limited construction vehicle traffic to primarily rural roadways in and around the study area. Potential actions, such as the construction of small water treatment facilities (approximately the size of a shed) or of water quality monitoring stations such as wall-mounted racks, freestanding racks, enclosed stations, compact stations, or floating platforms, would be of limited size and therefore would require limited equipment and personnel to construct. General rule-of-thumb estimates are that two-lane rural roadways have a capacity of at least 5,000 vehicles per day. Construction trips would not increase that percentage substantially; this minimal temporary action-related traffic would be within the range of typical daily variation in traffic levels (usually on the order of  $\pm 5$  percent or 250 vehicles if 5,000 vehicles per day were on the road) that might be expected on major roadways serving the study area. Therefore, temporary limited construction traffic that may occur with implementation of the proposed Guidelines is not likely to degrade conditions for transit, roadway, bicycle or pedestrian facilities, such that they would conflict with applicable programs, plans, ordinances, or policies addressing the circulation system for those areas.

Operational and maintenance activities would be similar to existing conditions and would not result in a conflict with applicable programs, plans, ordinances, or policies. Therefore, this impact would be **less than significant**.

**Impact 3.14-2: Implementation of the proposed Guidelines could conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).**

CEQA allows lead agencies the latitude to determine their own methodologies and significance thresholds for CEQA technical studies. In response, Tulare County adopted guidelines in June 2020 to determine the significance of transportation impacts (Tulare County 2020). Tulare County's guidelines state that some projects are small enough that they can be presumed to have a less-than-significant transportation impact without doing a detailed VMT analysis. For Tulare County, projects that generate fewer than 500 trips per day can be presumed to have a less-than-significant impact (Tulare County 2020). Fresno and Kern counties have not finalized or adopted the regulations of SB 743 (see Section 3.14.3, *Regulatory Setting*); therefore, the 110 trips per day small-project screening criterion in the OPR Technical Guidelines is used for this analysis.

Potential construction activities associated with Contractor actions implemented in response to the proposed Guidelines would generate minimal temporary trips and operational and maintenance activities would be similar to existing conditions. Potential actions, such as the construction of small water treatment facilities approximately the size of a shed or water quality monitoring stations, would be of limited size and therefore would require limited equipment and personnel to construct. Therefore, daily passenger vehicle trips generated by the proposed Guidelines would be well below OPR's recommended small-project screening criterion threshold of 110 trips per day. This impact would be **less than significant**.

**Impact 3.14-3: Implementation of the proposed Guidelines could substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).**

Neither construction activities associated with actions implemented in response to the proposed Guidelines nor operational and maintenance activities would require permanent modifications to existing public roadways or other transportation infrastructure. The proposed Guidelines and actions taken by Contractor projects in response to the proposed Guidelines are intended to protect water quality in the Friant-Kern Canal for sustained use and would serve agricultural and domestic interests. Facilities would be of limited size (at most, the size of a shed) and associated construction activities would be limited in scope, short-term, and temporary. Operational and maintenance activities would be similar to existing conditions. Therefore, the proposed Guidelines would not create or substantially increase hazards. This impact would be **less than significant**.

**Impact 3.14-4: Implementation of the proposed Guidelines could result in inadequate emergency access.**

As noted in the discussion of Impact 3.14-1, Contractors may conduct construction activities for actions implemented in response to the proposed Guidelines, which could temporarily increase vehicular traffic in the study area; however, this increase would be limited, given the small scale of the water treatment facilities or water quality monitoring stations that may be constructed. Although this traffic could affect emergency access, the construction-related increase in vehicle traffic would be minor and would not substantially affect response times. It is not anticipated that

construction work would occur within public roadways, meaning that emergency vehicle access would be preserved. Operational and maintenance activities would be similar to existing conditions and would not result in inadequate emergency access. Therefore, this impact would be **less than significant**.

---

## 3.15 Tribal Cultural Resources

### 3.15.1 Introduction

This section examines the potential impacts of the proposed Guidelines on tribal cultural resources. Cultural resources are discussed separately in Section 3.6, *Cultural Resources*, although tribal cultural resources are included in the cultural resources section because some of the same mitigation measures for reducing impacts on cultural resources also apply to tribal cultural resources.

Comments addressing tribal cultural resources were received in response to the NOP. Comments submitted in response to the NOP were also considered in development of the impact analysis. The NAHC provided details on some tribal cultural resource regulations pertaining to the proposed Guidelines and requested that the NAHC be contacted for a Sacred Lands File search and list of California Native American Tribes for the study area. See Appendix A for NOP comment letters.

This section includes the key term defined below.

- **Tribal Cultural Resource.** This resource type consists of sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are listed, or determined to be eligible for listing, in the National Register, the California Register, or a local register of historical resources.

### 3.15.2 Environmental Setting

The following provides a summary of ethnographic setting and indigenous resources in the study area. Pre-contact setting is summarized in Section 3.6, *Cultural Resources*, and additional details are provided in Appendix D, *Cultural and Tribal Cultural Resources Supplemental Setting Information*.

#### Ethnographic Setting

Beginning in the early 16th century, but primarily during the late 19th and early 20th centuries, Native American lifeways and languages were documented throughout California. Whether compiled by professional ethnographers or anthropologists, field personnel from government agencies such as the U.S. Bureau of Indian Affairs, soldiers, merchants, settlers, or travelers, ethnographic accounts partly illuminate the traditions, beliefs, and cultures of Native American groups during specific points in time. Synthesized narratives such as the *Handbook of North American Indians* (Heizer 1978) categorize Native traditions and practices; however, the complexity of regional diversity should not be overlooked. Depopulation and relocation of Central Valley Native Americans in the 19th century resulted in conflicting and incomplete information about tribal ancestral territories. Although cultural descriptions of these groups in the English language are known from as early as 1849, most current cultural knowledge comes from various early-20th-century anthropologists (Levy 1978:413). The uncertainty regarding the territorial boundaries of the Native American groups that occupied the study area and vicinity

derives from the fact that ethnographies historically demarcated contact-period tribal boundaries in various and conflicting ways.

The study area is in a location historically attributed to the Yokuts, a Penutian-speaking people (Heizer and Elsasser 1980:15). At the time of European contact, the Central Valley was occupied by the Yokuts, who spoke a language from the California Penutian family of languages. The Yokuts entered the San Joaquin Valley sometime before 600 BP, perhaps by force, as indicated by skeletal remains with fatal wounds inflicted by projectile points. Historically, Yokuts have been divided into three cultural-geographical groupings: Northern Valley, Southern Valley, and Foothills (Arkush 1993; Wallace 1978a, 1978b). The study area overlaps the territories of the Northern Valley and Southern Valley groups.

The traditional territory of the Northern Valley Yokuts is defined roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east. The southern boundary is located approximately where the San Joaquin River bends northward and the northern boundary is roughly halfway between the Calaveras and Mokelumne rivers. Populations were concentrated along waterways and on the more hospitable east side of the San Joaquin River (Wallace 1978b). The Southern Valley Yokuts territory included Tulare, Buena Vista, and Kern lakes and the lower portions of the Kings, Kaweah, Tule, and Kern rivers (Wallace 1978a).

Yokuts were organized into distinct groups, each of which had its own name, dialect, and territory. Each group averaged about 350 persons (Wallace 1978a, 1978b). Yokuts were uniquely egalitarian in their political organization. Local groups were self-governing, and all members received equal ownership and access to most resources (Arkush 1993). Both the Northern Valley Yokuts and the Southern Valley Yokuts established permanent settlements on high ground near larger bodies of water, above flood levels. Housing consisted of small round or oval-shaped structures framed by light wooden poles tied together and topped with tule mats.

The Northern Valley Yokuts favored smaller milling tools such as mortars and pestles, with larger milling implements such as manos and metates used less frequently. Flaked-stone tools were manufactured primarily from locally available materials, including chert, jasper, and chalcedony. Tools made from imported obsidian were less common. Tribes traded for baskets, bows and arrows, and mussel and abalone shells (Wallace 1978b). Southern Valley Yokuts relied heavily on tule reeds for basketry and making floor mats. Basketry tools, such as awls, were manufactured primarily from large mammal bones. Cordage was constructed from milkweed. Stone was less abundant in the Southern Valley Yokuts territory and lithic material and milling implements were generally obtained through trade. Other items acquired through trade with neighboring groups include *Olivella* and abalone shells, as well as clam disk monetary beads (Wallace 1978a). Both the Northern Valley Yokuts and the Southern Valley Yokuts used tule to construct watercraft.

Diets consisted mainly of fish, waterfowl, shellfish, roots, and seeds. Preferred fish included lake trout and, when available, steelhead, salmon, and sturgeon. Chub, perch, and suckers were less desirable and caught in smaller numbers. Northern Valley Yokuts also had access to salmon, which would spawn in the San Joaquin River and its primary feeder streams. Fish were caught by

trolling with nets, diving with hand nets, spearing, or capturing fish via basketry traps, with bare hands, or with a bow and arrow. Available waterfowl included geese, ducks, and mud hens. Methods for capturing birds included using snares, nets, and bows and arrows and throwing tule mats over their prey. Stuffed decoys were employed to assist in capture. The Yokuts also acquired eggs from nests (Wallace 1978a, 1978b).

Other foodstuffs included freshwater mussels, turtles, wild seeds, and roots, which were all consumed in large quantities. Grass roots were roasted whole or made into a paste. For the Southern Valley Yokuts, the absence of oak trees in the valley floor meant that acorns were available only through travel or trade, while the Northern Valley Yokuts enjoyed greater access to this staple. Land mammals composed an insignificant percentage of the Yokuts diet. On occasion, wild pigeons, jackrabbits, ground squirrels, and burrowing rodents were acquired. Larger game, such as antelope and elk, were rarely hunted (Wallace 1978a, 1978b).

The population of the Yokuts collapsed during the contact period. First contact probably occurred during the first decades of the 19th century, with sporadic forays by the Spanish into the Central Valley. By 1805, missionaries with the support of Spanish soldiers began making forays into the Central Valley to gather Native Americans to bring back to the coastal missions. This continued for nearly two decades, and neophytes were taken to nearby missions. More active missionary “recruitment” occurred after 1810. Milliken (2002:59) documents the draining of Native population into the Mission system: “All of the San Joaquin River people were at the Mission by the end of 1820, with the exception of a few individuals...”

Further intrusions into Native American lands came in the form of *ranchos*, expanses of land granted to individuals by the Spanish and Mexican governments. What developed was a complex interchange between the Native Americans and their new Spanish neighbors. Missionaries and soldiers made more, and farther-reaching, excursions to gather up Native Americans. Many Native Americans tired of life at the missions and escaped, returning to their homelands. Simultaneously, many Native Americans attained a taste for the Spanish horse and cattle and began raiding the stocks of the missions and ranchos. The result was punitive raids by the Spanish to punish the Native Americans and bring captors back to the missions and ranchos. In 1822, control passed from Spain to Mexico, and the missions were eventually secularized, leaving many Native Americans free to return to their homes. By this time, Native American populations were greatly reduced, they had been mixed and intermarried at the mission, ties had been broken with their former tribes, and many did not return (Wallace 1978b:466–468).

Several major episodes of overt resistance to Spanish and Mexican colonization of the area were undertaken by Yokuts, among other tribes. Of note are those led by the Northern Valley Yokuts *Cucunuchi*, who was born near the present-day Stanislaus River in the early 1790s. In 1821, Cucunuchi and his family moved to Mission San José, and soon thereafter he was baptized and given the Christian name *Estanislao*. Estanislao is described in historical accounts as being highly intelligent and educated (Tinkham 1921:33). In 1827 or 1828, Estanislao left Mission San José with around 400 followers and soon thereafter began a campaign of raids against missions (San José, Santa Clara, Santa Cruz) and Mexican settlers in the area. The Mexican army sent several military expeditions from San Francisco, Monterey, and San José to subdue Estanislao

and his followers, resulting in notable battles on the Stanislaus River between in 1828 and 1829. Estanislao and his group were victorious on multiple occasions, inspiring Native Americans throughout the region (and from multiple tribes) to join Estanislao in his resistance to the Mexicans (see Santis 2014). At the end of May 1829, a large Mexican force led by Mariano Vallejo defeated Estanislao and his group on the banks of the Stanislaus River near its confluence with the San Joaquin River, in one of the most notable battles between Native Americans and Euroamericans in California history. Estanislao escaped, although he soon surrendered at Mission San José, remaining there until his death from smallpox in 1838 (Santis 2014:68; Mora-Torres 2005:69). Estanislao inspired resistance to Mexican colonizers that continued even after his death (see Santis 2014).

Disease was another major disruptive factor in the lives of Native Americans after Euroamerican contact; influenza, smallpox, venereal disease, and malaria were all major contributors to the decline of Native American populations in California. Even before contact, old-world diseases were wreaking havoc on Native populations. In 1833, a major epidemic swept the Central Valley of California. What has since been surmised to be malaria was responsible for the deaths of up to 75 percent of the remaining Native American population in the Central Valley. The result was that by the 1840s, the Yokuts had nearly vanished as a coherent group. The few who remained were pushed aside by the onslaught of immigrants who flooded in during the American period (Kroeber 1925 [1976]:887).

As with other California Native American groups, the Gold Rush of 1849 had a devastating effect on the Yokuts. The flood of miners who came to the area in search of gold brought diseases with them that decimated the populations. Those who survived were subjected to violence and prejudice at the hands of the miners, and the groups were eventually pushed out of their ancestral territory. Although this contact with settlers had a profound negative impact on the groups' populations through disease and violent actions, the Yokuts survived and maintained strong communities and action-oriented organizations (Castillo 1978). The Yokuts find membership amongst a number of state- and federally recognized Tribes and continue to maintain their cultures.

### 3.15.1 Regulatory Setting

#### State

##### ***California Environmental Quality Act***

CEQA (PRC Section 21000 et seq.) is the principal statute governing environmental review of projects occurring in California. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on the environment, including significant effects on historical and tribal cultural resources. Under CEQA (PRC Section 21084.2), a project that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.



### **Tribal Cultural Resources**

CEQA recognizes that California Native American Tribes have expertise with regard to their tribal history and practices. PRC Section 21074(a) defines a “tribal cultural resource” as any of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:
  - Included or determined to be eligible for inclusion in the California Register.
  - Included in a local register of historical resources, as defined in PRC Section 5020.1(k).
- 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 [PRC] Section 5024.1.

In applying these criteria, the lead agency would consider the significance of the resource to a California Native American Tribe.

A cultural landscape that meets the criteria of PRC Section 21074(a) is also a tribal cultural resource if the landscape is geographically defined in terms of the size and scope. A historical resource as described in PRC Section 21084.1, a unique archaeological resource as defined in PRC Section 21083.2, or a non-unique archaeological resource as defined in PRC Section 21083.2 may also be a tribal cultural resource under CEQA if it meets the criteria identified in PRC Section 21074(a).

CEQA requires lead agencies to analyze the impacts of projects on tribal cultural resources separately from impacts on archaeological resources (PRC Sections 21074 and 21083.09) because tribal cultural resources have cultural values beyond their ability to yield data important to prehistory or history. Tribal consultation pursuant to PRC Section 21080.3.1 applies to projects for which an NOP or notice of negative declaration/mitigated negative declaration was filed on or after July 1, 2015 and for which the CEQA lead agency has received formal requests from California Native American Tribes to be notified of that agency’s projects subject to review under CEQA, and such California Native American Tribes respond in writing within 30 days of receiving the project notification from the CEQA lead agency. Because Friant has not received any such formal requests, consultation pursuant to PRC Section 21080.3.1 does not apply to the proposed Guidelines.

### ***California Register of Historical Resources***

The California Register is “an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1[a]). The criteria for eligibility for the California Register are based upon the criteria for listing in the National Register (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a cultural resource must be significant at the local, state, and/or federal level under one or more of the following four criteria:

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

A resource eligible for the California Register must be of sufficient age and retain enough of its historic character or appearance (integrity) to convey the reason for its significance. Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the National Register (and those formally determined eligible for the National Register).
- California Registered Historical Landmarks from No. 770 onward.
- Those California Points of Historical Interest that have been evaluated by the California Office of Historic Preservation and have been recommended to the State Historical Resources Commission for inclusion in the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register).
- Individual historic resources.
- Historic resources contributing to historic districts.
- Historic resources designated or listed as local landmarks, or designated under any local ordinance, such as a historic preservation overlay zone.
- Tribal cultural resources.

### ***California Public Resources Code Section 5097***

PRC Section 5097.99, as amended, states that no person shall obtain or possess any Native American artifacts or human remains that are taken from a Native American grave or cairn. Any person who knowingly or willfully obtains or possesses any Native American artifacts or human remains is guilty of a felony, which is punishable by imprisonment. Any person who removes, without authority of law, any such items with an intent to sell or dissect or with malice or wantonness is also guilty of a felony, which is punishable by imprisonment. PRC Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor.

**California Native American Historic Resource Protection Act**

The California Native American Historic Resource Protection Act of 2002 imposes civil penalties, including imprisonment and fines up to \$50,000 per violation, for persons who unlawfully and maliciously excavate upon, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be listed in the California Register.

**California Health and Safety Code Section 7050.5**

HSC Section 7050.5 protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (reiterated in 14 CCR 15064.59[e]) also identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery.

**Local**

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address tribal cultural resources, including protection of important archaeological and cultural sites and their attributing environment. Applicable general plan goals and policies are presented in **Table 3.15-1**.

**TABLE 3.15-1  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—TRIBAL CULTURAL RESOURCES**

<b>General Plan</b>	<b>Goals and Policies</b>
<b>Fresno County</b>	Open Space and Conservation Element, Goal OS-J, Policies OS-J.1 to OS-J.3
<b>Kern County</b>	General Provisions, Policy 25, Implementation Measures K, L, N, and O
<b>Tulare County</b>	Environmental Resources Management Element, Goal ERM-6, Policies ERM-6.1 to ERM-6.4, ERM-6.6 to ERM-6.9

SOURCES: Fresno County 2000; Kern County 2009; Tulare County 2012

**3.15.3 Impacts and Mitigation Measures**

**Methods of Analysis**

Effective for projects for which an NOP or a notice of negative declaration/mitigated negative declaration was filed on or after July 1, 2015, CEQA requires that a project’s impacts on tribal cultural resources be considered as part of the overall analysis of project impacts (PRC Sections 21080.3.1, 21084.2, and 21084.3). The significance of a resource as a tribal cultural resource is assessed by evaluating all of the following:

- Its eligibility for listing in the California Register.
- Its eligibility as a unique archaeological resource pursuant to PRC Section 21083.2.
- Its listing status in the NAHC’s Sacred Lands File.

In addition, a lead agency can independently determine a resource to be a tribal cultural resource. California Native American Tribes are considered experts with respect to tribal cultural resources.

As described in Section 3.1, *Approach to the Analysis*, because the precise locations and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to tribal cultural resources is considered significant if the proposed Guidelines would do any of the following:

- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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:
  - Listed or eligible for listing in the California Register, or in a local register of historical resources as defined in PRC Section 5020.1(k). OR
  - 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.

### Impacts Not Evaluated Further

Operational and maintenance-related activities associated with actions that could be implemented by Contractors in response to the proposed Guidelines would be similar to existing conditions with respect to tribal cultural resources. Therefore, operational and maintenance-related activities are not the types of activities with potential to cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074, and there would be **no impact** on tribal cultural resources, as defined in PRC Section 21074. Therefore, potential operational and maintenance-related impacts from the proposed Guidelines on tribal cultural resources are not evaluated further in the EIR.

### Impacts and Mitigation Measures

Table 3.15-2 summarizes the impact conclusions presented in this section.

**TABLE 3.15-2  
 SUMMARY OF IMPACT CONCLUSIONS—TRIBAL CULTURAL RESOURCES**

Impact Statement	Impact Conclusion
<b>3.15-1:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.	LSM
NOTE: LSM = Less than Significant with Mitigation	

**Impact 3.15-1: Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a shed) likely located within or adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal itself. It is also possible that some actions could occur in areas within Contractors' boundaries.

Potential construction of small water treatment facilities by Contractors in response to the proposed Guidelines could involve ground disturbance and may also affect the biological resources community, visual setting, noise levels, and air quality, among other resources. Such activities are the type that have the potential to affect tribal cultural resources through their partial or complete destruction, introduction of new visual elements to landscapes associated with or composing tribal cultural resources and impacts on biological resources associated with or composing tribal cultural resources. However, because the precise locations and characteristics of potential future actions are uncertain, it is not known whether impacts on tribal cultural resources would occur. Construction of small water treatment facilities could partially or completely destroy archaeological resources that may compose tribal cultural resources or could result in as-yet-undefined impacts on tribal cultural resources if construction were to occur on undisturbed land, thus resulting in a significant impact.

If construction activities were to result in an impact on tribal cultural resources as defined in PRC Section 21074, the impact would be **potentially significant**.

Construction activities associated with actions that could be implemented by Contractors in response to the proposed Guidelines are the types of activities that have the potential to affect tribal cultural resources. However, the exact details, including precise locations, of any such actions have yet to be determined. Therefore, it is not known whether such actions would affect tribal cultural resources. Factors necessary to identify specific impacts on archaeological resources include the design, footprint, and type of the actions and the precise locations of construction activities. If any construction activities were to affect tribal cultural resources as defined in PRC Section 21074, the impact would be **potentially significant**.

### **Mitigation Measures**

**Implement Mitigation Measures 3.6-2a, 3.6-2b, 3.6-2c, 3.6-2d, and 3.6-3.** (See Section 3.6, *Cultural Resources*.)

**Significance After Mitigation:** Implementation of Mitigation Measure 3.6-2a would require for construction-related activities consultation with California Native American Tribes, as well as identification and evaluation of archaeological resources, including any that may qualify as tribal cultural resources. Mitigation Measure 3.6-2b would require additional consultation with California Native American Tribes regarding avoidance of any indigenous archaeological resources, and if avoidance is not feasible, development and implementation of an archaeological resources management plan for the archaeological resources that would be affected. Implementation of Mitigation Measure 3.6-2c would

require a cultural resources awareness training for construction personnel involved in ground-disturbing activities, and Mitigation Measure 3.6-2d would require implementation of a protocol for assessment and treatment, including consultation with California Native American Tribes, if the resource is indigenous, of any potential archaeological resources identified during construction activities. Mitigation Measure 3.6-3 would require implementation of a protocol for assessment and treatment of any potential human remains, including any that may be Native American in origin and may constitute a tribal cultural resource, identified during construction activities. Implementation of Mitigation Measures 3.6-2a through 3.6-2d and 3.6-3, or equally effective measures, would reduce any potential impacts on tribal cultural resources associated with construction of actions by Contractors in response to the proposed Guidelines to a less-than-significant level. Therefore, this impact would be **less than significant with mitigation incorporated.**

---

## 3.16 Utilities and Service Systems

### 3.16.1 Introduction

This section describes the utilities and service systems currently occurring in the study area and provides an analysis of the potential utilities and service system impacts that could result from implementation of the proposed Guidelines.

No comments specifically addressing aesthetics were received in response to the NOP. See Appendix A for NOP comment letters.

### 3.16.2 Environmental Setting

The study area, which includes the length of the Friant-Kern Canal, extends 152 miles through Fresno, Tulare, and Kern counties and through a number of towns, hamlets, and unincorporated areas. Utilities vary by town and county.

#### **Wastewater Collection and Treatment Systems**

Wastewater collection and treatment services in Fresno, Tulare, and Kern counties are provided by cities, counties, and special districts. Wastewater treatment facilities with collection systems typically are located in urban areas. Some of the unincorporated areas of Fresno, Tulare, and Kern counties are serviced by individual or community septic systems. Wastewater collection systems, including sanitary sewer pipelines, leach fields, and septic systems, are likely to occur in the study area and vicinity. There are a number of wastewater treatment facilities in Fresno, Tulare, and Kern counties; those largest and closest to the study area are described below.

Wastewater in Porterville is collected through 6- to 36-inch pipelines. The Porter Vista Public Utility District owns and maintains sewer collection services for the Porter Vista development area, which is generally north of State Route 190, south of Olive Avenue, and east of Main Street in Porterville. The Porterville Wastewater Treatment Facility, located at the southwest corner of West Grand Avenue and North Prospect Street, collects and treats wastewater from the city of Porterville; the facility has a capacity of 8 million gallons per day (City of Porterville 2021).

The Strathmore Public Utilities District provides sanitary sewer collection, treatment, and disposal services to residents in the community of Strathmore. The Strathmore Public Utilities District owns and operates a wastewater treatment facility located southwest of the community that provides primary treatment for wastewater collected in the community. The capacity of the Strathmore Wastewater Treatment Facility is 0.4 million gallons per 21 days (Central Valley Regional Water Board 2016).

Fresno County is serviced by the Fresno-Clovis Regional Wastewater Reclamation Facility. The facility has a capacity of 80 million gallons per day, and currently receives an average of 65 million gallons per day. It services a population of 500,000 (City of Fresno Department of Public Utilities 2014). Reedley Wastewater Treatment Plant is located near the Kings River and has a capacity of 7 million gallons per day (City of Reedley 2006). The town of Sanger also

operates a wastewater collection system along with an industrial wastewater treatment plant. The capacity of the plant totals around 4.3 million gallons a day and receives an average of 1.8 million gallons a day (City of Sanger 2009).

Bakersfield has two wastewater treatment plants (Numbers 2 and 3). Wastewater Treatment Plant Number 2 services west of Highway 99 and Wastewater Treatment Plant Number 3 services east of Highway 99. Both receive a daily average flow of about half of their design capacity; Plant Number 2 receives an average daily flow of 13.7 million gallons per day and has a capacity of 25 million gallons per day and Plant Number 3 receives an average daily flow of 17.3 million gallons per day and has a capacity of 32 million gallons per day (City of Bakersfield 2023).

### Solid Waste Collection and Disposal

The RCRA states that “solid waste” means any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities (EPA 2023). Generally, solid waste is sorted into landfills. Active landfills in the vicinity of the study area are listed in **Table 3.16-1**.

**TABLE 3.16-1  
 ACTIVE LANDFILLS IN THE VICINITY OF THE STUDY AREA**

<b>Kern County</b>	<b>Fresno County</b>	<b>Tulare County</b>
Valley Tree and Construction Disposal Site	Orange Cove Disposal Site, City of Orange Cove	So. Tulare-Richgrove Recycling Facility
Kern Front Disposal Site	City of Sanger Public Works Yard	Richgrove Disposal Site
North of The River Bd, Shafter #2 Bd	City of Sanger Disposal Site (City Yard)	Teapot Dome Disposal Site, Terra Bella (South)
American Tire Tech	Trimmer Solid Waste	City of Porterville Solid Waste Transfer
R & F Disposal Transfer Station Operation		Viramontes Express
Delano #2 Bd		Strathmore (Pit 19)
McFarland-Delano Recycling/Transfer Station; McFarland-Delano Sanitary Landfill		City of Lindsay Dump, Exeter City Dump
		Exeter Disposal Site, Woodlake Disposal Site
		Woodlake City Dump
		Orosi Disposal Site
		Pena’s Disposal Inc. Transfer

SOURCE: CalRecycle 2023

### Water Supply and Distribution Systems

Water service providers in Fresno, Tulare, and Kern counties include cities and counties, special districts, and private utilities. Water service providers range in size from those with a few service connections to those with thousands of connections. Most water service providers obtain their water from surface water, groundwater, or a combination of these sources. The amount of water available to these service providers is defined by water rights, water contract agreements, groundwater pumping limitations, and the infrastructure required to treat, pump, and deliver water. In unincorporated areas, individuals often rely on private groundwater wells. Other water or irrigation districts that may service or impact the Friant-Kern Canal outside of Fresno, Tulare,



and Kern County. Chowchilla Water District, Madera Irrigation District, Gravelly Ford Water District, and Madera County (Hidden Lakes Estates) are districts in Madera County and are divisions of Friant. A list of water and irrigation districts in Fresno, Tulare, and Kern are listed in **Table 3.16-2**.

**TABLE 3.16-2  
 WATER AND IRRIGATION DISTRICTS IN KERN, FRESNO, AND TULARE COUNTIES**

<b>Kern County</b>	<b>Fresno County</b>	<b>Tulare County</b>
Antelope Valley – East Kern Water Agency	City of Fresno	Angola Water District
Arvin Community Services District	Freewater County Water District	Atwell Island Water District
Arvin Edison Water Storage District	Malaga County Water District	Hope Water District
Belridge Water Storage District	Pinedale County Water District	Kern-Tulare Water District
Berrenda Mesa Water District	Broadview Water District	Lewis Creek Water District
Buena Vista Water Storage District	Farmers Water District	St. John’s Water District
Calloway Canal	Firebaugh Canal Water District	Tea Pot Dome Water District
Cawelo Water District	Fresno Irrigation District	Vandalia Water District
Delano-Earlimart Irrigation District	Fresno Slough Water District	Alpaugh Irrigation District
Henry Miller Water District	Garfield Water District	Alta Irrigation District
Indian Wells Valley Water District	International Water District	Consolidated Irrigation District
Kern County Water Agency	Kings River Water District	Corcoran Irrigation District
Kern Delta Water District	Liberty Water District	Delano-Earlimart Irrigation District
Kern Tulare Water District	Mercy Springs Water District	Ducor Irrigation District
Lebec County Water District	Mid Valley Water District	Exeter Irrigation District
Lost Hills Water District	Oro Loma Water District	Hills Valley Irrigation District
North Kern Water Storage District	Panoche Water District	Ivanhoe Irrigation District
Olcese Water District	Pleasant Valley Water District	Kaweah Delta WCD
Rosedale-Rio Bravo Water Storage District	Raisin City Water District	Lindmore Irrigation District
Semitropic Water Storage District	Stinson Water District	Lindsay-Strathmore Irrigation District
Southern San Joaquin MUD	Tri-Valley Water District	Lower Tule River Irrigation District
Shafter-Wasco Irrigation District	Westlands Water District	Orange Cove & Hills Valley Irrigation Districts
Tehachapi-Cummings County Water District	Widren Water District	Pixley Irrigation District
Tejon-Castac Water District	James Irrigation District	Porterville Irrigation District
Tulare Lake Basin Water Storage District		Saucelito Irrigation District
West Kern Water District		Stone Corral Irrigation District
Wheeler Ridge-Maricopa Water Storage District		Terra Bella Irrigation District
		Tulare Irrigation District

SOURCE: Water Association of Kern County 2023; Fresno County 2023; Tulare County 2023

Water for agricultural use in Tulare, Fresno, and Kern counties is conveyed largely by canals, including the Friant-Kern Canal and Cross Valley Canal. Water for domestic use in the more developed areas, such as the cities of Porterville, McFarland, and Lindsay, is conveyed by pipelines. Refer to Section 5.11, *Hydrology and Water Quality*, for a description of surface water conveyance facilities and surface water use in the study area.

## **Stormwater Collection**

Stormwater infrastructure in each of the counties in the study area is limited to the urban areas where stormwater drainage is present. The more rural areas are drained primarily by overland flow into human-made ditches, natural drainage swales, and watercourses that discharge into waterways.

## **Electricity and Natural Gas Service**

Fresno County is serviced by PG&E and the counties of Tulare and Kern are serviced by Southern California Electric. PG&E provides natural gas and electric service to approximately 16 million people throughout northern and central California, with 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines, as well as 42,141 miles of natural gas distribution lines (PG&E 2023). Southern California Electric serves roughly 15 million people with 12,635 miles of transmission lines and 91,375 of distribution lines (SCE 2023).

### **3.16.3 Regulatory Setting**

Federal and state plans, policies, regulations, and laws, and regional or local plans, policies, regulations, and ordinances pertaining to utilities and service systems are discussed in this section. Refer to Section 3.11, *Hydrology and Water Quality*, for federal, state, and local regulations related to hydrology and water quality.

#### **Federal**

##### ***Resource Conservation and Recovery Act***

Subtitle D of the Resource Conservation and Recovery Act (United States Code title 42, Section 6901 et seq.) contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. The federal regulations address the location, operation, design, groundwater monitoring, and closure of landfills. The USEPA's waste management regulations are listed in volume 40, parts 239–282 of the Code of Federal Regulations. Resource Conservation and Recovery Act subtitle D is implemented by title 27 of the Public Resources Code, approved by the USEPA.

#### **State**

##### ***California Public Utilities Commission***

The California Public Utilities Commission regulates privately owned water, energy, and telecommunications utilities. The commission is also responsible for safety enforcement, which includes investigating accidents occurring on the property of any public utility. The California Public Utilities Commission's Division of Ratepayer Advocates has a statutory mandate to obtain the lowest possible utility rates for service consistent with safe and reliable service levels.

##### ***State Water Resources Control Board, Division of Drinking Water***

The State Water Board's Division of Drinking Water regulates public water systems, oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and performs a number of other functions. The Division of Drinking Water consists of three branches: The Northern California Field Operations Branch, the Southern California Field

Operations Branch, and the Program Management Branch. The Northern California and Southern California field operations branches are responsible for enforcing the federal and California Safe Drinking Water Acts and conducting regulatory oversight of public water systems in California. In this undertaking, staff members perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for noncompliance with laws and regulations, review water quality monitoring results, and support and promote water system security. The Field Operations Branches also participate in funding infrastructure improvements, conducting source water assessments, overseeing water recycling projects, and promoting public water systems in drought preparation and water conservation.

### ***Integrated Waste Management Act (Assembly Bill 939)***

The regulations affecting solid waste disposal in California can be found in Title 14 of the California Public Resources Code, the Integrated Waste Management Act. Originally enacted in 1989 through AB 939, the law is designed to increase the life of landfills by requiring diversion of solid waste from landfills in the state and conservation of other resources through increased recycling programs and incentives.

AB 939 requires counties to prepare integrated waste management plans to implement landfill diversion goals and requires cities and counties to prepare and adopt source reduction and recycling elements. These elements must establish a program for managing solid waste generated within the city's or county's jurisdiction. Each source reduction and recycling element must include, but is not limited to, all of the following components for solid waste generated within the plan's jurisdictional area:

- Waste characterization
- Source reduction
- Recycling
- Composting
- Solid waste facility capacity
- Education and public information
- Funding
- Special waste

Source reduction and recycling element programs are designed to achieve landfill diversion goals by encouraging recycling in the manufacture, purchase, and use of recycled products. AB 939 also requires California cities to implement plans designed to divert the total solid waste generated within each jurisdiction by 50 percent, based on a base year of 2000. The diversion rate is adjusted annually for population and economic growth when calculating the percentage achieved in a particular jurisdiction.

### ***Public Resources Code Section 41780***

The California Legislature set a policy goal that not less than 75 percent (%) of solid waste generated in the state would be source reduced, recycled, or composted beginning by January 1, 2020. A 50 percent diversion rate is enforced for local jurisdictions.

### ***Assembly Bill 1220***

The California Department of Resources Recycling and Recovery (CalRecycle) and the State Water Board completed parallel rulemaking as a result of AB 1220 (chapter 656, Statutes of

1993). AB 1220 required clarification of the roles and responsibilities of CalRecycle and the State Water Board, the regional water boards, and CalRecycle's local enforcement agencies in regulating solid waste disposal sites. The approved regulations in California Code of Regulations title 27 combine the prior disposal site/landfill regulations of CalRecycle and the State Water Board, which were maintained in California Code of Regulations title 14 and title 23, chapter 15 (which contains requirements for disposal of hazardous waste).

The purpose of CalRecycle's regulatory standards is to protect public health and safety and the environment. The regulations apply to active and inactive disposal sites, including facilities or equipment used there. These standards clarify that the local enforcement agency has primary responsibility for enforcing the state's minimum standards, working in cooperation with the regional water board or other oversight agencies.

The California Code of Regulations Title 27 regulations also include the following operating criteria and requirements for landfills and disposal sites:

- Sufficient materials to cover waste to prevent a threat to human health and the environment.
- Proper handling of waste and the equipment needs of solid waste facilities.
- Control of activities on-site.
- Control of landfill gas that is made from the decomposition of wastes on-site.
- Proper operation of the site to protect the site from fire threats.

### ***Assembly Bill 341***

To reduce greenhouse gas emissions from disposal of recyclables in landfills, AB 341 requires local jurisdictions to implement commercial solid waste recycling programs. Businesses that generate 4 cubic yards or more of solid waste per week or multifamily dwellings of five units or more must arrange for recycling services. To comply with AB 341, jurisdictions' commercial recycling programs must include education, outreach, and monitoring of commercial waste generators and must report on the process to CalRecycle. Jurisdictions may enact commercial recycling ordinances to outline how the goals of AB 341 will be reached.

To comply with AB 341, businesses must arrange for collection of recyclables by self-hauling, subscribing to a franchised hauler for collection, or subscribing to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation (CalRecycle 2023).

### ***Assembly Bill 1826***

To further reduce greenhouse gas emissions from disposal of organic materials in landfills, AB 1826 required certain businesses to recycle their organic waste beginning on April 1, 2016, with required recycling services dependent on the amount of solid waste generated per week. Similar to AB 341, jurisdictions must implement an organic waste recycling program that includes the education, outreach, and monitoring of businesses that must comply. *Organic waste* refers to food waste, green waste, landscaping and pruning waste, nonhazardous wood waste, and food-soiled paper that is mixed with food waste.

## Local

The study area includes lands in Fresno, Tulare, and Kern counties. Each of these jurisdictions have general plans with goals and policies that address utilities and service systems, including policies addressing providing adequate utility systems. Applicable general plan goals and policies are Presented in **Table 3.16-3**.

**TABLE 3.16-3  
 APPLICABLE GENERAL PLAN GOALS AND POLICIES—UTILITIES AND SERVICE SYSTEMS**

General Plan	Goals and Policies
<b>Fresno County</b>	Public Facilities and Services Element, Goal PF-D, Policies PF-D.1–PF-D.7; Goal PF-E, Policies PF-E.1–PF-E.22; Goal PF-F, Policies PF-F.1–PF-F.11; Goal PF-J, Policies PF-J.1–PF-J.4
<b>Tulare County</b>	Public Facilities and Services, Goal PFS-3 Wastewater; Policies PFS-3.1–PFS- 3.7; Goal PSF-4 Storm Drainage, Policies PFS-4.1–PFS 4.7; Goal PFS-5 Solid Waste, Policies PFS-5.1–PFS-5.9; Goal PFS-6 Communications Systems, Policies PFS-6.1–PFS-6.3
<b>Kern County</b>	Public Facilities and Services Policies 1–17, Goals 1–6 and 9-11

SOURCES: Fresno County 2000; Tulare County 2012; Kern County 2009

### 3.16.4 Impacts and Mitigation Measures

#### Methods of Analysis

This analysis of impacts related to utilities and service systems generally describes potential changes to existing utilities and service systems that could result from implementation of the proposed Guidelines and actions that Contractors may take to comply with the proposed Guidelines. As described in Section 3.1, *Approach to the Analysis*, because the precise location and characteristics of potential future actions are yet to be determined, this impact analysis is programmatic. The analysis focuses on the types of reasonably foreseeable changes associated with implementation of actions taken by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts will be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

The study area and vicinity was analyzed through various mapping mediums (e.g., Google Earth, Google Maps, SWIS) for proximity to various utilities and service systems.

#### Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to utilities and service systems is considered significant if the proposed Guidelines would do any of the following:

- 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.
- Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

- 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.
- 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.
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

### Impacts Not Evaluated Further

**Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the action’s projected demand in addition to the provider’s existing commitments.** Potential Contractor actions taken in response to the implementation of the proposed Guidelines could include construction activities that may temporarily generate wastewater at the construction site. However, generation of wastewater during construction activities would be negligible because such activities would be short-term, ranging from as short as a few days to as long as a couple of weeks. All wastewater generated on-site would be collected and disposed of in accordance with state and federal regulations and would cease once construction is complete. No local wastewater treatment or collection systems would be affected by the proposed Guidelines. Operational and maintenance activities would be similar to existing conditions and would not cause an increase in wastewater. Therefore, the proposed Guidelines would not result in additional wastewater flows that would exceed wastewater treatment capacity. **No impact** would occur, and this issue is not further evaluated in this Draft EIR.

### Impacts and Mitigation Measures

Table 3.16-4 summarizes the impact conclusions presented in this section.

**TABLE 3.16-4  
 SUMMARY OF IMPACT CONCLUSIONS—UTILITIES AND SERVICE SYSTEMS**

Impact Statement	Impact Conclusion
<b>3.16-1:</b> Implementation of the proposed Guidelines could require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	LTS
<b>3.16-2:</b> Implementation of the proposed Guidelines would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.	LTS
<b>3.16-3:</b> Implementation of the proposed Guidelines could 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, and would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	LTS
NOTES: LTS = Less than Significant	

**Impact 3.16-1: Implementation of the proposed Guidelines could require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a small shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of water quality monitoring stations located in the Friant-Kern Canal. It is also possible that some actions could occur in areas within the Contractor's boundaries.

Construction activities could involve the use of small amounts of water during construction for dust suppression. Water needed during construction may be taken from the Friant-Kern Canal from willing sellers, groundwater, or it may be trucked in from outside sources. The amount of water that would be required for construction would be negligible and would not require the relocation or construction of new or expanded water facilities. Operational and maintenance activities would be similar to existing conditions and also would not require the relocation or construction of new or expanded water facilities.

Construction activities could also involve minor wastewater generation from sources such as construction trailers, concrete mixing, and placement and cleaning of trucks and other equipment. All wastewater generated on-site would be collected and disposed of in accordance with state and federal regulations and would cease once construction is complete. Therefore, no local wastewater treatment or collection systems would be affected by construction of actions. Operational and maintenance activities would not generate any new wastewater or treatment needs.

Because of the small scale of potential Contractor actions, the relocation of stormwater drainage features or power/natural gas/telecommunication facilities would not be required.

Because proposed facilities would have limited footprints and the duration of construction activities would be short-term (a few days to a couple of weeks), potential impacts associated with relocation of utility lines would be nominal. Furthermore, the construction and operation of the small-scale facilities would also not be anticipated to result in the need to construct new or expand existing utilities. Therefore, this impact would be **less than significant**. Furthermore, potential environmental effects associated with the need to construct new, modify existing or relocate utilities infrastructure are evaluated in the technical resource sections in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*, as appropriate.

**Impact 3.16-2: Implementation of the proposed Guidelines would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.**

As described in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the proposed Guidelines. Actions may include construction and operation of small water treatment facilities (approximately the size of a small shed) likely located adjacent to the Friant-Kern Canal right-of-way, or installation of

water quality monitoring stations located in the Friant-Kern Canal. It is also possible that some actions could occur in areas within the Contractor's boundaries. As discussed in Impact 3.16-1, construction activities could involve the use of small amounts of water for dust suppression that could be supplied from the Friant-Kern Canal from willing sellers, groundwater, or trucked in from outside sources. However, construction water demand would be negligible, and operational and maintenance activities would be similar to existing conditions. Therefore, this impact would be **less than significant**. Effects on groundwater supplies as a result of the proposed Guidelines are discussed in Section 3.11, *Hydrology and Water Quality*.

**Impact 3.16-3: Implementation of the proposed Guidelines could 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, and would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.**

Construction activities may temporarily cause an increase in solid waste generation in the study area, such as from construction-related debris from demolition or leftover materials. However, due to the small scale of the potential activities and proper waste management, solid waste would not be created in excess of state or local standards or in excess of the capacity of local infrastructure or impair the attainment of solid waste reduction goals. The generation of solid waste from potential construction activities would have a negligible impact on the permitted capacity at landfills within the study area given the current available landfill capacities. Operational and maintenance activities would be similar to existing conditions and would not generate new volumes of solid waste.

