



September 2024



Water Reduction Program Agreement Between the Sacramento River Settlement Contractors
Nonprofit Mutual Benefit Corporation, Individual Sacramento River Settlement Contractors, and the
U.S. Bureau of Reclamation
State Clearinghouse Number: 2024050834

Draft Environmental Impact Report

Prepared for Glenn-Colusa Irrigation District

September 2024

Water Reduction Program Agreement Between the Sacramento River Settlement Contractors
Nonprofit Mutual Benefit Corporation, Individual Sacramento River Settlement Contractors, and the
U.S. Bureau of Reclamation
State Clearinghouse Number: 2024050834

Draft Environmental Impact Report

Prepared for
Glenn-Colusa Irrigation District
P.O. Box 150
Willows, California 95988

Prepared by
Anchor QEA
33 New Montgomery Street, Suite 1210
San Francisco, California 94105

TABLE OF CONTENTS

Executive Summary.....	ES-1
Proposed Project.....	ES-3
Project Objectives.....	ES-4
Summary of Project Alternatives	ES-4
Alternative 1: No Project Alternative	ES-4
Alternative 2: No Groundwater Substitution Alternative.....	ES-5
Public Scoping and Outreach.....	ES-5
Availability of the Draft Environmental Impact Report	ES-5
Summary of Impacts and Mitigation.....	ES-5
Summary of Project-Level Impacts.....	ES-5
Summary of Cumulative Impacts.....	ES-6
1 Introduction	1
1.1 California Environmental Quality Act Process.....	3
1.2 Lead, Responsible, and Trustee Agencies.....	4
1.3 Public Participation, Consultation, and Coordination	5
1.4 Notice of Preparation	5
1.4.1 Public Scoping	6
1.4.2 Assembly Bill 52	8
1.5 California Environmental Quality Act Baseline.....	8
1.6 Environmental Impact Report Organization.....	8
2 Project Description	10
2.1 Environmental Setting.....	10
2.1.1 Regional Setting.....	10
2.1.2 Project Setting	10
2.2 Background.....	12
2.2.1 Settlement Contracts	12
2.2.2 Ecosystem Management	13
2.2.3 Existing Agreements.....	13
2.3 Project Need and Objectives	14
2.4 Proposed Agreement Phases	15
2.4.1 Phase 1	16
2.4.2 Phase 2	17
2.5 Methods for Accomplishing Water Reductions	18

2.5.1	Water Reduction Activities.....	18
2.5.2	Drought-Resiliency Projects.....	20
2.6	Alternatives Evaluated in this DEIR.....	33
2.6.1	Alternatives Considered but Eliminated	34
2.6.2	Alternative 1: No Project Alternative	35
2.6.3	Alternative 2: No Groundwater Substitution Alternative	35
3	Environmental Impact Analysis	36
3.1	Aesthetics	37
3.1.1	Environmental Setting	37
3.1.2	Applicable Regulations.....	42
3.1.3	Environmental Impacts and Mitigation Measures.....	45
3.2	Agriculture and Forestry Resources	49
3.2.1	Environmental Setting	49
3.2.2	Applicable Regulations.....	58
3.2.3	Environmental Impacts and Mitigation Measures.....	63
3.3	Air Quality	68
3.3.1	Environmental Setting	68
3.3.2	Applicable Regulations.....	73
3.3.3	Environmental Impacts and Mitigation Measures.....	77
3.4	Biological Resources	83
3.4.1	Environmental Setting	83
3.4.2	Applicable Regulations.....	94
3.4.3	Environmental Impacts and Mitigation Measures.....	104
3.5	Cultural Resources	131
3.5.1	Environmental Setting	131
3.5.2	Applicable Regulations.....	133
3.5.3	Environmental Impacts and Mitigation Measures.....	138
3.6	Energy.....	144
3.6.1	Environmental Setting	144
3.6.2	Applicable Regulations.....	146
3.6.3	Environmental Impacts and Mitigation Measures.....	149
3.7	Geology and Soils	151
3.7.1	Environmental Setting	152
3.7.2	Applicable Regulations.....	160
3.7.3	Environmental Impacts and Mitigation Measures.....	162

3.8	Greenhouse Gas Emissions.....	168
3.8.1	Environmental Setting	168
3.8.2	Applicable Regulations.....	169
3.8.3	Environmental Impacts and Mitigation Measures.....	174
3.9	Hazards and Hazardous Materials	178
3.9.1	Environmental Setting	178
3.9.2	Applicable Regulations.....	181
3.9.3	Environmental Impacts and Mitigation Measures.....	184
3.10	Hydrology and Water Quality	191
3.10.1	Environmental Setting	191
3.10.2	Applicable Regulations.....	199
3.10.3	Environmental Impacts and Mitigation Measures.....	209
3.11	Land Use and Planning	217
3.11.1	Environmental Setting	217
3.11.2	Applicable Regulations.....	217
3.11.3	Environmental Impacts and Mitigation Measures.....	220
3.12	Mineral Resources.....	222
3.12.1	Environmental Setting	223
3.12.2	Applicable Regulations.....	224
3.12.3	Environmental Impacts and Mitigation Measures.....	226
3.13	Noise 228	
3.13.1	Environmental Setting	228
3.13.2	Applicable Regulations.....	229
3.13.3	Environmental Impacts and Mitigation Measures.....	233
3.14	Population and Housing.....	238
3.14.1	Environmental Setting	238
3.14.2	Applicable Regulations.....	239
3.14.3	Environmental Impacts and Mitigation Measures.....	240
3.15	Public Services	241
3.15.1	Environmental Setting	242
3.15.2	Applicable Regulations.....	242
3.15.3	Environmental Impacts and Mitigation Measures.....	243
3.16	Recreation	245
3.16.1	Environmental Setting	245
3.16.2	Applicable Regulations.....	245

3.16.3	Environmental Impacts and Mitigation Measures.....	247
3.17	Transportation.....	248
3.17.1	Environmental Setting.....	249
3.17.2	Applicable Regulations.....	250
3.17.3	Environmental Impacts and Mitigation Measures.....	251
3.18	Tribal Cultural Resources.....	254
3.18.1	Environmental Setting.....	255
3.18.2	Applicable Regulations.....	255
3.18.3	Environmental Impacts and Mitigation Measures.....	259
3.19	Utilities and Service Systems	262
3.19.1	Environmental Setting.....	262
3.19.2	Applicable Regulations.....	265
3.19.3	Environmental Impacts and Mitigation Measures.....	265
3.20	Wildfire.....	271
3.20.1	Environmental Setting.....	271
3.20.2	Applicable Regulations.....	272
3.20.3	Environmental Impacts and Mitigation Measures.....	275
4	Cumulative Impacts.....	280
4.1	Requirements for Cumulative Impact Analysis.....	280
4.1	Projects Considered Under Cumulative Analysis.....	281
4.1.1	Past History in the Project Area	281
4.1.2	Present and Future Projects	282
4.2	Analysis of Cumulative Impacts.....	288
4.2.1	Cumulative Impacts for Unaffected Environmental Resource Areas.....	288
4.2.2	Cumulative Impacts for Affected Environmental Resource Areas.....	288
5	Other Required Analyses	305
5.1	Unavoidable Significant Impacts.....	305
5.2	Significant Irreversible Environmental Changes.....	305
5.3	Growth-Inducing Impacts	306
6	Alternatives.....	307
6.1	Alternatives Considered but Eliminated.....	308
6.2	Alternatives Carried Forward for Analysis.....	308
6.2.1	Alternative 1: No Project Alternative	309
6.2.2	Alternative 2: No Groundwater Substitution Alternative	309

6.3	Resources with Significant and Unavoidable Impacts	310
6.3.1	Biological Resources.....	310
6.4	Resources with Less-than-Significant Impacts Following Mitigation	313
6.4.1	Agriculture and Forestry Resources	313
6.4.2	Cultural Resources	314
6.4.3	Hazards and Hazardous Materials	315
6.4.4	Hydrology and Water Quality.....	316
6.4.5	Noise	317
6.4.6	Tribal Cultural Resources.....	318
6.4.7	Utilities and Service Systems.....	319
6.5	Comparison of Alternatives.....	321
6.6	Environmentally Superior Alternative.....	322
7	List of Preparers	323
	Glenn-Colusa Irrigation District.....	323
	Sacramento River Settlement Contractors.....	323
	Anchor QEA.....	323
	MBK Engineers.....	323
8	References	324

TABLES

Table ES-1	Summary of Proposed Project Impacts and Mitigation	ES-7
Table ES-2	Summary of Mitigation Measures	ES-19
Table 1	Regulatory Agencies and Authority	4
Table 2	Summary of Scoping Comments	7
Table 3	Contracted Water Supply Available for the SRSC in Phases 1 and 2 including Existing Contracts and Proposed Agreement.....	16
Table 4	Approximate Maximum Contract Water Reduction per the SRSC During Phase 1 Agreement Years	17
Table 5	Approximate Maximum Contract Water Reduction per the SRSC During Phase 2 Agreement Years	18
Table 6	Annual Cropland Idling within the SRSC Service Area	19
Table 7	Potential Annual Groundwater Substitution within the SRSC Service Area.....	20
Table 8	Crop Acreages in the Project Area Per County (2022).....	52
Table 9	Forest Land in the Project Area by County (2021).....	57

Table 10	National and California Ambient Air Quality Standards	70
Table 11	Nonattainment Status by County and Standard	71
Table 12	Toxic Air Contaminant Health Effects.....	72
Table 13	Electricity Consumption and Generation by County (2022).....	144
Table 14	Natural Gas Consumption by County in Millions of Therms (2022).....	145
Table 15	Notable Faults Within the Project Area and Associated Regional Risk.....	155
Table 16	Summary of Hydrologic Unit Codes Within the Project Area	193
Table 17	Drainage Network within Project Area	193
Table 18	CDWR Bulletin 118 Groundwater Subbasins within Project Area.....	194
Table 19	Waterbodies Listed in 2020-2022 Integrated Report for Clean Water Act Sections 303(d) Within the Project Area.....	196
Table 20	Flood Insurance Studies Within the Project Area	198
Table 21	Status of Mines Overlapping the Project Area.....	223
Table 22	MRZs in Project Area by Acre and Category.....	225
Table 23	Vibration Velocities for Construction Equipment	236
Table 24	Summary of Water Systems within Project Area Counties.....	263
Table 25	Related Past, Present, and Future Projects Considered in the Cumulative Impact Analysis	283
Table 26	Contracted Water Supply Available for the SRSC under the Project Alternatives including Existing Contracts and Proposed Agreement.....	309
Table 27	Comparison of Impacts of Alternatives as Compared to the Proposed Project Impacts.....	321

FIGURES

Figure ES-1	SRSC Service Area	ES-2
Figure 1	Project Area.....	2
Figure 2	Four Major Regions of the Central Valley	11
Figure 3	Well Components.....	29
Figure 4	Well Construction Method.....	31
Figure 5	Typical Well Construction.....	32
Figure 6	Sacramento Valley Soil Order Map	153
Figure 7	Sacramento River Basin Hydrologic Soil Order Map.....	154
Figure 8	Project Area Linear Extensibility Percentages Map	157
Figure 9	Wind Erosion Processes.....	158
Figure 10	Soil Erodibility Factor (K_w) values within the Sacramento Valley Area.....	159

PHOTOGRAPHS

Photograph 1	Wireless SCADA System Example	25
Photograph 2	Automated Gate Installation Example	26
Photograph 3	Agriculture Uses Within the Project Area	38
Photograph 4	Agriculture Landscape Within the Project Area.....	39
Photograph 5	Shasta Reservoir	40
Photograph 6	Redding.....	41
Photograph 7	Typical View Within the Project Area	42

APPENDICES

Appendix A	Comments Received on the Notice of Preparation
Appendix B	Potentially Present Special Status Species Lists

ABBREVIATIONS

--	not applicable
µg/L	microgram per liter
µg/m ³	microgram per cubic meter
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
Agreement	Water Reduction Program Agreement
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BMO	Basin Management Objective
BMP	best management practice
BNSF	BNSF Railway
BP	Before Present
BRCP	Butte Regional Conservation Plan
Btu	British thermal unit
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Division of Occupational Safety and Health
CAL FIRE	California Department of Forestry and Fire Prevention
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CAP	criteria air pollutant
CBC	California Building Code
CCAA	California Clean Air Act
CCR	<i>California Code of Regulations</i>
CDFW	California Department of Fish and Wildlife
CDMG	California Department of Mines and Geology
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFCP	California Farmland Conservancy Program
CFR	<i>Code of Federal Regulations</i>
CGA	Colusa and Glenn Groundwater Authority
CGS	California Geological Survey
CHP	California Highway Patrol

CHRIS	California Historical Resources Information System
CH ₄	methane
CNDDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
COC	contaminant of concern
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CUPA	Certified Unified Program Agency
CVP	Central Valley Project
CWA	Clean Water Act
dB	decibel
dBA	decibel, A-weighted
DEIR	Draft Environmental Impact Report
Delta	Sacramento-San Joaquin River Delta
DMR	Division of Mine Reclamation
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EIR	Environmental Impact Report
EO	Executive Order
EOP	Emergency Operations Plan
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FGC	<i>California Fish and Game Code</i>
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration
FHZ	Flood Hazard Zone
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Studies
FMMP	Farmland Mapping and Monitoring Program
FRA	Federal Responsibility Area

FTA	Federal Transit Administration
GAMA	Groundwater Ambient Monitoring and Assessment Program
GCID	Glenn-Colusa Irrigation District
GGS	giant garter snake
GHG	greenhouse gases
GIS	geographic information system
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWh	gigawatt hours
GWP	global warming potential
HCP	Habitat Conservation Plan
HDPE	high-density polyethylene
HMMP	Hazardous Materials Management Plan
HRA	Health Risk Assessment
HSC	<i>California Health and Safety Code</i>
HSG	hydrologic soil group
I-5	Interstate 5
I-80	Interstate 80
IDP	Inadvertent Discovery Plan
IPaC	Information for Planning and Consultation
IPCC	Intergovernmental Panel on Climate Change
K _w	soil erodibility factor
LCFS	Low Carbon Fuel Standard
L _{dn}	day/night average sound level
LEP	linear extensibility percentage
LID	Low Impact Development
LOS	level of service
LRA	Local Responsible Area
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant levels
MEI	maximally exposed individual
MRZ	mineral resource zone
MT	metric tons
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NBHCP	Natomas Basin Habitat Conservation Plan

NCCP	Natural Community Conservation Plan
NEIC	Northeast Information Center
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NO ₂	nitrogen dioxide
NOP	Notice of Preparation
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O ₃	ozone
OHP	Office of Historic Preservation
OPR Technical Advisory	<i>Technical Advisory on Evaluating Transportation Impacts in CEQA</i>
OSHA	Occupational Safety and Health Administration
PG&E	Pacific Gas & Electric
PM	particulate matter
PM ₁₀	particulate matter less than 10 microns in diameter
PM _{2.5}	particulate matter less than 2.5 microns in diameter
ppm	parts per million
PPV	peak particle velocity
PRC	<i>California Public Resources Code</i>
proposed project	Water Reduction Program Agreement
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
Reclamation	U.S. Bureau of Reclamation
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCADA	Supervisory Control and Data and Acquisition
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	California Surface Mining and Reclamation Act
SO ₂	sulfur dioxide

SR	State Route
SRA	State Responsibility Area
SRSC	Sacramento River Settlement Contractors
SRSCNC	Sacramento River Settlement Contractors Nonprofit Mutual Benefit Corporation
SUCOEM	Sutter County Office of Emergency Management
SVAB	Sacramento Valley Air Basin
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCOES	Tehama County Office of Emergency Services
TMDL	Total Maximum Daily Load
UP	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USC	<i>United States Code</i>
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
YCOES	Yolo County Office of Emergency Services
VELB	valley elderberry longhorn beetle
VFD	Variable Frequency Drive
Yolo NCCP/HCP	Yolo Habitat Conservation Plan/Natural Communities Conservation Plan
WDR	Waste Discharge Requirement