As the proposed Guidelines would not generate a significant amount of waste during potential construction or operation of Contractor actions to comply with the requirements of the proposed Guidelines, the proposed Guidelines would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. Therefore, this impact would be **less than significant**.



# CHAPTER 4

---

## Cumulative Impacts

### 4.1 Introduction

This chapter describes the CEQA requirements for the analysis of cumulative impacts, the geographic scope and time frame for cumulative analysis, the existing-conditions context for past activities, related projects, and the potential cumulative impacts of the proposed Guidelines.

As discussed in Chapter 2, *Project Description*, in response to the proposed Guidelines, Contractors might need to take certain actions to comply with the water quality thresholds defined in the proposed Guidelines. Potential actions could include blending water, changing the timing of water introduced into the Friant-Kern Canal, installing well head filtration, or constructing and operating a small water treatment facility. In addition, Contractors might install facilities for monitoring and forecasting water quality (e.g., construction and maintenance of water quality monitoring stations). Further, to account for changes in water supply related to compliance with the proposed Guidelines, a Contractor may seek alternative water supplies, such as increasing groundwater pumping and/or purchasing, exchanging, and transferring surface water supplies as part of the Contractor’s overarching water portfolio management.

A range of actions could be undertaken to meet the requirements of the proposed Guidelines. This potential range of activities is described in Chapter 2, *Project Description*. The extent to which a Contractor might take a certain action in response to the proposed Guidelines and the precise locations and detailed characteristics of future actions are yet to be determined. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions.

Implementation of the proposed Guidelines would require Friant to install small water quality monitoring stations in the Friant-Kern Canal and this is evaluated in this Draft EIR. However, implementation of the proposed Guidelines would not cause Friant to make any substantial physical modifications to the Friant-Kern Canal; therefore, no associated impacts would occur.

The CEQA Guidelines require that an EIR assess the cumulative environmental impacts of a project when the project’s incremental effect is “cumulatively considerable.” An EIR must assess the cumulative impacts of a project with respect to past, current, and probable future projects in the region. Section 15355 of the CEQA Guidelines defines “cumulative effects” as “two or more individual effects that, when considered together, are considerable or which compound or increase other environmental impacts.” According to CEQA Guidelines Section 15130(b), the purpose of the cumulative impacts discussion is to reflect “the severity of the impacts and their

likelihood of occurrence,” and the discussion shall “be guided by the standards of practicality and reasonableness.”

The CEQA Guidelines further indicate that the discussion of cumulative impacts should include all of the following information:

- Either (a) a list of past, present, and probable future projects producing related cumulative impacts or (b) a summary of projections in an adopted general plan or similar document, or an adopted or certified environmental document, that described or evaluated conditions contributing to a cumulative impact.
- A discussion of the geographic scope of the area affected by the cumulative effect.
- A summary of the environmental effects expected to be produced by these projects.
- Reasonable, feasible options for mitigating or avoiding the project’s contribution to any significant cumulative effects.

## 4.2 Cumulative Context and Approach

### 4.2.1 Geographic Scope

The cumulative context considers both the geographical scope and the timing of projects related to the proposed Guidelines. To evaluate the cumulative impacts of implementation of the proposed Guidelines, the geographic scope is defined in Chapter 2, *Project Description*, and shown in Figure 2-1 as: (1) the 152-mile Friant-Kern Canal; (2) the area within and adjacent to the Friant-Kern Canal right-of-way; and (3) areas within the Friant Contractors’ boundaries. Because the precise locations and characteristics of potential actions are uncertain, this impact analysis is programmatic, focusing on the types of reasonably foreseeable changes from implementation of actions by Contractors in response to the proposed Guidelines. Once specific actions are proposed by Contractors, their impacts would be more fully evaluated in future project-level CEQA review by the lead agencies for the proposed actions. The evaluation of cumulative impacts considers the locations of potential impacts of implementation of the proposed Guidelines relative to the geographic extent of other projects with which it may be combined. Some impacts would be site specific or localized.

### 4.2.2 Criteria for Identifying Related Projects in the Study Area

Projects were considered for inclusion in the cumulative impact analysis based on whether they could affect resources in the study area that implementation of the proposed Guidelines could also affect. A list of such past, present, and reasonably foreseeable future projects was developed based on the following criteria:

- (1) The project would affect a portion of the physical environment that could also be affected by implementation of the proposed Guidelines (i.e., could interact with the Contractor actions implemented as a result of the proposed Guidelines on a cumulative basis).

- (2) Sufficiently detailed information about the project is available to allow meaningful analysis without undue speculation.
- (3) The project meets all of the following criteria:
- The project is actively under development (i.e., an identified sponsor is actively pursuing project development or construction).
  - An NOP or a notice of intent has been released and/or environmental clearance documentation has been completed, or substantial progress has been made toward completion.
  - The project is “reasonably foreseeable” given other considerations, such as site suitability, funding availability and economic viability, and regulatory limitations (e.g., the project has required regulatory permits).
- (4) The project is not considered part of the proposed action.

This cumulative impact discussion considers projects and plans identified under existing conditions (which include the current effects of past projects) and reasonably foreseeable and probable future projects. The criterion used by this Draft EIR analysis for considering whether a project is reasonably foreseeable and probable is whether the project has been defined in adequate detail to assess potential impacts, through the completion of either publicly available preliminary evaluations, feasibility studies, or draft environmental and engineering documents. The availability of funding and regulatory permits are also considerations for whether a project is reasonably foreseeable. Projects that were only in the development phase without detailed descriptions, operations criteria, or general locations, or that were not funded or permitted at the time that this cumulative impact assessment was written, are considered speculative. Thus, those projects are not considered further in this evaluation.

### 4.3 Cumulative Projects

**Table 4-1** summarizes the projects determined to meet the four criteria listed in subsection 4.2.2 for past, present, and reasonably foreseeable future projects and were selected for inclusion in the cumulative impact analysis.

### 4.4 Approach to the Cumulative Impact Analysis

To determine the significance of the proposed Guidelines’ cumulative impacts, a three-step process was followed:

- First, the extent of the cumulative impacts without the proposed Guidelines was evaluated to determine whether a significant cumulative impact on a resource would exist in the future. To do so, the combined effects of the past, present, and probable future projects listed in Table 4-1 were evaluated to determine whether there would be a significant cumulative impact.
- Second, a determination was made regarding whether the proposed Guidelines’ incremental contribution to any significant cumulative impact would be cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are

significant when viewed in connection with the effects of past, current, and probable future projects (CEQA Guidelines Section 21083).

- Third, a determination was made as to whether mitigation measures would be required to reduce the proposed Guidelines’ contribution to the cumulative impact to a less-than-considerable level, thus resulting in a less-than-significant cumulative impact. If not, then the cumulative impact would remain significant and unavoidable.

**TABLE 4-1  
PROJECTS INCLUDED IN THE CUMULATIVE IMPACT ANALYSIS**

Name	Type
Friant-Kern Canal Middle Reach Capacity Correction Project	Water Management
Friant-Kern Canal Reverse-Flow Pump-back Project	Water Management
Water Storage Investment Program	Multi-benefit
Existing and Future Friant-Kern Canal Pump-In Projects: <i>Sierra Waters:</i> <ul style="list-style-type: none"> <li>• Terra Bella Irrigation District Tule River Water Warren Act Agreement 2020–2024</li> <li>• Lower Tule River Irrigation District One-Year Agreement for Conveyance of Non-Project Surface Water in the Friant-Kern Canal</li> <li>• Kaweah River Warren Act Agreements 2019–2023</li> <li>• Shafter-Wasco Irrigation District 5-Year Warren Act Agreement for Kern River Water</li> <li>• FID FKC Intertie Project</li> <li>• Warren Act Contract for Delta Lands Reclamation District 770</li> <li>• Warren Act Contract for KTWD and LSID</li> <li>• Ivanhoe Irrigation District Warren Act Agreement of Kaweah River</li> </ul> <i>Groundwater:</i> <ul style="list-style-type: none"> <li>• Table Mountain Rancheria 25-Year Warren Act Contract</li> <li>• Madera ID Long-Term Banking and Return Project with North Kern WSD and/or Semitropic WSD</li> <li>• KTWD North Kern Banking Program</li> <li>• DEID North Kern Banking Program</li> <li>• Friant Division Groundwater Pump-in Program</li> <li>• Poso Creek IRWMP</li> <li>• Kimberlina Groundwater Recharge Basin and Banking Program</li> <li>• Cawelo Water District Long-Term Warren Act Contract</li> <li>• San Joaquin Municipal Utility District—Poso Creek IRWMP</li> <li>• FKC Farmer Pump-ins</li> </ul> <i>Cross Valley:</i> <ul style="list-style-type: none"> <li>• Cross Valley Contractors Interim Renewal of Conveyance Contracts</li> <li>• San Joaquin River Restoration Program Flows (Short- and Long-Term Recapture)</li> <li>• KTWD Rosedale Banking Program</li> <li>• DEID Rosedale Banking Program</li> <li>• KTWD West Kern Banking Program</li> <li>• LTRID and PID Cross Valley Contract</li> <li>• KTWD Cross Valley Contract</li> </ul>	Water Management and Multi-benefit

NOTES: DEID = Delano-Earlimart Irrigation District; FID = Fresno Irrigation District; FKC = Friant-Kern Canal; ID = Irrigation District; IRWMP = Integrated Regional Water Management Plan; KTWD = Kern-Tulare Water District; LSID = Lindsay Strathmore Irrigation District; LTRID = Lower Tule River Irrigation District; PID = Porterville Irrigation District; WSD = Water Storage District

SOURCES: Friant Water Authority 2023; data compiled by Environmental Science Associates in 2023.

## 4.5 Cumulative Impact Analysis

The cumulative impact analysis is presented by resource section and in the same order as the technical resource sections in Chapter 3, *Environmental Settings, Impacts, and Mitigation Measures*. All impacts of the proposed Guidelines discussed in this chapter are described in detail in Chapter 3, Sections 3.2 through 3.16. For each issue area addressed in this Draft EIR, the criteria applied to evaluate the significance of the overall cumulative effect are the same criteria used to evaluate direct and indirect impacts for that issue area.

### 4.5.1 Aesthetics

The study area includes many features that make up the visible landscape, including land, water, vegetation, geologic features, and built structures across primarily agricultural and rural residential land uses. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could result in adverse effects on visual quality, affect scenic vistas and scenic resources, and introduce new sources of light and glare. These effects could be temporary (construction-related) as well as long-term or permanent (new structures). This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction of small water treatment facilities would not substantially degrade scenic resources or degrade the existing visual character and quality of public views of the site and its surroundings, given the limited size and scale of such facilities. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

### 4.5.2 Agriculture and Forestry

Much of the land adjacent to the Friant-Kern Canal and in the larger study area is agricultural land. Many of the lands are designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could result in the permanent conversion of agricultural lands, including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, to nonagricultural use, or cause conflicts with a Williamson Act contract. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction of small water treatment facilities would not result in the permanent conversion of agricultural lands to nonagricultural use or conflict with a Williamson Act contract, given the limited size and scale of such facilities and their likely placement adjacent to existing water supply facilities. Therefore, the proposed Guidelines' contribution to this potentially significant

cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

### 4.5.3 Air Quality

SJVAPCD regulates air quality within the study area. In developing thresholds of significance for air pollutants, air districts consider the emissions levels at which a project's individual emissions would be cumulatively considerable. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could result in emissions of criteria air pollutants currently designated nonattainment (e.g., O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> relative to the NAAQS and CAAQS), or other emissions that create odors that would exceed the identified significance thresholds and could result in significant adverse impacts on the region's existing air quality. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Given the limited size and scale of such facilities, it is anticipated that any construction emissions would be short-term and temporary and would not result in substantial pollutant concentrations that would exceed general conformity *de minimis* thresholds or SJVAPCD CEQA thresholds, or conflict with or obstruct implementation of the air quality plans. SJVAPCD has adopted various air quality management plans to address pollutants currently designated nonattainment. As part of these plans, on-site control measures were adopted by Fresno, Kern, and Tulare counties to attain and maintain air quality standards. These control measures were then promulgated in the rules and regulations. Any actions implemented under the Guidelines must comply with the same air quality management standards, and therefore must adopt on-site measures to maintain these standards. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

### 4.5.4 Biological Resources

The study area includes a wide variety of natural communities highly altered from agricultural practices. Special-status plant and wildlife species are considered to potentially occur in the study area. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could affect sensitive habitats and special-status species, resulting in potentially significant cumulative impacts on those biological resources.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction of small water treatment facilities could affect sensitive habitats and special-status species, resulting in a considerable contribution to the potential significant cumulative impact. Implementation of Mitigation Measures 3.5-1a through 3.5-1k, 3.5-2, 3.5-3, and 3.5-4 would impose measures to avoid, minimize, and/or compensate for the loss of sensitive habitats and special-status species and ensure compliance with relevant federal, state, and local ordinances and

regulations. Therefore, implementing these mitigation measures would reduce the contribution of the proposed Guidelines to cumulative impacts on biological resources to less than cumulatively considerable, and this cumulative impact would be **less than significant**.

### 4.5.5 Cultural Resources

The study area includes historical (i.e., architectural) and archaeological resources, considering the traditional territory of the local Native American community. Continued development in the region runs the inherent risk of damaging or destroying unknown significant cultural resources that could yield information important to history or prehistory or previously unidentified human remains, resulting in a significant cumulative impact. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could potentially affect architectural resources that qualify as historical resources and/or archaeological resources, as defined in CEQA Guidelines Section 15064.5, or disturb or damage any human remains. This could result in a potentially cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction of small water treatment facilities could potentially affect architectural resources that qualify as historical resources and/or archaeological resources or disturb or damage any human remains, resulting in a considerable contribution to the potentially significant cumulative impact. Implementation of Mitigation Measures 3.6-1a and 3.6-1b, 3.6-2a through 3.6-2d, and 3.6-3 would require identification and treatment of archaeological and/or cultural resources discovered during the course of preconstruction cultural resource studies and other protective measures and adherence to state laws regarding human remains. Therefore, implementing these mitigation measures would reduce the contribution of the proposed Guidelines to cumulative impacts on cultural resources to less than cumulatively considerable, and this cumulative impact would be **less than significant**.

### 4.5.6 Energy

Electric services within the study area are provided by Eastside Power Authority, PG&E, and Southern California Edison; natural gas, gasoline, and diesel fuel are also used widely for electricity generation and transportation across the study area. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could require the use of fuels and direct and indirect energy use. These effects could be temporary (construction-related) as well as long-term or permanent (new structures), and could result in wasteful, inefficient, or unnecessary consumption of energy resources, or conflict with or obstruct state and local plans for renewable energy or energy efficiency. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Given the limited size and scale of such facilities, energy consumption associated with

construction and operations and maintenance activities would be temporary and minimal compared to the total amount of direct and indirect energy used in the study area. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

#### 4.5.7 Geology and Soils and Paleontology

The study area is located in a moderately active seismic area; however, the risk of ground failure as a result of fault rupture is considered low because no active faults are known to cross the study area. The majority of the study area is located in a highly disturbed landscape. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could result in substantial soil loss or the loss of topsoil; result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse in unstable soils; or directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction would not result in substantial soil erosion or loss of topsoil, and new features would not require extensive construction or any soil excavation, given the limited size and scale of Contractor actions. Projects could be subject to an NPDES permit requiring the preparation and implementation of a SWPPP, which would include BMPs designed to control and reduce soil erosion. In addition, given the small footprint of potential actions (e.g., small water treatment facilities), the nearly seismically inactive area, and the fact that the study area is not located in or near areas at risk for landslides, any impacts related to the risk of loss, injury, or death due to fault rupture, strong seismic ground shaking, seismic-related ground failure, or landslides would not be significant. In addition, because potential water treatment facilities would be small and any required excavation would be minor, the potential to destroy a unique paleontological resource or a unique geologic feature would be minimal. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

#### 4.5.8 Greenhouse Gas Emissions

Climate change is a global problem and the effects of GHG emissions are experienced globally. Therefore, in the context of CEQA, impacts of GHG emissions on global climate change are inherently cumulative. No single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, GHG emissions from present and future projects, including those listed in Table 4-1, combine to contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Given the limited size and scale of such facilities, it is anticipated that any emissions would not



generate substantial GHG emissions greater than the 1,100 MTCO<sub>2</sub>e threshold (i.e., the action-specific threshold selected to be consistent with the SMAQMD threshold (SMAQMD 2020)) or conflict with the applicable GHG plan, policy, or regulation, or GHG reduction goals. Therefore, the proposed Guidelines' contribution to the global cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

#### 4.5.9 Hazards and Hazardous Materials

Much of the land adjacent to the Friant-Kern Canal and in the larger study area of the Friant-Kern Canal is agricultural land. Current and past land use activities are potential indicators of hazardous materials storage and use. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could involve the routine transport, use, or disposal of hazardous materials that, if released, could create a hazard to the public or the environment, or within one-quarter mile of a school; could be located on a hazardous materials site; could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or could expose people or structures to loss, injury, or death involving wildland fires. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Given the limited size and scale of such facilities, and the short-term and intermittent nature of construction activities, the likelihood of creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (motor oil, gasoline, diesel fuel, solvents, and degreasers) in the study area during construction is low. Cal/OSHA is responsible for developing and enforcing workplace safety standards, including the handling and use of hazardous materials. Transport of hazardous materials is regulated by the U.S. Department of Transportation and Caltrans. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release of hazardous materials. The use of any hazardous materials would be subject to BMPs and would not result in reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

#### 4.5.10 Hydrology and Water Quality

The study area is in the Tulare Lake Hydrologic Region, which coincides with a portion of the San Joaquin Valley Groundwater Basin and multiple subbasins identified to be in a critically overdrafted condition by DWR as part of the SGMA basin prioritization. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features and/or alter existing operations, which could: violate surface and groundwater quality standards; degrade surface or groundwater quality; alter existing drainage patterns (e.g., resulting in substantial erosion or siltation on- or off-site, increasing the rate or amount of surface runoff, creating or contributing runoff water, or impeding or redirecting flood flows); risk releases of pollutants due

to project inundation; or conflict with or obstruct implementation of a water quality control and/or sustainable groundwater management plan. This could result in cumulatively significant impacts.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. To account for changes in water supply related to compliance with the proposed Guidelines, Contractors may seek alternative water supplies, such as increasing groundwater pumping and/or purchasing, exchanging, and transferring surface water supplies as part of Contractors' overarching water portfolio management. Groundwater pumping would need to meet all SGMA requirements, and purchasing, exchanging, and transferring surface water supplies would require compliance with requirements established by the State Water Board (e.g., water right petition for change) and Reclamation (e.g., compliance with Section 3405[a] of the Central Valley Project Improvement Act), as applicable. The types of activities and potential actions are not anticipated to violate surface and groundwater quality standards, degrade surface or groundwater quality, alter existing drainage patterns, risk releases of pollutants due to project inundation, or conflict with or obstruct implementation of a water quality control and/or sustainable groundwater management plan. Contractor actions could be subject to the NPDES and Construction General Permit, requiring implementation of temporary and/or permanent stormwater and erosion control BMPs described in a SWPPP.

Additionally, the proposed Guidelines would require water quality monitoring according to the in-prism water quality thresholds, further ensuring that there would not be a violation of existing water quality standards (i.e., basin plans) that would otherwise substantially degrade surface and groundwater quality. The proposed Guidelines would serve agricultural and domestic interests by protecting water quality in the Friant-Kern Canal for sustained use; therefore, the proposed Guidelines may improve water quality and contribute toward sustainable groundwater management in the study area. The proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

#### 4.5.11 Land Use and Planning

The study area comprises primarily agricultural and rural residential land uses. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could 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. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. The proposed Guidelines are consistent with land uses in the study area (primarily agricultural and rural residential) because they are intended to protect water quality in the Friant-Kern Canal for sustained use and would serve agricultural and domestic interests. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

### 4.5.12 Noise and Vibration

The study area comprises primarily agricultural and rural residential communities. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could temporarily contribute to the noise environment, expose nearby sensitive receptors to noise levels in excess of the applicable noise standards, or generate temporary groundborne vibration or groundborne noise levels. If these activities were to occur simultaneously with other nearby projects in the study area, the resulting cumulative increase in noise levels could exceed established thresholds, resulting in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction of small water treatment facilities could temporarily contribute to the noise environment, expose nearby sensitive receptors to noise levels in excess of the applicable noise standards, or generate temporary groundborne vibration or groundborne noise levels, resulting in a considerable contribution to the potential significant cumulative impact. Implementation of Mitigation Measure 3.13-1 would impose measures to reduce noise- and vibration-generating activities occurring adjacent to sensitive receptors. Therefore, implementing this mitigation measure would reduce the contribution of the proposed Guidelines to cumulative noise and vibration impacts to less than cumulatively considerable, and this cumulative impact would be **less than significant**.

### 4.5.13 Transportation

Most of the roads in the study area are narrow, county-owned, undivided two-lane collectors and local roads that are used primarily for access to agricultural lands and rural residential areas. Because of the rural nature of the area through which the Friant-Kern Canal passes, bicycle and pedestrian use of local and arterial roads is often shared with motor vehicle traffic. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could degrade conditions for transit, roadway, bicycle, or pedestrian facilities such that they would conflict with applicable programs, plans, ordinances, or policies addressing the circulation system for those areas or result in inadequate emergency access. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Temporary, limited construction traffic associated with construction of these small facilities would not conflict with applicable programs, plans, ordinances, or policies addressing the circulation system for those areas or result in inadequate emergency access. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

### 4.5.14 Tribal Cultural Resources

The study area may contain previously undocumented archaeological resources that have value independent of the scientific information they can provide and that may qualify as tribal cultural resources. Therefore, the potential exists for construction and operation of ongoing and future projects in the study area and vicinity, including the projects listed in Table 4-1, to disturb landscapes and archeological resources that may qualify as tribal cultural resources, as defined in PRC Section 21074. This would result in a potentially significant cumulative impact on those tribal cultural resources.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction of small water treatment facilities could disturb landscapes and archaeological resources that may qualify as tribal cultural resources, resulting in a considerable contribution to the potential significant cumulative impact. Implementation of Mitigation Measures 3.6-2a through 3.6-2d and 3.6-3 would require identification and treatment of tribal cultural resources discovered during the course of preconstruction cultural resource studies and other protective measures and adherence to state laws regarding human remains and would reduce the proposed Guidelines' contribution to cumulative impacts on historical and/or archeological resources. Therefore, implementing these mitigation measures would reduce the contribution of the proposed Guidelines to cumulative impacts on tribal cultural resources to less than cumulatively considerable, and the cumulative impact would be **less than significant**.

### 4.5.15 Utilities and Service Systems

Utilities and service systems providing service to the primarily agricultural and rural residential communities vary across the study area. Construction and operation of the projects listed in Table 4-1 would introduce new structures and features that could involve the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities; require sufficient water supplies for construction and operation activities; require additional wastewater treatment capacity; or generate solid waste in excess of federal, state, and local standards. This could result in a cumulatively significant impact.

In response to the proposed Guidelines, Contractors might need to implement actions to comply with the water quality thresholds including construction and operation of small water treatment facilities, or installation of water quality monitoring stations located in the Friant-Kern Canal. Construction of small water treatment facilities would not result in relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, nor would it require additional wastewater treatment capacity or generate solid waste in excess of federal, state, and local standards. Construction water demand would be negligible, given the small scale of potential facilities. Therefore, the proposed Guidelines' contribution to this potentially significant cumulative impact would not be considerable and this would be a **less-than-significant** cumulative impact.

# CHAPTER 5

---

## Other CEQA Considerations

CEQA Guidelines Section 15126 requires that all phases of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development and operation. As part of this analysis, an EIR must also identify: (1) significant environmental effects of the proposed project; (2) significant environmental effects that cannot be avoided if the proposed project is implemented; (3) significant irreversible environmental changes that would result from implementation of the proposed project; and (4) growth-inducing impacts of the proposed project.

Specifically, CEQA Guidelines include the following requirements:

- *Section 15126*: An evaluation of environmental impacts must consider all aspects of a project, including planning, acquisition, development, and operation. As part of this analysis, the EIR must also identify all of the following elements:
  - Significant environmental effects of the proposed project.
  - Significant environmental effects that cannot be avoided if the proposed project is implemented.
  - Significant irreversible environmental changes that would result from implementation of the proposed project.
  - Growth-inducing impacts of the proposed project.
- *Section 15126.2(b)*: An EIR must mitigate energy use if analysis of the project’s energy use reveals that the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary consumption use of energy, or wasteful use of energy resources. The analysis of the proposed project’s energy use is contained in Section 3.7, *Energy* and Chapter 4, *Cumulative Impacts*.
- *Section 15126.2(c)*: An EIR must describe any significant impacts that cannot be avoided, even with implementation of feasible mitigation measures. Chapter 3 of this Draft EIR presents the effects of the proposed project on various aspects of the environment. Section 5.1 identifies any significant and unavoidable impacts identified in Chapter 3.
- *Section 15126.2(d)*: An EIR must discuss any significant and irreversible environmental changes that would be caused by the proposed project. This analysis is included in Section 5.2 of this Draft EIR.
- *Section 15126.2(e)*: An EIR must evaluate the growth-inducing impacts of a project. This analysis is presented in Section 5.3 of this Draft EIR.
- *Section 15130(a)*: An EIR must assess the cumulative impacts that could be associated with project implementation. This assessment is included in Chapter 4 of this Draft EIR.

## 5.1 Significant and Unavoidable Impacts

CEQA Guidelines Section 15126.2(c) states that an EIR must describe the impacts identified as significant and unavoidable should a proposed project be implemented. Impacts are determined to be significant and unavoidable when either no mitigation, or only partial mitigation, is feasible to reduce impacts to less-than-significant levels. Friant will make the final determination of impact significance and of the feasibility of mitigation measures as part of the certification action. The environmental impacts that would result from implementation of the proposed Guidelines are presented in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*, and are summarized in the *Executive Summary*. All impacts can be feasibly mitigated to less-than-significant levels. Therefore, there would be no significant and unavoidable adverse impacts.

## 5.2 Significant Irreversible Environmental Changes

CEQA Guidelines (Section 15126.2[d]) require an evaluation of the significant irreversible environmental changes that would be caused by a project if implemented, as described below:

*Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse there after unlikely. Primary impacts, and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irrecoverable commitments of resources should be evaluated to assure that such current consumption is justified.*

In general, CEQA Guidelines refer to the need to evaluate and justify the consumption of nonrenewable resources and the extent to which a project would commit future generations to similar uses of nonrenewable resources. In addition, CEQA requires the evaluation of irreversible damage resulting from an environmental accident associated with the project.

Implementing of actions to meet the water quality thresholds in the proposed Guidelines could indirectly result in the commitment of nonrenewable natural resources used in the construction process and during operation and maintenance activities, including gravel, petroleum products, steel, and other materials. Actions could also result in the commitment of slowly renewable resources, such as wood products. As discussed in Section 3.16, *Utilities and Service Systems*, due to the small scale of proposed facilities, such as small water treatment facilities, that could be implemented by Contractors in response to the proposed Guidelines, earthmoving activities would not generate large amounts of construction waste and operations and maintenance activities also would not generate large amounts of waste. (See also Impact 3.16-3 in Section 3.16.)

Implementing actions to meet the water quality thresholds in the proposed Guidelines could also result in the commitment of energy resources such as fossil fuels. As discussed in Section 3.7, *Energy*, construction activities could require the direct and indirect use of energy resources. Direct energy use during construction would involve using petroleum products and electricity to operate equipment, and indirect energy use would involve consuming energy to extract raw materials, manufacture items, and transport the goods and people necessary for construction

activities. Construction-related energy consumption would be temporary, occurring only during the construction period (ranging from as short as a few days to as long as a couple of weeks), and use would be minimal given the limited size of facilities.

General operation and maintenance activities necessary to support the implementation of the Guidelines could require use of electricity for all processes, equipment, and operational lights. However, these activities would be similar to existing conditions and would not be anticipated to result in a substantial increase in energy use over existing conditions.

Compliance with all applicable state, county, and local plans, policies, and regulations pertaining to energy standards would ensure that natural resources are conserved to the maximum extent possible. It is therefore concluded that the rate and amount of energy consumed during construction or operation and maintenance activities would not result in the unnecessary, inefficient, or wasteful use of resources, and that energy use would be accomplished in a manner consistent with applicable laws and regulations.

To the extent that actions implemented by Contractors in response to the proposed Guidelines (including small water treatment facilities) would be constructed in currently sensitive natural communities (discussed in Section 3.5, *Biological Resources*), the potential actions could result in an irreversible conversion of sensitive natural communities. It is not anticipated that actions constructed near agricultural land (discussed in Section 3.3, *Agriculture and Forestry Resources*) would result in the conversion of agricultural land.

Finally, construction activities have the potential to result in accidental release of hazardous materials (discussed in Impact 3.10-1 in Section 3.10, *Hazards and Hazardous Materials*), which may lead to irreversible damage.

### 5.3 Growth-Inducing Impacts

CEQA Guidelines require that an EIR evaluate the growth-inducing impacts of a proposed project (Section 15126.2[e]). A growth-inducing impact is described by the CEQA Guidelines as:

*[T]he way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.*

A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project resulted in establishing a new demand for public services, facilities, or infrastructure, such as construction of new housing. A project would have indirect or secondary growth inducement potential if it would establish substantial new permanent employment

opportunities (e.g., commercial, industrial, or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. Similarly, as explained in the CEQA Guidelines, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint or increasing the capacity of a required public service, such as increased water supply capacity.

As identified in CEQA Section 15126.2(e), growth inducement is not in and of itself an “environmental impact”; however, growth can result in adverse environmental consequences. Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and policies for the affected area. Local land use plans, typically general plans, provide for land use development patterns and growth policies that allow for the “orderly” expansion of urban development supported by adequate urban public services, such as water supply, sewer service, and new roadway infrastructure. A project that would induce “disorderly” growth (i.e., a project conflicting with local land use plans) could indirectly cause adverse environmental impacts: for example, the loss of agricultural land that has not been addressed in the planning process. To assess whether a project with the potential to induce growth is expected to result in significant impacts, it is important to assess the degree to which the growth associated with a project would or would not be consistent with applicable land use plans.

### 5.3.1 Direct Growth Inducement

The proposed Guidelines would not directly induce growth because they do not involve the development of new housing or job centers that would attract an additional population. Although implementation of the proposed Guidelines may include minor construction activities, those activities would be of limited size and duration (such as small water treatment facilities approximately the size of a shed or water quality monitoring stations such as wall-mounted racks, free-standing racks, enclosed stations, compact stations, or floating platforms) and would require nominal numbers of construction workers. Because of the limited amount of work that would be required at any given time, and because the proposed Guidelines would not require a substantial workforce, no new homes, businesses, or public roads would be constructed, and the proposed Guidelines would not require construction workers to relocate to the area or result in the need for additional operations or maintenance employees. The proposed Guidelines also would not increase the area available for development of housing or include infrastructure that could indirectly induce growth. Therefore, the proposed Guidelines would not directly induce growth.

### 5.3.2 Indirect Growth Inducement

A project that would generate substantial new permanent employment could indirectly generate growth by creating demand for homes and services and fostering economic and population growth. Similarly, population growth induced by a short- or long-term construction effort with substantial employment opportunities could indirectly stimulate the need for additional housing and services to support the new temporary employment demand. Construction activities associated with implementing the proposed Guidelines would be of limited size and duration and would not require a substantial workforce. No new homes or businesses would be constructed,



and the proposed Guidelines would not require construction employees to relocate to the area or result in the need for additional operations or maintenance employees.

As stated in Section 1.1, *Introduction*, introducing Non-Millerton water into the Friant-Kern Canal provides a supplemental source of water to meet existing and new water demands for farmland and people in Central California. However, population in the study area would develop consistent with the overall framework for growth and development planned in the existing general plans for the study area.

The proposed Guidelines would not remove an impediment to growth or result in indirect population growth because construction of new residences and commercial development would not occur as a result of implementation of the proposed Guidelines.

This page intentionally left blank

# CHAPTER 6

---

## Project Alternatives

### 6.1 Introduction

This chapter describes alternatives to the proposed Guidelines and compares the environmental impacts of those alternatives. This chapter also describes alternatives that were considered for further consideration but rejected.

The principles used to guide selection of the alternatives analyzed in this Draft EIR are provided by Section 15126.6 of the CEQA Guidelines, which specifies that an EIR must do all of the following:

- Describe a reasonable range of potentially feasible alternatives to the project that could feasibly attain most of the basic objectives of the project.
- Consider alternatives that could reduce or eliminate any significant environmental impacts of the proposed project (in this case, the proposed Guidelines), including alternatives that may be costlier or could otherwise impede the project’s objectives.
- Evaluate the comparative merits of the alternatives.

The focus and definition of the alternatives evaluated in this Draft EIR are governed by the “rule of reason,” in accordance with CEQA Guidelines Section 15126.6(f). That is, the range of alternatives presented in this Draft EIR must permit a reasoned choice by Friant. The CEQA Guidelines (Section 15126.6) require that an EIR evaluate at least one “No-Project Alternative,” evaluate a reasonable range of alternatives to the project, identify alternatives that were considered during the scoping process but eliminated from detailed consideration, and identify the “environmentally superior alternative.”

Although the CEQA Guidelines (Section 15126.6[d]) require that alternatives be evaluated, they permit the evaluation to be conducted in less detail than for the proposed project (i.e., proposed Guidelines). Consistent with CEQA Guidelines Section 15126.6(d), the information provided in this Draft EIR about each alternative is sufficient to allow for a meaningful evaluation, analysis, and comparison of the alternatives with the proposed Guidelines.

The alternatives considered but rejected are discussed in subsection 6.3.3, *Alternatives Considered but Rejected*. The alternatives carried forward for analysis are discussed in Section 6.4, *Alternatives to the Proposed Guidelines*. The CEQA Guidelines also require that the EIR identify the environmentally superior alternative. Section 6.5, *Environmentally Superior Alternative*, identifies the environmentally superior alternative and summarizes the impacts of the alternative, and its ability to meet project objectives, as compared to the proposed Guidelines.

## 6.2 Objectives

As presented in Chapter 2, *Project Description*, Section 2.2, *Objectives of the Guidelines*, the objectives of the proposed Guidelines are to:

- Provide greater protection of the quality of water introduced to or received from the Friant-Kern Canal for sustained domestic and agricultural use.
- Define the water quality thresholds, including the “leave behind” water associated with introduced Non-Millerton water and corresponding water quality, as well as the methodologies and tools for monitoring and forecasting water quality in the Friant-Kern Canal.
- Guide the application review process, implementation procedures, and the responsibilities of water contractors and other parties authorized by Reclamation to introduce or receive Non-Millerton water into or from the Friant-Kern Canal.

## 6.3 Alternatives Considered and Screening Criteria

This section describes the development of a reasonable range of alternatives to the proposed Guidelines, the method used to screen the alternatives, and the alternatives considered but eliminated from detailed consideration in this document.

### 6.3.1 Development of a Reasonable Range of Alternatives

CEQA requires that an EIR describe and evaluate a reasonable range of alternatives to a project or to the location of a project that would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. The alternatives to the proposed Guidelines considered in this Draft EIR were developed based on information gathered during development of the proposed Guidelines.

Friant has been working for many years with Friant Contractors and Reclamation to develop the proposed Guidelines and prepare for their implementation. In developing the proposed Guidelines, a range of potential measures and other ways to meet the project objectives were considered, as discussed in Section 2.1.1, *Development of the Guidelines*. Reclamation developed the 2008 *Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals*, (referred to herein as the “2008 Policy”), which was revised in 2011, but the changes were not adopted. After consecutive critical water years in 2014 and 2015, Friant Contractors explored alternative water management options such as new or expanded groundwater banking programs to diversify water portfolios and increase supply flexibility. In 2017, Friant reinitiated a study of expanding the Friant-Kern Canal Reverse-Flow Pump-Back to develop a water quality management plan based on agronomic principles that would provide protections for Contractors and program operations.

In 2018 a “Friant-Kern Canal Water Quality Ad Hoc Committee” formed with the task of preparing an update to Reclamation’s 2008 Policy, which resulted in the proposed Guidelines. In the development of the proposed Guidelines, many iterations of water quality thresholds and management protocols were considered. Thresholds were established and management protocols

were determined through a negotiation process that sought to balance concerns regarding long-term supply reliability and chronic mass loading in the region and water quality management. Various draft versions of the proposed Guidelines were prepared based on input received from Ad Hoc Committee members, Reclamation, and the Friant Board of Directors.

### 6.3.2 Method Used to Screen Alternatives

Potential alternatives were screened based on their ability to feasibly attain most of the basic project objectives, their feasibility within the limits of Friant’s jurisdiction, and their ability to reduce or eliminate any significant environmental impacts of the proposed Guidelines.

- **Meeting project objectives**—The project objectives are listed above in Section 6.2. The CEQA Guidelines state that alternatives must feasibly attain most of the basic objectives of the project. Alternatives that do not meet the majority of the objectives of the proposed Guidelines were screened out and not carried forward for further evaluation in the Draft EIR.
- **Feasibility**—Alternatives that do not meet the requirements of applicable laws and regulations were not carried forward for further evaluation in the Draft EIR.
- **Avoiding or lessening any potentially adverse environmental effect of the proposed Guidelines**—Consistent with the CEQA Guidelines, alternatives should avoid or substantially lessen one or more of the significant environmental effects of the proposed project (i.e., the proposed Guidelines). Alternatives that would not lessen or avoid a potentially significant environmental impact may be eliminated from detailed evaluation in the Draft EIR.

### 6.3.3 Alternatives Considered but Rejected

The CEQA Guidelines require an EIR to identify any alternatives that were considered by the lead agency but were rejected as infeasible, and to briefly explain the reasons underlying the lead agency’s determination. Section 15126.6(c) of the CEQA Guidelines states the following:

*The EIR should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination...Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.*

The alternative considered but rejected was a large-scale, regional desalination plant. This alternative proposed constructing a 90-million-gallon-per-day plant that could process approximately 100,880 AF per year. The plant would utilize reverse osmosis to treat water supplies, with an assumed 90 percent recovery rate; the remainder would be concentrate or brine that would need to be disposed of. Based on high-level cost estimates for construction, capital repayment, permitting, annual power costs, and maintenance, the cost per acre-foot was anticipated to range from \$146 to \$457. This estimate did not include costs related to brine disposal. Options for brine disposal, in the absence of an ocean or other saltwater receiving body, could include deep well injection, evaporation ponds, and mechanical or thermal evaporation and crystallization. The required size of the desalination plant would have made it the largest

operating, inland saltwater desalination plant in the United States, at more than triple the size of The Kay Bailey Hutchison Desalination Plant in El Paso, Texas.

A desalination plant would meet the project objectives, including protecting the quality of water introduced to or received from the Friant-Kern Canal for sustained domestic and agricultural use. However, the construction and operation of the desalination plant, including the brine disposal, would not avoid or lessen environmental impacts compared to the proposed Guidelines. For example, using evaporation ponds to dispose of brine could result in the conversion of agricultural lands, and potential leakage of brine solution could alter the physical chemistry of the soil or result in groundwater contamination and increased salinity of the groundwater aquifer (Khan et al. 2021). Deep-well injection—in which brine is injected underground below the groundwater extraction level—is also not an ideal option, considering the importance of groundwater and groundwater management in the region and the risk of aquifer contamination (Elsaid 2017). Therefore, this alternative was rejected from further consideration.

## **6.4 Alternatives to the Proposed Guidelines**

One alternative was identified for further evaluation in the Draft EIR as a result of the alternatives development and screening process described above: the No Project Alternative.

This alternative is described below, along with a comparison of the impacts of the alternative to the impacts of the proposed Guidelines. The alternative was also evaluated for its ability to achieve the project objectives.

This analysis of impacts is based on an evaluation of the potential changes to environmental resources that would result from implementation of Contractor actions in response to the alternative, compared to the proposed Guidelines. However, the precise locations and detailed characteristics of potential actions are yet to be determined. Therefore, this analysis focuses on reasonably foreseeable types of activities and operational considerations that might be taken by Contractors, consistent with the level of detail appropriate for a program-level analysis.

Similar to the proposed Guidelines, impacts of the alternative were evaluated in terms of how typical construction, operations, and maintenance activities might cause adverse environmental impacts.

Consistent with CEQA Guidelines Section 15126.6(d), the information provided in this Draft EIR about the alternative is sufficient to allow for a meaningful evaluation, analysis, and comparison of the alternative with the proposed Guidelines. If the alternative would cause one or more significant effects in addition to those identified for the proposed Guidelines, the effects are discussed, but in less detail than for the proposed Guidelines. In the following section, impacts are described with respect to whether they are likely to be similar to, more severe than, or less severe than the corresponding impacts of the proposed Guidelines.

## 6.4.1 No Project Alternative

### Description of Alternative

CEQA Guidelines Section 15126.6(e) requires consideration of a “no project” alternative. The purpose of this alternative is to allow the decision makers to compare the impacts of the proposed project (i.e., proposed Guidelines) with the impacts of not approving the proposed Guidelines. The No Project Alternative consists of existing conditions at the time the NOP is published, and what would be reasonably expected to occur in the foreseeable future if the proposed Guidelines were not approved, based on current plans and consistent with available infrastructure.

Under the No Project Alternative, water would continue to be introduced into the Friant-Kern Canal consistent with the water quality monitoring requirements of the 2008 Policy. As described in subsection 2.1.1, *Development of the Guidelines*, the 2008 Policy only defines water quality and management requirements for “Non-Project Water,” which is water that has not been appropriated by the United States for the Friant Division of the CVP. Three types of Non-Project Water are identified—Type A, Type B, and Type C—and based on the Non-Project Water type, varying levels of monitoring and limited management of that water are required. In addition, the only water quality thresholds referenced are the Title 22 California Drinking Water Standards, or Title 22.

Type A water demonstrates complete compliance with Title 22 and must be analyzed every year. Type B water, which includes floodwater and groundwater, generally complies with Title 22 but may exceed the MCL for certain constituents. Reclamation allows Type B water to be introduced into the Friant-Kern Canal over short intervals and requires regular in-prism (i.e., in-situ) monitoring in the Friant-Kern and Madera canals (Reclamation 2008). Type C water originates at the same source as CVP water but has not been fully appropriated by Reclamation and is considered to be physically the same as CVP water. No water quality analyses are required to convey Type C water in the Friant-Kern Canal. An example of Type C water is CVC Contract supply. The 2008 Policy provides limited protections for water quality with a focus on domestic use water quality thresholds only. Specifically, Friant Contractors disproportionately affected by changes to Friant-Kern Canal water quality had concerns related to the limited requirements applied to Type B and Type C, which are typically higher in salts and other constituents of concern and not of equivalent quality to Millerton water.

Introducing higher salinity water supplies with limited monitoring and management would increase salt loading in the Friant Division and lead to agronomic impacts. Under the No Project Alternative, there would be no water quality threshold management based on agronomic principles that are protective of the most sensitive crops in the region. No “leave behind” water would be available to provide additional leaching water and support agronomic practices to effectively manage applied salts and long-term salt loading in the root zone, nor would monitoring and communication protocols be implemented. Under the No Project Alternative, Contractors and water users may need to act to appropriately manage applied salts and salt loading as a result of changes to the quality of water conveyed in the Friant-Kern Canal, and to protect their water supply for sustained domestic and agricultural use. Actions that Contractors are currently implementing and may need to implement under the No Project Alternative (i.e., should the 2008 Policy remain unchanged) could include operational and maintenance activities

associated with water quality monitoring and reporting. Therefore, Contractors may continue to install small water quality monitoring stations and/or manage applied salts and salt loading under the No Project Alternative.