Executive Summary

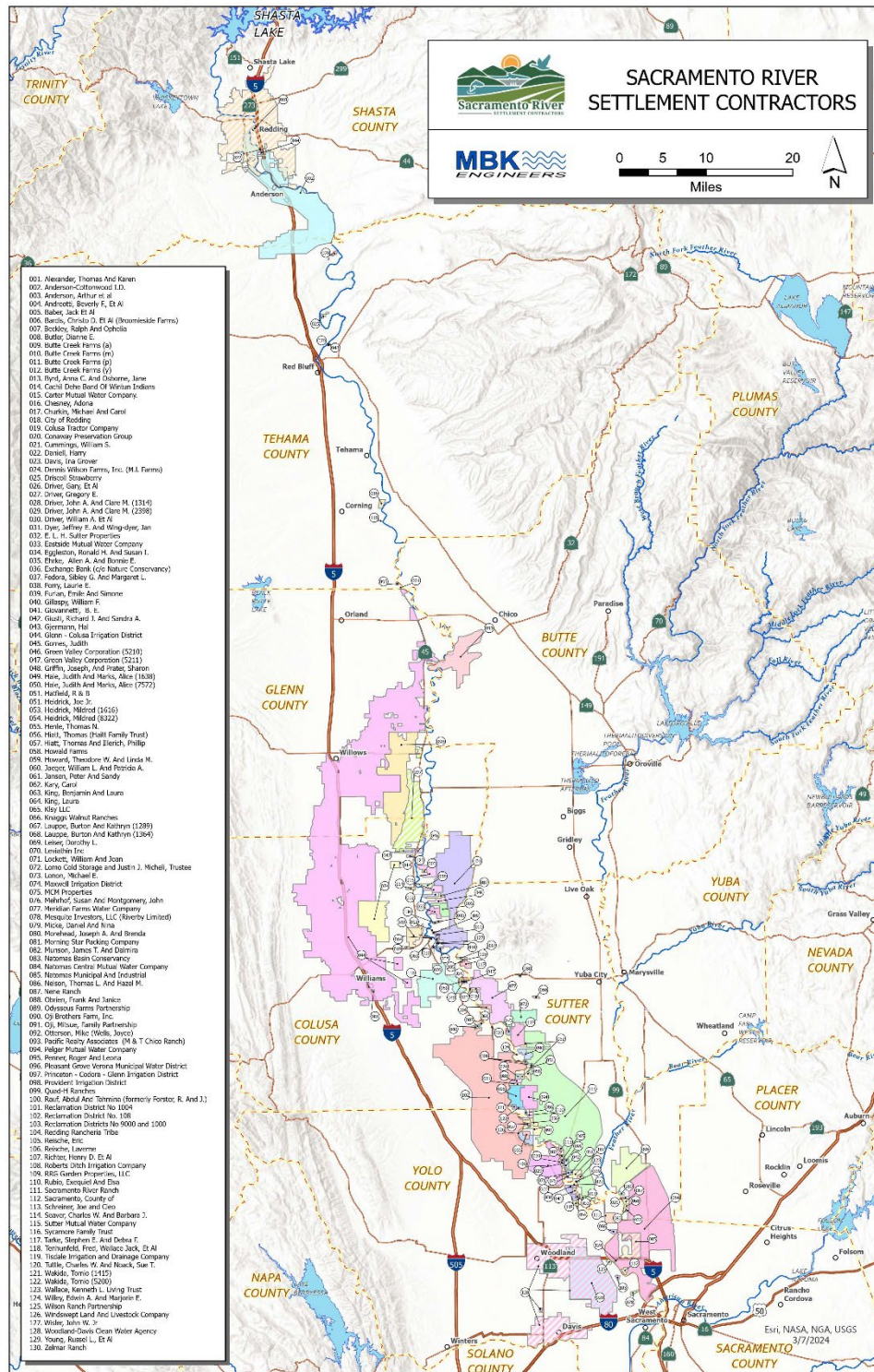
This *Draft Environmental Impact Report* (DEIR) was prepared to assist the Glenn-Colusa Irrigation District (GCID) in considering the approval of the proposed Water Reduction Program Agreement (proposed project or Agreement) between the Sacramento River Settlement Contractors Nonprofit Mutual Benefit Corporation (SRSCNC), individual Sacramento River Settlement Contractors (SRSC), and the U.S. Bureau of Reclamation (Reclamation) in accordance with Public Resources Code §§ 21000-21189.57 and California Environmental Quality Act (CEQA) Guidelines §§ 15000-15387. GCID is preparing this document pursuant to its obligations as a public agency.

Under the proposed project, the SRSCNC and individual members of the SRSC would enter into an Agreement with Reclamation to forego a larger percentage of their contract supply in specified drought years under two phases. In addition, the SRSC would engage in drought-resiliency projects to address potential water loss and strengthen the resilience of the SRSC's water system and long-term water delivery capabilities. The proposed project would occur within the SRSC service areas in eight counties: Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento (Figure ES-1).

GCID aims to accomplish the following as part of this DEIR:

- Describe the proposed project and its regulatory background.
- Identify any significant environmental effects associated with the proposed project.
- Provide a discussion of alternatives and feasible mitigation measures for environmental resources where significant impacts are identified.

**Figure ES-1
SRSC Service Area**



Source: MBK Engineers

Proposed Project

The SRSC is composed of 130 agricultural and municipal senior water rights holders that manage water resources for cities, rural communities, farms, as well as fish and wildlife and their habitats in California's Sacramento Valley (SRSC 2024). The SRSC members are various irrigation districts, reclamation districts, mutual water companies, cities and other public entities, partnerships, corporations, tribes, and individuals that operate within the Sacramento Valley. The SRSC members hold senior water rights that are the basis for contracts with Reclamation that identify how much water the SRSC can divert from the Sacramento River, which comes from water supplies held in Shasta Lake. The SRSC also funds environmental improvement projects that support wildlife and their habitat, including habitat enhancement for salmon spawning and rearing, fish screens, and fish food production.

Water supply and usage in California is highly managed through an integrated system of federal, state, and locally owned water projects including dams, reservoirs, pumping plants, and aqueducts to link water supplies (primarily originating north of Sacramento) with demand (primarily located in the middle and southern portions of the state). Hydrologic conditions, climatic variability, consumptive use within watersheds, and regulatory requirements for operation of water projects routinely affect water supply in California. This variability makes advanced planning for water shortages necessary and routine.

Under the proposed project, the SRSCNC and individual members of the SRSC would enter into an Agreement with Reclamation to forego a larger percentage of their contracted supply in specified drought years under two phases: from 2025 to 2035 and from 2036 to 2045. Water reductions would be implemented during specified drought years, which may occur within a series of drier years such as during a multi-year drought sequence. The term of the Agreement will consist of two phases:

- Phase 1 (2025–2035): The SRSC would reduce contract supply by up to 500,000 acre-feet during specified drought years.
- Phase 2 (2036–2045): The SRSC would reduce contract supply by up to 100,000 acre-feet during specified drought years.

Reduced contract supply would be accomplished through various actions by the SRSC, including groundwater substitution, cropland idling, cropland shifting, conservation, and through implementing the drought-resiliency projects. By reducing the amount of water that is released from Shasta Lake and diverted by the SRSC, the proposed project would consequently allow for additional flexibility in Reclamation's management of operation of the Central Valley Project (CVP) during drought conditions.

GCID prepared this DEIR using available technical information and comments received as part of scoping. An Environmental Impact Report (EIR) is an informational disclosure document and not an action document. As required by CEQA, GCID must evaluate the information in this DEIR, including the proposed mitigation measures and potentially feasible alternatives, before deciding whether to

approve the proposed project or an alternative. By following prescribed procedures, a public agency may approve a project even if an EIR concludes there are one or more unavoidable significant environmental effects.

Project Objectives

Pursuant to the CEQA Guidelines and 14 CCR 15124, a “statement of the objectives sought by the proposed project” must be provided as part of the project description in an EIR. The purpose of the proposed project is to approve and facilitate reduced water contract supply to the SRSC during specified drought years to address water shortages at Shasta Lake. Reduced SRSC contract supply allows for Reclamation to respond to shortages in water supplies due to very dry hydrologic conditions, climatic variability, climate change, and regulatory requirements. The proposed project would also develop implementable and supplemental water supplies and drought-resiliency projects to strengthen the resilience of the SRSC’s water systems and long-term water delivery capabilities.

In summary, the project objectives are to:

- Approve and facilitate reduced water contract supply to the SRSC during specified drought years to address water shortages at Shasta Lake in accordance with the Agreement and generally meet existing municipal, agricultural, and habitat demands from 2025 to 2045.
- Develop implementable and supplemental drought-resiliency projects to strengthen the resilience of the SRSC’s water systems and long-term water delivery capabilities.

Summary of Project Alternatives

The CEQA Guidelines (14 CCR 15126) require that a DEIR consider a range of reasonable alternatives to the project or to the location of the project that would feasibly attain most of its basic objectives but would avoid or substantially lessen any of the significant effects of the project. The following alternatives are considered in the DEIR:

- Alternative 1: No Project Alternative
- Alternative 2: No Groundwater Substitution Alternative

Alternative 1: No Project Alternative

The No Project Alternative, which is required for inclusion in an EIR by CEQA, represents what would reasonably be expected to occur in the foreseeable future if the proposed project were not approved. Under the No Project Alternative, the Agreement between the SRSC and Reclamation would not be signed, and water would continue to be managed based on current allocations and management plans. Neither additional reductions during specified drought years nor drought-resiliency projects to address potential water loss and strengthen the resilience of the SRSC’s water system and long-term water delivery capabilities would be implemented.

Alternative 2: No Groundwater Substitution Alternative

This alternative would involve accomplishing surface water use reductions through cropland idling, cropland shifting, and conservation activities, without groundwater substitution occurring as a result of the Agreement. Drought-resiliency projects would also be undertaken with this alternative. While more crop shifting could reduce surface water use, it is assumed most contractors would idle more cropland without access to the additional water provided by groundwater substitution. Crop shifting and conservation may result in additional reductions but these are too speculative to quantify.

Public Scoping and Outreach

GCID circulated the Notice of Preparation (NOP) to prepare an EIR for the proposed project for public review from May 17, 2024, through June 17, 2024 (GCID 2024). A virtual public scoping meeting was held for the proposed project on June 5, 2024. Comment letters were received on the NOP from the California Department of Fish and Wildlife (CDFW) and Native American Heritage Commission. GCID separately held a meeting with CDFW to discuss their comments on the NOP on August 5, 2024. All comments received during the scoping process were considered in preparing this DEIR.

One Native American Tribe, the Colusa Tribe – Cachil Dehe Band of Wintun Indians, has requested to be notified of CEQA documents prepared by GCID. GCID notified the Colusa Tribe – Cachil Dehe Band of Wintun Indians on May 24, 2024. To date, GCID has not received a response from the Colusa Tribe – Cachil Dehe Band of Wintun Indians.