Under the No Project Alternative, no action would be taken to approve the proposed Guidelines. None of the water quality requirements defined in the proposed Guidelines would be implemented, including water quality threshold management or the quantified “leave behind” water required for Non-Millerton water being introduced into the canal. In addition, potential actions (other than installation of small water quality monitoring stations) that might be taken by Contractors to meet the proposed Guidelines’ requirements and described in Chapter 2, *Project Description*, would not occur.

### **Relationship to Project Objectives**

The No Project Alternative would not provide greater protection of the quality of water introduced to or received from the Friant-Kern Canal for sustained domestic and agricultural use. It would not define the water quality thresholds, including the “leave behind” water associated with introduced Non-Millerton water and corresponding water quality, or the methodologies and tools for monitoring and forecasting water quality in the Friant-Kern Canal. The No Project Alternative also would not guide the application review process, implementation procedures, and the responsibilities of water contractors and other parties authorized by Reclamation to introduce or receive Non-Millerton water into or from the Friant-Kern Canal. Therefore, the No Project Alternative does not meet the project objectives of the proposed Guidelines.

### **Comparison of the No Project Alternative to the Proposed Guidelines**

Like the proposed Guidelines, the No Project Alternative may result in the use of construction equipment and materials, vehicles, and workers; ground-disturbing construction activities; and operational and maintenance activities to implement actions undertaken by Contractors and water users to appropriately manage applied salts and salt loading and/or install small water quality monitoring stations. For this reason, the No Project Alternative would result in impacts similar to those of the proposed Guidelines related to aesthetics, forestry resources, air quality, biological resources, cultural resources, energy, geology and soils and paleontology, hazards and hazardous materials, land use and planning, noise and vibration, transportation, tribal cultural resources, and utilities and service systems. Mitigation measures identified for the proposed Guidelines would also apply to the No Project Alternative.

Implementation of the No Project Alternative could result in less-than-significant but more severe impacts related to water quality and agricultural resources compared to the proposed Guidelines. Water quality in the Friant-Kern Canal could be degraded compared to existing conditions or when compared to water quality with implementation of the proposed Guidelines. Under the No Project Alternative, only certain types of Non-Project Water would be required to meet Title 22 MCL thresholds as defined in the 2008 Policy; by contrast, the proposed Guidelines require that all water not delivered from Millerton Lake to the Friant-Kern Canal’s headworks meet both Title 22 MCL and additional agronomic in-prism water quality thresholds. In addition, because the proposed Guidelines would not be implemented, “leave behind” water would not be



required for Non-Millerton water entering the Friant-Kern Canal. Contractors affected by changes to expected water quality would not receive the proportioned “leave behind” water necessary to augment agronomic leaching practices protective of sensitive crops. With the No Project Alternative, water quality in the Friant-Kern Canal may meet basic water quality standards; however, without additional agronomic water quality thresholds and management, “leave behind” water and monitoring of sustained domestic and agricultural use may not be protected. As a result, the end users of Contractors’ water supplies (i.e., farmers) may experience both acute and chronic impacts on agricultural resources and water supply.

Like the proposed Guidelines, the No Project Alternative may generate project construction emissions and may include activities that could expose sensitive receptors to pollutant concentrations or result in other emissions (such as those leading to odors), adversely affecting people. In addition, because this alternative may involve construction work or operational and maintenance activities, the No Project Alternative may generate GHG emissions that would have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for reducing GHGs. However, like the proposed Guidelines, these activities would likely be of limited scale and duration and not result in significant impacts.

Because ground-disturbing activities may occur under the No Project Alternative, impacts on biological resources, potential impacts on previously unrecorded cultural and tribal cultural resources, and conflicts with land use regulations may occur. Similarly, because construction and operational and maintenance activities may occur, potential impacts related to aesthetics, energy, forestry resources, geology and soils and paleontology, hazards and the use of hazardous materials in the study area, drainage and flood hazards, and temporary impacts associated with noise and transportation-related construction activities may occur with the No Project Alternative.

## 6.5 Environmentally Superior Alternative

CEQA requires identification of the environmentally superior alternative—that is, the alternative that would have the least significant impacts on the environment. CEQA Guidelines Section 15126.6(e)(2) states: “If the environmentally superior alternative is the ‘no project’ alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.”

**Table 6-1** presents a comparison of impacts by resource issue area for the proposed Guidelines and the No Project Alternative.

As shown in Table 6-1, and as discussed in the alternatives analysis above, the No Project Alternative would result in construction-related impacts similar to those of the proposed Guidelines, given that ground-disturbing activities may occur. However, the No Project Alternative could result in greater water quality impacts, and potentially greater impacts on agricultural resources and water supply (including groundwater demand or the need for new water supplies or water facilities), than the proposed Guidelines because water quality thresholds and actions would not be implemented for Non-Millerton water entering the Friant-Kern Canal. The proposed Guidelines are considered the environmentally superior alternative because the proposed Guidelines would result in potential impacts on fewer environmental resources than the No Project Alternative.

Implementation of appropriate general protection measures, species protection measures, and mitigation measures would minimize the potential for significant impacts from the proposed Guidelines.

**TABLE 6-1  
SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE  
AND THE PROPOSED GUIDELINES**

Resource Topic		Proposed Guidelines	No Project Alternative
<b>3.2 Aesthetics</b>	<b>3.2-1:</b> Implementation of the proposed Guidelines could have a substantial adverse effect on a scenic vista.	LTS	LTS
	<b>3.2-2:</b> Implementation of the proposed Guidelines could substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	LTS	LTS
	<b>3.2-3:</b> Implementation of the proposed Guidelines could, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. In an urbanized area, implementation of the proposed Guidelines could conflict with applicable zoning and other regulations governing scenic quality.	LTS	LTS
	<b>3.2-4:</b> Implementation of the proposed Guidelines could create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	LTS	LTS
<b>3.3 Agriculture and Forestry Resources</b>	<b>3.3-1:</b> Implementation of the proposed Guidelines could convert Farmland to nonagricultural use or conflict with a Williamson Act contract or zoning for agricultural use.	LTS	LTS+
	<b>3.3-2:</b> Implementation of the proposed Guidelines could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use.	LTS	LTS+
<b>3.4 Air Quality</b>	<b>3.4-1:</b> Implementation of the proposed Guidelines could conflict with or obstruct implementation of the applicable air quality plan.	LTS	LTS
	<b>3.4-2:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS
	<b>3.4-3:</b> Implementation of the proposed Guidelines could expose sensitive receptors to substantial pollutant concentrations.	LTS	LTS
	<b>3.4-4:</b> Implementation of the proposed Guidelines could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LTS	LTS
<b>3.5 Biological Resources</b>	<b>3.5-1:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.	LSM	LSM
	<b>3.5-2:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS.	LSM	LSM
	<b>3.5-3:</b> Implementation of the proposed Guidelines could result in a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.	LSM	LSM

**TABLE 6-1 (CONTINUED)**  
**SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE**  
**AND THE PROPOSED GUIDELINES**

Resource Topic		Proposed Guidelines	No Project Alternative
<b>3.5 Biological Resources (cont.)</b>	<b>3.5-4:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS
	<b>3.5-5:</b> Implementation of the proposed Guidelines could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	LSM	LSM
<b>3.6 Cultural Resources</b>	<b>3.6-1:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	LSM	LSM
	<b>3.6-2:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	LSM	LSM
	<b>3.6-3:</b> Implementation of the proposed Guidelines could disturb human remains, including those interred outside of dedicated cemeteries.	LSM	LSM
<b>3.7 Energy Resources</b>	<b>3.7-1:</b> Implementation of the proposed Guidelines could result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.	LTS	LTS
	<b>3.7-2:</b> Implementation of the proposed Guidelines could conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LTS	LTS
<b>3.8 Geology and Soils and Paleontology</b>	<b>3.8-1:</b> Implementation of the proposed Guidelines could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to fault rupture, strong seismic ground shaking, seismic-related ground failure, or landslides.	LTS	LTS
	<b>3.8-2:</b> Implementation of the proposed Guidelines could result in substantial soil erosion or the loss of topsoil.	LTS	LTS
	<b>3.8-3:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS
	<b>3.8-4:</b> Implementation of the proposed Guidelines could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LTS	LTS
<b>3.9 Greenhouse Gas Emissions</b>	<b>3.9-1:</b> Implementation of the proposed Guidelines could generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LTS	LTS
	<b>3.9-2:</b> Implementation of the proposed Guidelines could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	LTS
<b>3.10 Hazards and Hazardous Materials</b>	<b>3.10-1:</b> Implementation of the proposed Guidelines could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment, or that could be located within one-quarter mile of a school.	LTS	LTS
	<b>3.10-2:</b> Implementation of the proposed Guidelines could 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.	LTS	LTS

**TABLE 6-1 (CONTINUED)**  
**SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE**  
**AND THE PROPOSED GUIDELINES**

	Resource Topic	Proposed Guidelines	No Project Alternative
<b>3.10 Hazards and Hazardous Materials (cont.)</b>	<b>3.10-3:</b> Implementation of the proposed Guidelines could 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, could create a significant hazard to the public or the environment.	LTS	LTS
	<b>3.10-4:</b> Implementation of the proposed Guidelines could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LTS	LTS
	<b>3.10-5:</b> Implementation of the proposed Guidelines could expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires.	LTS	LTS
<b>3.11 Hydrology and Water Quality</b>	<b>3.11-1:</b> Implementation of the proposed Guidelines could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	LTS	LTS+
	<b>3.11-2:</b> Implementation of the proposed Guidelines could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LTS	LTS+
	<b>3.11-3:</b> Implementation of the proposed Guidelines could alter existing drainage patterns.	LTS	LTS
	<b>3.11-4:</b> Implementation of the proposed Guidelines in flood hazard, tsunami, or seiche zones could risk releases of pollutants due to project inundation.	LTS	LTS
	<b>3.11-5:</b> Implementation of the proposed Guidelines could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LTS	LTS+
<b>3.12 Land Use and Planning</b>	<b>3.12-1:</b> Implementation of the proposed Guidelines could conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LTS	LTS
<b>3.13 Noise and Vibration</b>	<b>3.13-1:</b> Implementation of the proposed Guidelines could result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the actions carried out in response to the implementation of the proposed Guidelines, in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LSM	LSM
	<b>3.13-2:</b> Implementation of the proposed Guidelines could result in the generation of excessive groundborne vibration or groundborne noise levels.	LSM	LSM
<b>3.14 Transportation</b>	<b>3.14-1:</b> Implementation of the proposed Guidelines could conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	LTS	LTS
	<b>3.14-2:</b> Implementation of the proposed Guidelines could conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS	LTS
	<b>3.14-3:</b> Implementation of the proposed Guidelines could substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS	LTS
	<b>3.14-4:</b> Implementation of the proposed Guidelines could result in inadequate emergency access.	LTS	LTS

**TABLE 6-1 (CONTINUED)**  
**SUMMARY COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE NO PROJECT ALTERNATIVE**  
**AND THE PROPOSED GUIDELINES**

Resource Topic	Proposed Guidelines	No Project Alternative
<b>3.15 Tribal Cultural Resources</b>	<b>3.15-1:</b> Implementation of the proposed Guidelines could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.	LSM
<b>3.16 Utilities and Service Systems</b>	<b>3.16-1:</b> Implementation of the proposed Guidelines could require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	LTS
	<b>3.16-2:</b> Implementation of the proposed Guidelines would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	LTS
	<b>3.16-3:</b> Implementation of the proposed Guidelines could 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, and would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	LTS

NOTES: LTS—Less than significant; LSM—Less than significant after application of feasible mitigation measure(s); + = Impact is more severe than under the proposed Guidelines.

SOURCE: Data compiled by Environmental Science Associates in 2023.

This page intentionally left blank

# CHAPTER 7

---

## List of Preparers

### **CEQA Lead Agency**

#### **Friant Water Authority (Friant)**

Ian Buck-Macleod, Water Resources Manager, Friant Water Authority

Katie Duncan, Senior Water Resources EIT, Friant Water Authority

Donald M. Davis, General Counsel, Friant Water Authority

Stephen E. Velyvis, Special Counsel, Friant Water Authority

### **EIR Consultant**

#### **Environmental Science Associates (ESA)**

Catherine McEfee, CEQA Project Manager

Meredith Parkin, CEQA Strategy

Emily Kline, Aesthetics, Geology, Soils and Paleontology, Hazards and Hazardous Materials,  
Utilities and Service Systems

Kelley Sterle, Air Quality, Energy, Greenhouse Gas Emissions, Hydrology and Water Quality

Jennifer Aranda, Agriculture and Forestry Resources, Land Use and Planning, Noise,  
Transportation

Daniel Huang, Biological Resources

Robin Hoffman, Cultural Resources and Tribal Cultural Resources

Julie Nichols, Technical Editor

Megan Rhode, Technical Editor

Kristine Olsen, Document Production

Lisa Bautista, Document Production

Stephan Geissler, Graphics and Figures

Ron Teitel, Graphics and Figures

This page intentionally left blank



# CHAPTER 8

---

## References

### Chapter 1, Introduction

Friant Water Authority. 2018. “The Friant Division of the Central Valley Project.” Fact sheet. April 2018. Available: <https://friantwater.org/fact-sheets>.

### Chapter 2, Project Description

United States Department of the Interior, Bureau of Reclamation (Reclamation). 2008. *Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals. Water Quality Monitoring Requirements*. March 7, 2008. Available: [https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc\\_ID=31688](https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=31688).

### Chapter 3, Environmental Setting, Impacts, and Mitigation Measures

#### Section 3.1, Approach to Analysis

California Department of Conservation (DOC). 2023. Mines Online. Available: <https://maps.conservation.ca.gov/mol/index.html>.

California Department of Forestry and Fire Protection (CAL FIRE). 2023. Fire Hazard Severity Zones. Office of the State Fire Marshal. Available: <https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/>.

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

Kern County. 2023. Kern County Gateway. Available: <https://kcpdcd.databasin.org/maps/new/#datasets=26c92d3ecbe541ec81451f9de4e1e0e4>.

Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.

## Section 3.2, Aesthetics

California Department of Transportation (Caltrans). 2019. Scenic Highways: California Scenic Highway System Map. Available: <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>.

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

Friant Water Authority. 2023. About the Friant-Kern Canal. Available: <https://friantwater.org/fkc>.

Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).

Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.

United States Department of Agriculture (USDA). 1996. *Landscape Aesthetics: A Handbook for Scenery Management*. Pages 6–8. Available: [https://blmwyomingvisual.anl.gov/docs/Landscape%20Aesthetics%20\(AH-701\).pdf](https://blmwyomingvisual.anl.gov/docs/Landscape%20Aesthetics%20(AH-701).pdf).

## Section 3.3 Agriculture and Forestry Resources

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).

Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.

## Section 3.4, Air Quality

California Air Resources Board (CARB). 2022. Maps of State and Federal Area Designations. Available: <https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations>. Accessed February 2, 2023.

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).

- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. March 19, 2015. Available: [http://www.valleyair.org/transportation/ceqa\\_idx.htm](http://www.valleyair.org/transportation/ceqa_idx.htm). Accessed February 2, 2023.
- U.S. Environmental Protection Agency (USEPA). 2004. Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel; Final Rule. *Federal Register* 69(124):38958–39273, June 29, 2004. Available: <https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-emissions-air-pollution-nonroad>. Accessed February 2, 2023.
- . 2023. Nonattainment Areas for Criteria Pollutants (Green Book). Available: <https://www.epa.gov/green-book>. Accessed February 2, 2023.
- ## Section 3.5, Biological Resources
- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds.). 2012. *The Jepson Manual: Vascular Plants of California*, second edition. Berkeley: University of California Press.
- California Department of Fish and Game (CDFG). 2012. *Staff Report on Burrowing Owl Mitigation*. March 7, 2012. Available: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843>.
- California Department of Fish and Wildlife (CDFW). 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. Sacramento, CA. March 20, 2018. Available: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959>.
- . 2023. California Natural Diversity Database (CNDDB) search.
- California Native Plant Society (CNPS). 2023. California Rare Plant Ranking Inventory of Rare and Endangered Plants (online edition, v9.5).
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- Jennings, M. R. and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. California Department of Fish and Game. November. Available: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83971&inline>.
- Pacific Gas and Electric Company (PG&E). 2006. *San Joaquin Valley Operation & Maintenance Habitat Conservation Plan*.

- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- U.S. Fish and Wildlife Service (USFWS). 2023. USFWS Information for Planning and Consultation online system. Official Species List.
- . 2013. Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats. U.S. Fish and Wildlife Service. Sacramento Field Office. March 2013.
- . 2011. Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance. Sacramento Fish and Wildlife Office. January 2011.
- ## Section 3.6, Cultural Resources
- Arkush, B. S. 1993. Yokuts Trade Networks and Native Culture Change in Central and Eastern California. *Ethnohistory* 40(4):619–640.
- Autobee, R. n.d. San Luis Unit, West San Joaquin Division, Central Valley Project. Available: <https://www.usbr.gov/projects/pdf.php?id=109>.
- Fredrickson, D. A. 1993. Archaeological Taxonomy in Central California Reconsidered. In *Toward a New Taxonomic Framework for Central California Archaeology* [1994], ed. R. E. Hughes, 91–103. Berkeley: Archaeological Research Facility, University of California, Berkeley.
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Heizer, R. F., and A. B. Elsasser. 1980. *The Natural World of the California Indians*. Berkeley: University of California Press.
- Jackson, W. T., and D. J. Pisani. 1983. The Evolution of California State Water Planning 1850–1928. University of California, Berkeley, Water Resources Center Archives. Available: <https://escholarship.org/uc/item/0s84j2ww.%20Accessed%20February%201,2023>.
- JRP Historical Consulting Services and California Department of Transportation (JRP and Caltrans). 2000. *Water Conveyance Systems in California: Historic Context, Development, and Evaluation Procedures*.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- Moratto, M. J. 1984 [2004]. *California Archaeology*, 2004 reprinted ed. Salinas, CA: Coyote Press.
- Norby, H., and S. R. Wee. 2019. *Historic Property Survey Report Friant Canal*. Prepared for the U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA.

- Polanco, J. 2019. Letter to Anastasia Leigh, Regional Environmental Officer, U.S. Bureau of Reclamation, regarding Section 106—Continuing Consultation for the Friant-Kern Canal (FKC) Subsidence and Capacity Correction Project, Fresno, Tulare and Kern Counties, CA (17-SCAO-016). Rosenthal, J. S., G. G. White, and M. Q. Sutton. 2007. The Central Valley: A View from the Catbird’s Seat. In *California Prehistory: Colonization, Culture, and Complexity*, ed. T. L. Jones and K. A. Klar, 147–163. Lanham, MD: AltaMira Press.
- Stene, E. n.d. Central Valley Project Overview. Available: <https://www.usbr.gov/projects/pdf.php?id=253>.
- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- United States Department of the Interior, Bureau of Reclamation (Reclamation). 2021. “California-Great Basin Region, Central Valley Project”, Available: <https://www.usbr.gov/mp/mpr-news/docs/factsheets/cvp.pdf>.
- Wallace, W. 1978a. Southern Valley Yokuts. In *California*, ed. R. F. Heizer, *Handbook of North American Indians, Vol. 8*, 448–461. W. C. Sturtevant, gen. ed. Washington, DC: Smithsonian Institution.
- . 1978b. Northern Valley Yokuts. In *California*, ed. R. F. Heizer, *Handbook of North American Indians, Vol. 8*, 462–470. W. C. Sturtevant, gen. ed. Washington, DC: Smithsonian Institution.

## Section 3.7, Energy

- California Building Standards Commission (CBSC). 2019. 2019 California Green Building Standards Code, Nonresidential Mandatory Measures. July 2019. Available: <https://codes.iccsafe.org/content/CGBC2019P3>. Accessed February 2, 2023.
- California Energy Commission (CEC). 2018. *2019 Nonresidential Compliance Manual for the 2019 Building Energy Efficiency Standards, Title 24, Part 6, and Associated Administrative Regulations in Part 1*. CEC-400-2018-018-CMF. December 2018. Available: <https://www.energy.ca.gov/publications/2018/2019-nonresidential-compliance-manual-2019-building-energy-efficiency-standards>. Accessed February 2, 2023.
- California Energy Commission (CEC). 2022a. Electricity Consumption by County. Available: <http://www.ecdms.energy.ca.gov/elecbycounty.aspx>. Accessed January 30, 2023.
- . 2022b. California Electric Infrastructure App. Available: <https://cecgis-caenergy.opendata.arcgis.com/apps/ad8323410d9b47c1b1a9f751d62fe495/explore>. Accessed January 30, 2023.
- . 2022c. California Electric Transmission Lines. Available: <https://cecgis-caenergy.opendata.arcgis.com>. Accessed January 30, 2023.
- . 2022d. Gas Consumption by County. Available: <http://www.ecdms.energy.ca.gov/gasbycounty.aspx>. Accessed January 30, 2023.

- . 2023a. Supply and Demand of Natural Gas in California. Available: <https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california>. Accessed January 30, 2023.
- . 2023b. California Retail Fuel Outlet Annual Reporting (CEC-A15) Results—A15 Report Responses vs. California Department of Tax and Fee Administration (CDTFA) (Million Gallons). Available: <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting>. Accessed January 30, 2023.
- . 2023c. Diesel Fuel Data, Facts, and Statistics. Available: <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/diesel-fuel-data-facts-and-statistics>. Accessed January 30, 2023.
- . 2023d. Integrated Energy Policy Report - IEPR. Available: <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report>. Accessed April 24, 2023.
- California Public Utilities Commission (CPUC). 2021. RPS Program Overview. Available: [https://www.cpuc.ca.gov/RPS\\_Overview/](https://www.cpuc.ca.gov/RPS_Overview/). Accessed February 2, 2023.
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- U.S. Energy Information Administration. 2022. Natural Gas Consumption by End Use. Available: [https://www.eia.gov/dnav/ng/ng\\_cons\\_sum\\_dcu\\_nus\\_a.htm](https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm). Accessed January 30, 2023.

## Section 3.8, Geology and Soils and Paleontology

- California Department of Conservation. 2023a. Reported California Landslides. Available: <https://cadoc.maps.arcgis.com/apps/webappviewer/index.html?id=bc48ad40e3504134a1fc8f3909659041>.
- . 2023b. Geologic Map of California. Available: <https://maps.conservation.ca.gov/cgs/gmc/>.
- . 2023c. California Regional Geologic Maps. Available: <https://www.conservation.ca.gov/cgs/rgm/maps>.
- California Department of Water Resources (DWR). 2012. *2012 Central Valley Flood Protection Plan Consolidated Final Program Environmental Impact Report*. July 2012. SCH No. 2010102044. Available: <https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan>.

- California Seismic Safety Commission (CSSC). 2003. Earthquake Shaking Potential for California. Publication No. 03-02. [https://ssc.ca.gov/wp-content/uploads/sites/9/2020/08/shaking\\_18x23.pdf](https://ssc.ca.gov/wp-content/uploads/sites/9/2020/08/shaking_18x23.pdf).
- County of Fresno. 2009. *Friant Community Plan Update & Friant Ranch Specific Plan, Draft Environmental Impact Report*. October 2009. Available: <https://www.co.fresno.ca.us/home/showdocument?id=14246>.
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Harden, D. R. 1998. *California Geology*. Upper Saddle River, NJ: Prentice-Hill Publishers. Pages 27, 233–251.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- San Joaquin River Restoration Program (SJRRP). 2011. *Friant-Kern Canal Capacity Restoration Feasibility Study. Draft Feasibility Report*. June 2011. Available: [https://www.restoresjr.net/?wpfb\\_dl=1916](https://www.restoresjr.net/?wpfb_dl=1916).
- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- United States Department of the Interior, Bureau of Reclamation and Friant Water Authority (Reclamation and Friant). 2019. *Friant-Kern Canal Middle Reach Capacity Correction Project Environmental Assessment/Initial Study*. EA/IS-18-057. November 2019. Available: [https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc\\_ID=41441](https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=41441).
- U.S. Geological Survey (USGS). 2023. U.S. Quaternary Faults. Golden, CO: USGS Geologic Hazards Science Center. Available: <https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf>.

## Section 3.9, Greenhouse Gas Emissions

- Bay Area Air Quality Management District (BAAQMD). 2022. 2022 California Environmental Quality Act Air Quality Guidelines. Available: <https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines>. Accessed April 25, 2023.
- California Air Resources Board (CARB). 2008. *Climate Change Scoping Plan: A Framework for Change*. December 2008. Available: [https://ww3.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](https://ww3.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf). Accessed February 2, 2023.
- . 2014. First Update to the Climate Change Scoping Plan. May. Available: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2013-scoping-plan-documents>. Accessed April 24, 2023.

- . 2017. *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target*. November 2017. Available: [https://ww3.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf). Accessed February 2, 2023.
- . 2018. AB 32 Global Warming Solutions Act of 2006. Available: <https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006>. Accessed February 2, 2023.
- . 2022. 2022 Scoping Plan for Achieving Carbon Neutrality. November. Available: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>. Accessed April 24, 2023.
- California Public Utilities Commission (CPUC). 2021. RPS Program Overview. Available: [https://www.cpuc.ca.gov/RPS\\_Overview/](https://www.cpuc.ca.gov/RPS_Overview/). Accessed February 2, 2023.
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Intergovernmental Panel on Climate Change (IPCC). 2021. *Climate Change 2021: The Physical Science Basis*. Available: <https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/>. Accessed January 30, 2023.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- Legislative Analyst's Office (LAO). 2021. Assessing California's Climate Policies – Agriculture. December. Available: <https://lao.ca.gov/Publications/Report/4483>.
- Sacramento Metropolitan Air Quality Management District (SMAQMD). 2020. *Greenhouse Gas Thresholds for Sacramento County*. Available: <https://www.airquality.org/LandUseTransportation/Documents/SMAQMDGHGThresholds2020-03-04v2.pdf>. Accessed February 2, 2023.
- San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009a. *District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. December 17, 2009. Available: <http://www.valleyair.org/Programs/CCAP/12-17-09/2%20CCAP%20-%20FINAL%20District%20Policy%20CEQA%20GHG%20-%20Dec%2017%202009.pdf>. Accessed February 2, 2023.
- . 2009b. *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*. December 17, 2009. Available: <http://www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf>. Accessed February 2, 2023.
- South Coast Air Quality Management District (SCAQMD). 2019. *South Coast AQMD Air Quality Significance Thresholds*. Available: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf>. Accessed February 2, 2023.



- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- . 2018. *Tulare County Climate Action Plan*. December 2018 Update. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/220Climate%20Action%20Plan/CLIMATE%20ACTION%20PLAN%202018%20UPDATE.pdf>. Accessed February 2, 2023.
- U.S. Environmental Protection Agency (USEPA). 2012. EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks. EPA-420-F-12-051. August. Available: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF>.
- ## Section 3.10, Hazards and Hazardous Materials
- California Department of Forestry and Fire Protection (CAL FIRE). 2023. Fire Hazard Severity Zones. Office of the State Fire Marshal. Available: <https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/>.
- California Department of Toxic Substances Control (DTSC). 2023. Envirostor. Available: <https://www.envirostor.dtsc.ca.gov/public/>.
- California Environmental Protection Agency (CalEPA). 2023. Unified Program. Available: <https://calepa.ca.gov/cupa/>.
- Centers for Disease Control and Prevention (CDC). 2020. Valley Fever Maps. Available: <https://www.cdc.gov/fungal/diseases/coccidioidomycosis/maps.html>.
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- State Water Resources Control Board. 2023. GeoTracker. Available: [https://www.waterboards.ca.gov/ust/electronic\\_submittal/about.html](https://www.waterboards.ca.gov/ust/electronic_submittal/about.html).
- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- U.S. Environmental Protection Agency (USEPA). 2023. Overview of EPA's Brownfields Program. Available: <https://www.epa.gov/brownfields/overview-epas-brownfields-program>.

## Section 3.11, Hydrology and Water Quality

- California Department of Water Resources (DWR). 2004a. San Joaquin Valley Groundwater Basin, Madera Subbasin. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5\\_022\\_06\\_MaderaSubbasin.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_06_MaderaSubbasin.pdf). Accessed February 1, 2023.
- . 2004b. San Joaquin Valley Groundwater Basin, Kaweah Subbasin. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5\\_022\\_11\\_KaweahSubbasin.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_11_KaweahSubbasin.pdf). Accessed February 1, 2023.
- . 2004c. San Joaquin Valley Groundwater Basin, Tule Subbasin. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5\\_022\\_13\\_TuleSubbasin.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_13_TuleSubbasin.pdf). Accessed February 1, 2023.
- . 2006a. San Joaquin Valley Groundwater Basin, Kings Subbasin. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5\\_022\\_08\\_KingsSubbasin.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_08_KingsSubbasin.pdf). Accessed February 1, 2023.
- . 2006b. San Joaquin Valley Groundwater Basin, Kern County Subbasin. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5\\_022\\_14\\_KernCountySubbasin.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_14_KernCountySubbasin.pdf). Accessed February 1, 2023.
- . 2017. *California Aqueduct Subsidence Study*. June 2017. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Engineering-And-Construction/Files/Subsidence/Aqueduct\\_Subsidence\\_Study-Accessibility\\_Compatibility.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Engineering-And-Construction/Files/Subsidence/Aqueduct_Subsidence_Study-Accessibility_Compatibility.pdf). Accessed February 1, 2023.
- . 2020. California’s Groundwater Update 2020 (Bulletin 118). Available: [https://data.cnra.ca.gov/dataset/calgw\\_update2020](https://data.cnra.ca.gov/dataset/calgw_update2020). Accessed February 1, 2023.
- . 2021. Groundwater Sustainability Agencies. Available: <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies>. Accessed February 1, 2023.
- Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board). 2018. *Water Quality Control Plan for the Tulare Lake Basin*. Third Edition. Revised May 2018. Available: [https://www.waterboards.ca.gov/rwqcb5/water\\_issues/basin\\_plans/tularelakebp\\_201805.pdf](https://www.waterboards.ca.gov/rwqcb5/water_issues/basin_plans/tularelakebp_201805.pdf). Accessed February 1, 2023.
- Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS). 2023. CV-SALTS – Managing Salt and Nitrate in the California Central Valley. About Us. Available: <https://www.cvsalinity.org/about/>. Accessed February 1, 2023.
- Downing, J. 2018. Enforcing the Sustainable Groundwater Management Act. *California Agriculture* 72(1):18–19.

- Eastern Tule Groundwater Sustainability Agency. 2018. *Eastern Tule Groundwater Sustainability Plan*. Available: <https://www.easterntulegsa.com/gsp/>. Accessed February 1, 2023.
- Federal Emergency Management Agency (FEMA). 2020. Flood Zones. Available: <https://www.fema.gov/flood-zones>. Last updated July 8, 2020. Accessed February 1, 2023.
- . 2023. FEMA's National Flood Hazard Layer (NFHL) Viewer. Last updated 2021. Available: <https://www.fema.gov/flood-maps/national-flood-hazard-layer>. Accessed February 10, 2023.
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Friant Water Authority (Friant). 2019. *Friant-Kern Canal Middle Reach Capacity Correction Project Environmental Assessment/Initial Study*. EA/IS-18-057. November 2019. Available: [https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc\\_ID=41441](https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=41441). Accessed February 10, 2023.
- . 2022a. New Turnout Improves Friant-Kern Canal's Floodwater Conveyance to Hannah Ranch Multibenefit Project. May 2022. Available: [https://static1.squarespace.com/static/58c2eccc15d5db46200ea426/t/628ebff59a69986e1fc26abd/1653522426104/FWA\\_eNews\\_05-2022.pdf](https://static1.squarespace.com/static/58c2eccc15d5db46200ea426/t/628ebff59a69986e1fc26abd/1653522426104/FWA_eNews_05-2022.pdf). Accessed February 10, 2023.
- . 2022b. *Existing Program Exceedance and Effects Analysis*. Memorandum. November 28, 2022.
- . 2023a. Subsidence: A Critical Challenge to Friant-Kern Canal Water Deliveries. Available: <https://www.energy.senate.gov/services/files/A51E0F6A-3BFC-43E9-8E27-E69B867392F4>. Accessed February 1, 2023.
- . 2023b. Friant-Kern Canal Operations and Maintenance. Available: <https://friantwater.org/fkc-omr>. Accessed February 1, 2023.
- Greater Kaweah Groundwater Sustainability Agency. 2022. Groundwater Sustainability Plan. Available: <https://greaterkaweahgsa.org/resources/gsp/>. Accessed February 1, 2023.
- Ireland, R. L., J. F. Poland, and F. S. Riley. 1984. *Land Subsidence in the San Joaquin Valley, California, as of 1980*. U.S. Geological Survey Professional Paper 437-1. Prepared in cooperation with the California Department of Water Resources. Available: <https://pubs.usgs.gov/pp/0437i/report.pdf>. Accessed February 1, 2023.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- Kern Groundwater Authority. 2022. Kern Groundwater Authority. Available: <https://kerngwa.com/>. Accessed February 1, 2023.
- Lower Tule River Irrigation District. 2016. *Cross Valley Canal Contractors Renewal of Conveyance Contracts Draft Environmental Impact Report*. State Clearinghouse

- No. 2011051022. June 2016. Available: [http://www.ltrid.org/wp-content/uploads/\\_pdf/CVC\\_DEIR\\_06292016\\_1of2.pdf](http://www.ltrid.org/wp-content/uploads/_pdf/CVC_DEIR_06292016_1of2.pdf). Accessed February 2, 2023.
- Madera Subbasin Coordination Committee. 2020. *Final Madera Subbasin Sustainable Groundwater Management Act Joint Groundwater Sustainability Plan*. January 2020. Available: [https://www.maderacountywater.com/wp-content/uploads/2020/02/Madera\\_GSP\\_2020\\_FinalReport.pdf](https://www.maderacountywater.com/wp-content/uploads/2020/02/Madera_GSP_2020_FinalReport.pdf). Accessed February 1, 2023.
- North Kings Groundwater Sustainability Agency. 2021. Groundwater Sustainability Plan Subbasin Coordination. Available: <https://northkingsgsa.org/groundwater-sustainability-plan/subbasin-coordination/>. Accessed February 1, 2023.
- State Water Resources Control Board (State Water Board). 2000. *Revised Water Right Decision 1641, In the Matter of Water Quality Objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*. Revised in Accordance with Order WR 2000-02, March 15, 2000. Available: [https://www.waterboards.ca.gov/waterrights/board\\_decisions/adopted\\_orders/decisions/d1600\\_d1649/wrd1641\\_1999dec29.pdf](https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/decisions/d1600_d1649/wrd1641_1999dec29.pdf). Accessed February 1, 2023.
- . 2022. 2020–2022 California Integrated Report (Clean Water Act Section 303(d) List and 305(b) Report). Available: [https://www.waterboards.ca.gov/water\\_issues/programs/water\\_quality\\_assessment/2020\\_2022\\_integrated\\_report.html](https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html). Accessed February 1, 2023.
- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- United States Department of the Interior, Bureau of Reclamation (Reclamation). 1994. *Friant Division, Central Valley Project*. Available: <https://www.usbr.gov/projects/pdf.php?id=103>. Accessed February 1, 2023.
- . 2007. *Friant-Kern Cross Valley Canals Intertie Construction Project Draft Environmental Assessment*. EA-07-70. Available: [https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc\\_ID=2860](https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=2860). Accessed February 2, 2023.
- . 2021. *Friant Division Groundwater Pump-in Program, Contract Years 2020–2022. Final Environmental Assessment*. CGB-EA-2021-033. Available: [https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc\\_ID=50209](https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=50209).
- United States Department of the Interior, Bureau of Reclamation and California Department of Water Resources (Reclamation and DWR). 2005. *Upper San Joaquin River Basin Storage Investigation Initial Alternatives Information Report*. Water Operations Technical Appendix. Prepared by: MWH. June 2005. Available: [https://www.usbr.gov/mp/sccao/storage/docs/initial\\_alt\\_info/ta\\_iai\\_03\\_vol2\\_water\\_ops\\_ta.pdf](https://www.usbr.gov/mp/sccao/storage/docs/initial_alt_info/ta_iai_03_vol2_water_ops_ta.pdf). Accessed February 1, 2023.
- U.S. Environmental Protection Agency (USEPA). 2023a. Summary of the Clean Water Act. Available: <https://www.epa.gov/laws-regulations/summary-clean-water-act>. Accessed February 1, 2023.

———. 2023b. Overview of Total Maximum Daily Loads (TMDLs). Available: <https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls>. Accessed February 1, 2023.

## Section 3.12, Land Use and Planning

County of Fresno. 2018. Zoning Ordinance of the County of Fresno — Land Use and Planning. Available: <https://www.co.fresno.ca.us/departments/public-works-planning/divisions-of-public-works-and-planning/development-services-division/zoning-ordinance>. Accessed May 1, 2023.

———. 2023. County of Fresno Zoning with Web AppBuilder for ArcGIS. Available: <https://gisportal.co.fresno.ca.us/portal/apps/webappviewer/index.html?id=b921843d343d4df998b5b3c6a301756a>. Accessed May 1, 2023.

County of Kern. 2022. County of Kern GEODAT – Open Data and Portal for Smarter Communities. Available: <https://geodat-34 kernco.opendata.arcgis.com/>.

County of Kern Planning Department. 2016. Kern County Zoning, 2016. Available: <https://databasin.org/datasets/3b66e0cdf594457eb9fb1a38fe122448/>. Accessed May 1, 2023.

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

Governor’s Office of Planning and Research (OPR). 2017. *State of California General Plan Guidelines 2017*. Sacramento, CA.

Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).

———. 2017. Title 19—Zoning. Chapter 19.12: Exclusive Agriculture (A) District. Available: [http://kerncounty-ca.elaws.us/code/coor\\_title19\\_ch19.12](http://kerncounty-ca.elaws.us/code/coor_title19_ch19.12). Accessed May 1, 2023.

Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.

———. 2023. Tulare County Zoning Ordinance: Chapter 3, Section 9.5: “AE” Exclusive Agricultural Zone (effective 10-26-67). Available: <https://tularecounty.ca.gov/rma/rma-documents/planning-documents/tulare-county-zoning-ordinance/>. Accessed May 1, 2023.

Tulare County Resource Management Agency. 2018. Tulare County Public Parcel Zoning Lookup. Available: <https://tularecounty.maps.arcgis.com/apps/webappviewer/index.html?id=e7d7da648dab43e1a9eb0233889b7c32>. Accessed May 1, 2023.

## Section 3.13, Noise

California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September 2013. Available: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf>.

———. 2020. *Transportation and Construction Vibration Guidance Manual*. Sacramento, CA.

Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. September 2018. Available: [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf).

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).

Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.

## Section 3.14, Transportation

California Governor's Office of Planning and Research (OPR). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018. Available: [https://opr.ca.gov/docs/20180416-743\\_Technical\\_Advisory\\_4.16.18.pdf](https://opr.ca.gov/docs/20180416-743_Technical_Advisory_4.16.18.pdf).

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).

Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.

———. 2020. *County of Tulare SB 743 Guidelines*. June 8, 2020. Available: <https://tularecounty.ca.gov/rma/rma-documents/planning-documents/tulare-county-sb-743-guidelines-final/>.

## Section 3.15, Tribal Cultural Resources

Arkush, B. S. 1993. Yokuts Trade Networks and Native Culture Change in Central and Eastern California. *Ethnohistory* 40(4):619–640.

- Castillo, E. D. 1978. The Impact of Euro-American Exploration and Settlement. In *California*, ed. R. F. Heizer, *Handbook of North American Indians*, Vol. 8, 99–127. W. C. Sturtevant, gen. ed. Washington, DC: Smithsonian Institution.
- Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.
- Heizer, R. F. (ed.). 1978. *California*. In *Handbook of North American Indians*, Vol. 8, W. C. Sturtevant, gen. ed. Washington, DC: Smithsonian Institution.
- Heizer, R. F., and A. B. Elsasser. 1980. *The Natural World of the California Indians*. Berkeley: University of California Press.
- Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).
- Kroeber, A. L. 1925 [1976]. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Washington, DC: Smithsonian Institution. 1976 reprinted ed., New York: Dover Publications, Inc.
- Levy, R. 1978. Eastern Miwok. In *California*, ed. R. F. Heizer, *Handbook of North American Indians*, Vol. 8, 398–413. W. C. Sturtevant, gen. ed. Washington, DC: Smithsonian Institution.
- Milliken, R. 2002. The Indians of Mission Santa Clara. In *Telling the Santa Clara Story: Sesquicentennial Voices*, ed. R. K. Skowronek, 45–63. Santa Clara University and City of Santa Clara, CA.
- Mora-Torres, G. 2005. *Californio Voices, the Oral Memoirs of José Maria Amador and Lorenzo Asisara*. Denton: University of North Texas Press.
- Santis, G. A. F. 2014. *Native American Response and Resistance to Spanish Conquest in the San Francisco Bay Area, 1769–1846*. Master's thesis, San José State University, San José, CA.
- Tinkham, G. H. 1921. *History of Stanislaus County California with Biographical Sketches of The Leading Men and Women of the County Who Have Been Identified with Its Growth and Development From the Early Days to the Present*. Los Angeles, CA: Historic Record Company.
- Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.
- Wallace, W. 1978a. Southern Valley Yokuts. In *California*, ed. R. F. Heizer, *Handbook of North American Indians*, Vol. 8, 448–461. W. C. Sturtevant, gen. ed. Washington, DC: Smithsonian Institution.
- . 1978b. Northern Valley Yokuts. In *California*, ed. R. F. Heizer, *Handbook of North American Indians*, Vol. 8, 462–470. W. C. Sturtevant, gen. ed. Washington, DC: Smithsonian Institution.

## Section 3.16, Utilities and Service Systems

California Department of Resources Recycling and Recovery (CalRecycle). 2023. Solid Waste Information System. SWIS Facility/Site Search. Available: <https://www2.calrecycle.ca.gov/SolidWaste/Site/Search>.

City of Bakersfield. 2023. Wastewater Treatment Plants. Available: <https://www.bakersfieldcity.us/679/Wastewater-Treatment-Plants>.

City of Fresno Department of Public Utilities. 2014. Wastewater Management Division Presentation. Available: <https://watereuse.org/wp-content/uploads/2015/09/Presentation-Wastewater-Management-Division-January-2014.pdf>.

City of Porterville. 2021. *City of Porterville Wastewater Treatment Facility*. Available: [https://cms9files.revize.com/PortervilleCA/Document\\_Center/Department/Public%20Works/Field%20Services%20Division/Waste%20Water%20Treatment%20Facility/WWTFBooklet.pdf](https://cms9files.revize.com/PortervilleCA/Document_Center/Department/Public%20Works/Field%20Services%20Division/Waste%20Water%20Treatment%20Facility/WWTFBooklet.pdf).

City of Reedley. 2006. Reedley Waste Water Treatment Plant. July 2006. Available: <https://ceqanet.opr.ca.gov/2006021132/2>.

City of Sanger. 2009. *City of Sanger Sewer System Management Plan*. March 2009. <https://www.ci.sanger.ca.us/DocumentCenter/View/219/Sewer-System-Management-Plan-PDF>.

Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board). 2016. *Waste Discharge Requirements for Strathmore Public Utility District Wastewater Treatment Facility*.

Fresno County. 2000. *Fresno County General Plan Policy Document*. October 3, 2000. Available: <https://www.co.fresno.ca.us/home/showpublisheddocument/18117/636753797422170000>.

———. 2023. Elected Special Districts and Landowner Elected Special Districts. Available: <https://www.co.fresno.ca.us/departments/clerk-of-the-board-of-supervisors/boards-commissions-and-committees/elected-special-districts-and-landowner-elected-special-districts>.

Kern County. 2009. *Kern County General Plan*. September 22, 2009. Available: [https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP\\_Complete.pdf](https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP_Complete.pdf).

Pacific Gas and Electric Company (PG&E). 2023. Company Profile. Available: [https://www.pge.com/en\\_US/about-pge/company-information/profile/profile.page](https://www.pge.com/en_US/about-pge/company-information/profile/profile.page).

Southern California Edison (SCE). 2023. About Us. <https://www.sce.com/about-us/who-we-are>.

Tulare County. 2012. *Tulare County General Plan 2030 Update*. August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf>.



———. 2023. Tulare County California Water Districts. Available: <https://lafco.co.tulare.ca.us/maps/districts/districts-california-water/>.

U.S. Environmental Protection Agency (EPA). 2023. Criteria for the Definition of Solid Waste and Solid and Hazardous Waste Exclusions. Available: <https://www.epa.gov/hw/criteria-definition-solid-waste-and-solid-and-hazardous-waste-exclusions>.

Water Association of Kern County. 2023. Who's Who. Available: <https://www.wakc.com/whos-who/>.

## Chapter 4, Cumulative Impacts

Friant Water Authority. 2023. Existing Programs Catalog.

## Chapter 5, Other CEQA Considerations

No references.

## Chapter 6, Alternatives

Elsaid, K. 2017. Development, Modeling, Analysis, and Optimization of a Novel Inland Desalination with Zero Liquid Discharge for Brackish Groundwaters: Brine Disposal and Management for Inland Desalination (pages 48-51). [Doctoral dissertation, University of Waterloo]. University of Waterloo's Institutional Repository. Available: <https://uwspace.uwaterloo.ca/handle/10012/11203>.

Khan, G., M. A. Maraqa, and A.O. Mohamed. 2021. "Chapter 17 – Inland desalination: techniques, brine management, and environmental concerns." In *Pollution Assessment for Sustainable Practices in Applied Sciences and Engineering*, edited by A.-M. Mohamed, E. Paleologos, & F. Howari (pp. 871–918). Available: <https://www.sciencedirect.com/science/article/pii/B9780128095829000177>.

United States Department of the Interior, Bureau of Reclamation (Reclamation). 2008. *Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals. Water Quality Monitoring Requirements*. March 7, 2008. Available: [https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc\\_ID=31688](https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=31688).

## Chapter 7, List of Preparers

No references.

This page intentionally left blank

# Appendix A

## **Notice of Preparation (NOP) and NOP Comment Letters**

This page intentionally left blank



**DATE:** December 6, 2022

**TO:** State Clearinghouse; Responsible and Trustee Agencies; and Other Interested Parties

**SUBJECT:** Notice of Preparation of an Environmental Impact Report

**PROJECT:** Friant-Kern Canal Water Quality Guidelines Program

**LEAD AGENCY:** Friant Water Authority  
854 N. Harvard Avenue  
Lindsay, CA 93247

pull  
1/21/23

As part of the Friant-Kern Canal Water Quality Guidelines Program (Program), Friant Water Authority (Friant) intends to prepare an Environmental Impact Report (EIR) for its proposed *Guidelines for Accepting Water into the Friant-Kern Canal*, which will define the water quality thresholds and required Program measures associated with the introduction or receipt of Non-Millerton water<sup>1</sup> into or from the Friant-Kern Canal (proposed Guidelines or proposed project). Friant is the Lead Agency under the California Environmental Quality Act (CEQA). Friant invites written comments on the scope of the environmental analysis and identification of potential environmental issues to be included in the EIR.

**Notice of Preparation:** This Notice of Preparation (NOP) has been sent to the Office of Planning and Research, responsible and trustee agencies, other public agencies, and interested members of the public to inform them that Friant is preparing an EIR to analyze the proposed Guidelines and to solicit information that will be helpful in the environmental review process. This notice includes a description of the proposed project and information regarding how to provide comments to Friant.

**Comment Period:** Friant is requesting input from responsible and trustee agencies, other public agencies, and interested members of the public regarding the scope and content of the environmental information to be included in the EIR. Responsible and trustee agency responses should provide specific detail about the scope and content of the environmental information related to the responsible or trustee agency’s area of statutory responsibility that they believe should be included in the EIR and other pertinent information consistent with CEQA Guidelines Section 15082(b).

State law mandates that responses must be sent at the earliest possible date but postmarked within 30 days from this notice and the CEQA Guidelines state that if a responsible or trustee agency fails to respond (with comments or a well-justified request for additional time) Friant may presume that none of those entities have a response to make. The 30-day public review period for this NOP extends from **Tuesday, December 6, 2022 to Monday, January 9, 2023**. Please provide any written comments (either by mail or electronically) no later than **5:00 pm on January 9, 2023**. Please direct all comments to the following address:

<sup>1</sup> Collectively, Non-Millerton water is water introduced into the Friant-Kern Canal other than directly from Millerton Lake to the headworks of the Friant-Kern Canal.

Ian Buck-Macleod  
Friant Water Authority 854 N. Harvard Avenue, Lindsay, CA 93247  
Email: [ibuckmacleod@friantwater.org](mailto:ibuckmacleod@friantwater.org).

**Document Availability.** This NOP and current draft of the *Guidelines for Accepting Water into the Friant-Kern Canal* are available for review on Friant's website: [https://friantwater.org/s/Friant\\_WQ\\_Guidelines\\_NOP\\_120622.pdf](https://friantwater.org/s/Friant_WQ_Guidelines_NOP_120622.pdf) and [https://friantwater.org/s/12062022\\_Proposed\\_WQ\\_Guidelines.pdf](https://friantwater.org/s/12062022_Proposed_WQ_Guidelines.pdf), respectively, and at the Friant Water Authority office at 854 N. Harvard Avenue, Lindsay, CA 93247.

**Scoping Meeting:** A virtual public meeting will be held during the 30-day NOP review period to solicit comments on the scope and content of the EIR. The meeting will be held at 3:00 p.m. on **Tuesday, December 13, 2022** via the Zoom web conference application. To join the meeting, please click the following link or join by phone:

Join on your computer or Zoom mobile application:

[Join Zoom Meeting](#)

Meeting URL: <https://esassoc.zoom.us/j/5575729291?from=addon>  
Meeting ID: 557 572 9291

Or call in (audio only)  
+1 877 853 5247 (United States), Meeting ID: 557 572 9291#

To ensure the best experience for this meeting, please join via the Desktop or mobile Zoom application. The dial-in audio conferencing number should only be used if other options do not work or are not available.

The scoping meeting will include a brief presentation, providing an overview of the proposed project. After the presentation, comments will be accepted. Individuals wishing to provide comments during the meeting are encouraged to first register by emailing Ian Buck-Macleod at [ibuckmacleod@friantwater.org](mailto:ibuckmacleod@friantwater.org) (please include "**Friant Water Authority Guidelines for Accepting Water into the Friant-Kern Canal, Scoping Meeting Comment Registration**" in the subject line).

**Project Location:** The proposed project is located in the Friant Division of the Central Valley Project, specifically, along and within the 152-mile right-of way for the Friant-Kern Canal. The Friant-Kern Canal extends from Friant Dam at the San Joaquin River near Fresno, California to the Kern River in Bakersfield, California. It is located in the San Joaquin Valley of central California (Figure 1).

**Project Description:** The proposed Guidelines describe the Friant application review process, implementation procedures, and the responsibilities of water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the Friant-Kern Canal (collectively, "Contractors"). The proposed Guidelines define the water quality thresholds and the required Program measures associated with introduced Non-Millerton water and corresponding water quality, as well as the methodologies and tools for monitoring and forecasting water quality in the Friant-Kern Canal. The proposed Guidelines are intended to ensure that water quality is protected for sustained domestic and agricultural use.

The proposed Guidelines are applicable to all Non-Millerton water introduced or diverted into the Friant-Kern Canal including but not limited to:

- Groundwater pump-ins
- Surface water diversions and pump-ins
- Recaptured and recirculated San Joaquin River Restoration Program Restoration Flows
- Water introduced at the Friant-Kern Canal-Cross Valley Canal (“CVC”) intertie and delivered via reverse flow on the Friant-Kern Canal

A Water Quality Advisory Committee composed of Friant Division long-term contractors (“Friant Contractors”) and other Contractors and users involved in either introducing or receiving Non-Millerton water to or from the Friant-Kern Canal will be established to provide recommendations to Friant on operations and monitoring requirements of the proposed Guidelines. The Water Quality Advisory Committee will operate under an established charter and will appoint a Monitoring Subcommittee to assist Friant in the implementation of the proposed Guidelines.

Implementation of the proposed Guidelines would not result in Friant making any physical modifications to the Friant-Kern Canal. However, in response to the proposed Guidelines, Contractors may need to implement Program measures to demonstrate that a proposed introduction or discharge of Non-Millerton water meets the water quality thresholds. Program measures or activities may include construction and maintenance of discharge structures, construction and operation of water treatment facilities, blending of water, changes in timing of the introduction or discharge of Non-Millerton water, etc. In addition, Friant or Contractors may need to construct facilities for monitoring and forecasting water quality (e.g., construction and maintenance of water quality monitoring stations).

**Environmental Baseline:** CEQA Guidelines section 15125 states that an EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the NOP is published from a local and regional perspective (existing conditions). The environmental setting will constitute the baseline physical conditions that Friant, the Lead Agency, will use to determine if an impact is significant. In general, the environmental baseline is the same as the existing on-the-ground conditions when environmental review begins.

**Project Alternatives:** In preparing the EIR, Friant will consider a reasonable range of Project alternatives, including the no project alternative, as well as others that may be identified in comments received in response to this NOP.

**Environmental Effects and Scope of the EIR:** The EIR will analyze potentially significant impacts that may result from implementation of the proposed project (i.e., implementation of Program measures to achieve water quality thresholds as defined in the proposed Guidelines).

Pursuant to section 15063(a) of the CEQA Guidelines, an Initial Study has not been prepared for the proposed project. The EIR will evaluate the full range of environmental issues contemplated for consideration under CEQA and the CEQA Guidelines:

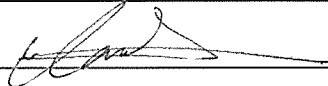
- Aesthetics
- Agriculture and Forestry
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils and Paleontology
- Greenhouse Gas Emissions and Climate Change
- Hazards and Hazardous Materials

- Hydrology and Water Quality
- Land Use and Planning
- Noise and Vibration
- Service Systems
- Transportation
- Tribal Cultural Resources
- Utilities
- Cumulative Impacts

Environmental issues not contemplated for consideration due to the determination that there will be no impact include:

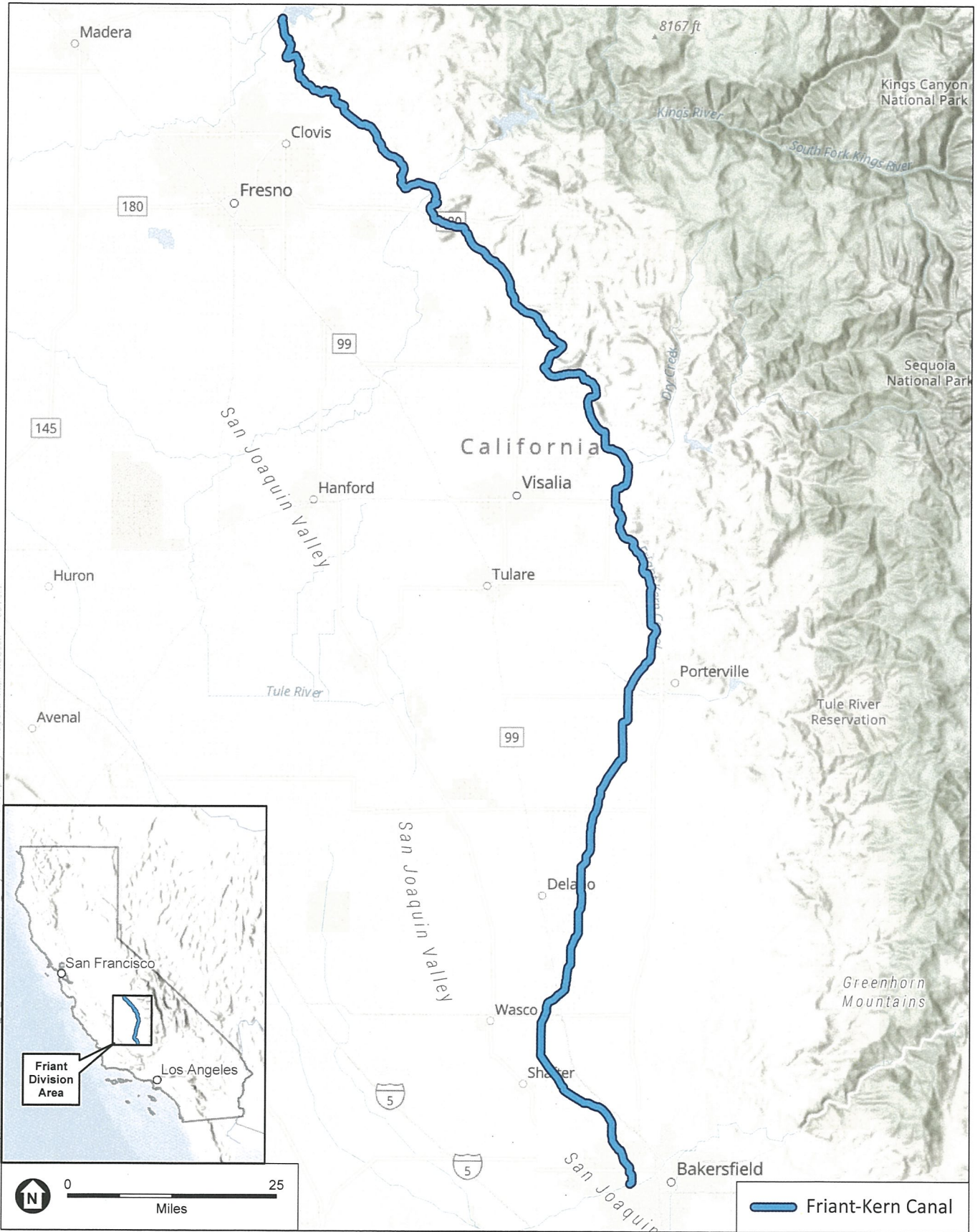
- Growth Inducement
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Wildfire

Date: 12/6/2022

Signature: 

Title: Water Resources Engineer





SOURCE: ESA, 2022

Friant Water Authority - Friant-Kern Canal

**Figure 1**  
Regional and  
Project Area  
Map





## NATIVE AMERICAN HERITAGE COMMISSION

Received  
DEC 19 2022  
FWA

December 6, 2022

Ian Buck-Macleod  
Friant Water Authority  
854 N. Harvard Avenue  
Lindsay, CA 93247CHAIRPERSON  
**Laura Miranda**  
LuiseñoVICE CHAIRPERSON  
**Reginald Pagaling**  
ChumashSECRETARY  
**Sara Dutschke**  
MiwokCOMMISSIONER  
**Isaac Bojorquez**  
Ohlone-CostanoanCOMMISSIONER  
**Buffy McQuillen**  
Yokayo Pomo, Yuki,  
NomlakiCOMMISSIONER  
**Wayne Nelson**  
LuiseñoCOMMISSIONER  
**Stanley Rodriguez**  
KumeyaayCOMMISSIONER  
**[Vacant]**COMMISSIONER  
**[Vacant]**EXECUTIVE SECRETARY  
**Raymond C. Hitchcock**  
Miwok/NisenanNAHC HEADQUARTERS  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)**Re: 2022120093, Friant-Kern Canal Water Quality Guidelines Program Project, Tulare, Kern, and Fresno Counties**

Dear Mr. Buck-Macleod:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

**Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

## AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

- 1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project:** Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
  - a. A brief description of the project.
  - b. The lead agency contact information.
  - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
  - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).
  
- 2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report:** A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
  - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).
  
- 3. Mandatory Topics of Consultation If Requested by a Tribe:** The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
  - a. Alternatives to the project.
  - b. Recommended mitigation measures.
  - c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).
  
- 4. Discretionary Topics of Consultation:** The following topics are discretionary topics of consultation:
  - a. Type of environmental review necessary.
  - b. Significance of the tribal cultural resources.
  - c. Significance of the project's impacts on tribal cultural resources.
  - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).
  
- 5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process:** With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).
  
- 6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document:** If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
  - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
  - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

- 7. Conclusion of Consultation:** Consultation with a tribe shall be considered concluded when either of the following occurs:
- a.** The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
  - b.** A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
- 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document:** Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
- 9. Required Consideration of Feasible Mitigation:** If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
- 10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**
- a.** Avoidance and preservation of the resources in place, including, but not limited to:
    - i.** Planning and construction to avoid the resources and protect the cultural and natural context.
    - ii.** Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
  - b.** Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
    - i.** Protecting the cultural character and integrity of the resource.
    - ii.** Protecting the traditional use of the resource.
    - iii.** Protecting the confidentiality of the resource.
  - c.** Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
  - d.** Protecting the resource. (Pub. Resource Code §21084.3 (b)).
  - e.** Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
  - f.** Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
- 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource:** An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
- a.** The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
  - b.** The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
  - c.** The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: [http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation\\_CalEPAPDF.pdf](http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf)

## SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: [https://www.opr.ca.gov/docs/09\\_14\\_05\\_Updated\\_Guidelines\\_922.pdf](https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf).

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
  - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>.

### NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center ([https://ohp.parks.ca.gov/?page\\_id=30331](https://ohp.parks.ca.gov/?page_id=30331)) for an archaeological records search. The records search will determine:
  - a. If part or all of the APE has been previously surveyed for cultural resources.
  - b. If any known cultural resources have already been recorded on or adjacent to the APE.
  - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
  - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
  - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
  
4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
  - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
  - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
  - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address:

[Cameron.Vela@nahc.ca.gov](mailto:Cameron.Vela@nahc.ca.gov).

Sincerely,

*Cameron Vela*

Cameron Vela  
Cultural Resources Analyst

cc: State Clearinghouse

# Appendix B

## **Draft Guidelines for Accepting Water into the Friant-Kern Canal**

This page intentionally left blank





# Guidelines for Accepting Water into the Friant-Kern Canal

Draft

DRAFT

# Table of Contents

Guidelines for Accepting Water into the Friant-Kern Canal .....	1
Overview .....	1
A. General Requirements for Discharge of Water into the Friant-Kern Canal.....	2
B. Water Quality Monitoring and Reporting Requirements .....	3
C. Resolution of Disputes .....	8
D. Water Quality Forecasting and Communications .....	9
E. Implementation Responsibilities and Costs.....	9
Definitions.....	11
Tables .....	12
Attachments.....	12

DRAFT

# Guidelines for Accepting Water into the Friant-Kern Canal

## Overview

These Guidelines apply to all water introduced into the Friant-Kern Canal (“**FKC**”) other than directly from Millerton Lake to the headworks of the FKC (collectively, “Non-Millerton water”).

These Guidelines describe the Friant Water Authority’s (“**FWA**”) application review process, implementation procedures, and the responsibilities of water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the FKC (collectively, “**Contractors**”). These Guidelines define the water quality thresholds and the required mitigation associated with introduced Non-Millerton water and corresponding water quality, as well as the methodologies and tools for monitoring and forecasting water quality in the FKC. These Guidelines are intended to ensure that water quality is protected for sustained domestic and agricultural use.

These Guidelines are applicable to all Non-Millerton water introduced or diverted into the FKC including but not limited to:

- Groundwater pump-ins (e.g., groundwater wells or previously banked water)
- Surface water diversions and pump-ins
- Recaptured and recirculated San Joaquin River Restoration Program Restoration Flows
- Water introduced at the FKC-Cross Valley Canal (“**CVC**”) intertie and delivered via reverse flow on the FKC

A Water Quality Advisory Committee composed of Friant Division long-term contractors (“**Friant Contractors**”) involved in either introducing or receiving Non-Millerton water to or from the FKC has been established to provide recommendations to FWA on operations and monitoring requirements of the FKC. The Water Quality Advisory Committee will operate under an established charter (see Attachment A). The Water Quality Committee will appoint a Monitoring Subcommittee to assist FWA in the implementation of the Guidelines.

These Guidelines are subject to review and modification by FWA if any of the following conditions occurs:

- A future regulatory cost or equivalent fee is imposed on Friant Contractors and a portion of such fee can reasonably be attributed to the incremental difference of water quality conditions in the FKC.
- When Friant Division Class 1 contract allocation is less than or equal to 25 percent, the Water Quality Advisory Committee will convene as outlined in Attachment A. In these years, mitigation will be accounted for as presented in these Guidelines, but will be deferred to a mutually agreed to later date unless those responsible for the put and take mutually agree to put and take the

mitigation in the critical year. All monitoring requirements will remain as presented in these Guidelines.

- There is a significant, regulatory change or scientifically based justification and three out of the following five Friant Contractors agree and work with the Water Quality Advisory Committee to recommend a change: (1) Arvin-Edison Water Storage District, (2) Shafter Wasco Irrigation District, (3) Delano-Earlimart Irrigation District, (4) South San Joaquin Municipal Utility District, and (5) Kern-Tulare Water District.

The Bureau of Reclamation (Reclamation) may also propose and/or require modifications to these Guidelines in coordination with FWA and reserves the right to implement additional water quality requirements as needed to protect water quality within the FKC. FWA will provide written notice of any proposed modification that are relevant to these Guidelines to all Contractors prior to adoption and implementation.

#### **A. General Requirements for Discharge of Water into the Friant-Kern Canal**

##### **1. Guidelines Compliance Determination**

A Contractor wishing to discharge Non-Millerton water into the FKC must, concurrent with its application for a contract or other applicable approval from Reclamation in such form and contents as may be required by Reclamation, obtain a determination from FWA as to compliance with the Guidelines or demonstrate to FWA and Reclamation that the proposed discharge will be subject to comparable and adequate alternative water quality mitigation measures. The application will not be approved until FWA has provided its determination that the applicant is compliant with the Guidelines or the provision of alternative mitigation measures is adequately demonstrated and incorporated into the proposed discharge project. Figure 1 shows the concurrent process that a Contractor must pursue to obtain these approvals. The Contractor will be responsible for securing all other requisite Federal, State or local permits.

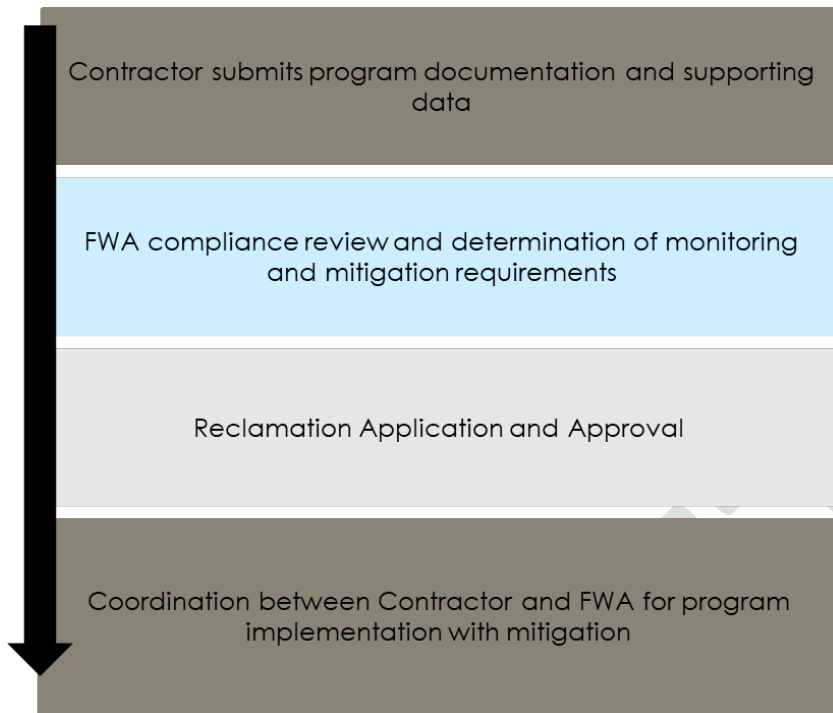


Figure 1. Approval Process Diagram

2. Discharge Facility Approval

The approvals for the erection and maintenance of each discharge facility into the FKC must be approved and documented in the manner required by Reclamation, in coordination with FWA.

3. Other Discharge and Conveyance Requirements

The discharge of Non-Millerton water into the FKC may not in any way limit the ability of either FWA or Reclamation to operate and maintain the FKC for its intended purpose nor may it adversely impact existing water delivery contracts or any other water supply or delivery agreements. The discharge of Non-Millerton water into the FKC will be permissible only when there is capacity in the system as determined by FWA and/or Reclamation.

**B. Water Quality Monitoring and Reporting Requirements**

1. General Discharge Approval Requirements

Each source of Non-Millerton water discharged into the FKC must be correctly sampled, completely analyzed, and approved by FWA and Reclamation prior to introduction into the FKC. The Contractor must pay the cost of collection and analyses of the water required under these Guidelines. Other costs associated with the implementation of these Guidelines to be paid by the Contractors are described in Section E below.

2. Water Quality Monitoring and Management

The monitoring program requirements are detailed below. In addition, the requirements are summarized in a single table in Attachment B.

(a) Monitoring Requirements for Discharged Water

Prior to introduction to the FKC, all Non-Millerton water discharged into the FKC must be tested at the source (i.e., grab samples at each pump location for groundwater pump-ins or in-prism (i.e., in-situ) grab samples for water being introduced via other conveyances) and sampled by an appropriate party every three years for the complete list of water quality constituents listed in the then current version of Table 1. In addition, all Non-Millerton water discharged into the FKC must be tested and sampled by an appropriate party annually for the short list of water quality constituents listed in Table 4. The analytical laboratory must be a facility with Environmental Laboratory Accreditation Program (ELAP) certification. The laboratory analytical report and summary of water quality analytical results must be reported to FWA and Reclamation's Contracting Officer for review. All monitoring requirements are summarized in Attachment B.

If analytical results show an exceedance of 80% of the threshold for any water quality constituents, defined in Table 4, discharged Non-Millerton water will be tested weekly for the targeted constituents of concern until four consecutive grab samples show consistent water quality results. The appropriateness of the threshold buffer (i.e., 80% of the threshold) will be evaluated by the Water Quality Advisory Committee.

If the water quality analytical results show exceedance of any constituent above its threshold in Table 1, 3 or 4 (i.e., not the threshold buffer but the threshold itself), at the discretion of Reclamation such water may not be allowed to be introduced into the FKC. FWA will evaluate monitoring requirements on a case-by-case basis and may impose additional requirements including but not limited to monitoring of the discharge source and downstream in prism quality at the cost of the Contractor.

(b) In-Prism Water Quality Monitoring

FWA will cause to be implemented continuous, real-time monitoring of in-prism water quality conditions in the FKC. Conductivity meters (or sondes) will measure and record real-time in-prism electrical conductivity (EC), measured as microsiemens per centimeter ( $\mu\text{S}/\text{cm}$ ), every 15 minutes at the FKC check structures and corresponding mileposts shown in Table 2. Collected EC data will be uploaded to FWA's Intellisite Operation System ("IOS") in real-time. These continuous, in-prism measurements of EC will provide real-time data on incremental water quality changes and mixing in the canal and will assist in water quality threshold management.

If the Friant Water Quality Model forecasts an in-prism exceedance of 80% of the threshold for any water quality constituents, defined in Table 4, water samples from the FKC will be collected each week by appropriate FWA staff until the sampled concentrations, supported through Friant Water Quality Model forecasted simulations, show four consecutive weeks below the 80% threshold. Each weekly collection will consist of one sample from each downstream check structure shown in Table 2 and where water quality changes are expected, plus one duplicate sample. FWA will deliver the samples to a laboratory with ELAP certification. FWA expenses for all water quality monitoring and sampling are subject to

reimbursement from Contractors through fees and charges. As was the case for the discharged water, the appropriateness of the threshold buffer will be evaluated by the Water Quality Advisory Committee.

Additional water quality sampling and analysis will be performed during specific FKC operations. FWA will cause to be measured EC using hand-held conductivity meters as needed, such as during:

- servicing of real-time monitoring equipment;
- unexpected real-time monitoring equipment outages;
- confirmation of real-time monitoring equipment measurements; and,
- targeted in-prism measurements.

#### (c) CVC In-Prism Water Quality Monitoring

Upon initiation of reverse-flow, pump-back activities and/or if it is anticipated that operations within the CVC will significantly change mixed water quality conditions (i.e., influence from California Aqueduct, Kern River, Kern Fan), grab samples will be collected by FWA within the CVC near the FKC/CVC Intertie, and provided to a third-party laboratory with ELAP certification for testing of water quality constituents listed in Table 1. In addition, during reverse-flow, pump-back operations, weekly water quality sampling will be performed within the CVC near the FKC/CVC Intertie. Grab samples will be collected by FWA and provided to a third-party, ELAP certified laboratory for testing. At a minimum, grab samples collected during reverse-flow pump-back operations will be analyzed for the short list of water quality constituents listed in Table 4.

The Water Quality Advisory Committee will evaluate water quality monitoring, sampling, and analysis requirements on a regular basis and provide recommendations for modification of the described requirements.

#### (d) In-Prism Water Quality Management

FKC in prism water quality will be managed per the following thresholds. If the below thresholds are exceeded, systematic cessation of pump-in or pump-back operations will occur.

1. Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 116270-116755), and Title 22 of the California Code of Regulations (Sections 6440 et seq.), as amended. In prism water quality constituent concentrations may not exceed the Maximum Contaminant Level (“MCL”) as defined in Table 1, except those constituents listed in Table 3 and Table 4. Current State of California requirements at the time of sampling will prevail over those in the accepted version of this document if MCLs in Table 1 are changed in the future.
2. Water quality thresholds defined in Table 3. Water quality thresholds are representative of constituent thresholds of sensitive crops; leaching requirements; and crop thresholds for regulated deficit irrigation practices that occur during almond hull split from July 1 through August 31; and



flexible thresholds in the second half of the contract year, from September 1 through February 28, depending on observed water quality in the first portion of the contract year.

- i. Table 3 presents alternative water quality thresholds for Period 3 (September 1 – February 28) that are dependent on the measured water quality during Period 1 (March 1 – June 30). If the measured average chloride concentration for Period 1 exceeds 70 milligrams per liter (mg/L), the chloride threshold remains at 102 mg/L for Period 3a. If the measured average chloride concentrations for Period 1 are less than or equal to 70 mg/L, the allowable chloride concentration increases from 102 mg/L to 123 mg/L for Period 3b.
- ii. It is estimated that an average of one week is required for in-prism water quality to turnover. Prior to the onset of the defined hull split period requirements (July 1), current FKC operations and water quality conditions will be evaluated to determine if this one-week period should be adjusted.

If water quality thresholds are exceeded, or based on modeling appear likely to be imminently exceeded, or operations in the FKC need to change per Guidelines requirements, FWA will immediately notify the Water Quality Advisory Committee, which must convene a meeting of the Monitoring Subcommittee within three days of receiving notification from FWA. The Monitoring Subcommittee and FWA will review operations and water quality data and will seek consensus on determining the best management actions to improve water quality; provided, however, the final operational decision will be made by FWA. In addition, the Monitoring Subcommittee will seek 1:1, unleveraged, and cost-neutral exchanges to limit potential Project water impacts. Notwithstanding the foregoing, FWA retains the right to determine and take immediate management actions with respect to groundwater pump-ins in accordance with the applicable approvals, but will work in good faith with the Water Quality Advisory Committee and Monitoring Subcommittee to evaluate options. If required, management actions including any reductions or cessation of pump-in volume must occur within three days of the meeting between FWA and the Monitoring Subcommittee. FWA will order any reduction in pump-in volume in order of greatest mass loading. Finally, the Monitoring Subcommittee will set an appropriate review period to assess if implemented management actions are working and, if not, will agree to reconvene to discuss additional actions necessary to improve water quality.

#### (e) Uncontrolled Season

Non-Millerton water may not be introduced to the FKC during the Friant Division uncontrolled season as declared by Reclamation unless:

- Deliveries are necessary due to FKC capacity constraints, and if the Non-Millerton water delivered from the CVC remains below the Shafter Check, or
- The Non-Millerton water is below the determined baseline EC threshold of 200  $\mu\text{S}/\text{cm}$  and, therefore, does not require mitigation.
- Introduction of Non-Millerton does not impact Friant Division flood operations.

### 3. Water Quality Mitigation

Mitigation for impacted water quality is quantified through use of the Water Quality Mitigation Ledger (“**Ledger**”). The Ledger tracks and accounts for all inflows into and diversions from the FKC in order to determine appropriate mitigation for impacted water quality (attributable to the introduced Non-Millerton water or “**Put**”<sup>1</sup>). The volume of additional surface water needed for mitigation, expressed as a percentage of the introduced water, or Put, is determined using an established mitigation rating curve. The mitigation rating curve is based on (1) constituent concentrations, and (2) agronomic principles that focus on leaching requirements to prevent constituent accumulation in the rootzone and resulting impacts on crops. This approach aims to balance concerns related to long-term groundwater quality with a multi-layered assessment of agronomic impacts as a durable solution. The process for developing the agronomic impacts evaluation and mitigation rating curve can be found in *Attachment C– Agronomic Impacts and Mitigation*.

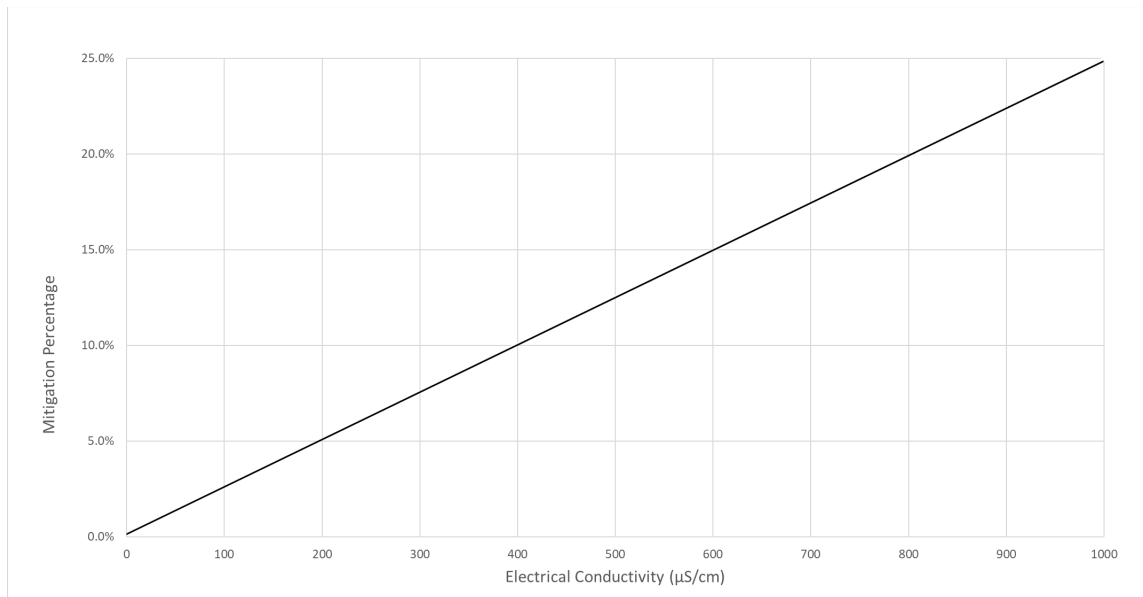
The Ledger quantifies mitigation for Friant Contractors that have an expectation to receive water consistent with quality conditions of Millerton Lake. Specifically, mitigation applies to the “**Take**” (or delivery) of Friant Division Class 1, Class 2, Recovered Water Account (RWA [Paragraph 16b]), and Unreleased Restoration Flows supplies. Friant Contractors and/or other Contractors, including but not limited to third parties, whose supplies are not delivered to the headworks of the FKC are not eligible to receive mitigation.

Mitigation percentage is based on the EC of the Put above the established baseline. The established baseline is based on assumptions of current, minimum leaching practices by water users, or growers, in the region. Consistent with good agricultural practices, it is assumed that growers are currently applying at least a five percent (5%) leaching fraction. Under the mitigation rating curve shown in Figure 2, this corresponds to an approximate EC of 200  $\mu\text{S}/\text{cm}$ . It is assumed that growers are already managing the effects of applied water quality conditions up to 200  $\mu\text{S}/\text{cm}$  of EC, and mitigation is only required for water quality conditions with incremental EC that exceed the baseline EC threshold of 200  $\mu\text{S}/\text{cm}$ . Note that the mitigation rating curve extends beyond the maximum EC and mitigation percentage shown in Figure 2 (i.e., at 1,000  $\mu\text{S}/\text{cm}$  and 25%) at the same slope of 5% mitigation per 200  $\mu\text{S}/\text{cm}$  of EC.

A mitigation volume is calculated based on the Put volume and corresponding mitigation percentage. Mitigation volumes for each Put are distributed to each Friant Contractor receiving an eligible Take, or “**Taker**,” downstream based on the volumetric proportion of the Take on a weekly basis. Mitigation occurs in real time by the Contractor and offsets a like volume of each Taker’s supply at the end of a reporting period. Additional mitigation is not required to account for the water quality conditions of the mitigation volumes. Water quality conditions and flows are tracked daily. The ledger and required mitigation volumes are balanced weekly and reported and transferred monthly. Accounting and reporting are detailed in *Attachment D – Standard Operating Procedures*.

---

<sup>1</sup> Existing FKC inlet drains are exempt from providing mitigation.



Key:  
 $\mu\text{S/cm}$  = microsiemens per centimeter ( $1 \mu\text{S/cm} = 1 \mu\text{mhos/cm} = 1/1,000 \text{ dS/m}$ )

*Figure 2. Proposed Mitigation Rating Curve Based on Boron Sensitivity and Normalized to Electrical Conductivity*

#### 4. Critical Year Management

When Friant Division Class 1 contract allocation is less than or equal to 25 percent, the Water Quality Advisory Committee will convene as outlined in Attachment A. In these years, mitigation will be accounted for as presented in these Guidelines, but will be deferred to a mutually agreed later date unless those responsible for the Put and Take mutually agree to put and take the mitigation in the critical year. All monitoring requirements will remain as presented in these Guidelines.

#### **C. Resolution of Disputes**

In the event a Contractor is dissatisfied with the application or interpretation of these Guidelines by FWA staff or consultants, the following dispute resolution procedures will apply:

1. A Contractor may request FWA refer the dispute to Reclamation's Contracting Officer's Representative for initial review. FWA will prepare and deliver a written summary of the dispute for Reclamation's Contracting Officer's Representative, who will then confer with the parties and issue an advisory opinion regarding the dispute in a timely manner.
2. In addition to or in lieu of the meet and confer process with Reclamation's Contracting Officer's Representative above, a Contractor may submit a written appeal to be heard by the FWA Board of Directors. The written appeal must be submitted to the office of the Chief Executive Officer, who will then place the dispute on the agenda of the Board of Directors for a hearing at a board meeting no later than 60 days from the date of receipt. The decision of the Board of Directors will be final and FWA and the other party(ies) must promptly comply with such decision until the same is stayed, reversed, or modified by a decision of a court of competent jurisdiction.

The Cooperative Agreement between the Contractors and FWA provides additional dispute resolution procedures. In the event of any conflict between the dispute resolution procedures in these Guidelines and the Cooperative Agreement, the provisions in the Cooperative Agreement will control.

#### **D. Water Quality Forecasting and Communications**

##### **1. Friant-Kern Canal Water Quality Model**

Water quality monitoring and collection of water quality data will be evaluated using the FKC Water Quality Model, a volumetric mass-balance model of the entire FKC. The FKC Water Quality Model will serve as a predictive, water quality forecast tool to assist Friant Contractors and FWA in making real-time operation decisions. The weekly application of this model will require compilation of surface water quality data collected, as described above, as well as forecasts of water orders and periodic model updates.

##### **2. Water quality reporting and communications**

IOS will report real-time, continuous FKC in-prism EC measurements. In addition, FWA will cause to be provided a weekly summary report to Friant Contractors and Reclamation on:

- FKC current and forecasted operations;
- FKC current in-prism monitoring and forecasted water quality conditions; and,
- Pertinent pump-in programs' operations and water quality conditions.

#### **E. Implementation Responsibilities and Costs**

FWA will be responsible for the following actions:

- Maintain and calibrate conductivity meters
- Perform water quality sampling during pump-in operations
- Coordinate laboratory water quality testing
- Coordinate with Contractors on water quality data monitoring and analysis
- Manage in-prism water quality and manage operations database
- Perform weekly water quality reporting and forecasting using FKC Water Quality Model
- Perform weekly analysis to determine mitigation and distribution to respective Friant Contractors or any other Contractor party(ies) using the FKC Water Quality Mitigation Ledger
- Coordinate with Reclamation's SCCAO on water quality reporting, mitigation, and contractual requirements

- Coordinate and facilitate the work of Water Quality Advisory Committee and the Monitoring Subcommittee.

Costs for implementation and administration of these Guidelines will be initially paid out of the FWA Operation, Maintenance, and Replacement (OM&R) budget, and subsequently will be reimbursed by Contractors. The Contractor will pay a dollar per acre-foot (\$/acre-foot) fee (“**Water Quality Fee**”) for introduced Non-Millerton water, that will be credited to the FWA OM&R budget. The Water Quality Fee will be adopted by the FWA Board of Directors and will be based on an estimate of total annual costs divided by average annual deliveries of pump-in programs into the FKC. The Water Quality Fee will be applied to all introduced Non-Millerton water even if mitigation is not required

Annual costs and deliveries will be reassessed every year and compared to estimates provided in Attachment E to determine if any adjustments are required to the Water Quality Fee.

## Definitions

**Contractors:** Water contractors and other parties authorized to introduce or receive Non-Millerton water into or from the FKC.

**Cooperative Agreement:** The agreement between FWA and the participating Contractors regarding the establishment, implementation and management of these Guidelines.

**CVC:** Cross Valley Canal

**EC:** Salinity measured as electrical conductivity

**ELAP:** Environmental Laboratory Accreditation Program

**Friant Contractors:** Friant Division contractors with long-term contracts with Reclamation.

**FWA:** Friant Water Authority, a California joint powers agency.

**IOS:** Intellisite Operation System

**Ledger:** The Water Quality Mitigation Ledger that tracks and accounts for all inflows into and diversions from the FKC in order to determine appropriate mitigation for impacted water quality attributable to the introduced Non-Millerton water.

**Maximum Contaminant Level (MCL):** Usually reported in milligrams per liter (parts per million) or micrograms per liter (parts per billion).

**Non-Millerton Water:** All water introduced into the Friant-Kern Canal other than directly from Millerton Lake to the headworks of the FKC.

**OM&R:** Operation, Maintenance and Replacement

**Put:** The introduction of Non-Millerton water into the FKC.

**Project:** The Friant Division of the Central Valley Project, specifically the Friant-Kern Canal.

**Reclamation:** U.S. Department of the Interior, Bureau of Reclamation.

**SCCAO:** Reclamation's South-Central California Area Office.

**Take:** The delivery of Friant Division Class 1, Class 2, Recovered Water Account (RWA [Paragraph 16b]), and Unreleased Restoration Flows supplies.