Availability of the Draft Environmental Impact Report

Consistent with CEQA requirements, copies of the DEIR and technical appendices are available for a 45-day public review period beginning September 20, 2024, and ending November 4, 2024. The DEIR is available on GCID's website at <https://www.gcid.net/>. It is also posted on the State Clearinghouse website at <https://ceqanet.opr.ca.gov/> and can be found by entering the State Clearinghouse Number 2024050834 in the "search" window. Hard copies of the DEIR and technical appendices are available upon request by contacting Jeff Sutton by email (ceqapubliccomments@gcid.net) or phone at (530) 934-8881.

Summary of Impacts and Mitigation

Summary of Project-Level Impacts

Anticipated environmental effects associated with the proposed project are evaluated in Section 3 of the DEIR. Feasible mitigation measures that could minimize significant adverse impacts are also identified in these sections. Table ES-1 presents a summary of the environmental effects of proposed mitigation measures and residual impacts of the proposed project.

The proposed project would result in significant and unavoidable project-level impacts to biological resources. Less-than-significant or no project level impacts would occur in the following resource

areas: aesthetics; agriculture and forestry resources; air quality; cultural resources; energy; geology and soils; greenhouse gas (GHG) emissions; hazards and hazardous materials; hydrology and water quality; land use and planning; mineral resources; noise; population and housing; public services; noise; recreation; transportation; Tribal cultural resources; utilities and service systems; and wildfire. Mitigation measures have been incorporated where available and feasible.

Summary of Cumulative Impacts

For this DEIR, the potential for other regional projects to contribute to cumulative impacts was analyzed using a list of related projects that would be constructed in the cumulative geographic scope. In consideration of these projects, cumulative impact analyses for each environmental resource area potentially affected by the proposed project are presented in Section 4 and summarized in Table ES-1. Implementation of the proposed project—cumulatively combined with other related past, present, or probable future projects—may result in significant and unavoidable cumulative adverse impacts related to biological resources.

Table ES-1
Summary of Proposed Project Impacts and Mitigation

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Aesthetics			
AES-1: Except as provided in Public Resources Code Section 21099, would the project have a substantial adverse effect on a scenic vista?	Less than significant	None	Less than significant
AES-2: Except as provided in Public Resources Code Section 21099, would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a scenic highway?	Less than significant	None	Less than significant
AES-3: Except as provided in Public Resources Code Section 21099, would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Less than significant	None	Less than significant
AES-4: Except as provided in Public Resources Code Section 21099, would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less than significant	None	Less than significant
Would the project result in cumulative impacts on aesthetics?	Not cumulatively considerable		
Agriculture and Forestry Resources			
AGR-1: Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	Less than significant	None	Less than significant
AGR-2: Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?	Less than significant	None	Less than significant
AGR-3: Would the project conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220[q]), timberland (as defined by Public Resources Code	Potentially significant	MM-AGR-1	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?			
AGR-4: Would the project result in the loss of forest land or conversion of forest land to non-forest use?	Potentially significant	MM-AGR-1	Less than significant
AGR-5: Would the project involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	Potentially significant	MM-AGR-1	Less than significant
Would the project result in cumulative impacts on agriculture and forestry resources?	Not cumulatively considerable		
Air Quality			
AIR-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?	Less than significant	MM-AIR-1 MM-AIR-2	Less than significant
AIR-2: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	Less than significant	MM-AIR-1 MM-AIR-2	Less than significant
AIR-3: Would the project expose sensitive receptors to substantial pollutant concentrations?	Less than significant	MM-AIR-1 MM-AIR-2	Less than significant
AIR-4: Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less than significant	None	Less than significant
Would the project result in cumulative impacts on air quality?	Not cumulatively considerable		
Biological Resources			
BIO-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Potentially significant	MM-BIO-1 MM-BIO-2 MM-BIO-3 MM-BIO-4 MM-BIO-5 MM-BIO-6 MM-BIO-7 MM-BIO-8	Significant and unavoidable

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
		MM-BIO-9 MM-BIO-10 MM-BIO-11 MM-HYD-1 MM-HYD-2	
BIO-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Potentially significant	MM-BIO-1 MM-BIO-5 MM-BIO-8 MM-BIO-9 MM-BIO-11 MM-HYD-1 MM-HYD-2	Less than significant
BIO-3: Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	Potentially significant	MM-BIO-1 MM-BIO-5 MM-BIO-11 MM-BIO-12 MM-BIO-13 MM-HYD-1 MM-HYD-2	Less than significant
BIO-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Potentially significant	MM-BIO-1 MM-BIO-3 MM-BIO-4 MM-BIO-5 MM-BIO-8 MM-BIO-9 MM-BIO-10 MM-BIO-11	Significant and unavoidable
BIO-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Potentially significant	MM-BIO-1 MM-BIO-2 MM-BIO-3	Significant and unavoidable

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
		MM-BIO-4 MM-BIO-5 MM-BIO-6 MM-BIO-7 MM-BIO-8 MM-BIO-9 MM-BIO-10 MM-BIO-11 MM-BIO-12 MM-BIO-13 MM-HYD-1 MM-HYD-2	
BIO-6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Potentially significant	MM-BIO-1 MM-BIO-2 MM-BIO-3 MM-BIO-4 MM-BIO-5 MM-BIO-6 MM-BIO-7 MM-BIO-8 MM-BIO-9 MM-BIO-10 MM-BIO-11 MM-BIO-12 MM-BIO-13 MM-HYD-1 MM-HYD-2	Significant and unavoidable
Would the project result in cumulative impacts on biological resources?	Cumulatively considerable		

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Cultural Resources			
CUL-1: Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	Potentially significant	MM-CUL-1 MM-CUL-2 MM-CUL-3 MM-CUL-4	Less than significant
CUL-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	Potentially significant	MM-CUL-1 MM-CUL-2 MM-CUL-3 MM-CUL-4	Less than significant
CUL-3: Would the project disturb any human remains, including those interred outside of formal cemeteries?	Potentially significant	MM-CUL-1 MM-CUL-2 MM-CUL-3 MM-CUL-4	Less than significant
Would the project result in cumulative impacts on cultural resources?	Not cumulatively considerable		
Energy			
ENE-1: Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	Less than significant	MM-AIR-1	Less than significant
ENE-2: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	Less than significant	None	Less than significant
Would the project result in cumulative energy impacts?	Not cumulatively considerable		
Geology and Soils			
GEO-1: Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); ii) strong seismic ground shaking; iii) seismic-related ground failure, including liquefaction; or iv) landslides?	Less than significant	MM-GEO-1 MM-GEO-2 MM-GEO-3	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
GEO-2: Would the project result in substantial soil erosion or the loss of topsoil?	Less than significant	MM-HYD-1	Less than significant
GEO-3: Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less than significant	MM-GEO-1 MM-GEO-3	Less than significant
GEO-4: Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	Potentially significant	MM-GEO-1 MM-GEO-3	Less than significant
GEO-5: Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	No impact	None	No impact
GEO-6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less than significant	None	Less than significant
Would the project result in cumulative impacts on geology and soils?	Not cumulatively considerable		
Greenhouse Gas Emissions			
GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than significant	MM-AIR-1	Less than significant
GHG-2: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less than significant	MM-AIR-1	Less than significant
Would the project result in cumulative greenhouse gas emissions impacts?	Not cumulatively considerable		
Hazards and Hazardous Materials			
HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Potentially significant	MM-HAZ-1 MM-HAZ-2 MM-HYD-1	Less than significant
HAZ-2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident	Potentially significant	MM-HAZ-1 MM-HAZ-2 MM-HYD-1	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
conditions involving the release of hazardous materials into the environment?			
HAZ-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	Less than significant	None	Less than significant
HAZ-4: Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Potentially significant	MM-HAZ-3	Less than significant
HAZ-5: 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?	Less than significant	None	Less than significant
HAZ-6: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less than significant	None	Less than significant
HAZ-7: Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	Less than significant	None	Less than significant
Would the project result in cumulative hazards or hazardous materials impacts?	Not cumulatively considerable		
Hydrology and Water Quality			
HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	Potentially significant	MM-HYD-1 MM-HYD-2	Less than significant
HYD-2: Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the of the basin?	Potentially significant	MM-HYD-2	Less than significant
HYD-3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or	Potentially significant	MM-HYD-1	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
siltation on or off site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; iii) create or contribute runoff water which would exceed the existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows?			
HYD-4: Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No impact	None	No impact
HYD-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Potentially significant	MM-HYD-1 MM-HYD-2	Less than significant
Would the project result in cumulative impacts on hydrology and water quality?	Not cumulatively considerable		
Land Use and Planning			
LAN-1: Would the project physically divide an established community?	Less than significant	None	Less than significant
LAN-2: Would the project 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?	Less than significant	None	Less than significant
Would the project result in cumulative land use and planning impacts?	Not cumulatively considerable		
Mineral Resources			
MIN-1: Would the project result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	Less than significant	MM-MIN-1	Less than significant
MIN-2: Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	No impact	None	No impact
Would the project result in cumulative impacts on mineral resources?	Not cumulatively considerable		