**Taker:** A Friant Contractor receiving an eligible Take.

**Title 22:** The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 116270-116755), and California Code of Regulations (Sections 6440 et seq.), as amended.

**Water Quality Fee:** The fee established by FWA for introduced Non-Millerton water to fund this water quality program.

### **Tables**

Table 1. Water Quality Constituents

Table 2. Check Structure Locations for Real-Time Measurements of Electrical Conductivity

Table 3. Friant-Kern Canal In-Prism Water Quality Thresholds

Table 4: Friant-Kern Canal Water Quality Constituents Short List.

### **Attachments**

Attachment A: Water Quality Advisory Committee Charter

Attachment B: Monitoring Program Summary

Attachment C: Agronomic Impacts and Mitigation

Attachment D: Ledger Standard Operating Procedures

Attachment E: FKC Water Quality Guidelines Cost Allocation

The non-Project water discharged into Federal Facilities must comply with the California Drinking Water standards (Title 22)<sup>2</sup> listed in Table 1. However, selenium thresholds cannot exceed 2 micrograms per liter as defined in Table 4.

**Table 1 Title 22 Water Quality Standards**

Constituent	Units	MCL	Detection Limit for Reporting	CAS Registry Number	Recommended Analytical Method
<b>Primary</b>					
Aluminum	mg/L	1 <sup>(1)</sup>	0.05 <sup>(2)</sup>	7429-90-5	EPA 200.7
Antimony	mg/L	0.006 <sup>(1)</sup>	0.006 <sup>(2)</sup>	7440-36-0	EPA 200.8
Arsenic	mg/L	0.010 <sup>(1)</sup>	0.002 <sup>(2)</sup>	7440-38-2	EPA 200.8
Asbestos	MFL	7 <sup>(1)</sup>	0.2 MFL>10µm <sup>(2)</sup>	1332-21-4	EPA 100.2
Barium	mg/L	1 <sup>(1)</sup>	0.1 <sup>(2)</sup>	7440-39-3	EPA 200.7
Beryllium	mg/L	0.004 <sup>(1)</sup>	0.001 <sup>(2)</sup>	7440-41-7	EPA 200.7
Cadmium	mg/L	0.005 <sup>(1)</sup>	0.001 <sup>(2)</sup>	7440-43-9	EPA 200.7
Chromium, total	mg/L	0.05 <sup>(1)</sup>	0.01 <sup>(2)</sup>	7440-47-3	EPA 200.7
Copper	mg/L	1.3	0.050 <sup>(2)</sup>	7440-50-8	EPA 200.7
Cyanide	mg/L	0.15 <sup>(1)</sup>	0.1 <sup>(2)</sup>	57-12-5	EPA 335.2
Fluoride	mg/L	2.0 <sup>(1)</sup>	0.1 <sup>(2)</sup>	16984-48-8	EPA 300.1
Hexavalent Chromium	mg/L	0.010 <sup>(1)</sup>	0.001 <sup>(2)</sup>	18540-29-9	EPA 218.7
Lead	mg/L	0.015 <sup>(9)</sup>	0.005 <sup>(2)</sup>	7439-92-1	EPA 200.8
Mercury	mg/L	0.002 <sup>(1)</sup>	0.001 <sup>(2)</sup>	7439-97-6	EPA 245.1
Nickel	mg/L	0.1 <sup>(1)</sup>	0.01 <sup>(2)</sup>	7440-02-0	EPA 200.7
Nitrate (as nitrogen)	mg/L	10 <sup>(1)</sup>	0.4 <sup>(2)</sup>	7727-37-9	EPA 300.1
Nitrate + Nitrite (sum as nitrogen)	mg/L	10 <sup>(1)</sup>		14797-55-8	EPA 353.2
Nitrite (as nitrogen)	mg/L	1 <sup>(1)</sup>	0.4 <sup>(2)</sup>	14797-65-0	EPA 300.1
Perchlorate	mg/L	0.006 <sup>(1)</sup>	0.004 <sup>(2)</sup>	14797-73-0	EPA 314/331/332
Selenium	mg/L	0.002 <sup>(10)</sup>	0.001	7782-49-2	EPA 200.8
Thallium	mg/L	0.002 <sup>(1)</sup>	0.001 <sup>(2)</sup>	7440-28-0	EPA 200.8
Thiobencarb	mg/L	0.07		28249-77-6	EPA 527
<b>Secondary</b>					
Aluminum	mg/L	0.2 <sup>(6)</sup>		7429-90-5	EPA 200.7
Chloride	mg/L	500 <sup>(7)</sup>		16887-00-6	EPA 300.1
Color	units	15 <sup>(6)</sup>			EPA 110
Copper	mg/L	1.0 <sup>(6)</sup>	0.050 <sup>(8)</sup>	7440-50-8	EPA 200.7
Iron	mg/L	0.3 <sup>(6)</sup>		7439-89-6	EPA 200.7
Manganese	mg/L	0.05 <sup>(6)</sup>		7439-96-5	EPA 200.7
Methyl-tert-butyl ether (MTBE)	mg/L	0.005 <sup>(6)</sup>		1634-04-4	EPA 502.2/524.2
Odor -threshold	units	3 <sup>(6)</sup>			SM 2150B
Silver	mg/L	0.1 <sup>(6)</sup>		7440-22-4	EPA 200.7
Specific Conductance	µS/cm	1,600 <sup>(7)</sup>			SM 2510 B

<sup>2</sup> California Code of Regulations, Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010 4037), and Administrative Code (Sections 64401 et seq.), as amended  
[https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/documents/lawbook/dw\\_regulations\\_2019\\_03\\_28.pdf](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/dw_regulations_2019_03_28.pdf)



Constituent	Units	MCL	Detection Limit for Reporting	CAS Registry Number	Recommended Analytical Method
Sulfate	mg/L	500 <sup>(7)</sup>		14808-79-8	EPA 300.1
Thiobencarb	mg/L	0.001 <sup>(6)</sup>		28249-77-6	EPA 527
Total Dissolved Solids	mg/L	1,000 <sup>(7)</sup>			SM 2540 C
Turbidity	units	5 <sup>(6)</sup>			EPA 190.1/SM2130B
Zinc	mg/L	5.0 <sup>(6)</sup>		7440-66-6	EPA 200.7
<b>Other Required Analyses</b>					
Boron	mg/L	2.0 <sup>(13)</sup>		7440-42-8	EPA 200.7
Molybdenum	mg/L	0.01 <sup>(11)</sup>		7439-98-7	EPA 200.7
Sodium	mg/L	200 <sup>(12)</sup>		7440-23-5	EPA 200.7
<b>Radioactivity</b>					
Gross alpha*	pCi/L	15 <sup>(3)</sup>			SM 7110C
<b>Organic Chemicals</b>					
<i>(a) Volatile Organic Chemicals (VOCs)</i>					
Benzene	mg/L	0.001 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	71-43-2	EPA 502.2/524.2
Carbon Tetrachloride	mg/L	0.0005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	56-23-5	EPA 502.2/524.2
1,2-Dichlorobenzene.	mg/L	0.6 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	95-50-1	EPA 502.2/524.2
1,4-Dichlorobenzene.	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	106-46-7	EPA 502.2/524.2
1,1-Dichloroethane	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	75-34-3	EPA 502.2/524.2
1,2-Dichloroethane	mg/L	0.0005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	107-06-2	EPA 502.2/524.2
1,1-Dichloroethylene	mg/L	0.006 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	75-35-4	EPA 502.2/524.2
cis-1,2-Dichloroethylene	mg/L	0.006 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	156-59-2	EPA 502.2/524.2
trans-1,2-Dichloroethylene	mg/L	0.01 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	156-60-5	EPA 502.2/524.2
Dichloromethane.	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	75-09-2	EPA 502.2/524.2
1,2-Dichloropropane.	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	78-87-5	EPA 502.2/524.2
1,3-Dichloropropene.	mg/L	0.0005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	542-75-6	EPA 502.2/524.2
Ethylbenzene.	mg/L	0.3 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	100-41-4	EPA 502.2/524.2
Methyl-tert-butyl ether	mg/L	0.013 <sup>(4)</sup>	0.003 <sup>(5)</sup>	1634-04-4	EPA 502.2/524.2
Monochlorobenzene	mg/L	0.07 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	108-90-7	EPA 502.2/524.2
Styrene.	mg/L	0.1 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	100-42-5	EPA 502.2/524.2
1,1,2,2-Tetrachloroethane	mg/L	0.001 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	79-34-5	EPA 502.2/524.2
Tetrachloroethylene (PCE)	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	127-18-4	EPA 502.2/524.2
Toluene	mg/L	0.15 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	108-88-3	EPA 502.2/524.2
1,2,4-Trichlorobenzene	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	120-82-1	EPA 502.2/524.2
1,1,1-Trichloroethane	mg/L	0.200 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	71-55-6	EPA 502.2/524.2
1,1,2-Trichloroethane	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	79-00-5	EPA 502.2/524.2
Trichloroethylene (TCE)	mg/L	0.005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	79-01-6	EPA 502.2/524.2
Trichlorofluoromethane	mg/L	0.15 <sup>(4)</sup>	0.005 <sup>(5)</sup>	75-69-4	EPA 502.2/524.2
1,1,2-Trichloro-1,2,2-Trifluoroethane	mg/L	1.2 <sup>(4)</sup>	0.01 <sup>(5)</sup>	76-13-1	SM 6200B
Vinyl Chloride	mg/L	0.0005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	75-01-4	EPA 502.2/524.2
Xylenes	mg/L	1.750* <sup>(4)</sup>	0.0005 <sup>(5)</sup>	1330-20-7	EPA 502.2/524.2
<i>(b) Non-Volatile Synthetic Organic Chemicals (SOCs)</i>					
Alachlor	mg/L	0.002 <sup>(4)</sup>	0.001 <sup>(5)</sup>	15972-60-8	EPA 505/507/508
Atrazine	mg/L	0.001 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	1912-24-9	EPA 505/507/508
Bentazon	mg/L	0.018 <sup>(4)</sup>	0.002 <sup>(5)</sup>	25057-89-0	EPA 515.1
Benzo(a)pyrene	mg/L	0.0002 <sup>(4)</sup>	0.0001 <sup>(5)</sup>	50-32-8	EPA 525.2
Carbofuran	mg/L	0.018 <sup>(4)</sup>	0.005 <sup>(5)</sup>	1563-66-2	EPA 531.1
Chlordane	mg/L	0.0001 <sup>(4)</sup>	0.0001 <sup>(5)</sup>	57-74-9	EPA 505/508
2,4-D	mg/L	0.07 <sup>(4)</sup>	0.01 <sup>(5)</sup>	94-75-7	EPA 515.1

Constituent	Units	MCL	Detection Limit for Reporting	CAS Registry Number	Recommended Analytical Method
Dalapon	mg/L	0.2 <sup>(4)</sup>	0.01 <sup>(5)</sup>	75-99-0	EPA 515.1
Dibromochloropropane	mg/L	0.0002 <sup>(4)</sup>	0.00001 <sup>(5)</sup>	96-12-8	EPA 502.2/504.1
Di(2-ethylhexyl)adipate	mg/L	0.4 <sup>(4)</sup>	0.005 <sup>(5)</sup>	103-23-1	EPA 506
Di(2-ethylhexyl)phthalate	mg/L	0.004 <sup>(4)</sup>	0.003 <sup>(5)</sup>	117-81-7	EPA 506
Dinoseb	mg/L	0.007 <sup>(4)</sup>	0.002 <sup>(5)</sup>	88-85-7	EPA 5151-4
Diquat	mg/L	0.02 <sup>(4)</sup>	0.004 <sup>(5)</sup>	85-00-7	EPA 549.2
Endothall	mg/L	0.1 <sup>(4)</sup>	0.045 <sup>(5)</sup>	145-73-3	EPA 548.1
Endrin	mg/L	0.002 <sup>(4)</sup>	0.0001 <sup>(5)</sup>	72-20-8	EPA 505/508
Ethylene Dibromide	mg/L	0.00005 <sup>(4)</sup>	0.00002 <sup>(5)</sup>	106-93-4	EPA 502.2/504.1
Glyphosate (Roundup)	mg/L	0.7 <sup>(4)</sup>	0.025 <sup>(5)</sup>	1071-83-6	EPA 547
Heptachlor.	mg/L	0.00001 <sup>(4)</sup>	0.00001 <sup>(5)</sup>	76-44-8	EPA 508
Heptachlor Epoxide	mg/L	0.00001 <sup>(4)</sup>	0.00001 <sup>(5)</sup>	1024-57-3	EPA 508
Hexachlorobenzene	mg/L	0.001 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	118-74-1	EPA 505/508
Hexachlorocyclopentadiene	mg/L	0.05 <sup>(4)</sup>	0.001 <sup>(5)</sup>	77-47-4	EPA 505/508
Lindane (gamma-BHC)	mg/L	0.0002 <sup>(4)</sup>	0.0002 <sup>(5)</sup>	58-89-9	EPA 505/508
Methoxychlor	mg/L	0.03 <sup>(4)</sup>	0.01 <sup>(5)</sup>	72-43-5	EPA 505/508
Molinate	mg/L	0.02 <sup>(4)</sup>	0.002 <sup>(5)</sup>	2212-67-1	EPA 525.1
Oxamyl	mg/L	0.05 <sup>(4)</sup>	0.02 <sup>(5)</sup>	23135-22-0	EPA 531.1
Pentachlorophenol	mg/L	0.001 <sup>(4)</sup>	0.0002 <sup>(5)</sup>	87-86-5	EPA 515.1-3
Picloram	mg/L	0.5 <sup>(4)</sup>	0.001 <sup>(5)</sup>	1918-02-1	EPA 515.1-3
Polychlorinated Biphenyls	mg/L	0.0005 <sup>(4)</sup>	0.0005 <sup>(5)</sup>	1336-36-3	EPA 130.1
Simazine	mg/L	0.004 <sup>(4)</sup>	0.001 <sup>(5)</sup>	122-34-9	EPA 505
Thiobencarb (Bolero)	mg/L	0.07 <sup>(4)</sup>	0.001 <sup>(5)</sup>	28249-77-6	EPA 527
Toxaphene	mg/L	0.003 <sup>(4)</sup>	0.001 <sup>(5)</sup>	8001-35-2	EPA 505
1,2,3-Trichloropropane	mg/L	0.000005 <sup>(4)</sup>	0.000005 <sup>(5)</sup>	96-18-4	SRL 524M
2,3,7,8-TCDD (Dioxin)	mg/L	3 x 10 <sup>-8</sup> <sup>(4)</sup>	5 x 10 <sup>-9</sup> <sup>(5)</sup>	1746-01-6	EPA 130.3
2,4,5-TP (Silvex)	mg/L	0.05 <sup>(4)</sup>	0.001 <sup>(5)</sup>	93-72-1	EPA 515.1
<b>Other Organic Chemicals</b>					
Chlorpyrifos	µg/L	0.015 <sup>(11)</sup>		2921-88-2	EPA 8141A
Diazinon	µg/L	0.10 <sup>(11)</sup>		333-41-5	EPA 8141A

Sources:

- Recommended Analytical Methods: <https://www.nemi.gov/home/>
- Maximum Contaminant Levels (MCL): Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.
- (1) Title 22. Table 64431-A Maximum Contaminant Levels, Inorganic Chemicals
- (2) Title 22. Table 64432-A Detection Limits for Reporting (DLRs) for Regulated Inorganic Chemicals
- (3) Title 22. Table 64442 Radionuclide Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting (DLRs)
- (4) Title 22. Table 64444-A Maximum Contaminant Levels, Organic Chemicals
- (5) Title 22. Table 64445.1-A Detection Limits for Purposes of Reporting (DLRs) for Regulated Organic Chemicals
- (6) Title 22. Table 64449-A Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Levels"
- (7) Title 22. Table 64449-B Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Level Ranges"
- (8) Title 22. Table 64678-A DLRs for Lead and Copper
- (9) Title 22. Section 64678 (d) Lead Action level
- [https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/documents/lawbook/dw\\_regulations\\_2019\\_03\\_28.pdf](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/dw_regulations_2019_03_28.pdf)
- California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. Revised June 2015
- (10) Basin Plan, Table III-1 (µg/L) (selenium in Grasslands water supply channels)
- (11) Basin Plan, Table III-2A. 4-day average (chronic) concentrations of chlorpyrifos & diazinon in San Joaquin River from Mendota to Vernalis
- [https://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/delta\\_op\\_pesticide/](https://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_op_pesticide/)
- Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).
- (12) Ayers, Table 1 (mg/L) (sodium)
- (13) Ayers, Table 1 (mg/L) (boron)
- <http://www.fao.org/3/T0234E/T0234E00.htm>
- (14) Requested by State Water contractors, no MCL specified.

- California Regional Water Quality Control Board. PFAS Per-and Polyfluoroalkyl Substances. (15) Testing Methods in California Drinking Water <https://www.waterboards.ca.gov/pfas/>

DRAFT

**Table 2. Check Structure Locations for Real-Time Measurements of Electrical Conductivity**

<b>Check Structure</b>	<b>Milepost</b>
Little Dry Creek	5.50
Kings River	28.52
Sand Creek	46.04
Dodge Ave	61.03
Kaweah River	71.29
Rocky Hill	79.25
Fifth Ave	88.22
Tule River	95.67
Deer Creek	102.69
White River	112.90
Reservoir (Woollomes)	121.51
Poso Creek	130.03
Shafter	137.20
Kern River	151.81

DRAFT

**Table 3. Friant-Kern Canal In-Prism Water Quality Thresholds**

Period	Salinity expressed as EC ( $\mu\text{S}/\text{cm}$ )	Chloride (mg/L)	Boron (mg/L) <sup>1</sup>	Turbidity (NTU) <sup>6</sup>	Total Suspended Solids (ppm) <sup>6</sup>	SAR <sup>7</sup>	Sodium (mg/L) <sup>7</sup>
<b>Period 1</b> March 1 – June 30	1,000 <sup>2</sup>	102 <sup>3</sup>	0.4	40	20	3	69
<b>Period 2</b> July 1 – August 31	500 <sup>4</sup>	55 <sup>4</sup>	0.4	40	20	3	69
<b>Period 3a</b> September 1 – February 28	1,000 <sup>2</sup>	102 <sup>3</sup>	0.4	40	20	3	69
<b>Period 3b</b> September 1 – February 28	1,000 <sup>2</sup>	123 <sup>5</sup>	0.4	40	20	3	69

**Notes:**

Thresholds adapted from Grieve, C.M., S.R. Grattan and E.V. Maas. 2012. Plant salt tolerance. In. (W.W. Wallender and K.K. Tanji, eds). Agricultural Salinity Assessment and Management (2nd edition). ASCE pp 405-459; and Ayers, R.S. and D.W. Westcot 1985. Water quality for agriculture. FAO Irrigation and Drainage Paper 29 (rev 1). Food and Agriculture Organization of the United Nations. Rome

For addition detail, see Attachment C – Agronomic Impacts and Mitigation.

When Friant-Kern Canal in-prism water quality conditions in this table are exceeded, Friant Division Long-Term Contractors will work together to seek 1:1, unleveraged, and cost-neutral exchanges for pump-in and pump-back programs. This does not apply to spot-market or third-party exchanges.

<sup>1</sup> Grapes are used as a representative crop for boron sensitivity and are prevalent in the Friant Division. They are used as a surrogate for many other sensitive crop types such as apricots, figs, and grapefruits. Threshold assumes conventional irrigation with minimum 20 percent leaching fraction applied.

<sup>2</sup> Threshold assumes minimum of 20 percent leaching requirement applied and adjusted to account for regulated deficit irrigation during almond hull split period (July 1 – August 31) to not exceed maximum  $EC_{et}$ . Almonds on Nemaguard rootstock are used as a representative crop for salinity sensitivity and are prevalent in the Friant Division. They are used as a surrogate for many other sensitive crop types such as apples, cherries, pears, pistachios, and walnuts.

<sup>3</sup> Threshold assumes minimum of 20 percent leaching requirement applied and then adjusted to account for regulated deficit irrigation during almond hull split period (July 1 – August 31) to not exceed maximum  $Cl_{et}$ . Almonds on Nemaguard rootstock used as a representative crop for chloride sensitivity. They are used as a surrogate for other sensitive crops including cherries, pistachios, and walnuts. If the measured average chloride concentration for Period 1 exceeds 70 mg/L, the chloride threshold remains at 102 mg/L.

<sup>4</sup> Threshold applies to almond hull split period when regulated deficit irrigation is applied to avoid hull rot. This threshold is used assuming irrigation applications are reduced to 50 percent of the tree water requirement and subsequently thresholds applied for the remainder of the year have been adjusted to account for additional salt accumulation. This threshold was developed with consideration of existing program operations, historical water quality data, and absolute water quality thresholds.

<sup>5</sup> If the measured average chloride concentration in Period 1 (March 1 – June 30) is less than or equal to 70 mg/L, the allowable chloride threshold for Period 3 (September 1 – February 28) is increased to 123 mg/L.

<sup>6</sup> Applied TSS and turbidity thresholds from section 3 of the Final Initial Study/Negative Declaration for: Warren Act Contract and License, and Operation and Maintenance Agreement to Introduce Floodwaters from Reclamation District 770 into the Friant-Kern Canal, March 2017. Additional detail provided in Attachment C – Agronomic Impacts and Mitigation

<sup>7</sup> SAR and Sodium are managed together. If the measured SAR value exceeds 3 AND the measured sodium concentration exceeds a threshold of 69 mg/L, management will be necessary. SAR is derived from Ayers Table 1 and assumes surface irrigation. The sodium threshold is also derived from Ayers Table 1 and suggests that irrigation waters <3 meq/L (69 mg/L) is suitable for crops that are sprinkler irrigated.

**Key:**

$\mu\text{S}/\text{cm}$  = microsiemens per centimeter (1  $\mu\text{S}/\text{cm}$  = 1  $\mu\text{mhos}/\text{cm}$  = 1/1,000 dS/m)

ASCE = American Society of Civil Engineers

$Cl_{et}$  = maximum chloride threshold of the saturated soil paste

EC = electrical conductivity of applied water

$EC_{et}$  = Soil salinity threshold for a given crop

FAO = Food and Agriculture Organization of the United Nations

Friant Division = Friant Division of the Central Valley Project

mg/L = milligrams per liter

SAR = sodium adsorption ratio

TDS = total dissolved solids

**Table 4: Friant-Kern Canal Water Quality Constituents Short List**

<b>Constituent</b>	<b>Units</b>	<b>Thresholds</b>
1,2,3 TCP	(µg/L)	0.005
Arsenic	(mg/L)	0.010
Bicarbonate	(mg/L)	--
Boron	(mg/L)	See Table 3
Bromide	(mg/L)	--
Calcium	(mg/L)	--
Chloride	(mg/L)	See Table 3
Chromium, total	(mg/L)	0.05
Hexavalent chromium	(mg/L)	0.010
Iron	(µg/L)	300
Magnesium	(mg/L)	--
Manganese	(µg/L)	50
Nitrate	(mg/L)	10
pH		--
SAR		See Table 3
Salinity (as EC)	(µS/cm)	See Table 3
Selenium	(µg/L)	2
Sodium	(mg/L)	See Table 3
Sulfate	(mg/L)	500
TDS	(mg/L)	-- *
Total Organic Carbon	(mg/L)	--
TSS	(ppm)	See Table 3
Turbidity	(NTU)	See Table 3
Gross alpha	pCi/L	15

Notes:

Thresholds are Title 22 MCLs unless otherwise noted.

Constituent with threshold denoted as "--" do not have an established MCL.

Refer to Table 1 and Notes for Table 1 for additional details.

\*TDS MCL not listed for the purposes of these Guidelines. TDS and EC are both a measure of salinity and the EC thresholds shown in Table 3 are controlling.

# Appendix C

## **Special-Status Plant and Wildlife Species Lists**

This page intentionally left blank





**Selected Elements by Scientific Name**  
**California Department of Fish and Wildlife**  
**California Natural Diversity Database**



**Query Criteria:** County IS (Fresno OR Kern OR Tulare)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Abronia alpina</i> Ramshaw Meadows abronia	PDNYC01020	None	None	G2	S2	1B.1
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Accipiter gentilis</i> northern goshawk	ABNKC12060	None	None	G5	S3	SSC
<i>Aegialia concinna</i> Ciervo aegilian scarab beetle	IICOL64010	None	None	G1	S1	
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
<i>Alkali Seep</i> Alkali Seep	CTT45320CA	None	None	G3	S2.1	
<i>Allium abramsii</i> Abrams' onion	PMLIL02360	None	None	G3	S3	1B.2
<i>Allium howellii</i> var. <i>clokeyi</i> Mt. Pinos onion	PMLIL02161	None	None	G4T2	S2	1B.3
<i>Allium howellii</i> var. <i>sanbenitense</i> San Benito onion	PMLIL02163	None	None	G3G4T3	S3	1B.3
<i>Allium shevockii</i> Spanish Needle onion	PMLIL022M0	None	None	G2	S2	1B.3
<i>Almutaster pauciflorus</i> alkali marsh aster	PDASTEL010	None	None	G4	S1S2	2B.2
<i>Ambystoma californiense</i> pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
<i>Ammonitella yatesii</i> tight coin (=Yates' snail)	IMGASB0010	None	None	G1	S1	
<i>Ammospermophilus nelsoni</i> Nelson's (=San Joaquin) antelope squirrel	AMAFB04040	None	Threatened	G2G3	S2S3	
<i>Anaxyrus canorus</i> Yosemite toad	AAABB01040	Threatened	None	G2G3	S2	SSC
<i>Andrena macswaini</i> An andrenid bee	IIHYM35130	None	None	G2	S2	
<i>Anniella alexanderae</i> Temblor legless lizard	ARACC01030	None	Candidate Endangered	G1	S1	SSC
<i>Anniella campi</i> Southern Sierra legless lizard	ARACC01040	None	None	G1G2	S2	SSC
<i>Anniella grinnelli</i> Bakersfield legless lizard	ARACC01050	None	None	G2G3	S2S3	SSC
<i>Anniella pulchra</i> Northern California legless lizard	ARACC01020	None	None	G3	S2S3	SSC



Selected Elements by Scientific 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
<b>Anniella spp.</b> California legless lizard	ARACC01070	None	None	G3G4	S3S4	SSC
<b>Anniella stebbinsi</b> Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
<b>Antirrhinum ovatum</b> oval-leaved snapdragon	PDSCR2K010	None	None	G3	S3	4.2
<b>Antrozous pallidus</b> pallid bat	AMACC10010	None	None	G4	S3	SSC
<b>Aplodontia rufa californica</b> Sierra Nevada mountain beaver	AMAF01013	None	None	G5T3T4	S2S3	SSC
<b>Aquila chrysaetos</b> golden eagle	ABNKC22010	None	None	G5	S3	FP
<b>Ardea alba</b> great egret	ABNGA04040	None	None	G5	S4	
<b>Ardea herodias</b> great blue heron	ABNGA04010	None	None	G5	S4	
<b>Arizona elegans occidentalis</b> California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
<b>Asio flammeus</b> short-eared owl	ABNSB13040	None	None	G5	S3	SSC
<b>Asio otus</b> long-eared owl	ABNSB13010	None	None	G5	S3?	SSC
<b>Asplenium septentrionale</b> northern spleenwort	PPASP021F0	None	None	G5	S3	2B.3
<b>Astragalus ertterae</b> Walker Pass milk-vetch	PDFAB0FB30	None	None	G2	S2	1B.3
<b>Astragalus hornii var. hornii</b> Horn's milk-vetch	PDFAB0F421	None	None	GUT1	S1	1B.1
<b>Astragalus lentiginosus var. kernensis</b> Kern Plateau milk-vetch	PDFAB0FB98	None	None	G5T2?	S2	1B.2
<b>Astragalus preussii var. laxiflorus</b> Lancaster milk-vetch	PDFAB0F721	None	None	G4T2	S1	1B.1
<b>Astragalus ravenii</b> Raven's milk-vetch	PDFAB0F7F0	None	None	G2	S2	1B.3
<b>Astragalus shevockii</b> Shevock's milk-vetch	PDFAB0F850	None	None	G2	S2	1B.3
<b>Athene cunicularia</b> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<b>Atractelmis wawona</b> Wawona riffle beetle	IICOL58010	None	None	G3	S1S2	
<b>Atriplex cordulata var. cordulata</b> heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2



**Selected Elements by Scientific 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
<b><i>Atriplex cordulata</i> var. <i>erecticaulis</i></b> Earlimart orache	PDCHE042V0	None	None	G3T1	S1	1B.2
<b><i>Atriplex coronata</i> var. <i>vallicola</i></b> Lost Hills crownscale	PDCHE04371	None	None	G4T3	S3	1B.2
<b><i>Atriplex depressa</i></b> brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
<b><i>Atriplex minuscula</i></b> lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
<b><i>Atriplex persistens</i></b> vernal pool smallscale	PDCHE042P0	None	None	G2	S2	1B.2
<b><i>Atriplex subtilis</i></b> subtle orache	PDCHE042T0	None	None	G1	S1	1B.2
<b><i>Atriplex tularensis</i></b> Bakersfield smallscale	PDCHE04240	None	Endangered	GX	SX	1A
<b><i>Batrachoseps altasierrae</i></b> Greenhorn Mountains slender salamander	AAAAD02200	None	None	G2	S2	
<b><i>Batrachoseps bramei</i></b> Fairview slender salamander	AAAAD02210	None	None	G3	S3	
<b><i>Batrachoseps regius</i></b> Kings River slender salamander	AAAAD02140	None	None	G2G3	S2S3	
<b><i>Batrachoseps relictus</i></b> relictual slender salamander	AAAAD02070	Proposed Endangered	None	G1	S1	SSC
<b><i>Batrachoseps robustus</i></b> Kern Plateau salamander	AAAAD02220	None	None	G3	S3	
<b><i>Batrachoseps simatus</i></b> Kern Canyon slender salamander	AAAAD02080	Proposed Threatened	Threatened	G2G3	S2S3	
<b><i>Batrachoseps stebbinsi</i></b> Tehachapi slender salamander	AAAAD02090	None	Threatened	G2G3	S2S3	
<b>Big Tree Forest</b> Big Tree Forest	CTT84250CA	None	None	G3	S3.2	
<b><i>Boecheira bodiensis</i></b> Bodie Hills rockcress	PDBRA06240	None	None	G3	S3	1B.3
<b><i>Boecheira cobrensis</i></b> Masonic rockcress	PDBRA06080	None	None	G5	S3	2B.3
<b><i>Boecheira dispar</i></b> pinyon rockcress	PDBRA060F0	None	None	G3	S3	2B.3
<b><i>Boecheira evadens</i></b> hidden rockcress	PDBRA40030	None	None	G1	S1	1B.3
<b><i>Boecheira shevockii</i></b> Shevock's rockcress	PDBRA40120	None	None	G1	S1	1B.1
<b><i>Boecheira tularensis</i></b> Tulare rockcress	PDBRA40130	None	None	G3	S3	1B.3



**Selected Elements by Scientific 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
<b><i>Bombus caliginosus</i></b> obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
<b><i>Bombus crotchii</i></b> Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
<b><i>Bombus morrisoni</i></b> Morrison bumble bee	IIHYM24460	None	None	G3	S1S2	
<b><i>Bombus occidentalis</i></b> western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
<b><i>Botrychium ascendens</i></b> upswept moonwort	PPOPH010S0	None	None	G4	S2	2B.3
<b><i>Botrychium crenulatum</i></b> scalloped moonwort	PPOPH010L0	None	None	G4	S3	2B.2
<b><i>Botrychium lineare</i></b> slender moonwort	PPOPH01120	None	None	G3	S1	1B.1
<b><i>Botrychium minganense</i></b> Mingan moonwort	PPOPH010R0	None	None	G5	S4	4.2
<b><i>Botrychium montanum</i></b> western goblin	PPOPH010K0	None	None	G3G4	S2	2B.1
<b><i>Bowmanasellus sequoiae</i></b> Sequoia cave isopod	ICMAL01210	None	None	G2	S2	
<b><i>Branchinecta longiantenna</i></b> longhorn fairy shrimp	ICBRA03020	Endangered	None	G1	S2	
<b><i>Branchinecta lynchi</i></b> vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
<b><i>Branchinecta mesovallensis</i></b> midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
<b><i>Brasenia schreberi</i></b> watershield	PDCAB01010	None	None	G5	S3	2B.3
<b><i>Brodiaea insignis</i></b> Kaweah brodiaea	PMLIL0C060	None	Endangered	G1	S1	1B.2
<b><i>Bruchia bolanderi</i></b> Bolander's bruchia	NBMUS13010	None	None	G3	S3	4.2
<b><i>Buteo regalis</i></b> ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
<b><i>Buteo swainsoni</i></b> Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
<b><i>Calasellus longus</i></b> An isopod	ICMAL34020	None	None	G1	S1	
<b><i>Calicina cloughensis</i></b> Clough Cave harvestman	ILARAU8090	None	None	G1	S1	
<b><i>Calicina dimorphica</i></b> Watts Valley harvestman	ILARAU8050	None	None	G1	S1	



Selected Elements by Scientific 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
<b><i>Calicina macula</i></b> marbled harvestman	ILARAU8060	None	None	G1	S1	
<b><i>Calicina mesaensis</i></b> Table Mountain harvestman	ILARAU8070	None	None	G1	S1	
<b><i>Calicina piedra</i></b> Piedra harvestman	ILARAU8080	None	None	G1	S1	
<b><i>Calochortus palmeri</i> var. <i>palmeri</i></b> Palmer's mariposa-lily	PMLIL0D122	None	None	G3T2	S2	1B.2
<b><i>Calochortus striatus</i></b> alkali mariposa-lily	PMLIL0D190	None	None	G3	S2S3	1B.2
<b><i>Calochortus westonii</i></b> Shirley Meadows star-tulip	PMLIL0D1M0	None	None	G3	S3	1B.2
<b><i>Calyptridium pulchellum</i></b> Mariposa pussypaws	PDPOR09060	Threatened	None	G1	S1	1B.1
<b><i>Calyptridium pygmaeum</i></b> pygmy pussypaws	PDPOR09070	None	None	G1G2	S1S2	1B.2
<b><i>Calystegia malacophylla</i> var. <i>berryi</i></b> Berry's morning-glory	PDCON040K2	None	None	G4G5T2Q	S2	3.3
<b><i>Camissonia benitensis</i></b> San Benito evening-primrose	PDONA03030	Delisted	None	G2	S2	1B.1
<b><i>Camissonia integrifolia</i></b> Kern River evening-primrose	PDONA030T0	None	None	G2	S2	1B.3
<b><i>Camissonia lacustris</i></b> grassland suncup	PDONA030W0	None	None	G2	S2	1B.2
<b><i>Camissonia sierrae</i> ssp. <i>alticola</i></b> Mono Hot Springs evening-primrose	PDONA031H1	None	None	G3T2	S2	1B.2
<b><i>Campylopodiella stenocarpa</i></b> flagella-like atractylocarpus	NBMUS84010	None	None	G5	S1?	2B.2
<b><i>Canbya candida</i></b> white pygmy-poppy	PDPAP05020	None	None	G3G4	S3S4	4.2
<b><i>Carex atherodes</i></b> wheat sedge	PMCYP03160	None	None	G5	S3	2B.2
<b><i>Carex comosa</i></b> bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
<b><i>Carex limosa</i></b> mud sedge	PMCYP037K0	None	None	G5	S3	2B.2
<b><i>Carex tompkinsii</i></b> Tompkins' sedge	PMCYP03DR0	None	Rare	G3G4	S3S4	4.3
<b><i>Carlquistia muirii</i></b> Muir's tarplant	PDASTDU010	None	None	G2	S2	1B.3
<b><i>Carpenteria californica</i></b> tree-anemone	PDHDR04010	None	Threatened	G1?	S1?	1B.2



Selected Elements by Scientific 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
<b><i>Castilleja campestris</i> var. <i>succulenta</i></b> succulent owl's-clover	PDSCR0D3Z1	Threatened	Endangered	G4?T2T3	S2S3	1B.2
<b><i>Caulanthus californicus</i></b> California jewelflower	PDBRA31010	Endangered	Endangered	G1	S1	1B.1
<b><i>Caulanthus lemmonii</i></b> Lemmon's jewelflower	PDBRA0M0E0	None	None	G3	S3	1B.2
<b><i>Central Valley Drainage Hardhead/Squawfish Stream</i></b> Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
<b><i>Ceratochrysis gracilis</i></b> Piute Mountains cuckoo wasp	IIHYM71020	None	None	G1	S1	
<b><i>Chaenactis douglasii</i> var. <i>alpina</i></b> alpine dusty maidens	PDAST20065	None	None	G5T5	S2	2B.3
<b><i>Charadrius montanus</i></b> mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
<b><i>Charadrius nivosus nivosus</i></b> western snowy plover	ABNNB03031	Threatened	None	G3T3	S3	SSC
<b><i>Charina umbratica</i></b> southern rubber boa	ARADA01011	None	Threatened	G2G3	S2S3	
<b><i>Chloropyron molle</i> ssp. <i>hispidum</i></b> hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
<b><i>Chloropyron palmatum</i></b> palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
<b><i>Chrysis tularensis</i></b> Tulare cuckoo wasp	IIHYM72010	None	None	G1G2	S2	
<b><i>Cicindela tranquebarica joaquinensis</i></b> San Joaquin tiger beetle	IICOL0220E	None	None	G5T1	S1	
<b><i>Cinna bolanderi</i></b> Bolander's woodreed	PMPOA1H040	None	None	G2G3	S2S3	1B.2
<b><i>Circus hudsonius</i></b> northern harrier	ABNKC11011	None	None	G5	S3	SSC
<b><i>Cirsium crassicaule</i></b> slough thistle	PDAST2E0U0	None	None	G1	S1	1B.1
<b><i>Clarkia springvillensis</i></b> Springville clarkia	PDONA05120	Threatened	Endangered	G2	S2	1B.2
<b><i>Clarkia tembloriensis</i> ssp. <i>calientensis</i></b> Vasek's clarkia	PDONA05141	None	None	G3T1	S1	1B.1
<b><i>Clarkia xantiana</i> ssp. <i>parviflora</i></b> Kern Canyon clarkia	PDONA05181	None	None	G4T3?	S3?	4.2
<b><i>Claytonia megarhiza</i></b> fell-fields claytonia	PDPOR030A0	None	None	G5	S2	2B.3
<b><i>Claytonia peirsonii</i> ssp. <i>yorkii</i></b> York's spring beauty	PDPOR03124	None	None	G2G3T1	S1	1B.1



Selected Elements by Scientific 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
<b>Coastal and Valley Freshwater Marsh</b> Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
<b>Coccyzus americanus occidentalis</b> western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
<b>Coelus gracilis</b> San Joaquin dune beetle	IICOL4A020	None	None	G1	S1	
<b>Cordylanthus eremicus ssp. kernensis</b> Kern Plateau bird's-beak	PDSCR0J043	None	None	G3T2	S2	1B.3
<b>Corynorhinus townsendii</b> Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
<b>Cryptantha clokeyi</b> Clokey's cryptantha	PDBOR0A3M0	None	None	G3	S3	1B.2
<b>Cryptantha incana</b> Tulare cryptantha	PDBOR0A1D0	None	None	G2	S2	1B.3
<b>Cryptochia denningi</b> Denning's cryptic caddisfly	IITRI11030	None	None	G1G2	S1S2	
<b>Cryptochia excella</b> Kings Canyon cryptochian caddisfly	IITRI11010	None	None	G1G2	S2S3	
<b>Cuscuta jepsonii</b> Jepson's dodder	PDCUS011T0	None	None	G3	S3	1B.2
<b>Cymopterus deserticola</b> desert cymopterus	PDAP10U090	None	None	G2	S2	1B.2
<b>Cypseloides niger</b> black swift	ABNUA01010	None	None	G4	S2	SSC
<b>Danaus plexippus plexippus pop. 1</b> monarch - California overwintering population	IILEPP2012	Candidate	None	G4T1T2Q	S2	
<b>Deinandra arida</b> Red Rock tarplant	PDAST4R010	None	Rare	G1	S1	1B.2
<b>Deinandra halliana</b> Hall's tarplant	PDAST4R0C0	None	None	G3	S3	1B.2
<b>Deinandra mohavensis</b> Mojave tarplant	PDAST4R0K0	None	Endangered	G3	S3	1B.3
<b>Delphinium inopinum</b> unexpected larkspur	PDRAN0B0W0	None	None	G3	S3	4.3
<b>Delphinium purpusii</b> rose-flowered larkspur	PDRAN0B1G0	None	None	G3	S3	1B.3
<b>Delphinium recurvatum</b> recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
<b>Dendragapus fuliginosus howardi</b> Mount Pinos sooty grouse	ABNLC09022	None	None	G5T2T3	S2S3	SSC
<b>Dendrocygna bicolor</b> fulvous whistling-duck	ABNJB01010	None	None	G5	S1	SSC



**Selected Elements by Scientific 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
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2T3	S3	
<i>Desmona bethula</i> amphibious caddisfly	IITRI77010	None	None	G2G3	S2S3	
<i>Diadophis punctatus modestus</i> San Bernardino ringneck snake	ARADB10015	None	None	G5T2T3	S2?	
<i>Diplacus pictus</i> calico monkeyflower	PDSCR1B240	None	None	G2	S2	1B.2
<i>Dipodomys ingens</i> giant kangaroo rat	AMAFD03080	Endangered	Endangered	G1G2	S1S2	
<i>Dipodomys nitratooides brevinasus</i> short-nosed kangaroo rat	AMAFD03153	None	None	G3T1T2	S1S2	SSC
<i>Dipodomys nitratooides exilis</i> Fresno kangaroo rat	AMAFD03151	Endangered	Endangered	G3TH	SH	
<i>Dipodomys nitratooides nitratooides</i> Tipton kangaroo rat	AMAFD03152	Endangered	Endangered	G3T1T2	S1S2	
<i>Downingia pusilla</i> dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
<i>Draba cruciata</i> Mineral King draba	PDBRA110U0	None	None	G3	S3	1B.3
<i>Draba lonchocarpa</i> spear-fruited draba	PDBRA111F0	None	None	G5	S2S3	2B.3
<i>Draba praealta</i> tall draba	PDBRA11210	None	None	G5	S3	2B.3
<i>Draba sharsmithii</i> Mt. Whitney draba	PDBRA113F0	None	None	G2	S2	1B.3
<i>Draba sierrae</i> Sierra draba	PDBRA112A0	None	None	G3	S3	1B.3
<i>Dudleya cymosa ssp. costatifolia</i> Pierpoint Springs dudleya	PDCRA040A2	None	None	G5T1	S1	1B.2
<i>Efferia antiochi</i> Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
<i>Egretta thula</i> snowy egret	ABNGA06030	None	None	G5	S4	
<i>Elanus leucurus</i> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<i>Elodium blandowii</i> Blandow's bog moss	NBMUS3C011	None	None	G4	S2	2B.3
<i>Elymus scribneri</i> Scribner's wheat grass	PMPOA2H170	None	None	G5	S3	2B.3
<i>Empidonax traillii</i> willow flycatcher	ABPAE33040	None	Endangered	G5	S3	