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
Noise			
NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less than significant	MM-NOI-1 MM-NOI-2	Less than significant
NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	Potentially significant	MM-NOI-1 MM-NOI-2 MM-NOI-3	Less than significant
NOI-3: 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?	Less than significant	MM-NOI-1 MM-NOI-2 MM-NOI-3	Less than significant
Would the project result in cumulative noise impacts?	Not cumulatively considerable		
Population and Housing			
POP-1: Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No impact	None	No impact
POP-2: Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No impact	None	No impact
Would the project result in cumulative impacts on population and housing?	Not cumulatively considerable		
Public Services			
PUB-1: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any	Potentially significant	MM-HYD-1	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
of the following public services: fire protection, police protection, schools, parks, or other public facilities?			
Would the project result in cumulative impacts on public services?	Not cumulatively considerable		
Recreation			
REC-1: Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	No impact	None	No impact
REC-2: Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	No impact	None	No impact
Would the project result in cumulative impacts on recreation?	Not cumulatively considerable		
Transportation			
TRA-1: Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	Less than significant	None	Less than significant
TRA-2: Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?	Less than significant	None	Less than significant
TRA-3: Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	No impact	None	No impact
TRA-4: Would the project result in inadequate emergency access?	No impact	None	No impact
Would the project result in cumulative impacts on transportation?	Not cumulatively considerable		
Tribal Cultural Resources			
TRI-1: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074? Would the project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local	Potentially significant	MM-CUL-1 MM-CUL-2 MM-CUL-3 MM-CUL-4	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
register of historical resources as defined in Public Resources Code Section 5020.1(k); or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?			
Would the project result in cumulative impacts on tribal cultural resources?	Not cumulatively considerable		
Utilities and Service Systems			
UTI-1: Would the project 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?	Potentially significant	MM-AGR-1 MM-HAZ-3 MM-MIN-1 MM-NOI-1 MM-NOI-2 MM-NOI-3 MM-BIO-1 MM-BIO-2 MM-BIO-3 MM-BIO-4 MM-BIO-5 MM-BIO-6 MM-BIO-7 MM-BIO-8 MM-BIO-9 MM-BIO-12 MM-BIO-13 MM-HYD-1 MM-UTI-1 MM-UTI-2	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
UTI-2: Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	Less than significant	None	Less than significant
UTI-3: Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments?	No impact	None	No impact
UTI-4: Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	No impact	None	No impact
UTI-5: Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No impact	None	No impact
Would the project result in cumulative impacts on utilities and service systems?	Not cumulatively considerable		
Wildfire			
WIL-1: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?	Less than significant	None	Less than significant
WIL-2: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	Less than significant	None	Less than significant
WIL-3: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	Less than significant	None	Less than significant
WIL-4: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose	Less than significant	MM-GEO-2 MM-HYD-1	Less than significant

	Impact Determination	Mitigation Measures	Impact Determination After Mitigation
people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			
Would the project result in cumulative wildfire impacts?	Not cumulatively considerable		

Table ES-2
Summary of Mitigation Measures

Name	Mitigation Measure
MM-AGR-1	Site Drought-Resiliency Projects Outside of Forest Lands. Drought-resiliency projects will not be sited in forest lands.
MM-AIR-1	Construction Truck Idling Requirements. During construction of drought resiliency projects, SRSC contractors will require construction contractors to minimize heavy-duty construction equipment idling time to 2 minutes where feasible. Currently, the In-Use Off-Road Diesel Vehicle Rule restricts construction equipment idling to 5 minutes. This measure would further reduce the time allowance for idling to 2 minutes to reduce emissions. Exceptions include equipment that needs to idle to perform work, vehicles being serviced, or vehicles in a queue waiting for work consistent with the In-Use Off-Road Diesel Vehicle Rule.
MM-AIR-2	Dust Reduction Measures. <ul style="list-style-type: none"> During drought-resiliency project construction in non-Agreement Years, the following dust control measures will be implemented as applicable to the drought-resiliency project: <ul style="list-style-type: none"> Active construction areas will be watered at least twice daily. Haul trucks will maintain at least two feet of freeboard. Trucks hauling soil, sand, and other loose materials will be covered. Non-toxic binders (e.g., latex acrylic copolymer) will be applied to exposed areas after cut-and-fill operations and hydroseed area. Inactive storage piles will be covered. During Agreement Years, a 20-mph speed limit for vehicles driving on unpaved roads or farmland devoid of crops will be established and enforced. Speed limits will be posted and workers will be notified in writing of restrictions. In addition, the following measures will be implemented as applicable to the drought-resiliency project: <ul style="list-style-type: none"> Haul trucks will maintain at least two feet of freeboard. Trucks hauling soil, sand, and other loose materials will be covered. Non-toxic binders (e.g., latex acrylic copolymer) will be applied to exposed areas after cut-and-fill operations and hydroseed area. Inactive storage piles will be covered.
MM-BIO-1	Conduct Desktop Special Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects. Prior to implementing a drought-resiliency project that involves grading, vegetation removal, or other form of construction in irrigation and drainage canals or upland areas outside of established agricultural croplands with a history of discing, planting, and maintenance, a qualified biologist will conduct a desktop evaluation of the site using digital web-based aerial photography. The purpose of the desktop evaluation will be to

Name	Mitigation Measure
	determine the potential for special status wildlife and plant species habitat or aquatic resources subject to regulation by the USACE, RWQCB, or CDFW to occur on site. A qualified biologist will also perform a review of the USFWS Information for Planning and Consultation, CNDDDB, CNPS, and Calflora databases to identify known records or potential for special status plant or wildlife species to occur in the project vicinity. If through this assessment, the biologist determines that potential habitat for special status wildlife or plants or jurisdictional aquatic resources exist, then site-specific survey(s) will be conducted per MM-BIO-2, MM-BIO-3, MM-BIO-4, MM-BIO-5, and MM-BIO-6, as applicable.
MM-BIO-2	Conduct Special Status Plant Species Surveys and Avoidance for Drought-Resiliency Projects. If the drought-resiliency project site survey indicates that the project site contains suitable habitat for special-status plant species, surveys using USFWS, CDFW, and California Native Plant Society protocols will be conducted by a qualified biologist. If present, special-status plant species will be flagged for avoidance. If avoidance is not possible, USFWS and/or CDFW will be consulted to determine the appropriate approach for minimizing impacts to special-status plant species and compensating for unavoidable impacts, and the project proponents will implement all necessary minimization and compensation measures.
MM-BIO-3	Conduct Special Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects. If the drought-resiliency project site survey indicates that the project site provides habitat for special-status wildlife, site-specific pre-construction surveys using USFWS and/or CDFW protocols will be conducted by a qualified biologist. If special-status wildlife species are actively using an area within the site, work shall not be permitted to occur within 100 feet until the animals have left on their own or, if necessary, are relocated in accordance with MM-BIO-5. Setback areas will be flagged. A qualified biologist shall be present during construction to monitor construction activities.
MM-BIO-4	Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects. If the drought-resiliency project site survey indicates that the project site provides habitat for nesting birds that may be affected by construction and construction would occur between March 1 and September 15, pre-construction nesting bird surveys (two site visits at least one week apart) will be conducted by a qualified biologist within 14 days prior to construction to detect the presence of nesting birds. If an active nest is found, then the qualified biologist will establish an appropriate buffer (minimum 100 feet for non-raptors and 250 feet for raptors) based on site-specific factors such as the topography, the type of work to be performed, natural visual and/or auditory barriers between the nest and proposed work area, and the species. If work must be performed within the established buffer zone, a qualified biologist should monitor the nest prior to work activities to determine baseline nesting behaviors. Work shall be permitted to occur within the buffer zone with a qualified biologist present to monitor the work for signs of disturbance, to adjust (increase) the buffer size as needed, and to exercise stop work authority if nest disturbance is observed. No further work may occur within the buffer zone until nesting birds have fledged from nests on their own. Setback areas will be flagged.
MM-BIO-5	Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction. The construction contractor and operations personnel shall implement the following general biological resources protection measures during drought-resiliency project construction: <ul style="list-style-type: none"> • Limit construction and operations activities to daylight hours to the extent feasible. If nighttime activities are unavoidable, then workers shall direct all lights for nighttime lighting into the work area and shall minimize the lighting of natural habitat areas adjacent to the work area. Light glare shields shall be used to reduce the extent of illumination into sensitive habitats. If the work area is located near surface waters, the lighting shall be shielded such that it does not shine directly into the water. • Vegetation clearing will be limited to only those areas necessary for construction. • Any excavated and stockpiled soils will be placed outside of designated special status species habitat. • Dispose of cleared vegetation and soils at a location that will not create habitat for special status wildlife species.

Name	Mitigation Measure
	<ul style="list-style-type: none"> • Dispose of food-related and other garbage in wildlife-proof containers and remove the garbage from the project area daily during construction. Vehicles carrying trash will be required to have loads covered and secured to prevent trash and debris from falling onto roads and adjacent properties. • Store all construction-related vehicles and equipment in the designated staging areas. These areas shall not contain native or sensitive vegetation communities and shall not support sensitive plant or wildlife species. • Construction-related vehicles and equipment will not exceed a 20 mile-per-hour speed limit at the construction site, staging areas, or on unpaved roads. • The qualified biologist will provide the contractor with worker environmental awareness training. • Prior to the initiation of work each day, the contractor will inspect construction pipes, culverts, or similar features; construction equipment; or construction debris left overnight in areas that may be occupied by special-status species that could occupy such structures prior to being used for construction. • Avoid wildlife entrapment by completely covering or providing escape ramps for all excavated steep-walled holes or trenches more than 1 foot deep at the end of each construction work day. The qualified biologist shall inspect open trenches and holes and shall remove or release any trapped wildlife found in the trenches or holes prior to filling by the construction contractors. <p>Capture and relocation of trapped or injured wildlife listed under ESA or CESA can only be performed by personnel with appropriate state and/or federal permits. Any sightings and any incidental take (mortality) shall be reported to CDFW via email within one working day of the discovery. Notification shall include the date, time, and location (U.S. Geological Survey (USGS) 7.5-minute quadrangle and/or similar map at a scale that will allow others to find the location in the field) of the incident or of the discovery of an individual special-status species that is dead or injured (type of injury shall be included). For each special-status species encountered, the biologist shall submit a completed CNDDDB field survey form (or equivalent) to CDFW no more than 90 days after completing the last field visit to the project site.</p>
MM-BIO-6	<p>Implement GGS Avoidance Measures for Drought-Resiliency Projects. If the need for a drought-resiliency project site survey is identified as part of MM-BIO-1, and the initial assessment indicates that the project site provides habitat for GGS, avoidance measures must be implemented to avoid GGS during construction. Construction activities within GGS habitat will be restricted to between May 1 and October 1, to the extent feasible. If work must be conducted within GGS habitat between October 2 and April 30, two GGS pre-construction surveys will be conducted in any area within 200 feet of GGS aquatic habitat by a qualified biologist. The first survey will occur within 15 days prior to onset of construction and the second will occur within 24 hours prior to the onset of construction. The information collected from the first pre-construction survey will serve primarily to alert the biologist and construction crews of the general level of GGS activity at the site and borrow area, and the second survey will serve to minimize potential for take of GGS. If GGS is found in the project area, then to avoid direct impacts on GGS, the following measures will be implemented during construction of the drought-resiliency project:</p> <ul style="list-style-type: none"> • Temporary fencing will be installed to exclude GGS from the work area. The design of the fence will be approved by the CDFW prior to installation. • Fence installation will be supervised by a qualified biologist. • The qualified biologist will provide the contractor with worker environmental awareness training, including instructing the contractor on how to inspect the exclusion fence. • Prior to the initiation of work each day, the contractor will inspect the exclusion fence to ensure it is functional for the intended purpose.

Name	Mitigation Measure
	If GGS is observed within the temporary fencing around the construction site, the contractor will stop work and allow the species to leave the site of its own volition or the snake will be captured by a qualified biologist with appropriate collecting/handling permits and relocated to the nearest suitable habitat beyond the influence of the project work area. "Take" of a state or federal special status species is prohibited without appropriate permits from the USFWS and CDFW.
MM-BIO-7	Obtain Incidental Take Authorization for Take of Listed Species from Drought-Resiliency Project Impacts. If species avoidance is not expected to be possible through implementation of MM-BIO-1, MM-BIO-3, MM-BIO-4, MM-BIO-5, or MM-BIO-6, USFWS and/or CDFW will be consulted to determine the appropriate approach for minimizing impacts to special-status wildlife species and compensating for potential incidental take. Incidental take authorization will be obtained for take of listed species resulting from construction of a drought-resiliency project.
MM-BIO-8	Compensate for Permanent Loss of Special Status Wildlife Species Habitat from Drought-Resiliency Projects. If it is determined through implementation of MM-BIO-1 and MM-BIO-3 that a drought-resiliency project site includes high-quality foraging or breeding habitat for special status wildlife species and there will be a permanent loss of such habitat resulting from construction, impacts will be compensated for through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Based on the findings of MM-BIO-3, the qualified biologist will prepare a plan that outlines proposed compensatory mitigation and coordinate with USFWS and CDFW. Compensatory lands will be of similar or better quality than habitat lost, preferably located in the vicinity of the drought-resiliency project site, and be permanently preserved through a conservation easement. The plan will identify conservation actions to ensure that the compensatory lands are managed to provide for the continued existence of the species. The plan will also identify an approach for funding assurance for the long-term management of the conserved land, as relevant.
MM-BIO-9	Tree Replanting Requirements for Drought-Resiliency Projects. Avoid native tree removal where practicable through adjustments to the alignment of ditches, pipelines, or other construction features. If protected or heritage native tree removal is not avoidable, local county requirements for replacement would be prescribed at the ratio specified in their general plan. Replanting ratios vary between counties. For trees known to be used by nesting raptors, preservation efforts shall be pursued to the maximum extent possible. Nest tree losses in HCP covered areas could be subject to replacement at 15:1 such as in the Natomas Basin HCP.
MM-BIO-10	Timing Requirements for Discing in Fallow Fields During Agreement Years. If discing occurs in idled croplands during an Agreement Year, the following will be adhered to: <ul style="list-style-type: none"> Between February 15 and September 15, discing will occur when vegetation is on average 12 inches or less in height. Between September 15 and February 15, discing may occur without vegetation height restriction.
MM-BIO-11	Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years. Certain croplands abut or are immediately adjacent to areas with known important GGS populations that may be in or connected to areas with specific management plans for GGS either for mitigation or as wildlife refuges. Croplands abutting or immediately adjacent to the following areas are considered important GGS populations: <ul style="list-style-type: none"> Butte Creek between Upper Butte Basin and Gray Lodge Wildlife areas Colusa Basin drainage canal between Delevan and Colusa National Wildlife Refuges Gilsizer Slough

Name	Mitigation Measure
	<ul style="list-style-type: none"> • Colusa Drainage Canal • Land side of the Toe Drain along the Sutter Bypass • Willow Slough and Willow Slough Bypass in Yolo County • Hunters and Logan Creeks between Sacramento and Delevan National Wildlife Refuges • Lands in the Natomas Basin <p>To the extent practicable, irrigation and drainage canal water depths in areas that are considered important GGS populations will be similar to years when the Agreement is not in effect or, where information on baseline water depths is limited, at least 2 feet deep.</p>
MM-BIO-12	<p>Conduct Aquatic Resources Surveys and Avoidance for Drought-Resiliency Projects. Require to the extent practicable that during crop idling minimum water depths are maintained in drainage canals in key areas for the benefit of GGS and northwestern pond turtle. While this mitigation measure could reduce impacts to GGS associated with loss of population and genetic diversity, disconnected natural habitats, and stress from the loss of essential cover from predators, as well as reduce impacts to northwestern pond turtle from reduced habitat and foraging opportunities, there could still be areas where sufficient water cannot be maintained due to inadequate surface water. Therefore, crop idling impacts on GGS and northwestern pond turtle could represent a conflict with local policies or ordinances protecting biological resources.</p>
MM-BIO-13	<p>Obtain Required Permits and Implement Wetland Mitigation for Drought-Resiliency Projects. If impacts to wetlands and waters cannot be avoided, then required permits, potentially including permits from the USACE, RWQCB, and CDFW would be obtained and complied with per MM-BIO-13. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved bank.</p>
MM-HYD-1	<p>Implement Erosion and Spill Control Measures for Drought-Resiliency Projects. To ensure that contaminants are not accidentally introduced into irrigation ditches and canals, the following measures will be implemented during construction of drought-resiliency projects:</p> <ul style="list-style-type: none"> • Use of BMPs (e.g., filter fabric or sandbags) to prevent pollutants from entering drainage channels • Equipment be inspected daily for leaks or spills • Materials for cleanup of spills be available on site • Flammable materials be stored in appropriate containers • Spill prevention kits be in close proximity when using hazardous materials • Spills and leaks be cleaned up immediately and disposed of in accordance with local, state, and federal regulations • Vehicles and equipment be kept clean • Construction personnel to be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills <p>For drought-resiliency projects involving over an acre of land disturbance, a NPDES Construction Stormwater General Permit will be obtained and a construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared.</p>
MM-HYD-2	<p>Install and Operate Groundwater Wells in Accordance with Groundwater Sustainability Plans (GSPs) to for all Groundwater Pumping Activities undertaken under the Agreement. The installation of any new groundwater wells and the operation of existing and new groundwater wells will be in accordance with targets and requirements set by applicable GSPs managed by Groundwater Sustainability Agencies in the project area.</p>