**Selected Elements by Scientific 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
<i>Empidonax traillii extimus</i> southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S3	
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Ensatina eschscholtzii croceater</i> yellow-blotched salamander	AAAAD04011	None	None	G5T3	S3	WL
<i>Epilobium howellii</i> subalpine fireweed	PDONA06180	None	None	G4	S4	4.3
<i>Eremalche parryi ssp. kernensis</i> Kern mallow	PDMAL0C031	Endangered	None	G3G4T3	S3	1B.2
<i>Eremophila alpestris actia</i> California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	
<i>Eriastrum hooveri</i> Hoover's eriastrum	PDPLM03070	Delisted	None	G3	S3	4.2
<i>Eriastrum rosamondense</i> Rosamond eriastrum	PDPLM030G0	None	None	G1?	S1?	1B.1
<i>Eriastrum tracyi</i> Tracy's eriastrum	PDPLM030C0	None	Rare	G3Q	S3	3.2
<i>Ericameria gilmanii</i> Gilman's goldenbush	PDAST3L0P0	None	None	G2	S2	1B.3
<i>Erigeron aequifolius</i> Hall's daisy	PDAST3M030	None	None	G3	S3	1B.3
<i>Erigeron inornatus var. keilii</i> Keil's daisy	PDAST3M1Z2	None	None	G5T2	S2	1B.3
<i>Erigeron multiceps</i> Kern River daisy	PDAST3M2N0	None	None	G2G3	S2S3	1B.2
<i>Eriogonum breedlovei var. breedlovei</i> Breedlove's buckwheat	PDPGN080V1	None	None	G3T2	S2	1B.2
<i>Eriogonum breedlovei var. shevockii</i> Needles buckwheat	PDPGN080V2	None	None	G3T3	S3	4.3
<i>Eriogonum callistum</i> Tehachapi buckwheat	PDPGN08790	None	None	G1	S1	1B.1
<i>Eriogonum eastwoodianum</i> Eastwood's buckwheat	PDPGN081V0	None	None	G2	S2	1B.3
<i>Eriogonum heermannii var. occidentale</i> western Heermann's buckwheat	PDPGN082P6	None	None	G5T2	S2	1B.2
<i>Eriogonum kennedyi var. alpinum</i> southern alpine buckwheat	PDPGN083B1	None	None	G4T3	S3	1B.3
<i>Eriogonum kennedyi var. pinicola</i> Kern buckwheat	PDPGN083B4	None	None	G4T1	S1	1B.1



**Selected Elements by Scientific 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
<i>Eriogonum nudum var. murinum</i> mouse buckwheat	PDPGN08495	None	None	G5T2	S2	1B.2
<i>Eriogonum nudum var. regirivum</i> Kings River buckwheat	PDPGN0849F	None	None	G5T2	S2	1B.2
<i>Eriogonum ovalifolium var. monarchense</i> Monarch buckwheat	PDPGN084FJ	None	None	G5T1	S1	1B.1
<i>Eriogonum temblorense</i> Temblor buckwheat	PDPGN085P0	None	None	G2	S2	1B.2
<i>Eriogonum twisselmannii</i> Twisselmann's buckwheat	PDPGN08610	None	Rare	G2	S2	1B.2
<i>Eriogonum wrightii var. olanchense</i> Olancha Peak buckwheat	PDPGN086D3	None	None	G5T2	S2	1B.3
<i>Eriophyllum lanatum var. hallii</i> Fort Tejon woolly sunflower	PDAST3N058	None	None	G5T1	S1	1B.1
<i>Eriophyllum mohavense</i> Barstow woolly sunflower	PDAST3N070	None	None	G2	S2	1B.2
<i>Eryngium spinosepalum</i> spiny-sepaled button-celery	PDAP10Z0Y0	None	None	G2	S2	1B.2
<i>Erythranthe gracilipes</i> slender-stalked monkeyflower	PDSCR1B1C0	None	None	G2	S2	1B.2
<i>Erythranthe marmorata</i> Stanislaus monkeyflower	PDPHR01130	None	None	G2?	S2?	1B.1
<i>Erythranthe norrisii</i> Kaweah monkeyflower	PDSCR1B2Y0	None	None	G2	S2	1B.3
<i>Erythranthe rhodopetra</i> Red Rock Canyon monkeyflower	PDPHR01040	None	None	G1	S1	1B.1
<i>Erythranthe shevockii</i> Kelso Creek monkeyflower	PDSCR1B2Z0	None	None	G1	S1	1B.1
<i>Erythronium pusaterii</i> Kaweah fawn lily	PML1L0U0R0	None	None	G3	S3	1B.3
<i>Eschscholzia lemmonii ssp. kernensis</i> Tejon poppy	PDPAP0A071	None	None	G5T2	S2	1B.1
<i>Eschscholzia minutiflora ssp. twisselmannii</i> Red Rock poppy	PDPAP0A093	None	None	G5T2	S2	1B.2
<i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
<i>Eucerceris ruficeps</i> redheaded sphecid wasp	IIHYM18010	None	None	G1G3	S2	
<i>Euderma maculatum</i> spotted bat	AMACC07010	None	None	G4	S3	SSC
<i>Eumops perotis californicus</i> western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC



**Selected Elements by Scientific 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
<b><i>Euphilotes glaucon comstocki</i></b> Comstock's blue butterfly	IILEPG201A	None	None	G5T2	S2	
<b><i>Euphorbia hooveri</i></b> Hoover's spurge	PDEUP0D150	Threatened	None	G1	S1	1B.2
<b><i>Euproserpinus euterpe</i></b> Kern primrose sphinx moth	IILEX14020	Threatened	None	G1G2	S1	
<b><i>Extriplex joaquinana</i></b> San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
<b><i>Falco columbarius</i></b> merlin	ABNKD06030	None	None	G5	S3S4	WL
<b><i>Falco mexicanus</i></b> prairie falcon	ABNKD06090	None	None	G5	S4	WL
<b><i>Fimbristylis thermalis</i></b> hot springs fimbristylis	PMCYP0B0N0	None	None	G4	S1S2	2B.2
<b><i>Fritillaria agrestis</i></b> stinkbells	PMLIL0V010	None	None	G3	S3	4.2
<b><i>Fritillaria brandegeei</i></b> Greenhorn fritillary	PMLIL0V040	None	None	G2G3	S2S3	1B.3
<b><i>Fritillaria striata</i></b> striped adobe-lily	PMLIL0V0K0	None	Threatened	G1	S1	1B.1
<b><i>Fritillaria viridea</i></b> San Benito fritillary	PMLIL0V0L0	None	None	G2	S2	1B.2
<b><i>Galium angustifolium ssp. onycense</i></b> Onyx Peak bedstraw	PDRUB0N048	None	None	G5T3	S3	1B.3
<b><i>Gambelia sila</i></b> blunt-nosed leopard lizard	ARACF07010	Endangered	Endangered	G1	S1	FP
<b><i>Gilia yorkii</i></b> Monarch gilia	PDPLM04230	None	None	G2	S2	1B.1
<b><i>Githopsis tenella</i></b> delicate bluecup	PDCAM07070	None	None	G2	S2	1B.3
<b><i>Glyceria grandis</i></b> American manna grass	PMPOA2Y080	None	None	G5	S3	2B.3
<b><i>Gonidea angulata</i></b> western ridged mussel	IMBIV19010	None	None	G3	S2	
<b><i>Gopherus agassizii</i></b> desert tortoise	ARAAF01012	Threatened	Threatened	G3	S2S3	
<b><i>Gratiola heterosepala</i></b> Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
<b><i>Great Valley Cottonwood Riparian Forest</i></b> Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
<b><i>Great Valley Mesquite Scrub</i></b> Great Valley Mesquite Scrub	CTT63420CA	None	None	G1	S1.1	



Selected Elements by Scientific 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
<b>Great Valley Mixed Riparian Forest</b> Great Valley Mixed Riparian Forest	CTT61420CA	None	None	G2	S2.2	
<b>Great Valley Valley Oak Riparian Forest</b> Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	G1	S1.1	
<b>Greeneocharis circumscissa var. rosulata</b> rosette cushion cryptantha	PDBOR0A0G3	None	None	G5T2	S2	1B.2
<b>Gulo gulo</b> wolverine	AMAJF03010	Proposed Threatened	Threatened	G4	S1	FP
<b>Gymnogyps californianus</b> California condor	ABNKA03010	Endangered	Endangered	G1	S2	FP
<b>Hackelia sharsmithii</b> Sharsmith's stickseed	PDBOR0G0Q0	None	None	G3	S3	2B.3
<b>Haliaeetus leucocephalus</b> bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
<b>Helianthus winteri</b> Winter's sunflower	PDAST4N260	None	None	G2?	S2?	1B.2
<b>Helminthoglypta callistoderma</b> Kern shoulderband	IMGASC2080	None	None	G1	S1	
<b>Helminthoglypta concolor</b> whitefir shoulderband	IMGASC2540	None	None	G1G2	S1S2	
<b>Helminthoglypta greggi</b> Mohave shoulderband	IMGASC2270	None	None	G2	S2	
<b>Helminthoglypta uvasana</b> Grapevine shoulderband	IMGASC2650	None	None	G1	S1	
<b>Hesperocyparis nevadensis</b> Piute cypress	PGCUP04012	None	None	G2	S2	1B.2
<b>Heterotheca monarchensis</b> Monarch golden-aster	PDAST4V0U0	None	None	G2	S2	1B.1
<b>Heterotheca shevockii</b> Shevock's golden-aster	PDAST4V0T0	None	None	G2	S2	1B.3
<b>Horkelia tularensis</b> Kern Plateau horkelia	PDROS0W0H0	None	None	G2	S2	1B.3
<b>Hosackia oblongifolia var. cuprea</b> copper-flowered bird's-foot trefoil	PDFAB2A0W1	None	None	G5T2	S2	1B.3
<b>Hulsea brevifolia</b> short-leaved hulsea	PDAST4Z020	None	None	G3	S3	1B.2
<b>Hulsea vestita ssp. pygmaea</b> pygmy hulsea	PDAST4Z077	None	None	G5T1	S1	1B.3
<b>Hydromantes platycephalus</b> Mount Lyell salamander	AAAAD09020	None	None	G4	S4	WL
<b>Icteria virens</b> yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC



**Selected Elements by Scientific 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
<b><i>Imperata brevifolia</i></b> California satintail	PMPOA3D020	None	None	G3	S3	2B.1
<b><i>Iris munzii</i></b> Munz's iris	PMIRI090M0	None	None	G2	S2	1B.3
<b><i>Ivesia campestris</i></b> field ivesia	PDROS0X050	None	None	G3	S3	1B.2
<b><i>Ivesia unguiculata</i></b> Yosemite ivesia	PDROS0X0N0	None	None	G3	S3	4.2
<b><i>Jaffuelobryum wrightii</i></b> Wright's jaffuelobryum moss	NBMUS97020	None	None	G5	S2S3	2B.3
<b><i>Lagophylla diabolensis</i></b> Diablo Range hare-leaf	PDAST5J060	None	None	G2	S2	1B.2
<b><i>Lagophylla dichotoma</i></b> forked hare-leaf	PDAST5J070	None	None	G2	S2	1B.1
<b><i>Lampetra hubbsi</i></b> Kern brook lamprey	AFBAA02040	None	None	G1G2	S1S2	SSC
<b><i>Lanius ludovicianus</i></b> loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
<b><i>Lasiurus cinereus</i></b> hoary bat	AMACC05032	None	None	G3G4	S4	
<b><i>Lasiurus frantzii</i></b> western red bat	AMACC05080	None	None	G4	S3	SSC
<b><i>Lasthenia chrysantha</i></b> alkali-sink goldfields	PDAST5L030	None	None	G2	S2	1B.1
<b><i>Lasthenia glabrata ssp. coulteri</i></b> Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
<b><i>Layia discoidea</i></b> rayless layia	PDAST5N030	None	None	G2	S2	1B.1
<b><i>Layia heterotricha</i></b> pale-yellow layia	PDAST5N070	None	None	G2	S2	1B.1
<b><i>Layia leucopappa</i></b> Comanche Point layia	PDAST5N0A0	None	None	G1	S1	1B.1
<b><i>Layia munzii</i></b> Munz's tidy-tips	PDAST5N0B0	None	None	G2	S2	1B.2
<b><i>Lepidium jaredii ssp. album</i></b> Panoche pepper-grass	PDBRA1M0G2	None	None	G2G3T2T3	S2S3	1B.2
<b><i>Lepidium jaredii ssp. jaredii</i></b> Jared's pepper-grass	PDBRA1M0G1	None	None	G2G3T1T2	S1S2	1B.2
<b><i>Lepidurus packardii</i></b> vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3	
<b><i>Leptosiphon serrulatus</i></b> Madera leptosiphon	PDPLM09130	None	None	G3	S3	1B.2



**Selected Elements by Scientific 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
<b><i>Lewisia congonii</i></b> Congdon's lewisia	PDPOR04040	None	Rare	G2	S2	1B.3
<b><i>Lewisia disepala</i></b> Yosemite lewisia	PDPOR04060	None	None	G2	S2	1B.2
<b><i>Linderiella occidentalis</i></b> California linderiella	ICBRA06010	None	None	G2G3	S2S3	
<b><i>Lithobates pipiens</i></b> northern leopard frog	AAABH01170	None	None	G5	S2	SSC
<b><i>Loeflingia squarrosa var. artemisiarum</i></b> sagebrush loeflingia	PDCAR0E011	None	None	G5T3	S2	2B.2
<b><i>Lomatium shevockii</i></b> Owens Peak lomatium	PDAPI1B2C0	None	None	G2	S2	1B.2
<b><i>Lupinus citrinus var. citrinus</i></b> orange lupine	PDFAB2B103	None	None	G2T2	S2	1B.2
<b><i>Lupinus lepidus var. culbertsonii</i></b> Hockett Meadows lupine	PDFAB2B171	None	None	G5T3	S3	1B.3
<b><i>Lupinus padre-crowleyi</i></b> Father Crowley's lupine	PDFAB2B2Z0	None	Rare	G2	S2	1B.2
<b><i>Lytta hoppingi</i></b> Hopping's blister beetle	IICOL4C010	None	None	G1G2	S2	
<b><i>Lytta moesta</i></b> moestan blister beetle	IICOL4C020	None	None	G2	S2	
<b><i>Lytta molesta</i></b> molestan blister beetle	IICOL4C030	None	None	G2	S2	
<b><i>Lytta morrisoni</i></b> Morrison's blister beetle	IICOL4C040	None	None	G1G2	S2	
<b><i>Madia radiata</i></b> showy golden madia	PDAST650E0	None	None	G3	S3	1B.1
<b><i>Malacothamnus aboriginum</i></b> Indian Valley bush-mallow	PDMAL0Q020	None	None	G3	S3	1B.2
<b><i>Margaritifera falcata</i></b> western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
<b><i>Martes caurina sierrae</i></b> Sierra marten	AMAJF01014	None	None	G4G5T3	S3	
<b><i>Masticophis flagellum ruddocki</i></b> San Joaquin coachwhip	ARADB21021	None	None	G5T2T3	S3	SSC
<b><i>Meesia triquetra</i></b> three-ranked hump moss	NBMUS4L020	None	None	G5	S4	4.2
<b><i>Meesia uliginosa</i></b> broad-nerved hump moss	NBMUS4L030	None	None	G5	S3	2B.2
<b><i>Mentzelia tridentata</i></b> creamy blazing star	PDLOA031U0	None	None	G3	S3	1B.3



**Selected Elements by Scientific 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
<b><i>Metapogon hurdi</i></b> Hurd's metapogon robberfly	IIDIP08010	None	None	G1G2	S1S2	
<b><i>Mielichhoferia elongata</i></b> elongate copper moss	NBMUS4Q022	None	None	G5	S3S4	4.3
<b><i>Mielichhoferia shevockii</i></b> Shevock's copper moss	NBMUSA1010	None	None	G2	S2	1B.2
<b><i>Monardella beneolens</i></b> sweet-smelling monardella	PDLAM180U0	None	None	G2	S2	1B.3
<b><i>Monardella linoides ssp. anemonoides</i></b> southern Sierra monardella	PDLAM180D7	None	None	G5T2	S2	1B.3
<b><i>Monardella linoides ssp. oblonga</i></b> Tehachapi monardella	PDLAM180D2	None	None	G5T2	S2	1B.3
<b><i>Monolopia congdonii</i></b> San Joaquin woollythreads	PDASTA8010	Endangered	None	G2	S2	1B.2
<b><i>Monvero Residual Dunes</i></b> Monvero Residual Dunes	CTT23300CA	None	None	G1	S1.2	
<b><i>Muhlenbergia utilis</i></b> aparejo grass	PMPOA481X0	None	None	G4	S2S3	2B.2
<b><i>Mylopharodon conocephalus</i></b> hardhead	AFCJB25010	None	None	G3	S3	SSC
<b><i>Myotis ciliolabrum</i></b> western small-footed myotis	AMACC01230	None	None	G5	S3	
<b><i>Myotis evotis</i></b> long-eared myotis	AMACC01070	None	None	G5	S3	
<b><i>Myotis thysanodes</i></b> fringed myotis	AMACC01090	None	None	G4	S3	
<b><i>Myotis volans</i></b> long-legged myotis	AMACC01110	None	None	G4G5	S3	
<b><i>Myotis yumanensis</i></b> Yuma myotis	AMACC01020	None	None	G5	S4	
<b><i>Myurella julacea</i></b> small mousetail moss	NBMUS4U010	None	None	G5	S2	2B.3
<b><i>Nannopterum auritum</i></b> double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
<b><i>Navarretia nigelliformis ssp. radians</i></b> shining navarretia	PDPLM0C0J2	None	None	G4T2	S2	1B.2
<b><i>Navarretia panochensis</i></b> Panoche navarretia	PDPLM0C220	None	None	G3	S3	1B.3
<b><i>Navarretia peninsularis</i></b> Baja navarretia	PDPLM0C0L0	None	None	G3	S2	1B.2
<b><i>Navarretia prostrata</i></b> prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2



**Selected Elements by Scientific 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
<b><i>Navarretia setiloba</i></b> Piute Mountains navarretia	PDPLM0C0S0	None	None	G2	S2	1B.1
<b><i>Nemacladus calcaratus</i></b> Chimney Creek nemacladus	PDCAM0F0E0	None	None	G1	S1	1B.2
<b><i>Nemacladus twisselmannii</i></b> Twisselmann's nemacladus	PDCAM0F0D0	None	Rare	G1	S1	1B.2
<b><i>Neotamias speciosus callipeplus</i></b> Mount Pinos chipmunk	AMAFB02171	None	None	G4T2	S2	
<b><i>Neotamias speciosus speciosus</i></b> lodgpole chipmunk	AMAFB02172	None	None	G4T3T4	S2	
<b><i>Northern Basalt Flow Vernal Pool</i></b> Northern Basalt Flow Vernal Pool	CTT44131CA	None	None	G3	S2.2	
<b><i>Northern Claypan Vernal Pool</i></b> Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
<b><i>Northern Hardpan Vernal Pool</i></b> Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
<b><i>Northern Vernal Pool</i></b> Northern Vernal Pool	CTT44100CA	None	None	G2	S2.1	
<b><i>Nycticorax nycticorax</i></b> black-crowned night heron	ABNGA11010	None	None	G5	S4	
<b><i>Ochotona princeps schisticeps</i></b> gray-headed pika	AMAEA0102L	None	None	G5T4	S2S4	
<b><i>Oncorhynchus clarkii henshawi</i></b> Lahontan cutthroat trout	AFCHA02081	Threatened	None	G5T3	S2	
<b><i>Oncorhynchus clarkii seleniris</i></b> Paiute cutthroat trout	AFCHA02089	Threatened	None	G5T1	S1	
<b><i>Oncorhynchus mykiss aguabonita</i></b> California golden trout	AFCHA0209A	None	None	G5T1	S1	SSC
<b><i>Oncorhynchus mykiss gilberti</i></b> Kern River rainbow trout	AFCHA02093	None	None	G5T1Q	S1	SSC
<b><i>Oncorhynchus mykiss irideus pop. 11</i></b> steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
<b><i>Oncorhynchus mykiss whitei</i></b> Little Kern golden trout	AFCHA0209B	Threatened	None	G5T2	S3	
<b><i>Onychomys torridus tularensis</i></b> Tulare grasshopper mouse	AMAFF06021	None	None	G5T1T2	S1S2	SSC
<b><i>Opuntia basilaris var. treleasei</i></b> Bakersfield cactus	PDCAC0D055	Endangered	Endangered	G5T1	S1	1B.1
<b><i>Oravelia pege</i></b> Dry Creek cliff strider bug	IIHEM14010	None	None	G1	S1	
<b><i>Orcuttia inaequalis</i></b> San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1





**Selected Elements by Scientific 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
<i>Oreonana purpurascens</i> purple mountain-parsley	PDAPI1G020	None	None	G3	S3	1B.2
<i>Oreonana vestita</i> woolly mountain-parsley	PDAPI1G030	None	None	G3	S3	1B.3
<i>Orthotrichum holzingeri</i> Holzinger's orthotrichum moss	NBMUS560E0	None	None	G3G4	S2	1B.3
<i>Orthotrichum spjutii</i> Spjut's bristle moss	NBMUS56160	None	None	G1G2	S1	1B.3
<i>Ovis canadensis sierrae</i> Sierra Nevada bighorn sheep	AMALE04015	Endangered	Endangered	G4T2	S2	FP
<i>Packera indecora</i> rayless mountain ragwort	PDAST8H1R0	None	None	G5	S2?	2B.2
<i>Pandion haliaetus</i> osprey	ABNKC01010	None	None	G5	S4	WL
<i>Pekania pennanti pop. 2</i> Fisher - southern Sierra Nevada ESU	AMAJF01022	Endangered	Threatened	G5T1	S1	SSC
<i>Peltigera gowardii</i> western waterfan lichen	NLVER00460	None	None	G4?	S3	4.2
<i>Perognathus alticola inexpectatus</i> Tehachapi pocket mouse	AMAFD01082	None	None	G2T1T2	S1S2	SSC
<i>Perognathus inornatus</i> San Joaquin pocket mouse	AMAFD01060	None	None	G2G3	S2S3	
<i>Perognathus mollipilosus xanthonotus</i> yellow-eared pocket mouse	AMAFD01072	None	None	GNRT2	S2	
<i>Petrophytum caespitosum ssp. acuminatum</i> marble rockmat	PDROS18010	None	None	G5T2	S2	1B.3
<i>Phacelia nashiana</i> Charlotte's phacelia	PDHYD0C350	None	None	G3	S3	1B.2
<i>Phacelia novemmillensis</i> Nine Mile Canyon phacelia	PDHYD0C3A0	None	None	G3	S3	1B.2
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G4	S4	SSC
<i>Picoides arcticus</i> black-backed woodpecker	ABNYF07090	None	None	G5	S2	
<i>Piranga rubra</i> summer tanager	ABPBX45030	None	None	G5	S1	SSC
<i>Plagiobothrys torreyi var. torreyi</i> Yosemite popcornflower	PDBOR0V152	None	None	G4T3Q	S3	1B.2
<i>Platanthera yosemitensis</i> Yosemite bog orchid	PMORC1Y1B0	None	None	G2	S2	1B.2
<i>Plebulina emigdionis</i> San Emigdio blue butterfly	IILEPG7010	None	None	G1G2	S1S2	



**Selected Elements by Scientific 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
<i>Plegadis chihi</i> white-faced ibis	ABNGE02020	None	None	G5	S3S4	WL
<i>Poa lettermanii</i> Letterman's blue grass	PMPOA4Z1H0	None	None	G4	S3	2B.3
<i>Pohlia tundrae</i> tundra thread moss	NBMUS5S1B0	None	None	G3	S3	2B.3
<i>Potamogeton robbinsii</i> Robbins' pondweed	PMPOT030Z0	None	None	G5	S3	2B.3
<i>Progne subis</i> purple martin	ABPAU01010	None	None	G5	S3	SSC
<i>Protodufourea zavortinki</i> Zavortink's protodufourea bee	IIHYM77020	None	None	G1	S1	
<i>Pseudobahia bahiifolia</i> Hartweg's golden sunburst	PDAST7P010	Endangered	Endangered	G1	S1	1B.1
<i>Pseudobahia peirsonii</i> San Joaquin adobe sunburst	PDAST7P030	Threatened	Endangered	G1	S1	1B.1
<i>Puccinellia simplex</i> California alkali grass	PMPOA53110	None	None	G2	S2	1B.2
<i>Pyrgulopsis greggi</i> Kern River pyrg	IMGASJ0A10	None	None	G1	S1	
<i>Rana boylei pop. 4</i> foothill yellow-legged frog - central coast DPS	AAABH01054	Proposed Threatened	Endangered	G3T2	S2	
<i>Rana boylei pop. 5</i> foothill yellow-legged frog - south Sierra DPS	AAABH01055	Proposed Endangered	Endangered	G3T2	S2	
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Rana muscosa</i> southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	WL
<i>Rana sierrae</i> Sierra Nevada yellow-legged frog	AAABH01340	Endangered	Threatened	G1	S1	WL
<i>Ravenella exigua</i> chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
<i>Rhaphiomidas trochilus</i> San Joaquin Valley giant flower-loving fly	IIDIP05010	None	None	G1	S1	
<i>Ribes menziesii var. ixoderme</i> aromatic canyon gooseberry	PDGRO02104	None	None	G4T2	S2	1B.2
<i>Ribes tularense</i> Sequoia gooseberry	PDGRO021L0	None	None	G1	S1	1B.3
<i>Riparia riparia</i> bank swallow	ABPAU08010	None	Threatened	G5	S3	
<i>Sabulina stricta</i> bog sandwort	PDCAR0G0U0	None	None	G5	S3	2B.3



Selected Elements by Scientific 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
<b><i>Sagittaria sanfordii</i></b> Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
<b><i>Saltugilia latimeri</i></b> Latimer's woodland-gilia	PDPLM0H010	None	None	G3	S3	1B.2
<b><i>Senecio aphanactis</i></b> chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
<b><i>Senna covesii</i></b> Cove's cassia	PDFAB491X0	None	None	G5	S3	2B.2
<b><i>Setophaga petechia</i></b> yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
<b><i>Sidalcea hickmanii ssp. parishii</i></b> Parish's checkerbloom	PDMAL110A3	None	Rare	G3T1	S1	1B.2
<b><i>Sidalcea keckii</i></b> Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
<b><i>Sidalcea multifida</i></b> cut-leaf checkerbloom	PDMAL110G0	None	None	G3	S2	2B.3
<b><i>Sidalcea neomexicana</i></b> salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
<b><i>Siphateles bicolor mohavensis</i></b> Mohave tui chub	AFCJB1303H	Endangered	Endangered	G4T1	S1	FP
<b><i>Sorex ornatus relictus</i></b> Buena Vista Lake ornate shrew	AMABA01102	Endangered	None	G5T1	S1	SSC
<b>Southern Interior Cypress Forest</b> Southern Interior Cypress Forest	CTT83230CA	None	None	G2	S2.1	
<b><i>Spea hammondii</i></b> western spadefoot	AAABF02020	None	None	G2G3	S3S4	SSC
<b><i>Speyeria egleis tehachapina</i></b> Tehachapi Mountain silverspot butterfly	IILEPJ6105	None	None	G5T2	S2	
<b><i>Sphenopholis obtusata</i></b> prairie wedge grass	PMPOA5T030	None	None	G5	S2	2B.2
<b><i>Sphyrapicus ruber</i></b> red-breasted sapsucker	ABNYF05020	None	None	G5	S4	
<b>Stabilized Interior Dunes</b> Stabilized Interior Dunes	CTT23100CA	None	None	G1	S1.1	
<b><i>Streptanthus cordatus var. piutensis</i></b> Piute Mountains jewelflower	PDBRA2G0D2	None	None	G5T1	S1	1B.2
<b><i>Streptanthus fenestratus</i></b> Tehipite Valley jewelflower	PDBRA2G0H0	None	None	G2	S2	1B.1
<b><i>Streptanthus gracilis</i></b> alpine jewelflower	PDBRA2G0K0	None	None	G3	S3	1B.3
<b><i>Streptanthus medeirosii</i></b> Tejon jewelflower	PDBRA2G530	None	None	G1	S1	1B.1



**Selected Elements by Scientific 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
<b><i>Strix nebulosa</i></b> great gray owl	ABNSB12040	None	Endangered	G5	S1	
<b><i>Stylocline citroleum</i></b> oil neststraw	PDAST8Y070	None	None	G3	S3	1B.1
<b><i>Stylocline masonii</i></b> Mason's neststraw	PDAST8Y080	None	None	G1	S1	1B.1
<b><i>Sycamore Alluvial Woodland</i></b> Sycamore Alluvial Woodland	CTT62100CA	None	None	G1	S1.1	
<b><i>Symphotrichum defoliatum</i></b> San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
<b><i>Talanites moodyae</i></b> Moody's gnaphosid spider	ILARA98020	None	None	G2G3	S2S3	
<b><i>Tauschia howellii</i></b> Howell's tauschia	PDAPI27050	None	None	G2G3	S2S3	1B.3
<b><i>Taxidea taxus</i></b> American badger	AMAJF04010	None	None	G5	S3	SSC
<b><i>Thamnophis gigas</i></b> giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
<b><i>Thamnophis hammondi</i></b> two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
<b><i>Tortula californica</i></b> California screw moss	NBMUS7L090	None	None	G2G3	S2?	1B.2
<b><i>Toxostoma bendirei</i></b> Bendire's thrasher	ABPBK06050	None	None	G4	S3	SSC
<b><i>Toxostoma crissale</i></b> Crissal thrasher	ABPBK06090	None	None	G5	S3	SSC
<b><i>Toxostoma lecontei</i></b> Le Conte's thrasher	ABPBK06100	None	None	G4	S3	SSC
<b><i>Trichodon cylindricus</i></b> cylindrical trichodon	NBMUS7N020	None	None	G4G5	S2	2B.2
<b><i>Trifolium bolanderi</i></b> Bolander's clover	PDFAB400G0	None	None	G3	S3	1B.2
<b><i>Trifolium dedeckerae</i></b> Dedecker's clover	PDFAB400Q0	None	None	G2	S2	1B.3
<b><i>Triglochin palustris</i></b> marsh arrow-grass	PMJCG02040	None	None	G5	S2	2B.3
<b><i>Triteleia piutensis</i></b> Piute Mountains triteleia	PMLIL210H0	None	None	G1	S1	1B.1
<b><i>Tropidocarpum californicum</i></b> Kings gold	PDBRA33010	None	None	G1	S1	1B.1
<b><i>Tuctoria greenei</i></b> Greene's tuctoria	PMPOA6N010	Endangered	Rare	G1	S1	1B.1



**Selected Elements by Scientific Name**  
**California Department of Fish and Wildlife**  
**California Natural Diversity Database**



<b>Species</b>	<b>Element Code</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Global Rank</b>	<b>State Rank</b>	<b>Rare Plant Rank/CDFW SSC or FP</b>
<b><i>Utricularia intermedia</i></b> flat-leaved bladderwort	PDLNT020A0	None	None	G5	S3	2B.2
<b><i>Valley Needlegrass Grassland</i></b> Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
<b><i>Valley Oak Woodland</i></b> Valley Oak Woodland	CTT71130CA	None	None	G3	S2.1	
<b><i>Valley Sacaton Grassland</i></b> Valley Sacaton Grassland	CTT42120CA	None	None	G1	S1.1	
<b><i>Valley Saltbush Scrub</i></b> Valley Saltbush Scrub	CTT36220CA	None	None	G2	S2.1	
<b><i>Valley Sink Scrub</i></b> Valley Sink Scrub	CTT36210CA	None	None	G1	S1.1	
<b><i>Viburnum ellipticum</i></b> oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
<b><i>Viola pinetorum ssp. grisea</i></b> grey-leaved violet	PDVIO04431	None	None	G4G5T3	S3	1B.2
<b><i>Vireo bellii pusillus</i></b> least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S3	
<b><i>Vireo vicinior</i></b> gray vireo	ABPBW01140	None	None	G5	S2	SSC
<b><i>Vulpes macrotis mutica</i></b> San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	
<b><i>Vulpes vulpes necator pop. 2</i></b> Sierra Nevada red fox - Sierra Nevada DPS	AMAJA03017	Endangered	Threatened	G5TNR	S1	
<b><i>Wildflower Field</i></b> Wildflower Field	CTT42300CA	None	None	G2	S2.2	
<b><i>Xanthocephalus xanthocephalus</i></b> yellow-headed blackbird	ABPBXB3010	None	None	G5	S3	SSC
<b><i>Xantusia vigilis sierrae</i></b> Sierra night lizard	ARACK01032	None	None	G5T1	S1	SSC
<b><i>Xerospermophilus mohavensis</i></b> Mohave ground squirrel	AMAFB05150	None	Threatened	G3	S2	








**Record Count: 435**










This page intentionally left blank

## Search Results




375 matches found. Click on scientific name for details






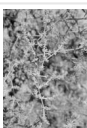
Search Criteria: County or Island is one of [FRE:KRN:TUL]






▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	CA RARE			DATE ADDED	PHOTO
								STATE RANK	PLANT RANK	CA ENDEMIC		
<a href="#"><i>Abronia alpina</i></a>	Ramshaw Meadows abronia	Nyctaginaceae	perennial herb	Jul-Aug	None	None	G2	S2	1B.1	Yes	1974-01-01	 © 2004 James M. Andre
<a href="#"><i>Acanthomintha lanceolata</i></a>	Santa Clara thorn-mint	Lamiaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	 © 2005 Barry Breckling
<a href="#"><i>Acanthomintha obovata</i> ssp. <i>obovata</i></a>	San Benito thorn-mint	Lamiaceae	annual herb	Apr-Jul	None	None	G4T3T4	S3S4	4.2	Yes	1974-01-01	 © 2013 Chris Winchell
<a href="#"><i>Agrostis humilis</i></a>	mountain bent grass	Poaceae	perennial herb	Jul-Sep	None	None	G4Q	S2	2B.3		1980-01-01	 © 2004 Steve Matson
<a href="#"><i>Allium abramsii</i></a>	Abrams' onion	Alliaceae	perennial bulbiferous herb	May-Jul	None	None	G3	S3	1B.2	Yes	2012-03-13	 © 2018 Steve Matson
<a href="#"><i>Allium atrorubens</i> var. <i>cristatum</i></a>	Inyo onion	Alliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G4T4	S4	4.3		2001-01-01	 © 2005 James M. Andre
<a href="#"><i>Allium howellii</i> var. <i>clokeyi</i></a>	Mt. Pinos onion	Alliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G4T2	S2	1B.3	Yes	1974-01-01	 © 2016 Keir Morse





<i>Allium howellii</i> <i>var. howellii</i>	Howell's onion	Alliaceae	perennial bulbiferous herb	Mar-Apr	None	None	G3G4T3	S3	4.3	Yes	2017-04-04	 © 2013 Neal Kramer
<i>Allium howellii</i> <i>var. sanbenitense</i>	San Benito onion	Alliaceae	perennial bulbiferous herb	Apr-May	None	None	G3G4T3	S3	1B.3	Yes	2017-04-04	 © 2020 Ryan O'Dell
<i>Allium shevockii</i>	Spanish Needle onion	Alliaceae	perennial bulbiferous herb	May-Jun	None	None	G2	S2	1B.3	Yes	1988-01-01	 © 2009 Aaron Schusteff
<i>Almutaster pauciflorus</i>	alkali marsh aster	Asteraceae	perennial herb	Jun-Oct	None	None	G4	S1S2	2B.2		2017-03-14	 © 2014 Richard Spellenberg
<i>Amaranthus watsonii</i>	Watson's amaranth	Amaranthaceae	annual herb	Apr-Sep	None	None	G5?	S3	4.3		2001-01-01	 © 2003 Debra Valov
<i>Amsinckia douglasiana</i>	Douglas' fiddleneck	Boraginaceae	annual herb	Mar-May	None	None	G4	S4	4.2	Yes	2007-08-20	 © 2013 Chris Winchell
<i>Amsinckia furcata</i>	forked fiddleneck	Boraginaceae	annual herb	Feb-May	None	None	G4	S4	4.2	Yes	1974-01-01	 © 2017 Keir Morse
<i>Androsace elongata</i> ssp. <i>acuta</i>	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5?T3T4	S3S4	4.2		1994-01-01	 © 2008 Aaron Schusteff
<i>Angelica callii</i>	Call's angelica	Apiaceae	perennial herb	Jun-Jul	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
<i>Antennaria pulchella</i>	beautiful pussy- toes	Asteraceae	perennial stoloniferous herb	Jun-Sep	None	None	G4	S4	4.3		1994-01-01	 © 2014 Steve Matson



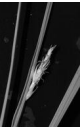






<u><i>Antirrhinum ovatum</i></u>	oval-leaved snapdragon	Plantaginaceae	annual herb	May-Nov	None	None	G3	S3	4.2	Yes	1974-01-01	 © 2013 Chris Winchell
<u><i>Arabis repanda</i> var. <i>greenei</i></u>	Greene's rockcress	Brassicaceae	perennial herb	Jun-Aug	None	None	G5T3Q	S3	3.3	Yes	2001-01-01	No Photo Available
<u><i>Arctostaphylos glandulosa</i> ssp. <i>gabrielensis</i></u>	San Gabriel manzanita	Ericaceae	perennial evergreen shrub	Mar	None	None	G5T3	S3	1B.2	Yes	1994-01-01	 © 2016 Neal Kramer
<u><i>Asplenium septentrionale</i></u>	northern spleenwort	Aspleniaceae	perennial rhizomatous herb	Jul-Aug	None	None	G5	S3	2B.3		1974-01-01	 ©2018 Sierra Pacific Industries
<u><i>Astragalus ertterae</i></u>	Walker Pass milk-vetch	Fabaceae	perennial herb	Apr-May	None	None	G2	S2	1B.3	Yes	1988-01-01	No Photo Available
<u><i>Astragalus hornii</i> var. <i>hornii</i></u>	Horn's milk-vetch	Fabaceae	annual herb	May-Oct	None	None	GUT1	S1	1B.1		2006-12-01	No Photo Available
<u><i>Astragalus kentrophyta</i> var. <i>danaus</i></u>	Sweetwater Mountains milk-vetch	Fabaceae	perennial herb	Jul-Sep	None	None	G5T4	S4	4.3		1974-01-01	No Photo Available
<u><i>Astragalus lentiginosus</i> var. <i>kernensis</i></u>	Kern Plateau milk-vetch	Fabaceae	perennial herb	Jun-Jul	None	None	G5T2?	S2	1B.2		1980-01-01	No Photo Available
<u><i>Astragalus macrodon</i></u>	Salinas milk-vetch	Fabaceae	perennial herb	Apr-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Astragalus preussii</i> var. <i>laxiflorus</i></u>	Lancaster milk-vetch	Fabaceae	perennial herb	Mar-May	None	None	G4T2	S1	1B.1		1988-01-01	No Photo Available
<u><i>Astragalus ravenii</i></u>	Raven's milk-vetch	Fabaceae	perennial herb	Jul-Sep	None	None	G2	S2	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Astragalus shevockii</i></u>	Shevock's milk-vetch	Fabaceae	perennial herb	Jun-Jul	None	None	G2	S2	1B.3	Yes	1980-01-01	No Photo Available
<u><i>Astragalus subvestitus</i></u>	Kern County milk-vetch	Fabaceae	perennial herb	(May)Jun-Jul	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available



<u><i>Atriplex cordulata</i></u> var. <u><i>cordulata</i></u>	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01		© 1994 Robert E. Preston, Ph.D.
<u><i>Atriplex cordulata</i></u> var. <u><i>erecticaulis</i></u>	Earlimart orache	Chenopodiaceae	annual herb	Aug-Sep(Nov)	None	None	G3T1	S1	1B.2	Yes	2001-01-01		© 2009 Robert E. Preston, Ph.D.
<u><i>Atriplex coronata</i></u> var. <u><i>coronata</i></u>	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2	Yes	1994-01-01		© 1994 Robert E. Preston, Ph.D.
<u><i>Atriplex coronata</i></u> var. <u><i>vallicola</i></u>	Lost Hills crownscale	Chenopodiaceae	annual herb	Apr-Sep	None	None	G4T3	S3	1B.2	Yes	1974-01-01	No Photo Available	
<u><i>Atriplex depressa</i></u>	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01		© 2009 Zoya Akulova
<u><i>Atriplex minuscula</i></u>	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1	Yes	1994-01-01		© 2000 Robert E. Preston, Ph.D.
<u><i>Atriplex persistens</i></u>	vernal pool smallscale	Chenopodiaceae	annual herb	Jun-Oct	None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available	
<u><i>Atriplex subtilis</i></u>	subtle orache	Chenopodiaceae	annual herb	(Apr)Jun-Sep(Oct)	None	None	G1	S1	1B.2	Yes	1994-01-01		© 2000 Robert E. Preston, Ph.D.
<u><i>Atriplex tularensis</i></u>	Bakersfield smallscale	Chenopodiaceae	annual herb	Jun-Oct	None	CE	GX	SX	1A	Yes	1974-01-01	No Photo Available	
<u><i>Azolla microphylla</i></u>	Mexican mosquito fern	Azollaceae	annual/perennial herb	Aug	None	None	G5	S4	4.2		1994-01-01	No Photo Available	
<u><i>Benitoa occidentalis</i></u>	western lessingia	Asteraceae	annual herb	May-Nov	None	None	G3G4	S3S4	4.3	Yes	1974-01-01	No Photo Available	



<i><u>Boechea</u></i> <i><u>bodiensis</u></i>	Bodie Hills rockcress	Brassicaceae	perennial herb	Jun-Jul(Aug)	None	None	G3	S3	1B.3		1984- 01-01	No Photo Available
<i><u>Boechea</u></i> <i><u>cobrensis</u></i>	Masonic rockcress	Brassicaceae	perennial herb	Jun-Jul	None	None	G5	S3	2B.3		1974- 01-01	No Photo Available
<i><u>Boechea dispar</u></i>	pinyon rockcress	Brassicaceae	perennial herb	Mar-Jun	None	None	G3	S3	2B.3		1994- 01-01	No Photo Available
<i><u>Boechea</u></i> <i><u>evadens</u></i>	hidden rockcress	Brassicaceae	perennial herb	May-Aug	None	None	G1	S1	1B.3	Yes	2012- 04-11	No Photo Available
<i><u>Boechea</u></i> <i><u>microphylla</u></i>	small-leaved rockcress	Brassicaceae	perennial herb	Jul	None	None	G4Q	S3	3		1980- 01-01	 © 2016 John Doyen
<i><u>Boechea</u></i> <i><u>pygmaea</u></i>	Tulare County rockcress	Brassicaceae	perennial herb	Jun-Jul	None	None	G3	S3	4.3	Yes	1974- 01-01	No Photo Available
<i><u>Boechea</u></i> <i><u>shevockii</u></i>	Shevock's rockcress	Brassicaceae	perennial herb	Jun-Jul	None	None	G1	S1	1B.1	Yes	2011- 05-06	No Photo Available
<i><u>Boechea</u></i> <i><u>tularensis</u></i>	Tulare rockcress	Brassicaceae	perennial herb	(May)Jun- Jul(Aug)	None	None	G3	S3	1B.3	Yes	2011- 07-05	No Photo Available
<i><u>Botrychium</u></i> <i><u>ascendens</u></i>	upswept moonwort	Ophioglossaceae	perennial rhizomatous herb	(Jun)Jul-Aug	None	None	G4	S2	2B.3		1994- 01-01	 © 2005 Steve Matson
<i><u>Botrychium</u></i> <i><u>crenulatum</u></i>	scalloped moonwort	Ophioglossaceae	perennial rhizomatous herb	Jun-Sep	None	None	G4	S3	2B.2		1984- 01-01	 © 2016 Steve Matson
<i><u>Botrychium</u></i> <i><u>lineare</u></i>	slender moonwort	Ophioglossaceae	perennial herb	Unk	None	None	G3	S1	1B.1		2001- 01-01	No Photo Available
<i><u>Botrychium</u></i> <i><u>minganense</u></i>	Mingan moonwort	Ophioglossaceae	perennial rhizomatous herb	Jul-Sep(Oct)	None	None	G5	S3	4.2		1994- 01-01	 © 2011 Aaron E. Sims
<i><u>Botrychium</u></i> <i><u>montanum</u></i>	western goblin	Ophioglossaceae	perennial rhizomatous herb	Jul-Sep	None	None	G3G4	S2	2B.1		1994- 01-01	 ©2012 Belinda Lo