Name	Mitigation Measure
MM-CUL-1	Conduct CHRIS Review and Desktop Evaluation for Drought-Resiliency Projects. Prior to the start of any drought-resiliency project, a qualified historian/archaeologist will request information regarding cultural resources already recorded in CHRIS to determine whether a drought-resiliency project may be located in an area where cultural resources are recorded. If through this review, a cultural resource is identified within resiliency project area or the historian/archaeologist determines through desktop review that the specific project area has potential to contain cultural resources, then implementation of MM-CUL-2 will be required.
MM-CUL-2	Conduct Pre-Construction Surveys and Establish Buffers for Drought-Resiliency Projects. If determined required by the qualified historian/archaeologist in MM-CUL-1, a site-specific pre-construction field survey will be conducted by a qualified historian/archeologist prior to the start of construction activities. The pre-construction survey will be designed to identify historic structures, archaeological sites, and potential Tribal cultural resources that may be present at the specific location of the drought-resiliency project that is to be implemented. Reports would be made available to the Office of Historic Preservation (OHP) and Native American Tribes that have requested consultation (if any), and these entities would be afforded an opportunity to comment prior to the start of construction. Any historical or archaeological resources identified during the survey would be recorded and flagged with a 30-foot buffer (or based on topography and access points to protect the find, as determined appropriate by the qualified historian/archeologist).
MM-CUL-3	Develop and Implement Applicable Monitoring and Mitigation for Drought-Resiliency Project Impacts. If the pre-construction survey conducted in MM-CUL-2 identifies any historic or archaeological resources and a Tribe(s) has requested consultation, then that Tribe(s) will be notified. If historic structures, archaeological sites, and potential Tribal cultural resources are identified and flagged, but impacts cannot be avoided or adequately minimized, then OHP and Tribes that have requested consultation (if any) will be provided a project-specific monitoring and mitigation plan. Impacts will be mitigated through implementation of this plan, with mitigation expected to include but not be limited to monitoring, resource investigation, documentation, recovery, or preservation as well as interpretive measures.
MM-CUL-4	Develop Inadvertent Discovery Plan (IDP) to be Implemented if Prehistoric or Historical Archaeological Resources Are Encountered during Drought-Resiliency Project Construction. A qualified archaeologist will develop an IDP for the proposed project to be provided to onsite personnel involved in drought-resiliency projects that involve excavation below depths routinely disced or disturbed through routine agricultural operations. The IDP will include steps to be taken in the event that cultural resources, any artifact, or an unusual amount of bone, shell, or non-native stone are identified during construction. Work will immediately stop and activities will be relocated to another area beyond 10 meters (30 feet) of the discovery. In the case of potential human remains, the find must be reported to local law enforcement. The IDP will specify steps to notify and consult with the OHP and Tribes. If the resources are found to be significant, they would be avoided or if avoidance is not possible, mitigated in accordance with MM-CUL-3.
MM-GEO-1	Needed Implementation of Geotechnical Recommendations for Drought-Resiliency Projects. Recommendations from geotechnical assessments or reports for specific project elements would be implemented as needed, including use of materials and construction techniques specifically addressing potential seismic and geologic hazards.
MM-GEO-2	Unstable Area Buffer for Drought-Resiliency Projects. Within a 50-foot-wide buffer around unstable areas regardless of percent slope, no drought-resiliency project construction would occur without approval from an earth sciences/physical sciences professional.
MM-GEO-3	Adhere to Applicable Seismic Design Parameters for Drought-Resiliency Projects. Drought-resiliency projects would adhere to all applicable seismic design parameters.

Name	Mitigation Measure
MM-HAZ-1	Soil Testing in Accordance with Disposal Site Requirements. To address potential impacts to people and the environment from management of potentially contaminated soils, any excavated soils that would not be reused on site would be tested in accordance with disposal site requirements.
MM-HAZ-2	Spill Kits. All heavy construction equipment vehicles would maintain spill kits with oil-absorbent material and tarps to contain minor releases.
MM-HAZ-3	Site Drought-Resiliency Projects Away from Active Cleanup Sites. Drought-resiliency projects will be sited away from active cleanup sites.
MM-MIN-1	Avoid Siting Drought-Resiliency Projects in Mineral Resource Zones. Drought-resiliency projects would sited away from areas mapped as MRZ to the extent practicable.
MM-NOI-1	Notification Requirements to Off-site Noise-sensitive Receptors for Drought-Resiliency Projects. Written notification of project activities would be provided to all off-site noise-sensitive receptors (e.g., residential land uses) located within 500 feet of drought-resiliency project locations. Notification would include anticipated dates and hours during which activities are anticipated to occur and contact information of the project representative, including a daytime telephone number.
MM-NOI-2	Power Equipment Use and Maintenance Requirements for Drought-Resiliency Projects. All powered heavy equipment and power tools will be used and maintained according to manufacturer specifications. All diesel- and gasoline-powered equipment will be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations.
MM-NOI-3	Heavy Equipment Must Operate at Least 25 Feet from Neighboring Structures for Drought-Resiliency Projects. Drought-resiliency projects involving the use of heavy equipment (such as a large bulldozer) will be sited to occur at least 25 feet from neighboring historical buildings and structures that are extremely susceptible to vibration damage.
MM-UTI-1	Notify Utility Companies of Drought-Resiliency Projects. Prior to construction of the drought-resiliency projects, utility companies will be contacted to determine whether the potential for utility line crossing or conflict exists. Notice of construction of the drought-resiliency projects will be provided to utility providers to request additional information on the location, if any, of private cables or utilities.
MM-UTI-2	Conduct Utility Surveys and Coordinate with Utility Companies for Drought-Resiliency Projects if Needed. During the design phase for each of the drought-resiliency projects and if coordination with utility companies reveals the potential for utility lines to be in the project area, site specific utilities surveys will be completed to locate, understand, and avoid conflicts with existing utilities. In addition, all overhead and buried utility lines will be demarcated and avoided unless modifications are required. Modifications will be coordinated with the utility company.

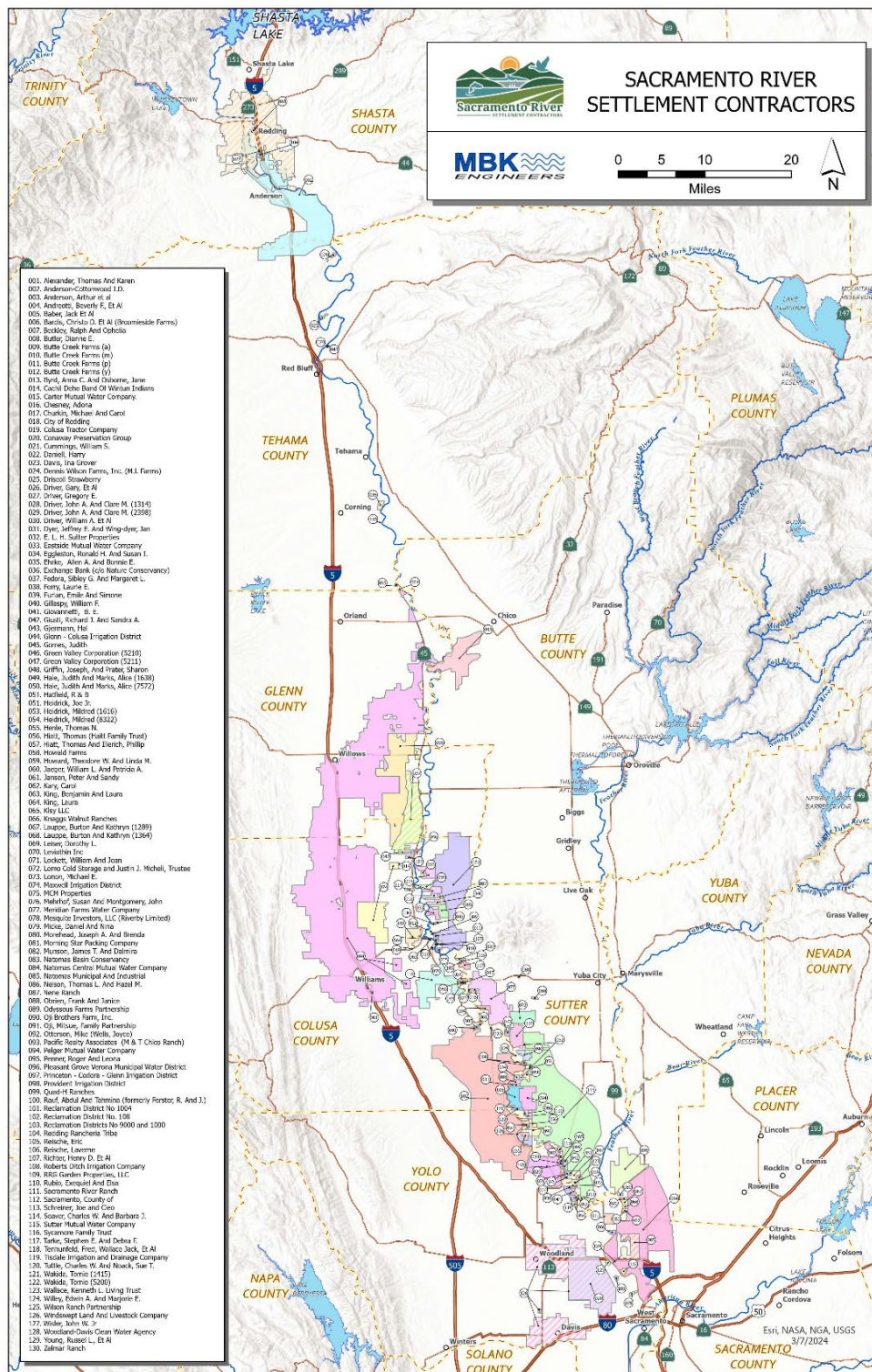
1 Introduction

This *Draft Environmental Impact Report* (DEIR) was prepared by the Glenn-Colusa Irrigation District (GCID) to identify the potential environmental impacts of the proposed Water Reduction Program Agreement (proposed project or Agreement) between the Sacramento River Settlement Contractors Nonprofit Mutual Benefit Corporation (SRSCNC), individual Sacramento River Settlement Contractors (SRSC), and the U.S. Bureau of Reclamation (Reclamation) under the California Environmental Quality Act (CEQA; 13 *California Public Resources Code* [PRC] 21000 et seq.) and the CEQA Guidelines (14 *California Code of Regulations* [CCR] 15000 et seq.). Reclamation is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) for its approval of the proposed project. The proposed project would occur within the SRSC service areas in eight counties: Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento (Figure 1).