<i>Botrychium neolunaria</i>	North American moonwort	Ophioglossaceae	perennial rhizomatous herb	Jun-Sep	None	None	GNR	S2	2B.3		1994-01-01	No Photo Available
<i>Brasenia schreberi</i>	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	None	None	G5	S3	2B.3		2010-10-27	 ©2014 Kirsten Bovee
<i>Brodiaea insignis</i>	Kaweah brodiaea	Themidaceae	perennial bulbiferous herb	Apr-Jun	None	CE	G1	S1	1B.2	Yes	1974-01-01	 © 2007 Robert E. Preston, Ph.D.
<i>Bruchia bolanderi</i>	Bolander's bruchia	Bruchianaceae	moss		None	None	G3	S3	4.2		2001-01-01	 ©2021 Scot Loring
<i>Bryum chryseum</i>	brassy bryum	Bryaceae	moss		None	None	G5	S3	4.3		2014-05-05	No Photo Available
<i>Bulbostylis capillaris</i>	thread-leaved beakseed	Cyperaceae	annual herb	Jun-Aug	None	None	G5	S3	4.2		2001-01-01	 ©2016 Ryan Batten
<i>Calochortus excavatus</i>	Inyo County star-tulip	Liliaceae	perennial bulbiferous herb	Apr-Jul	None	None	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
<i>Calochortus palmeri</i> var. <i>palmeri</i>	Palmer's mariposa-lily	Liliaceae	perennial bulbiferous herb	Apr-Jul	None	None	G3T2	S2	1B.2	Yes	1994-01-01	No Photo Available
<i>Calochortus striatus</i>	alkali mariposa-lily	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G3	S2S3	1B.2		1974-01-01	No Photo Available
<i>Calochortus westonii</i>	Shirley Meadows star-tulip	Liliaceae	perennial bulbiferous herb	May-Jun	None	None	G3	S3	1B.2	Yes	1974-01-01	No Photo Available
<i>Calyptridium pulchellum</i>	Mariposa pussypaws	Montiaceae	annual herb	Apr-Aug	FT	None	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
<i>Calyptridium pygmaeum</i>	pygmy pussypaws	Montiaceae	annual herb	Jun-Aug	None	None	G1G2	S1S2	1B.2	Yes	2008-10-10	No Photo Available
<i>Calystegia collina</i> ssp. <i>venusta</i>	South Coast Range morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	None	None	G4T4	S4	4.3	Yes	1984-01-01	No Photo Available
<i>Calystegia malacophylla</i> var. <i>berryi</i>	Berry's morning-glory	Convolvulaceae	perennial rhizomatous herb	Jul-Aug	None	None	G4G5T2Q	S2	3.3	Yes	1980-01-01	No Photo Available




<u><i>Calystegia peirsonii</i></u>	Peirson's morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	No Photo Available
<u><i>Camissonia benitensis</i></u>	San Benito evening-primrose	Onagraceae	annual herb	Apr-Jun	FD	None	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Camissonia integrifolia</i></u>	Kern River evening-primrose	Onagraceae	annual herb	(Apr)May	None	None	G2	S2	1B.3	Yes	1980-01-01	 © 2015 John Game
<u><i>Camissonia kernensis</i> ssp. <i>kernensis</i></u>	Kern County evening-primrose	Onagraceae	annual herb	Mar-May	None	None	G4T3	S3	4.3	Yes	1980-01-01	No Photo Available
<u><i>Camissonia lacustris</i></u>	grassland suncup	Onagraceae	annual herb	Mar-Jun	None	None	G2	S2	1B.2		2022-09-19	 © 2021 Ryan O'Dell
<u><i>Camissonia sierrae</i> ssp. <i>alticola</i></u>	Mono Hot Springs evening-primrose	Onagraceae	annual herb	May-Aug	None	None	G3T2	S2	1B.2	Yes	1980-01-01	No Photo Available
<u><i>Camissonia sierrae</i> ssp. <i>sierrae</i></u>	Yosemite evening-primrose	Onagraceae	annual herb	Apr-Jun	None	None	G3T3	S3	4.3	Yes	2001-01-01	No Photo Available
<u><i>Campylopodia stenocarpa</i></u>	flagella-like atractylocarpus	Dicranaceae	moss		None	None	G5	S1?	CBR		2001-01-01	No Photo Available
<u><i>Canbya candida</i></u>	white pygmy-poppy	Papaveraceae	annual herb	Mar-Jun	None	None	G3G4	S3S4	4.2	Yes	1974-01-01	No Photo Available
<u><i>Carex atherodes</i></u>	wheat sedge	Cyperaceae	perennial rhizomatous herb	Jun-Aug	None	None	G5	S3	2B.2		2001-01-01	 ©2015 Dean Wm. Taylor
<u><i>Carex comosa</i></u>	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	None	None	G5	S2	2B.1		1994-01-01	 Dean Wm. Taylor 1997
<u><i>Carex congdonii</i></u>	Congdon's sedge	Cyperaceae	perennial rhizomatous herb	Jul-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Carex incurviformis</i></u>	Mt. Dana sedge	Cyperaceae	perennial rhizomatous herb	Jul-Aug	None	None	G4G5	S4	4.3		1994-01-01	No Photo Available
<u><i>Carex limosa</i></u>	mud sedge	Cyperaceae	perennial rhizomatous herb	Jun-Aug	None	None	G5	S3	2B.2		1994-01-01	 Steve Matson 2009



<u><i>Carex tahoensis</i></u>	Tahoe sedge	Cyperaceae	perennial rhizomatous herb	Jul-Aug	None	None	G5	S4	4.3		2001- 01-01	No Photo Available
<u><i>Carex tompkinsii</i></u>	Tompkins' sedge	Cyperaceae	perennial rhizomatous herb	May-Jul	None	CR	G3G4	S3S4	4.3	Yes	1980- 01-01	No Photo Available
<u><i>Carlquistia muirii</i></u>	Muir's tarplant	Asteraceae	perennial rhizomatous herb	Jul-Aug(Oct)	None	None	G2	S2	1B.3	Yes	1980- 01-01	No Photo Available
<u><i>Carpenteria californica</i></u>	tree-anemone	Hydrangeaceae	perennial evergreen shrub	(Apr)May-Jul	None	CT	G1?	S1?	1B.2	Yes	1974- 01-01	No Photo Available
<u><i>Castilleja campestris</i></u> var. <u><i>succulenta</i></u>	succulent owl's- clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr- May	FT	CE	G4?T2T3	S2S3	1B.2	Yes	1984- 01-01	No Photo Available
<u><i>Castilleja plagiotoma</i></u>	Mojave paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	Apr-Jun	None	None	G4	S4	4.3	Yes	1974- 01-01	No Photo Available
<u><i>Caulanthus californicus</i></u>	California jewelflower	Brassicaceae	annual herb	Feb-May	FE	CE	G1	S1	1B.1	Yes	1984- 01-01	No Photo Available
<u><i>Caulanthus lemmonii</i></u>	Lemmon's jewelflower	Brassicaceae	annual herb	Feb-May	None	None	G3	S3	1B.2	Yes	2001- 01-01	No Photo Available
<u><i>Ceanothus fresnensis</i></u>	Fresno ceanothus	Rhamnaceae	perennial evergreen shrub	(Apr)May-Jul	None	None	G4	S4	4.3	Yes	1980- 01-01	No Photo Available
<u><i>Ceanothus pinetorum</i></u>	Kern ceanothus	Rhamnaceae	perennial evergreen shrub	May-Jul	None	None	G3	S3	4.3	Yes	1974- 01-01	 ©2017 Aaron Schusteff
<u><i>Chaenactis douglasii</i></u> var. <u><i>alpina</i></u>	alpine dusty maidens	Asteraceae	perennial herb	Jul-Sep	None	None	G5T5	S2	2B.3		1994- 01-01	 © 2008 Steve Matson
<u><i>Chloropyron molle</i></u> ssp. <u><i>hispidum</i></u>	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	None	None	G2T1	S1	1B.1	Yes	1974- 01-01	No Photo Available
<u><i>Chloropyron palmatum</i></u>	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1	Yes	1974- 01-01	No Photo Available
<u><i>Chorizanthe leptotheca</i></u>	Peninsular spineflower	Polygonaceae	annual herb	May-Aug	None	None	G3	S3	4.2		1994- 01-01	No Photo Available
<u><i>Chorizanthe palmeri</i></u>	Palmer's spineflower	Polygonaceae	annual herb	Apr-Aug	None	None	G4	S4	4.2	Yes	1994- 01-01	No Photo Available


<u><i>Chorizanthe spinosa</i></u>	Mojave spineflower	Polygonaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2	Yes	1974-01-01	 © 2011 Benjamin Smith
<u><i>Chorizanthe ventricosa</i></u>	potbellied spineflower	Polygonaceae	annual herb	May-Sep	None	None	G3	S3	4.3	Yes	2001-01-01	No Photo Available
<u><i>Cinna bolanderi</i></u>	Bolander's woodreed	Poaceae	perennial herb	Jul-Sep	None	None	G2G3	S2S3	1B.2	Yes	2001-01-01	No Photo Available
<u><i>Cirsium crassicaule</i></u>	slough thistle	Asteraceae	annual/perennial herb	May-Aug	None	None	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Clarkia breweri</i></u>	Brewer's clarkia	Onagraceae	annual herb	Apr-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	No Photo Available
<u><i>Clarkia exilis</i></u>	slender clarkia	Onagraceae	annual herb	Apr-May	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
<u><i>Clarkia lewisii</i></u>	Lewis' clarkia	Onagraceae	annual herb	(Feb)May-Jul	None	None	G4	S4	4.3	Yes	1980-01-01	No Photo Available
<u><i>Clarkia springvillensis</i></u>	Springville clarkia	Onagraceae	annual herb	(Mar)Apr-Jul	FT	CE	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
<u><i>Clarkia tembloriensis</i></u> <u>ssp. calientensis</u>	Vasek's clarkia	Onagraceae	annual herb	Apr	None	None	G3T1	S1	1B.1	Yes	1980-01-01	No Photo Available
<u><i>Clarkia xantiana</i></u> <u>ssp. parviflora</u>	Kern Canyon clarkia	Onagraceae	annual herb	May-Jun	None	None	G4T3?	S3?	4.2	Yes	1994-01-01	No Photo Available
<u><i>Claytonia megarhiza</i></u>	fell-fields claytonia	Montiaceae	perennial herb	Jul-Sep	None	None	G5	S2	2B.3		1980-01-01	No Photo Available
<u><i>Claytonia palustris</i></u>	marsh claytonia	Montiaceae	perennial herb	May-Oct	None	None	G4	S4	4.3	Yes	1988-01-01	 ©2006 Dean Wm. Taylor, Ph.D.
<u><i>Claytonia parviflora</i></u> ssp. <u>grandiflora</u>	streambank spring beauty	Montiaceae	annual herb	Feb-May	None	None	G5T3	S3	4.2	Yes	2006-09-29	No Photo Available
<u><i>Claytonia peirsonii</i></u> ssp. <u>yorkii</u>	York's spring beauty	Montiaceae	perennial herb	Mar-May	None	None	G2G3T1	S1	1B.1	Yes	2019-11-04	No Photo Available
<u><i>Convolvulus simulans</i></u>	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2		1994-01-01	No Photo Available
<u><i>Cordylanthus eremicus</i></u> ssp. <u>eremicus</u>	desert bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jul-Oct	None	None	G3T3	S3	4.3	Yes	1980-01-01	No Photo Available






<u><i>Cordylanthus eremicus</i> ssp. <i>kernensis</i></u>	Kern Plateau bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	(May)Jul-Sep	None	None	G3T2	S2	1B.3	Yes	1988-01-01	No Photo Available
<u><i>Cordylanthus rigidus</i> ssp. <i>brevibracteatus</i></u>	short-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jul-Aug(Sep-Oct)	None	None	G5T3	S3	4.3	Yes	2001-01-01	No Photo Available
<u><i>Cordylanthus tenuis</i> ssp. <i>barbatus</i></u>	Fresno County bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jul-Aug	None	None	G4G5T3	S3	4.3	Yes	1988-01-01	No Photo Available
<u><i>Cryptantha clokeyi</i></u>	Clokey's cryptantha	Boraginaceae	annual herb	Apr	None	None	G3	S3	1B.2	Yes	1994-01-01	No Photo Available
<u><i>Cryptantha glomeriflora</i></u>	clustered-flower cryptantha	Boraginaceae	annual herb	Jun-Sep	None	None	G4Q	S4	4.3	Yes	2001-01-01	No Photo Available
<u><i>Cryptantha incana</i></u>	Tulare cryptantha	Boraginaceae	annual herb	Jun-Aug	None	None	G2	S2	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Cryptantha rattanii</i></u>	Rattan's cryptantha	Boraginaceae	annual herb	Apr-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Cuscuta jepsonii</i></u>	Jepson's dodder	Convolvulaceae	annual vine (parasitic)	Jul-Sep	None	None	G3	S3	1B.2	Yes	1974-01-01	 ©2019 Dean Wm. Taylor
<u><i>Cymopterus deserticola</i></u>	desert cymopterus	Apiaceae	perennial herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Deinandra arida</i></u>	Red Rock tarplant	Asteraceae	annual herb	Apr-Nov	None	CR	G1	S1	1B.2	Yes	1974-01-01	 © 2012 Neal Kramer
<u><i>Deinandra halliana</i></u>	Hall's tarplant	Asteraceae	annual herb	(Mar)Apr-May	None	None	G3	S3	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Deinandra mohavensis</i></u>	Mojave tarplant	Asteraceae	annual herb	(Jan-May)Jun-Oct	None	CE	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Deinandra paniculata</i></u>	paniculate tarplant	Asteraceae	annual herb	(Mar)Apr-Nov	None	None	G4	S4	4.2		2001-01-01	No Photo Available
<u><i>Delphinium gypsophilum</i> ssp. <i>parviflorum</i></u>	small-flowered gypsum-loving larkspur	Ranunculaceae	perennial herb	(Mar)Apr-Jun	None	None	G4T2T3Q	S2S3	3.2	Yes	1974-01-01	No Photo Available
<u><i>Delphinium hansenii</i> ssp. <i>ewanianum</i></u>	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	None	None	G4T3	S3	4.2	Yes	1994-01-01	No Photo Available
<u><i>Delphinium inopinum</i></u>	unexpected larkspur	Ranunculaceae	perennial herb	May-Jul	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available














<i>Delphinium parryi</i> ssp. <i>purpureum</i>	Mt. Pinos larkspur	Ranunculaceae	perennial herb	May-Jun	None	None	G4T4	S4	4.3	Yes	1974-01-01	No Photo Available
<i>Delphinium purpusii</i>	rose-flowered larkspur	Ranunculaceae	perennial herb	(Mar)Apr-May	None	None	G3	S3	1B.3	Yes	1980-01-01	No Photo Available
<i>Delphinium recurvatum</i>	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	Yes	1988-01-01	No Photo Available
<i>Dicentra nevadensis</i>	Tulare County bleeding heart	Papaveraceae	perennial rhizomatous herb	Jun-Aug(Oct)	None	None	G4?	S4?	4.3	Yes	1974-01-01	 © 2016 Debra L Cook
<i>Didymodon californicus</i>	California beard-moss	Pottiaceae	moss		None	None	G3	S3	4.2	Yes	2014-05-14	No Photo Available
<i>Diplacus pictus</i>	calico monkeyflower	Phrymaceae	annual herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2020 Matt C. Berger
<i>Downingia pusilla</i>	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2		1980-01-01	 © 2013 Aaron Arthur
<i>Draba cruciata</i>	Mineral King draba	Brassicaceae	perennial herb	Jun-Aug	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
<i>Draba lonchocarpa</i>	spear-fruited draba	Brassicaceae	perennial herb	Jun-Jul	None	None	G5	S2S3	2B.3		2001-01-01	No Photo Available
<i>Draba praealta</i>	tall draba	Brassicaceae	perennial herb	Jul-Aug	None	None	G5	S3	2B.3		2001-01-01	No Photo Available
<i>Draba sharsmithii</i>	Mt. Whitney draba	Brassicaceae	perennial herb	Jul-Aug	None	None	G2	S2	1B.3	Yes	1974-01-01	No Photo Available
<i>Draba sierrae</i>	Sierra draba	Brassicaceae	perennial herb	Jun-Aug	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
<i>Dudleya abramsii</i> ssp. <i>calicicola</i>	limestone dudleya	Crassulaceae	perennial herb	Apr-Aug	None	None	G4T4	S4	4.3	Yes	1984-01-01	No Photo Available
<i>Dudleya cymosa</i> ssp. <i>costatifolia</i>	Pierpoint Springs dudleya	Crassulaceae	perennial herb	May-Jul	None	None	G5T1	S1	1B.2	Yes	2001-01-01	No Photo Available









<u><i>Elodium blandowii</i></u>	Blandow's bog moss	Helodiaceae	moss		None	None	G4	S2	2B.2		2001-01-01	 © 2013 Scot Loring
<u><i>Elymus scribneri</i></u>	Scribner's wheat grass	Poaceae	perennial herb	Jul-Aug	None	None	G5	S3	2B.3		1974-01-01	No Photo Available
<u><i>Epilobium howellii</i></u>	subalpine fireweed	Onagraceae	perennial stoloniferous herb	Jul-Aug	None	None	G4	S4	4.3	Yes	1994-01-01	No Photo Available
<u><i>Eremalche parryi</i> ssp. kernensis</u>	Kern mallow	Malvaceae	annual herb	Jan(Feb)Mar-May	FE	None	G3G4T3	S3	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Eriastrum hooveri</i></u>	Hoover's eriastrum	Polemoniaceae	annual herb	Mar-Jul	FD	None	G3	S3	4.2	Yes	1974-01-01	No Photo Available
<u><i>Eriastrum rosamondense</i></u>	Rosamond eriastrum	Polemoniaceae	annual herb	Apr-May(Jun-Jul)	None	None	G1?	S1?	1B.1	Yes	2013-12-04	No Photo Available
<u><i>Eriastrum sparsiflorum</i></u>	few-flowered eriastrum	Polemoniaceae	annual herb	May-Sep	None	None	G5	S4	4.3		2012-09-04	No Photo Available
<u><i>Eriastrum tracyi</i></u>	Tracy's eriastrum	Polemoniaceae	annual herb	May-Jul	None	CR	G3Q	S3	3.2	Yes	1974-01-01	 © 2012 Neal Kramer
<u><i>Ericameria gilmanii</i></u>	Gilman's goldenbush	Asteraceae	perennial shrub	Aug-Sep	None	None	G2	S2	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Erigeron aequifolius</i></u>	Hall's daisy	Asteraceae	perennial rhizomatous herb	Jun-Aug	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Erigeron inornatus</i> var. keilii</u>	Keil's daisy	Asteraceae	perennial herb	Jun-Sep	None	None	G5T2	S2	1B.3	Yes	1994-01-01	No Photo Available
<u><i>Erigeron multiceps</i></u>	Kern River daisy	Asteraceae	perennial herb	Jun-Sep	None	None	G2G3	S2S3	1B.2		1974-01-01	No Photo Available
<u><i>Eriogonum breedlovei</i> var. breedlovei</u>	Breedlove's buckwheat	Polygonaceae	perennial herb	Jun-Aug	None	None	G3T2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Eriogonum breedlovei</i> var. shevockii</u>	Needles buckwheat	Polygonaceae	perennial herb	(Jun)Jul-Sep	None	None	G3T3	S3	4.3	Yes	1980-01-01	No Photo Available
<u><i>Eriogonum callistum</i></u>	Tehachapi buckwheat	Polygonaceae	perennial herb	May-Jul	None	None	G1	S1	1B.1	Yes	2008-10-14	No Photo Available
<u><i>Eriogonum crocatum</i></u>	conejo buckwheat	Polygonaceae	perennial herb	Apr-Jul	None	CR	G1	S1	1B.2	Yes	1974-01-01	No Photo Available











<i>Eriogonum eastwoodianum</i>	Eastwood's buckwheat	Polygonaceae	annual herb	May-Sep	None	None	G2	S2	1B.3	Yes	1974-01-01	No Photo Available
<i>Eriogonum gossypinum</i>	cottony buckwheat	Polygonaceae	annual herb	Mar-Sep	None	None	G3G4	S3S4	4.2	Yes	1974-01-01	No Photo Available
<i>Eriogonum heermannii</i> var. <i>occidentale</i>	western Heermann's buckwheat	Polygonaceae	perennial deciduous shrub	Jul-Oct	None	None	G5T2	S2	1B.2	Yes	1994-01-01	No Photo Available
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i>	southern alpine buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G4T3	S3	1B.3	Yes	1994-01-01	No Photo Available
<i>Eriogonum kennedyi</i> var. <i>pinicola</i>	Kern buckwheat	Polygonaceae	perennial herb	May-Jun(Jul)	None	None	G4T1	S1	1B.1	Yes	1974-01-01	No Photo Available
<i>Eriogonum nudum</i> var. <i>indictum</i>	protruding buckwheat	Polygonaceae	perennial herb	(Apr)May-Oct(Dec)	None	None	G5T4	S4	4.2	Yes	1994-01-01	No Photo Available
<i>Eriogonum nudum</i> var. <i>murinum</i>	mouse buckwheat	Polygonaceae	perennial herb	Jun-Nov	None	None	G5T2	S2	1B.2	Yes	1974-01-01	No Photo Available
<i>Eriogonum nudum</i> var. <i>regirivum</i>	Kings River buckwheat	Polygonaceae	perennial herb	Aug-Nov	None	None	G5T2	S2	1B.2	Yes	1994-01-01	No Photo Available
<i>Eriogonum ovalifolium</i> var. <i>monarchense</i>	Monarch buckwheat	Polygonaceae	perennial herb	Jun-Aug	None	None	G5T1	S1	1B.1	Yes	2004-01-01	No Photo Available
<i>Eriogonum polypodium</i>	Tulare County buckwheat	Polygonaceae	perennial herb	Jul-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<i>Eriogonum prattenianum</i> var. <i>avium</i>	Kettle Dome buckwheat	Polygonaceae	perennial herb	Jun-Aug	None	None	G4T3	S3	4.2	Yes	1994-01-01	No Photo Available
<i>Eriogonum spergulinum</i> var. <i>pratense</i>	mountain meadow wild buckwheat	Polygonaceae	annual herb	Jul-Aug	None	None	G4T3	S3	4.3	Yes	2011-12-27	No Photo Available
<i>Eriogonum temblorens</i>	Temblor buckwheat	Polygonaceae	annual herb	(Apr)May-Sep	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<i>Eriogonum twisselmannii</i>	Twisselmann's buckwheat	Polygonaceae	perennial herb	Jun-Sep	None	CR	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<i>Eriogonum vestitum</i>	Idria buckwheat	Polygonaceae	annual herb	Apr-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
<i>Eriogonum wrightii</i> var. <i>olanchense</i>	Olancha Peak buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G5T2	S2	1B.3	Yes	1974-01-01	No Photo Available
<i>Eriophorum gracile</i>	slender cottongrass	Cyperaceae	perennial rhizomatous herb (emergent)	May-Sep	None	None	G5	S4	4.3		2006-10-31	 ©2011 Steven Perry

<u><i>Eriophyllum confertiflorum</i></u> var. <u><i>tanacetiflorum</i></u>	tansy-flowered woolly sunflower	Asteraceae	perennial shrub	May-Jul	None	None	G5T2?Q	S2?	4.3	Yes	2001-01-01	No Photo Available
<u><i>Eriophyllum lanatum</i></u> var. <u><i>hallii</i></u>	Fort Tejon woolly sunflower	Asteraceae	perennial herb	May-Jul	None	None	G5T1	S1	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Eriophyllum lanatum</i></u> var. <u><i>obovatum</i></u>	southern Sierra woolly sunflower	Asteraceae	perennial herb	Jun-Jul	None	None	G5T4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Eriophyllum mohavense</i></u>	Barstow woolly sunflower	Asteraceae	annual herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Eryngium spinosepalum</i></u>	spiny-sepaed button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
<u><i>Erythranthe acutidens</i></u>	Kings River monkeyflower	Phrymaceae	annual herb	Apr-Jul	None	None	G2G3	S2S3	3	Yes	1974-01-01	 Barry Breckling
<u><i>Erythranthe gracilipes</i></u>	slender-stalked monkeyflower	Phrymaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Erythranthe grayi</i></u>	Gray's monkeyflower	Phrymaceae	annual herb	May-Jul	None	None	G2G3Q	S2S3	4.3	Yes	1974-01-01	No Photo Available
<u><i>Erythranthe inconspicua</i></u>	small-flowered monkeyflower	Phrymaceae	annual herb	May-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2017 Debra L. Cook
<u><i>Erythranthe laciniata</i></u>	cut-leaved monkeyflower	Phrymaceae	annual herb	Apr-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2017 Steven Perry
<u><i>Erythranthe marmorata</i></u>	Stanislaus monkeyflower	Phrymaceae	annual herb	Mar-May	None	None	G2?	S2?	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Erythranthe norrisii</i></u>	Kaweah monkeyflower	Phrymaceae	annual herb	Mar-May	None	None	G2	S2	1B.3	Yes	1984-01-01	No Photo Available
<u><i>Erythranthe rhodopetra</i></u>	Red Rock Canyon monkeyflower	Phrymaceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	2013-07-08	 © 2015 Cindy Hopkins
<u><i>Erythranthe shevockii</i></u>	Kelso Creek monkeyflower	Phrymaceae	annual herb	Mar-May	None	None	G1	S1	1B.1	Yes	1984-01-01	 © 2021 Ryan O'Dell










<u><i>Erythranthe sierrae</i></u>	Sierra Nevada monkeyflower	Phrymaceae	annual herb	Mar-Jul	None	None	G2	S2	4.2	Yes	2013-10-02	
												© 2014 Neal Kramer
<u><i>Erythronium pusaterii</i></u>	Kaweah fawn lily	Liliaceae	perennial bulbiferous herb	May-Jul	None	None	G3	S3	1B.3	Yes	1980-01-01	No Photo Available
<u><i>Eschscholzia hyppecoides</i></u>	San Benito poppy	Papaveraceae	annual herb	Mar-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i></u>	Tejon poppy	Papaveraceae	annual herb	(Feb)Mar-May	None	None	G5T2	S2	1B.1	Yes	1994-01-01	No Photo Available
<u><i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i></u>	Red Rock poppy	Papaveraceae	annual herb	Mar-May	None	None	G5T2	S2	1B.2	Yes	1994-01-01	No Photo Available
<u><i>Eschscholzia procera</i></u>	Kernville poppy	Papaveraceae	perennial herb	Jun-Jul(Aug)	None	None	G1?Q	S1?	3	Yes	1974-01-01	No Photo Available
<u><i>Eschscholzia rhombipetala</i></u>	diamond-petaled California poppy	Papaveraceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
<u><i>Euphorbia hooveri</i></u>	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	FT	None	G1	S1	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Euphorbia vallis-mortae</i></u>	Death Valley sandmat	Euphorbiaceae	perennial herb	May-Oct	None	None	G3	S3	4.2	Yes	2001-01-01	No Photo Available
<u><i>Extriplex joaquinana</i></u>	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
<u><i>Fimbristylis thermalis</i></u>	hot springs fimbristylis	Cyperaceae	perennial rhizomatous herb	Jul-Sep	None	None	G4	S1S2	2B.2		1980-01-01	No Photo Available
<u><i>Frasera neglecta</i></u>	pine green-gentian	Gentianaceae	perennial herb	May-Jul	None	None	G4	S4	4.3	Yes	1980-01-01	No Photo Available
<u><i>Frasera tubulosa</i></u>	Coville's green-gentian	Gentianaceae	perennial herb	Jul-Aug	None	None	G3	S3	4.3	Yes	2017-07-19	No Photo Available
<u><i>Fritillaria agrestis</i></u>	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	
												© 2016 Aaron Schusteff










<u><i>Fritillaria brandegeei</i></u>	Greenhorn fritillary	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G2G3	S2S3	1B.3	Yes	1974-01-01	
												© 2017 Aaron Schusteff
<u><i>Fritillaria pinetorum</i></u>	pine fritillary	Liliaceae	perennial bulbiferous herb	May-Jul(Sep)	None	None	G4	S4	4.3	Yes	2001-01-01	
												© 2008 Steve Matson
<u><i>Fritillaria striata</i></u>	striped adobe-lily	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	CT	G1	S1	1B.1	Yes	1974-01-01	
												© 2013 Aaron Schusteff
<u><i>Fritillaria viridea</i></u>	San Benito fritillary	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	
												© 2010 Aaron Schusteff
<u><i>Galium angustifolium</i></u> <u>ssp. onycense</u>	Onyx Peak bedstraw	Rubiaceae	perennial herb	Apr-Jul	None	None	G5T3	S3	1B.3	Yes	1974-01-01	
												© 2020 Cheryl Birker
<u><i>Gilia interior</i></u>	inland gilia	Polemoniaceae	annual herb	Mar-May	None	None	G4	S4	4.3	Yes	2001-01-01	
												© 2015 Steve Matson
<u><i>Gilia latiflora</i></u> <u>ssp. cuyamensis</u>	Cuyama gilia	Polemoniaceae	annual herb	Apr-Jun	None	None	G5?T4	S4	4.3	Yes	1974-01-01	
												© 2012 Michael Charters
<u><i>Gilia leptantha</i></u> <u>ssp. pinetorum</u>	pine gilia	Polemoniaceae	annual herb	May-Jul	None	None	G4T4	S4	4.3	Yes	2001-01-01	
												© 2016 Keir Morse
<u><i>Gilia yorkii</i></u>	Monarch gilia	Polemoniaceae	annual herb	May-Jul	None	None	G2	S2	1B.1	Yes	2001-01-01	
												© 2012 Gary A. Monroe
<u><i>Githopsis tenella</i></u>	delicate bluecup	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.3	Yes	2001-01-01	No Photo Available






<u><i>Glyceria grandis</i></u>	American manna grass	Poaceae	perennial rhizomatous herb	Jun-Aug	None	None	G5	S3	2B.3		1974- 01-01		©2004 Dean Wm. Taylor
<u><i>Goodmania luteola</i></u>	golden goodmania	Polygonaceae	annual herb	Apr-Aug	None	None	G3	S3	4.2		1994- 01-01		© 2007 Steve Matson
<u><i>Gratiola heterosepala</i></u>	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974- 01-01		©2004 Carol W. Witham
<u><i>Greeneocharis circumscissa</i></u> <u>var. <i>rosulata</i></u>	rosette cushion cryptantha	Boraginaceae	annual herb	Jul-Aug	None	None	G5T2	S2	1B.2	Yes	2008- 11-20		No Photo Available
<u><i>Hackelia sharsmithii</i></u>	Sharsmith's stickseed	Boraginaceae	perennial herb	Jul-Sep	None	None	G3	S3	2B.3		1974- 01-01		© 2017 Steve Matson
<u><i>Hecastocleis shockleyi</i></u>	prickle-leaf	Asteraceae	perennial evergreen shrub	May-Jul	None	None	G4	S4	3		1974- 01-01		© 2013 Aaron Schusteff
<u><i>Helianthus winteri</i></u>	Winter's sunflower	Asteraceae	perennial shrub	Jan-Dec	None	None	G2?	S2?	1B.2	Yes	2014- 10-15		© 2014 Chris Winchell
<u><i>Hesperevax caulescens</i></u>	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001- 01-01		© 2017 John Doyen
<u><i>Hesperocypris nevadensis</i></u>	Piute cypress	Cupressaceae	perennial evergreen tree		None	None	G2	S2	1B.2	Yes	1974- 01-01		© 2012 Joey Malone
<u><i>Heterotheca monarchensis</i></u>	Monarch golden-aster	Asteraceae	perennial herb	May-Oct	None	None	G2	S2	1B.1	Yes	2001- 01-01		No Photo Available







<i>Heterotheca shevockii</i>	Shevock's golden-aster	Asteraceae	perennial herb	Aug-Nov	None	None	G2	S2	1B.3	Yes	1994-01-01	 © 2017 Chris Winchell
<i>Heuchera caespitosa</i>	urn-flowered alumroot	Saxifragaceae	perennial rhizomatous herb	May-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	 © 2015 Keir Morse
<i>Hordeum intercedens</i>	vernal barley	Poaceae	annual herb	Mar-Jun	None	None	G3G4	S3S4	3.2		1994-01-01	No Photo Available
<i>Horkelia tularensis</i>	Kern Plateau horkelia	Rosaceae	perennial herb	(May)Jun-Aug	None	None	G2	S2	1B.3	Yes	1974-01-01	 © 2003 Christopher L. Christie
<i>Hosackia oblongifolia</i> var. <i>cuprea</i>	copper-flowered bird's-foot trefoil	Fabaceae	perennial rhizomatous herb	Jun-Aug	None	None	G5T2	S2	1B.3	Yes	1974-01-01	 © 2018 Mary Merriman
<i>Hulsea brevifolia</i>	short-leaved hulsea	Asteraceae	perennial herb	May-Aug	None	None	G3	S3	1B.2	Yes	1974-01-01	 © 2009 Keir Morse
<i>Hulsea vestita</i> ssp. <i>pygmaea</i>	pygmy hulsea	Asteraceae	perennial herb	Jun-Oct	None	None	G5T1	S1	1B.3	Yes	2001-01-01	 © 2012 Duncan S. Bell
<i>Imperata brevifolia</i>	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G3	S3	2B.1		2006-12-26	 © 2020 Matt C. Berger
<i>Iris munzii</i>	Munz's iris	Iridaceae	perennial rhizomatous herb	Mar-Apr(May)	None	None	G2	S2	1B.3	Yes	1974-01-01	 © 2009 Irene Lindsey
<i>Ivesia campestris</i>	field ivesia	Rosaceae	perennial herb	May-Aug	None	None	G3	S3	1B.2	Yes	1974-01-01	 © 2020 Keir Morse
<i>Ivesia unguiculata</i>	Yosemite ivesia	Rosaceae	perennial herb	Jun-Sep	None	None	G3	S3	4.2	Yes	1974-01-01	 © 2020 Keir Morse
<i>Jaffuelobryum wrightii</i>	Wright's jaffuelobryum moss	Grimmiaceae	moss		None	None	G5	S2S3	2B.3		2014-05-15	No Photo Available










<u><i>Jamesia americana</i></u> var. <u><i>rosea</i></u>	rosy-petalled cliffbush	Hydrangeaceae	perennial deciduous shrub	May-Sep	None	None	G5T4	S4	4.3		1994-01-01	 © 2005 Steve Matson
<u><i>Jensia yosemitana</i></u>	Yosemite tarplant	Asteraceae	annual herb	(Apr)May-Jul	None	None	G3	S3	3.2	Yes	1994-01-01	No Photo Available
<u><i>Juglans californica</i></u>	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	None	None	G4	S4	4.2	Yes	1994-01-01	 © 2020 Zoya Akulova
<u><i>Juncus hemiendytus</i></u> var. <u><i>abjectus</i></u>	Center Basin rush	Juncaceae	annual herb	May-Jun(Jul)	None	None	G5T5	S4	4.3		1974-01-01	 ©2008 Steve Matson
<u><i>Lagophylla diabolensis</i></u>	Diablo Range hare-leaf	Asteraceae	annual herb	Apr-Sep	None	None	G2	S2	1B.2	Yes	2014-01-17	 © 2015 Ryan O'Dell
<u><i>Lagophylla dichotoma</i></u>	forked hare-leaf	Asteraceae	annual herb	Apr-May	None	None	G2	S2	1B.1	Yes	2012-03-13	 © 2010 Chris Winchell
<u><i>Lasthenia chrysantha</i></u>	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	Yes	2019-09-30	 © 2009 California State University, Stanislaus
<u><i>Lasthenia ferrisiae</i></u>	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2009 Zoya Akulova
<u><i>Lasthenia glabrata</i></u> ssp. <u><i>coulteri</i></u>	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	G4T2	S2	1B.1		1994-01-01	 © 2013 Keir Morse
<u><i>Layia discoidea</i></u>	rayless layia	Asteraceae	annual herb	May	None	None	G2	S2	1B.1	Yes	1974-01-01	 © 2010 Aaron Schusteff



<u>Layia heterotricha</u>	pale-yellow layia	Asteraceae	annual herb	Mar-Jun	None	None	G2	S2	1B.1	Yes	1994-01-01	 © 2003 Christopher L. Christie
<u>Layia leucopappa</u>	Comanche Point layia	Asteraceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1974-01-01	 © 2013 Neal Kramer
<u>Layia munzii</u>	Munz's tidy-tips	Asteraceae	annual herb	Mar-Apr	None	None	G2	S2	1B.2	Yes	1988-01-01	 © 2017 Neal Kramer
<u>Lepidium jaredii ssp. album</u>	Panoche pepper-grass	Brassicaceae	annual herb	Feb-Jun	None	None	G2G3T2T3	S2S3	1B.2	Yes	1994-01-01	 © 2015 Debra L. Cook
<u>Lepidium jaredii ssp. jaredii</u>	Jared's pepper-grass	Brassicaceae	annual herb	Mar-May	None	None	G2G3T1T2	S1S2	1B.2	Yes	1974-01-01	No Photo Available
<u>Leptosiphon ambiguus</u>	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1994-01-01	 © 2010 Aaron Schusteff
<u>Leptosiphon aureus</u>	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	None	None	G4?	S4?	4.2	Yes	1994-01-01	 © 2007 Len Blumin
<u>Leptosiphon grandiflorus</u>	large-flowered leptosiphon	Polemoniaceae	annual herb	Apr-Aug	None	None	G3G4	S3S4	4.2	Yes	1994-01-01	 © 2003 Doreen L. Smith
<u>Leptosiphon oblanceolatus</u>	Sierra Nevada leptosiphon	Polemoniaceae	annual herb	Jul-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	 © 1995 Saint Mary's College of California
<u>Leptosiphon serrulatus</u>	Madera leptosiphon	Polemoniaceae	annual herb	Apr-May	None	None	G3	S3	1B.2	Yes	1980-01-01	 © 2008 Chris Winchell


<u><i>Lessingia hololeuca</i></u>	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	None	None	G2G3	S2S3	3	Yes	1994-01-01	 © 2015 Aaron Schusteff
<u><i>Lessingia tenuis</i></u>	spring lessingia	Asteraceae	annual herb	May-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2020 Keir Morse
<u><i>Lewisia congdonii</i></u>	Congdon's lewisia	Montiaceae	perennial herb	Apr-Jun	None	CR	G2	S2	1B.3	Yes	1974-01-01	 © 2010 Aaron Schusteff
<u><i>Lewisia disepala</i></u>	Yosemite lewisia	Montiaceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2009 Steven Perry
<u><i>Loeflingia squarrosa</i></u> var. <u><i>artemisiarum</i></u>	sagebrush loeflingia	Caryophyllaceae	annual herb	Apr-May	None	None	G5T3	S2	2B.2		1974-01-01	No Photo Available
<u><i>Lomatium shevockii</i></u>	Owens Peak lomatium	Apiaceae	perennial herb	Apr-May	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
<u><i>Lupinus citrinus</i></u> var. <u><i>citrinus</i></u>	orange lupine	Fabaceae	annual herb	Apr-Jul	None	None	G2T2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Lupinus elatus</i></u>	silky lupine	Fabaceae	perennial herb	Jun-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Lupinus lepidus</i></u> var. <u><i>culbertsonii</i></u>	Hockett Meadows lupine	Fabaceae	perennial herb	Jul-Aug	None	None	G5T3	S3	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Lupinus padre-crowleyi</i></u>	Father Crowley's lupine	Fabaceae	perennial herb	Jul-Aug	None	CR	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Lupinus peirsonii</i></u>	Peirson's lupine	Fabaceae	perennial herb	Apr-Jun	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Madia radiata</i></u>	showy golden madia	Asteraceae	annual herb	Mar-May	None	None	G3	S3	1B.1	Yes	1988-01-01	No Photo Available
<u><i>Malacothamnus aboriginum</i></u>	Indian Valley bush-mallow	Malvaceae	perennial deciduous shrub	Apr-Oct	None	None	G3	S3	1B.2	Yes	1974-01-01	 © 2009 Keir Morse

<u><i>Meesia triquetra</i></u>	three-ranked hump moss	Meesiaceae	moss	Jul	None	None	G5	S4	4.2		2001-01-01	 Steve Matson 2008
<u><i>Meesia uliginosa</i></u>	broad-nerved hump moss	Meesiaceae	moss	Jul-Oct	None	None	G5	S3	2B.2		2001-01-01	 ©2013 Scot Loring
<u><i>Mentzelia eremophila</i></u>	solitary blazing star	Loasaceae	annual herb	Mar-May	None	None	G4	S3S4	4.2		2001-01-01	No Photo Available
<u><i>Mentzelia tridentata</i></u>	creamy blazing star	Loasaceae	annual herb	Mar-May	None	None	G3	S3	1B.3	Yes	2001-01-01	No Photo Available
<u><i>Microseris sylvatica</i></u>	sylvan microseris	Asteraceae	perennial herb	Mar-Jun	None	None	G4	S4	4.2	Yes	2001-01-01	No Photo Available
<u><i>Mielichhoferia elongata</i></u>	elongate copper moss	Mielichhoferiaceae	moss		None	None	G5	S3S4	4.3		2001-01-01	 © 2012 John Game
<u><i>Mielichhoferia shevockii</i></u>	Shevock's copper moss	Mielichhoferiaceae	moss		None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available
<u><i>Minuartia obtusiloba</i></u>	alpine sandwort	Caryophyllaceae	perennial herb	Jul-Aug	None	None	G5	S4	4.3		1994-01-01	 © 2013 Ron Wolf
<u><i>Monardella antonina</i> ssp. <i>antonina</i></u>	San Antonio Hills monardella	Lamiaceae	perennial rhizomatous herb	Jun-Aug	None	None	G4T1T3Q	S1S3	3	Yes	1980-01-01	No Photo Available
<u><i>Monardella antonina</i> ssp. <i>benitensis</i></u>	San Benito monardella	Lamiaceae	perennial rhizomatous herb	Jun-Jul	None	None	G4T3	S3	4.3	Yes	1974-01-01	 © 2021 Ryan O'Dell
<u><i>Monardella beneolens</i></u>	sweet-smelling monardella	Lamiaceae	perennial rhizomatous herb	Jun-Sep	None	None	G2	S2	1B.3	Yes	1994-01-01	 © Rick York and CNPS
<u><i>Monardella linoides</i> ssp. <i>anemonoides</i></u>	southern Sierra monardella	Lamiaceae	perennial herb	Jun-Aug	None	None	G5T2	S2	1B.3	Yes	2021-05-28	No Photo Available
<u><i>Monardella linoides</i> ssp. <i>oblonga</i></u>	Tehachapi monardella	Lamiaceae	perennial rhizomatous herb	(May)Jun-Aug	None	None	G5T2	S2	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Monolopia congdonii</i></u>	San Joaquin woollythreads	Asteraceae	annual herb	Feb-May	FE	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
<u><i>Muhlenbergia utilis</i></u>	aparejo grass	Poaceae	perennial rhizomatous herb	Mar-Oct	None	None	G4	S2S3	2B.2		2019-07-10	No Photo Available





<u>Muilla coronata</u>	crowned muilla	Themidaceae	perennial bulbiferous herb	Mar- Apr(May)	None	None	G3	S3	4.2		1988- 01-01	No Photo Available
<u>Myosurus minimus</u> ssp. <u>apus</u>	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		1980- 01-01	No Photo Available
<u>Myurella julacea</u>	small mousetail moss	Pterigynandraceae	moss		None	None	G5	S2	2B.3		2001- 01-01	 © 2021 Scot Loring
<u>Navarretia eriocephala</u>	hoary navarretia	Polemoniaceae	annual herb	May-Jun	None	None	G4?	S4?	4.3	Yes	1974- 01-01	 © 2018 Leigh Johnson
<u>Navarretia nigelliformis</u> ssp. <u>nigelliformis</u>	adobe navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4T3	S3	4.2	Yes	2007- 04-02	 © 2008 Zoya Akulova
<u>Navarretia nigelliformis</u> ssp. <u>radians</u>	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	Yes	1994- 01-01	No Photo Available
<u>Navarretia panochensis</u>	Panoche navarretia	Polemoniaceae	annual herb	Apr-Aug	None	None	G3	S3	1B.3	Yes	2019- 12-31	No Photo Available
<u>Navarretia peninsularis</u>	Baja navarretia	Polemoniaceae	annual herb	(May)Jun- Aug	None	None	G3	S2	1B.2		1994- 01-01	No Photo Available
<u>Navarretia prostrata</u>	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	Yes	2001- 01-01	No Photo Available
<u>Navarretia setiloba</u>	Piute Mountains navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.1	Yes	1974- 01-01	No Photo Available
<u>Nemacladus calcaratus</u>	Chimney Creek nemacladus	Campanulaceae	annual herb	May-Jun	None	None	G1	S1	1B.2	Yes	2010- 03-09	No Photo Available
<u>Nemacladus gracilis</u>	slender nemacladus	Campanulaceae	annual herb	Mar-May	None	None	G4	S4	4.3		1974- 01-01	No Photo Available
<u>Nemacladus secundiflorus</u> var. <u>robbinsii</u>	Robbins' nemacladus	Campanulaceae	annual herb	Apr-Jun	None	None	G3T2	S2	1B.2	Yes	2010- 06-25	No Photo Available
<u>Nemacladus secundiflorus</u> var. <u>secundiflorus</u>	large-flowered nemacladus	Campanulaceae	annual herb	Apr-Jun	None	None	G3T3?	S3?	4.3	Yes	2010- 06-25	No Photo Available
<u>Nemacladus twisselmannii</u> var. <u>twisselmannii</u>	Twisselmann's nemacladus	Campanulaceae	annual herb	Jul	None	CR	G1	S1	1B.2	Yes	1974- 01-01	No Photo Available





<i>Nemophila parviflora</i> var. <i>quercifolia</i>	oak-leaved nemophila	Hydrophyllaceae	annual herb	May-Jun	None	None	G5T4	S4	4.3		1980-01-01	No Photo Available
<i>Opuntia basilaris</i> var. <i>treleasei</i>	Bakersfield cactus	Cactaceae	perennial stem	Apr-May	FE	CE	G5T1	S1	1B.1	Yes	1974-01-01	No Photo Available
<i>Orcuttia inaequalis</i>	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
<i>Oreocarya tumulosa</i>	New York Mountains oreocarya	Boraginaceae	perennial herb	Apr-Jun	None	None	G4	S4	4.3		1980-01-01	No Photo Available
<i>Oreonana purpurascens</i>	purple mountain-parsley	Apiaceae	perennial herb	May-Jun	None	None	G3	S3	1B.2	Yes	1980-01-01	No Photo Available
<i>Oreonana vestita</i>	woolly mountain-parsley	Apiaceae	perennial herb	Mar-Sep	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
<i>Orthotrichum holzingeri</i>	Holzinger's orthotrichum moss	Orthotrichaceae	moss		None	None	G3G4	S2	1B.3		2014-06-03	 © 2021 Scot Loring
<i>Orthotrichum spjutii</i>	Spjut's bristle moss	Orthotrichaceae	moss		None	None	G1G2	S1	1B.3		2001-01-01	No Photo Available
<i>Packera indecora</i>	rayless mountain ragwort	Asteraceae	perennial herb	Jul-Aug	None	None	G5	S2?	2B.2		2001-01-01	 © 2013 Kirsten Bovee
<i>Packera ionophylla</i>	Tehachapi ragwort	Asteraceae	perennial herb	Jun-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<i>Peltigera gowardii</i>	western waterfan lichen	Peltigeraceae	foliose lichen (aquatic)		None	None	G4?	S3	4.2		2014-03-01	 © 2021 Scot Loring
<i>Pentachaeta fragilis</i>	fragile pentachaeta	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.3	Yes	2001-01-01	No Photo Available
<i>Perideridia bacigalupii</i>	Bacigalupi's yampah	Apiaceae	perennial herb	Jun-Aug	None	None	G3	S3	4.2	Yes	1974-01-01	No Photo Available
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	Gairdner's yampah	Apiaceae	perennial herb	Jun-Oct	None	None	G5T3T4	S3S4	4.2	Yes	1974-01-01	 ©2007 Neal Kramer
<i>Perideridia pringlei</i>	adobe yampah	Apiaceae	perennial herb	Apr-Jun(Jul)	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available

<u><i>Petrophytum caespitosum</i></u> ssp. <u><i>acuminatum</i></u>	marble rockmat	Rosaceae	perennial evergreen shrub	Aug-Sep	None	None	G5T2	S2	1B.3	Yes	2001-01-01	No Photo Available
<u><i>Phacelia exilis</i></u>	Transverse Range phacelia	Hydrophyllaceae	annual herb	May-Aug	None	None	G4Q	S4	4.3	Yes	1994-01-01	No Photo Available
<u><i>Phacelia mohavensis</i></u>	Mojave phacelia	Hydrophyllaceae	annual herb	Apr-Aug	None	None	G4Q	S4	4.3	Yes	1994-01-01	No Photo Available
<u><i>Phacelia nashiana</i></u>	Charlotte's phacelia	Hydrophyllaceae	annual herb	Mar-Jun	None	None	G3	S3	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Phacelia novemmillensis</i></u>	Nine Mile Canyon phacelia	Hydrophyllaceae	annual herb	(Feb)May-Jun	None	None	G3	S3	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Phacelia orogenes</i></u>	mountain phacelia	Hydrophyllaceae	annual herb	(May)Jun-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
<u><i>Phlox dispersa</i></u>	High Sierra phlox	Polemoniaceae	perennial stoloniferous herb	Jul-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
<u><i>Pholistoma auritum</i></u> var. <u><i>arizonicum</i></u>	Arizona pholistoma	Hydrophyllaceae	annual herb	Mar	None	None	G5T4?	S3	2B.3		1984-01-01	No Photo Available
<u><i>Physaria ludoviciana</i></u>	silver bladderpod	Brassicaceae	perennial herb	May-Jun	None	None	G5	S1	2B.2		2009-04-23	No Photo Available
<u><i>Plagiobothrys torreyi</i></u> var. <u><i>perplexans</i></u>	chaparral popcornflower	Boraginaceae	annual herb	Apr-Sep	None	None	G4T3?	S3?	4.3	Yes	2012-08-21	No Photo Available
<u><i>Plagiobothrys torreyi</i></u> var. <u><i>torreyi</i></u>	Yosemite popcornflower	Boraginaceae	annual herb	Apr-Jun	None	None	G4T3Q	S3	1B.2	Yes	2001-01-01	No Photo Available
<u><i>Plagiobryoides vinosula</i></u>	wine-colored tufa moss	Bryaceae	moss		None	None	G3G4	S3S4	4.2		2014-06-10	No Photo Available
<u><i>Platanthera yosemitensis</i></u>	Yosemite bog orchid	Orchidaceae	perennial herb	Jul-Aug	None	None	G2	S2	1B.2	Yes	2007-09-10	No Photo Available
<u><i>Poa lettermanii</i></u>	Letterman's blue grass	Poaceae	perennial herb	Jul-Aug	None	None	G4	S3	2B.3		2001-01-01	No Photo Available
<u><i>Pohlia tundrae</i></u>	tundra thread moss	Mielichhoferiaceae	moss		None	None	G3	S3	2B.3		2001-01-01	 ©2014 Dean Wm. Taylor
<u><i>Potamogeton robbinsii</i></u>	Robbins' pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	Jul-Aug	None	None	G5	S3	2B.3		1994-01-01	 ©2014 Dana York

<u><i>Pseudobahia bahiifolia</i></u>	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	FE CE G1	S1	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Pseudobahia peirsonii</i></u>	San Joaquin adobe sunburst	Asteraceae	annual herb	Feb-Apr	FT CE G1	S1	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Puccinellia simplex</i></u>	California alkali grass	Poaceae	annual herb	Mar-May	None None G2	S2	1B.2		2015-10-15	No Photo Available
<u><i>Ravenella exigua</i></u>	chaparral harebell	Campanulaceae	annual herb	May-Jun	None None G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Ribes menziesii</i> var. <i>ixoderme</i></u>	aromatic canyon gooseberry	Grossulariaceae	perennial deciduous shrub	Apr	None None G4T2	S2	1B.2	Yes	1980-01-01	No Photo Available
<u><i>Ribes tularense</i></u>	Sequoia gooseberry	Grossulariaceae	perennial deciduous shrub	May	None None G1	S1	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Sabulina stricta</i></u>	bog sandwort	Caryophyllaceae	perennial herb	Jul-Sep	None None G5	S3	2B.3		2010-04-06	No Photo Available
<u><i>Sagittaria sanfordii</i></u>	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None None G3	S3	1B.2	Yes	1984-01-01	 ©2013 Debra L. Cook
<u><i>Saltugilia latimeri</i></u>	Latimer's woodland-gilia	Polemoniaceae	annual herb	Mar-Jun	None None G3	S3	1B.2	Yes	2004-01-01	No Photo Available
<u><i>Sclerocactus polyancistrus</i></u>	Mojave fish-hook cactus	Cactaceae	perennial stem	Apr-Jul	None None G3	S3	4.2		1974-01-01	No Photo Available
<u><i>Selaginella asprella</i></u>	bluish spike-moss	Selaginellaceae	perennial rhizomatous herb	Jul	None None G4	S4	4.3		1974-01-01	No Photo Available
<u><i>Senecio aphanactis</i></u>	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None None G3	S2	2B.2		1994-01-01	No Photo Available
<u><i>Senna covesii</i></u>	Cove's cassia	Fabaceae	perennial herb	Mar-Jun(Aug)	None None G5	S3	2B.2		1980-01-01	No Photo Available
<u><i>Sidalcea hickmanii</i> ssp. <i>parishii</i></u>	Parish's checkerbloom	Malvaceae	perennial herb	(May)Jun-Aug	None CR G3T1	S1	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Sidalcea keckii</i></u>	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE None G2	S2	1B.1	Yes	1974-01-01	No Photo Available
<u><i>Sidalcea multifida</i></u>	cut-leaf checkerbloom	Malvaceae	perennial herb	May-Sep	None None G3	S2	2B.3		2009-01-06	No Photo Available



<u><i>Sidalcea neomexicana</i></u>	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	None	None	G4	S2	2B.2		1994-01-01	No Photo Available
<u><i>Silene aperta</i></u>	Tulare champion	Caryophyllaceae	perennial herb	Jul-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Solidago guiradonis</i></u>	Guirado's goldenrod	Asteraceae	perennial rhizomatous herb	Sep-Oct	None	None	G3	S3	4.3	Yes	1994-01-01	No Photo Available
<u><i>Sphenopholis obtusata</i></u>	prairie wedge grass	Poaceae	perennial herb	Apr-Jul	None	None	G5	S2	2B.2		1974-01-01	No Photo Available
<u><i>Streptanthus cordatus</i> var. <i>piutensis</i></u>	Piute Mountains jewelflower	Brassicaceae	perennial herb	May-Jul	None	None	G5T1	S1	1B.2	Yes	1980-01-01	No Photo Available
<u><i>Streptanthus farnsworthianus</i></u>	Farnsworth's jewelflower	Brassicaceae	annual herb	May-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2010 Aaron Schusteff
<u><i>Streptanthus fenestratus</i></u>	Tehipite Valley jewelflower	Brassicaceae	annual herb	(Apr)May-Jul	None	None	G2	S2	1B.1	Yes	1980-01-01	 © 2011 Aaron Schusteff
<u><i>Streptanthus gracilis</i></u>	alpine jewelflower	Brassicaceae	annual herb	Jul-Aug	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Streptanthus medeirosii</i></u>	Tejon jewelflower	Brassicaceae	perennial herb	Jun-Sep	None	None	G1	S1	1B.1	Yes	2020-11-05	 ©2019 Neal Kramer
<u><i>Stylocline citroleum</i></u>	oil neststraw	Asteraceae	annual herb	Mar-Apr	None	None	G3	S3	1B.1	Yes	1994-01-01	No Photo Available
<u><i>Stylocline masonii</i></u>	Mason's neststraw	Asteraceae	annual herb	Mar-May	None	None	G1	S1	1B.1	Yes	1994-01-01	No Photo Available
<u><i>Symphotrichum defoliatum</i></u>	San Bernardino aster	Asteraceae	perennial rhizomatous herb	Jul-Nov	None	None	G2	S2	1B.2	Yes	2004-01-01	No Photo Available
<u><i>Syntrichopappus lemmonii</i></u>	Lemmon's syntrichopappus	Asteraceae	annual herb	Apr-May(Jun)	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Tauschia howellii</i></u>	Howell's tauschia	Apiaceae	perennial herb	Jun-Aug	None	None	G2G3	S2S3	1B.3		1974-01-01	 ©2011 Dean Wm. Taylor

<u><i>Tortula californica</i></u>	California screw moss	Pottiaceae	moss		None	None	G2G3	S2?	1B.2	Yes	2001-01-01	No Photo Available
<u><i>Trichodon cylindricus</i></u>	cylindrical trichodon	Ditrichaceae	moss		None	None	G4G5	S2	2B.2		2001-01-01	No Photo Available
<u><i>Trichostema ovatum</i></u>	San Joaquin bluecurls	Lamiaceae	annual herb	(Apr-Jun)Jul-Oct	None	None	G3	S3	4.2	Yes	1974-01-01	No Photo Available
<u><i>Trichostema rubisepalum</i></u>	Hernandez bluecurls	Lamiaceae	annual herb	Jun-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
<u><i>Trifolium bolanderi</i></u>	Bolander's clover	Fabaceae	perennial herb	Jun-Aug	None	None	G3	S3	1B.2	Yes	1974-01-01	No Photo Available
<u><i>Trifolium dedeckeriae</i></u>	Dedecker's clover	Fabaceae	perennial herb	May-Jul	None	None	G2	S2	1B.3	Yes	1974-01-01	No Photo Available
<u><i>Triglochin palustris</i></u>	marsh arrow-grass	Juncaginaceae	perennial rhizomatous herb	Jul-Aug	None	None	G5	S2	2B.3		1980-01-01	No Photo Available
<u><i>Triteleia puitensis</i></u>	Piute Mountains triteleia	Themidaceae	perennial bulbiferous herb	May-Jun	None	None	G1	S1	1B.1	Yes	2014-07-24	No Photo Available
<u><i>Tropidocarpum californicum</i></u>	Kings gold	Brassicaceae	annual herb	Feb-Mar	None	None	G1	S1	1B.1	Yes	2001-01-01	 © 2017 Robert E. Preston, Ph.D.
<u><i>Tuctoria greenei</i></u>	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	FE	CR	G1	S1	1B.1	Yes	1974-01-01	 ©2008 F. Gauna
<u><i>Utricularia intermedia</i></u>	flat-leaved bladderwort	Lentibulariaceae	perennial stoloniferous herb (carnivorous) (aquatic)	Jul-Aug	None	None	G5	S3	2B.2		2001-01-01	 Barry Rice 2004
<u><i>Viburnum ellipticum</i></u>	oval-leaved viburnum	Viburnaceae	perennial deciduous shrub	May-Jun	None	None	G4G5	S3?	2B.3		1974-01-01	 © 2006 Tom Engstrom
<u><i>Viola pinetorum ssp. grisea</i></u>	grey-leaved violet	Violaceae	perennial herb	Apr-Jul	None	None	G4G5T3	S3	1B.2	Yes	1994-01-01	No Photo Available
<u><i>Wyethia elata</i></u>	Hall's wyethia	Asteraceae	perennial herb	May-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available

---

*Yucca brevifolia*

CC

GNR

SNR

CBR

2011-

12-13

No Photo

Available

---

Showing 1 to 375 of 375 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website <https://www.rareplants.cnps.org> [accessed 3 May 2023].

This page intentionally left blank



# 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:  
Project Code: 2023-0077602  
Project Name: Friant Water Authority - Friant-Kern Canal

May 03, 2023

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: 2023-0077602  
Project Name: Friant Water Authority - Friant-Kern Canal  
Project Type: Water Supply Facility - New Constr  
Project Description: To be defined  
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.2165571,-119.0698242094218,14z>



Counties: Fresno , Kern , and Tulare counties, California

## ENDANGERED SPECIES ACT SPECIES

There is a total of 28 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<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

NAME	STATUS
Buena Vista Lake Ornate Shrew <i>Sorex ornatus relictus</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1610">https://ecos.fws.gov/ecp/species/1610</a>	Endangered
Fisher <i>Pekania pennanti</i> Population: SSN DPS There is <b>proposed</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3651">https://ecos.fws.gov/ecp/species/3651</a>	Endangered
Fresno Kangaroo Rat <i>Dipodomys nitratoides exilis</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5150">https://ecos.fws.gov/ecp/species/5150</a>	Endangered
Giant Kangaroo Rat <i>Dipodomys ingens</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6051">https://ecos.fws.gov/ecp/species/6051</a>	Endangered
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2873">https://ecos.fws.gov/ecp/species/2873</a>	Endangered
Tipton Kangaroo Rat <i>Dipodomys nitratoides nitratoides</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7247">https://ecos.fws.gov/ecp/species/7247</a>	Endangered

---

**BIRDS**

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> Population: U.S.A. only, except where listed as an experimental population There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8193">https://ecos.fws.gov/ecp/species/8193</a>	Endangered
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6749">https://ecos.fws.gov/ecp/species/6749</a>	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3911">https://ecos.fws.gov/ecp/species/3911</a>	Threatened

**REPTILES**

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

**AMPHIBIANS**

NAME	STATUS
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2076">https://ecos.fws.gov/ecp/species/2076</a>	Threatened
Foothill Yellow-legged Frog <i>Rana boylei</i> Population: South Sierra Distinct Population Segment (South Sierra DPS) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5133">https://ecos.fws.gov/ecp/species/5133</a>	Proposed Endangered

**INSECTS**

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate
Valley Elderberry Longhorn Beetle <i>Desmocerus californicus dimorphus</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7850">https://ecos.fws.gov/ecp/species/7850</a>	Threatened

## CRUSTACEANS

NAME	STATUS
Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8246">https://ecos.fws.gov/ecp/species/8246</a>	Endangered
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/498">https://ecos.fws.gov/ecp/species/498</a>	Threatened
Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2246">https://ecos.fws.gov/ecp/species/2246</a>	Endangered

---

## FLOWERING PLANTS

NAME	STATUS
Bakersfield Cactus <i>Opuntia treleasei</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7799">https://ecos.fws.gov/ecp/species/7799</a>	Endangered
California Jewelflower <i>Caulanthus californicus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4599">https://ecos.fws.gov/ecp/species/4599</a>	Endangered
Fleshy Owl's-clover <i>Castilleja campestris ssp. succulenta</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8095">https://ecos.fws.gov/ecp/species/8095</a>	Threatened
Greene's Tuctoria <i>Tuctoria greenei</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1573">https://ecos.fws.gov/ecp/species/1573</a>	Endangered
Hartweg's Golden Sunburst <i>Pseudobahia bahiifolia</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1704">https://ecos.fws.gov/ecp/species/1704</a>	Endangered
Hoover's Spurge <i>Chamaesyce hooveri</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3019">https://ecos.fws.gov/ecp/species/3019</a>	Threatened
Keck's Checker-mallow <i>Sidalcea keckii</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5704">https://ecos.fws.gov/ecp/species/5704</a>	Endangered
San Joaquin Adobe Sunburst <i>Pseudobahia peirsonii</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2931">https://ecos.fws.gov/ecp/species/2931</a>	Threatened
San Joaquin Valley Orcutt Grass <i>Orcuttia inaequalis</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5506">https://ecos.fws.gov/ecp/species/5506</a>	Threatened
San Joaquin Woolly-threads <i>Monolopia (=Lembertia) congdonii</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/3746">https://ecos.fws.gov/ecp/species/3746</a>	Endangered
Springville Clarkia <i>Clarkia springvillensis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8309">https://ecos.fws.gov/ecp/species/8309</a>	Threatened

## CRITICAL HABITATS

There are 5 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Tiger Salamander <i>Ambystoma californiense</i>	Final

NAME	STATUS
<a href="https://ecos.fws.gov/ecp/species/2076#crithab">https://ecos.fws.gov/ecp/species/2076#crithab</a>	
Fleshy Owl's-clover <i>Castilleja campestris ssp. succulenta</i> <a href="https://ecos.fws.gov/ecp/species/8095#crithab">https://ecos.fws.gov/ecp/species/8095#crithab</a>	Final
Hoover's Spurge <i>Chamaesyce hooveri</i> <a href="https://ecos.fws.gov/ecp/species/3019#crithab">https://ecos.fws.gov/ecp/species/3019#crithab</a>	Final
San Joaquin Valley Orcutt Grass <i>Orcuttia inaequalis</i> <a href="https://ecos.fws.gov/ecp/species/5506#crithab">https://ecos.fws.gov/ecp/species/5506#crithab</a>	Final
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> <a href="https://ecos.fws.gov/ecp/species/498#crithab">https://ecos.fws.gov/ecp/species/498#crithab</a>	Final

---

## **IPAC USER CONTACT INFORMATION**

Agency: Environmental Science Associates

Name: Daniel Huang

Address: 2600 Capitol Avenue Suite 200

City: Sacramento

State: CA

Zip: 95816

Email: [dhuang@esassoc.com](mailto:dhuang@esassoc.com)

Phone: 9165644500

---

This page intentionally left blank



# Appendix D

## **Cultural and Tribal Cultural Resources Supplemental Setting Information**

This page intentionally left blank

## Pre-contact Period

Categorizing the pre-contact period into cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given timeframe, thereby creating a regional chronology. Rosenthal et al. (2007) provide a framework for the interpretation of the California Central Valley pre-contact archaeological record and have divided human history in the region into three basic periods: *Paleo-Indian* (13550–10550 years before present [BP]), *Archaic* (10550–900 BP), and *Emergent* (900–300 BP). The Archaic period is subdivided into three sub-periods: *Lower Archaic* (10550–7550 BP), *Middle Archaic* (7550–2550 BP), and *Upper Archaic* (2550–900 BP) (Rosenthal et al., 2007). Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods. The following summary of the region's prehistory is derived principally from Rosenthal et al. (2007), Moratto (1984 [2004]), and Fredrickson (1992).

### Paleo-Indian Period (13550–10550 BP)

Humans first entered the Central Valley sometime prior to 13,000 years ago. At that time Pleistocene glaciers had receded to the mountain crests leaving conifer forests on the mid- and upper elevations of the Sierra Nevada and a nearly contiguous conifer forest on the Coast Ranges. The Central Valley was covered with extensive grasslands and riparian forests. The Sacramento-San Joaquin River Delta (Delta) system had not yet developed. The Central Valley was home to a diverse community of large mammals, which soon became extinct. People were likely focused on large game hunting, although evidence remains scant, as does understanding of lifeways during this period. Evidence of human occupation of the Central Valley during this period comes primarily from the San Joaquin Valley. Basally thinned and fluted concave base projectile points, similar to Clovis points, have been found in three San Joaquin Valley areas: Tracy Lake, the Woolfsen mound, and the Tulare Lake basin. The Witt site (CA-KIN-32), on a Late Pleistocene shoreline of Tulare Lake, produced hundreds of these points. Human and faunal bone recovered from this site dated to between approximately 10,788 and 17,745 uncalibrated radiocarbon years BP; however, there is no direct association between the projectile points and the bone. Little other evidence of human occupation during the Paleo-Indian period is available for the Central Valley (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

### Lower Archaic Period (10550–7550 BP)

The Paleo-Indian Period was followed by the Lower Archaic Period (10550–7550 BP). During this period, the ancient lakes, which had been the subsistence base during the Paleo-Indian Period, began to dry up as a result of climate change. This led to the rapid expanse of oak woodland and grassland prairies across the Central Valley. After 10550 BP, a significant period of soil deposition ensued in the valley, capping older Pleistocene formation. This was followed around 7000 BP by a second period of substantial soil deposition in the valley (Rosenthal et al., 2007; Moratto, 1984 [2004]).

Lower Archaic occupation of the Central Valley is known mainly from isolated finds located along the ancient shorelines of lakes. Stemmed points, chipped stone crescents, and other flaked-stone artifacts are frequently recovered from the ancient shorelines of Tulare Lake, though an isolated flaked-stone crescent was recovered from an ancient alluvial fan west of Orland in the Sacramento Valley. Archaeological evidence from the valley floor and adjacent foothill areas suggest two distinct cultural adaptations, though degree of variation and interaction between valley floor and foothill groups is presently unknown; these variations may not represent divergent adaptations, but rather seasonal expressions of the same group (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

It was during this period that the first evidence of milling stone technology appeared, indicating an increased reliance on processing plants for food. This period is often termed the *Milling Stone Horizon* in southern California. The appearance of milling technology may also indicate less emphasis on hunting as individuals became more familiar with the local plant resources. Milling stones include handstones and milling slabs and are frequently associated with a diverse tool assemblage including cobble-based pounding, chopping, and scraping tools. Milling tools were used for processing seeds and nuts. The Lower Archaic also saw the development of well-made bifaces used for projectile points and cutting tools, commonly formed from meta-volcanic greenstone and volcanic basalts. Most artifacts during this period were manufactured of local materials and trade was limited. The primary social unit remained the extended family. In contrast to the valley floor, ground-stone tools indicative of plant processing, such as handstones and milling slabs, are common in adjacent foothill sites. These sites appear to have been seasonally exploited, with nuts, such as acorn and pine, consumed more than small seeds. Artifact assemblages suggest a semi-permanent settlement system with rotating occupation of seasonal camps (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

Very little archaeological evidence exists for occupation of the valley floor during this period. One component from site CA-KER-116 was dated to between approximately 9000 and 7500 BP based on radiocarbon assays obtained from freshwater mussels. This site is on the ancient shoreline of Buena Vista Lake, between Bakersfield and Taft. The artifact assemblage from CA-KER-116 included flaked-stone crescents, a stemmed projectile point fragment, a carved-stone atlatl spur, and other flaked-stone tools. Faunal bone included freshwater fish, waterfowl, freshwater mussel, and artiodactyl. No plant remains or milling tools were recovered. While regional trade of marine shell beads and obsidian is well documented for other areas during this time, Lower Archaic deposits from CA-KER-116 do not contain beads or obsidian (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

## Middle Archaic Period (7550–2550 BP)

After about 7550 BP, California was marked by a change in climate with warmer and drier conditions. Oak woodland expanded upslope in the Coast Ranges and conifer forest moved into the alpine zone in the Sierra Nevada. Rising sea levels led to the formation of the Delta and associated marshlands. An initial period of upland erosion and lowland deposition was followed by a long period of stabilization of landforms. Most evidence of human occupation in the Central Valley from this time comes from the Sierra Foothills in Calaveras and Tuolumne Counties. By

the Middle Archaic, foothill and valley floor groups were distinct and separate adaptations. Early sites from the period are more abundant in the foothill areas and are characterized by a large quantity of stone implements designed to exploit acorns and pine nuts. Projectile points are typically from locally available materials and include notched, stemmed, thick-leaf, and narrow concave base darts. There is a lack of bone and shell artifacts (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

Valley floor groups are better represented in sites dating from the later Middle Archaic period and reflect an increasing exploitation of river corridors in the Sacramento and San Joaquin valleys. Sites were occupied year-round and technological assemblages suggest a growing reliance on fishing. Gorge hooks, composite bone hooks, and spears appear in the archaeological record during the period. Tule elk, mule deer, pronghorn sheep, rabbits, and waterfowl are also represented in faunal assemblages and indicate exploitation of freshwater marshes, riparian forests, and grasslands. Mortars and pestles appear around 6000 BP; however, acorn and pine nut remains are also commonly recovered from sites lacking mortars and pestles. Middle Archaic northern San Joaquin Valley and southern Sacramento Valley sites include artifacts more common to later time periods elsewhere, including fine-twisted cordage, twined basketry, basketry awls, simple pottery, and baked clay objects. Items of personal adornment, such as stone plummets, bird bone tubes, and shell beads, are also present in deposits from the period (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

Regional trade was widespread during the period, as evidenced by obsidian and shell beads and ornaments commonly recovered from sites. The earliest appearance of *Olivella* grooved-rectangle beads is in the southern San Joaquin Valley (at sites CA-KER-3166/H and CA-KER-5404) and generally date to approximately 5000 BP or earlier (Rosenthal et al., 2007). Settlement patterns reflect more stable, long-term occupation of resource-abundant areas. The period is typified by the Windmill Pattern, first identified in the Delta. In the Central Valley, Windmill sites generally date to between 3850 and 2750 BP. These sites, found as far south as Buena Vista Lake, are characterized by westerly oriented, ventrally and dorsally extended burials and complex grave offerings (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992). During this period, Windmill cemeteries exhibit not only a distinct burial pattern, but evidence of resource depletion and increased interpersonal violence. Osteological studies reveal higher levels of malnutrition and skeletal trauma, such as fractures and embedded stone points (Fagan, 2003).

## Upper Archaic Period (2550–900 BP)

Evidence for Upper Archaic human occupation in the Central Valley is much more extensive than for earlier periods. The development of the Holocene landscape buried older deposits, resulting in the identification of more sites from the Upper Archaic than from older periods of development. Alluvial deposition was partially interrupted by two consecutive droughts known as the Medieval Climatic anomaly.

Two fundamental adaptations developed side-by-side during the Upper Archaic period, evidenced by a diversification in settlements patterns. Populations in the Valley tended towards large, high-density, permanent settlements. These villages were used as hubs from which the populace roamed to collect resources, utilizing a wide range of technologies. The populations in the

foothills and mountains lived in less dense settlements, moving with the seasons to maximize resource returns. Tools tended to be expedient and multipurpose for use in a wide variety of activities. Village sites show extended occupation as evidenced by well-developed midden, frequently containing hundreds of burials, storage pits, structural remains, hearths, ash dumps, and extensive floral and faunal remains (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

During the period, regional variations were more common and focused on resources that could be processed in bulk, such as acorns, salmon, shellfish, rabbits, and deer. Polished and ground-stone plummets, sometimes recovered as caches, are commonly recovered from riparian environments and marshlands in the Delta and southern San Joaquin Valley. Use of mortars and pestles for food processing was prevalent, except for the valley margins where handstones and milling slabs remained dominant (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

Shell bead trade and technological specialization increased. Shell bead types include saucer- and saddle-shaped *Olivella* beads. Bone wands, tubes, and ornaments, as well as well-made ceremonial obsidian blades, appear in the archaeological record during this period. In the San Joaquin Valley, obsidian biface blanks were imported via east-west travel corridors from eastern Sierra Nevada Mountains quarries, including Bodie Hills, Casa Diablo, and Coso. Lanceolate-shaped bifaces were produced by specialized craftsman located near northern obsidian sources, which were traded throughout the Central Valley (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

The Delta region saw the rise of large, mounded villages characterized by extensive habitation deposits with fire-cracked rock, hearths, ovens, house floors, and flexed burials. This adaptation is known as the Berkeley Pattern. However, descendants of the Windmiller Pattern remained in the San Joaquin Valley during this period. Upper Archaic Windmiller sites in the San Joaquin Valley are generally along the western and southern margins of the Delta, as well as near streams and marshes. Excavated cemeteries located along the western fringes of the San Joaquin Valley contained either flexed or extended burials and may reflect alternating occupation of this area by valley and coastal range groups (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

Sites around Buena Vista Lake in the southern San Joaquin Valley reflect year-round occupation of villages and include house floors and extensive middens. House floors appear in the archaeological record as large, round depressions ranging in diameter from 4–8 meters and 0.3–1 meter in depth. Other indicators of residential dwellings could include hearths, post holes, and underground storage pits (Chartkoff, 1998).

## Emergent Period (900–300 BP)

A major shift in material culture occurred around 900 BP, marking the beginning of the Emergent Period. Particularly notable was the introduction of the bow and arrow. The adoption of the bow occurred at slightly different times in various parts of the Central Valley, but by 750 BP it was in use in the region. The bow was accompanied by the Stockton Serrated point, an invention seemingly developed by people in the area, distinctive from point types used in other parts of the State. Another key element of material culture from this period include big-head effigy ornaments

thought to be associated with the Kuksu religious movement. In areas where stone was scarce, baked clay balls are found, presumably for cooking in baskets. Other diagnostic items from this period are bone tubes, stone pipes, and ear spools. Along rivers, villages are frequently associated with fish weirs, with fishing taking on an increasing level of importance in the diet of the local populace. Research on Emergent period sites in the San Joaquin Valley has been limited and only one cultural pattern, the Panoche Complex, has been fully identified. The Panoche Complex (approximately 500–150 BP) is characterized by large circular structures, flexed burials and cremations, small side-notched projectile points, shell disk beads, and ground stone, such as mortars, pestles, and some metates (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992).

The Emergent period is often divided into the Lower Emergent (approximately 900–500 BP) and Upper Emergent (500–200 BP). The Lower Emergent period is characterized by banjo-type *Haliotis* ornaments, incised bird bone whistles and tubes, flanged soapstone pipes, and rectangular *Olivella* sequin beads. The bow and arrow replaced the dart and atlatl in hunting tool kits. Panoche side-notched points, a variation on the Desert Side-Notched point, have been recovered from Lower Emergent period sites along the western side of the San Joaquin Valley. The Upper Emergent is characterized by small corner-notched and desert series projectile points, *Olivella* lipped and clam disk beads, bead drills, magnesite cylinders, and hopper mortars. While limited cremation was practiced during the Lower Emergent, it became widespread during the Upper Emergent. In general, increasingly complex burial practices developed, as indicated by grave goods and variation in burial type (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1974, 1992).

By the end of the Emergent period, village sites and territorial boundaries closely resembling those documented in ethnographic literature had been established. Manufacturing centers were decentralized and raw materials in the form of obsidian cobbles and shell bead blanks were transported from their sources to areas where the finished product would be completed. Trade relations were highly regularized and sophisticated, with increasing quantities of goods moving over greater distances. Clam disk beads became a monetary unit of trade. Individual and groups of specialized craftsmen arose governing various aspects of production and exchange throughout California (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1974, 1992).

Central Valley sites during this period exhibit faunal assemblages characterized by large quantities of fish bone and a diversity of bird and mammal bones, with some regional variations. Plant use is represented by the mortar and pestle, though the types of plants exploited in the San Joaquin Valley is not well documented. In the Sacramento Valley, small seeds became an increasingly important staple, as well as acorns, pine nuts, and manzanita. Diverse fishing equipment assemblages are common to the Sacramento Valley and include several types of harpoons, bone fishhooks, and gorge hooks. Twined and coiled basketry and netting have been recovered from several sites in the Central Valley, including CA-MER-3 (Menjoulet Site) near Los Banos Creek (Rosenthal et al., 2007).

In the southern San Joaquin Valley, pottery was not manufactured but was obtained by trade with groups from the foothills to the east. Consumnes pottery was produced in the Sacramento Valley

and is represented in several artifact assemblages from Sacramento County sites. Other clay items recovered from Sacramento Valley sites include baked clay balls (possibly used for cooking), and human and animal effigies. House floors are common throughout the Central Valley during the period (Rosenthal et al., 2007; Moratto, 1984 [2004]; Fredrickson, 1992). A very large house floor, probably representing a ceremonial structure, was documented during excavations at the Menjoulet Site in Merced County. The floor measured 28 meters in diameter with a mud wall around the perimeter. Thirty cremations and two inhumations were recovered from the house floor (Gamble, 2012; Moratto, 1984 [2004]).

## Regional Historic Resources

Widespread exploration of the Central Valley began in the early 1800s when Lieutenant Gabriel Moraga led a Spanish contingent over Pacheco Pass and into the valley. In the ensuing years, Moraga made several expeditions into the San Joaquin Valley to scout for potential mission sites and pursue runaway neophytes; however, no permanent Spanish settlements were established in the San Joaquin Valley (Cook, 1960; Toucan Valley Publications, Inc., 2021).

One of the earliest Spanish trails, known as El Camino Viejo (The Old Road), ran north-south through the San Joaquin Valley extending from San Pedro to San Antonio (present-day East Oakland). The trail followed the path of an indigenous trail and skirted the eastern slope of the Coast Range foothills. El Camino Viejo was an alternative route to heavily traveled El Camino Real (The Royal Road) and was often the preferred route of those wishing to travel under the radar of the Spanish government. The trail, called “The Old Trace” by American settlers, became a stagecoach and mail route and an important route for cattle ranchers. In the valley, the route largely corresponds to modern-day Interstate 5. Settlements along the trail corridor included *Poso de Chane* and a camp site situated on the banks of Arroyo de Cantua (Cantua Creek) (Hoover et al., 2002; Preston, 1981).

Mexico gained independence in 1821 and set about secularization of the missions and promoting settlement of Alta California through the issuance of land grants and liberal colonization laws, which did not prevent foreigners from settling in Mexican territory. This allowed for a significant number of Americans to gain a foothold in Alta California. To prevent continued foreign incursion and promote a greater Mexican presence in the interior, Mexico issued the 1840 Law of Colonization and encouraged the establishment of cattle ranches in the Central Valley; however, few Mexican land grants were issued in the San Joaquin Valley (Hoover et al., 2002; Preston, 1981; Shumway, 2007; State Lands Commission, 1982).

In the mid- to late 1820s, American trappers, including Jedediah Smith, Ewing Young, and Kit Carson, entered to the region to hunt fur-bearing animals inhabiting the valley. In 1848, gold was discovered at Sutter’s Mill, resulting in a large influx of immigrants hoping to make their fortunes. After cessation of the Mexican-American War in the same year, California was ceded to the U.S., officially becoming a state in 1850. Mexico’s public lands became U.S. public lands and were surveyed, sectioned, and made available for sale/settlement (Hoover et al., 2002; Preston, 1981; Shumway, 2007; State Lands Commission, 1982).



The federal government passed several pieces of legislation in the mid-1800s to promote settlement of the western U.S. and dispose of surplus public land. Under the Preemption Act of 1841, a settler could purchase up to 160 acres (a quarter-section) for \$1.25 per acre. This law was extended to California in 1853 and was the primary source of cash sales. The Homestead Act of 1862 allowed settlement of public lands, requiring only residence, improvement, and cultivation of the land. A claim for a 160-acre parcel could be made by anyone who was over the age of 21 and head of a household and paid an \$18 fee. The act allowed single women, former slaves, and new immigrants an opportunity to own a piece of land. They had to improve and live on the land for five years to receive deed to the property, which often proved difficult. The Timber Culture Act of 1873 provided 160 acres of land to applicants, provided they planted trees on at least 40 acres (later reduced to 10) within eight years; settlement was not required under this law. Under the Desert Land Act of 1877, which targeted settlement of arid regions in the west, applicants could receive 640 acres (an entire section) for a fee of \$0.25 per acre at filing and an additional \$1.00 per acre within three years, provided they reclaimed the land through artificial irrigation. While these laws were designed to give individual settlers and families access to land ownership, many land speculators and farmers/ranchers manipulated them to obtain huge tracts of land for little cost, particularly in the San Joaquin Valley. The railroads also benefited from federal laws, which granted alternating odd-numbered sections within 20 miles of a projected rail line to facilitate rail expansion (Orsi, 2005).

With the waning of the mining industry in the mid-1860s, many turned to raising cattle and sheep in the valley, including many Basque and Portuguese immigrants who had been shepherds in their native land (Graves, 2004; Miller, 2013). The vast prairie grasslands readily supported large herds that required little maintenance. Sheep were primarily herded on the uninhabited west side of the valley, feeding on wild alfalfa, or rented to stubble land. Sheep ranches often included a shearing barn or shed, feed barn, ranch house, lambing sheds, and corrals. Cattle generally roamed free until they were rounded up and driven to market where they were sold for their meat, hides, and other by-products. A severe drought in 1876–1877 crippled the cattle industry. Many cattle that would have been sold for their meat were slaughtered to save the hide. It was at this same time that dry farming experienced a boost due to mechanization of farm equipment, such as threshers (Vandor, 1919).

Dry farming had been practiced in the valley since the mid-1860s as well, but the Trespass Act of 1850 required farmers to fence out roaming herds, hindering its growth. The passage of the “No-Fence Law” in 1872 reversed the responsibility of fencing to ranchers, who were then required to fence their large grazing tracts or sell off their cattle. Prior to the advent of barbed wire in the 1880s, this proved cost-prohibitive for many. After the decline of the cattle industry in the 1870s, the grain industry rose to prominence. In 1889, the San Joaquin Valley wheat crop topped 40 million bushels, the largest crop in the U.S. except that produced by the entire state of Minnesota. Over the ensuing years a failure to rotate crops depleted the soil and yields decreased. This, coupled with a drop in grain prices and the advancement of irrigation, opened the opportunity for viticulture and other horticultural pursuits to expand (Pisani, 1985; Ryan and Breschini, 2010; Vandor, 1919).

In the 1870s, dairy farming was centered in other regions of California, such as the northern and central California coasts, where rainfall was more abundant and reliable. Prior to that time, the family cow usually supplied a household's dairy needs. The early 1900s saw the rise of the dairy farmer in the San Joaquin Valley. The decline of the wool industry from the 1880s to 1900s left many San Joaquin Valley Portuguese shepherders unemployed and many turned to the growing dairy farming. Most began as milk hands, saving up until they could start their own dairy farms. By the 1930s, Portuguese dairy farms were well established in the valley (Graves, 2004).

In the mid-1930s, the Great Depression, drought, and poor economic and agricultural conditions in the southern and plains states led to a mass migration of "Dust Bowl refugees" to California. Approximately 300,000–400,000 migrants from Oklahoma, Texas, Arkansas, Missouri, and other states moved to California, drawn by the promise of employment and a better life (Gregory, n.d.). Many ended up in the San Joaquin Valley to work as field hands; by 1950, as many as one in four residents of the San Joaquin Valley had emigrated from Oklahoma, Texas, Arkansas, or Missouri (Gregory, 1989). The influx of migrants led to a shortage of jobs, dramatically decreased wages, and abysmal living conditions (Starr, 2005). The migrants were pejoratively referred to as "Okies" and their plight was captured most famously by John Steinbeck in his 1939 book *The Grapes of Wrath*.

Today, a wide variety of agricultural enterprises exist in the San Joaquin Valley, with farms ranging from small to large industrial operations and producing crops such as fruits, nuts, barley, beans, corn, hay, beets, wheat, and cotton. Livestock, including cattle and poultry, is still raised in the San Joaquin Valley.