The SRSC is composed of 130 agricultural and municipal senior water rights holders that manage water resources for cities, rural communities, farms, as well as fish and wildlife and their habitats in California's Sacramento Valley (SRSC 2024). The SRSC members are various irrigation districts, reclamation districts, mutual water companies, cities and other public entities, partnerships, corporations, tribes, and individuals that operate within the Sacramento Valley.

Under the proposed project, the SRSCNC and individual members of the SRSC would enter into an Agreement with Reclamation to forego a larger percentage of their contract supply in specified drought years under two phases. In addition, the SRSC would engage in drought-resiliency projects to address potential water loss and strengthen the resilience of the SRSC's water system and long-term water delivery capabilities.

**Figure 1
Project Area**



Source: MBK Engineers

1.1 California Environmental Quality Act Process

CEQA, enacted by the California legislature in 1970, requires public agency decision-makers to consider the environmental effects of their actions. One of the main objectives of CEQA is to disclose the potential environmental effects of proposed activities to the public and decision-makers. CEQA requires that the potential environmental effects of a project be evaluated prior to implementation. Consistent with CEQA Guidelines 15002, the primary purposes of this DEIR include the following:

- Inform the public, decision-makers, and other responsible and interested agencies.
- Identify and evaluate the potential significant environmental effects of the proposed project or project activities.
- Identify the manner in which environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the Lead Agency finds the changes to be feasible.
- Encourage inter-agency coordination in the review of the project and allow for public participation in the planning process.

CEQA applies to any agency action that qualifies as a "project: any activity that (1) is a discretionary action by a governmental agency and (2) will either have a direct or reasonably foreseeable indirect impact on the environment." (Pub. Res. Code, § 21065.) A discretionary action is one that requires a public agency to exercise judgment or deliberation in determining whether the project will be approved or if a permit will be issued.

The DEIR is an informational document used in the planning and decision-making process. It is not the purpose of a DEIR to recommend either approval or denial of a project. This DEIR meets CEQA content requirements by including a project description; descriptions of the environmental setting, potential environmental impacts, mitigation measures and alternatives to the project capable of avoiding or substantially lessening any potentially significant impacts, and discussion of the proposed project's consistency with plans and policies. This DEIR is being circulated to potentially affected agencies and the public for review and comment over a 45-day review period, from September 20, 2024, to November 4, 2024.

The information contained in this DEIR, comments received during the public review period, the Final Environmental Impact Report (EIR) and responses to comments, and the administrative record will be reviewed and considered by the Lead Agency prior to making a decision to approve, disapprove, or modify the project. If approved, consistent with CEQA Guidelines 15002, the decision-making body will be required to disclose to the public the reasons why the project was approved if significant environmental effects are involved. In addition, the DEIR will also be used by responsible agencies for the purpose of deciding whether and how to approve the project within their jurisdictional authorities and responsibilities.

1.2 Lead, Responsible, and Trustee Agencies

The CEQA Guidelines identify “the lead agency as the public agency which has the principal responsibility for carrying out or approving a project” (14 CCR 15367). As the largest member of the SRSC, GCID is the CEQA Lead Agency for the proposed project. GCID has directed the preparation of an environmental document that complies with CEQA and will consider the information in this document when determining whether to approve the proposed project. The preparation of DEIRs is guided by Sections 15080 to 15097 of the CEQA Guidelines. Where appropriate and supportive to an understanding of the issues, reference will be made to the statute, the CEQA Guidelines, or appropriate case law.

Projects or actions undertaken by the Lead Agency (in this case, GCID) may require subsequent oversight, approvals, or permits from other public agencies. Other such agencies are referred to as responsible agencies and trustee agencies. Pursuant to CEQA Guidelines Sections 15381 and 15386, as amended, responsible and trustee agencies are defined as follows:

A responsible agency is a “public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term ‘Responsible Agency’ includes all public agencies other than the Lead Agency which have discretionary approval authority over the project” (CEQA Guidelines Section 15381).

A trustee agency is “a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California” (CEQA Guidelines Section 15386). Trustee agencies have jurisdiction over natural resources held in trust for the people of California but do not have legal authority over approving or carrying out a project. Table 1 summarizes the expected relevant regulatory agencies, expected jurisdiction, and statutory authority as related to the proposed project. The jurisdiction of these agencies will be confirmed through subsequent coordination.

Table 1
Regulatory Agencies and Authority

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
CDFW	Trustee Agency	<ul style="list-style-type: none">• Reviews and submits recommendations in accordance with CEQA• Reviews and authorizes in-water work and work in riparian areas under the California Fish and Game Code

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
RWQCB	Responsible agency	<ul style="list-style-type: none"> • Permitting authority for water quality, including point and non-point source discharges • Reviews projects for authorization under the Porter-Cologne Water Quality Control Act and Clean Water Act Sections 401 and 402 (National Pollutant Discharge Elimination System)
Shasta County	Responsible agency	<ul style="list-style-type: none"> • Reviews and approves any required local land use permits
Tehama County		
Glenn County		
Butte County		
Sutter County		
Colusa County		
Yolo County		
Sacramento County		
Butte County AQMD	Responsible agency	<ul style="list-style-type: none"> • Review authority under the California Clean Air Act • Responsible for implementing federal and state regulations at the local level and permitting any stationary sources of air pollution
Colusa County APCD		
Feather River AQMD		
Glenn County APCD		
Placer County APCD		
Sacramento Metro AQMD		
Shasta County AQMD		
Tehama County APCD		
Yolo-Solano AQMD		

1.3 Public Participation, Consultation, and Coordination

Public participation is an integral part of the CEQA process. Public participation facilitates two-way communication between the public and the Lead Agency (GCID) decision-makers, ensuring that public concerns and input are considered in the final decision. GCID's public participation process ensures that interested persons are informed about discretionary decisions and have the opportunity to provide input. GCID also consults with public agencies in a variety of ways when developing CEQA documents, including direct agency outreach and distribution of documents.

1.4 Notice of Preparation

After deciding that an EIR is needed, the Lead Agency (in this case, GCID) is required to prepare and distribute a notice informing interested parties that an EIR will be prepared. CEQA requires that the Lead Agency prepare a Notice of Preparation (NOP) to inform interested parties of a proposed project and to solicit their participation in the EIR scoping process. The CEQA Guidelines require that

an NOP be sent “immediately after deciding that an environmental impact report is required for the project” (CEQA Guidelines Section 15082[a]) and include “sufficient information describing the project and the potential environmental effects to enable the responsible agencies to make a meaningful response” (CEQA Guidelines Section 15082[a][1]). GCID distributed an NOP (GCID 2024) for the proposed project on May 17, 2024, for a 30-day public comment period. The NOP is available at: <https://files.ceqanet.opr.ca.gov/300312-1/attachment/YcMR7FvqWjR0pgBjlemFw9pmgYYu-MyeiF5bzdmEFpPQ13tLzGheVli-kWsVkoOxi8Apio-10mj3c2T90>. Comment letters were received on the NOP from the CDFW and Native American Heritage Commission (Appendix A); these comments were considered in preparing this DEIR.

1.4.1 Public Scoping

As part of CEQA’s consultation requirements, the CEQA Guidelines recommend that public scoping be combined to the extent possible with consultation with responsible agencies, as required under 14 CCR 15086. Consultation is conducted with agencies that will be locally involved in the environmental review process, as well as state and federal agencies and tribal governments, as appropriate.

CEQA Guidelines Sections 15086(a)(1–2) require that the Lead Agency formally consult with responsible and trustee agencies. GCID filed the NOP with the Governor’s Office of Planning and Research (filed on May 17, 2024) as well as with the following counties for a 30-day public comment period:

- Butte County (May 17, 2024)
- Glenn County (May 17, 2024)
- Colusa County (May 17, 2024)
- Napa County (May 17, 2024)
- Placer County (May 17, 2024)
- Solano County (May 17, 2024)
- Sutter County (May 17, 2024)
- Tehama County (June 12, 2024)
- Yuba County (May 17, 2024)
- Yolo County (May 17, 2024)
- Nevada County (May 21, 2024)
- Sacramento County (May 21, 2024)
- Shasta County (June 12, 2024)

In addition to making the NOP available for a 30-day public comment period, GCID also conducted a public scoping meeting. The virtual meeting was held on June 5, 2024, from 4:30 p.m. to 5:30 p.m. Project-related information, including maps, were provided as part of a presentation during this meeting. To encourage public comments, GCID opened the discussion for oral comments after the presentation.

GCID also sent the NOP directly to responsible and trustee agencies and other interested stakeholders. In total, the following agencies, stakeholders, and tribes received the NOP prepared for the proposed project:

- Anderson-Cottonwood Irrigation District
- AquAlliance
- Butte County
- CDFW, Bay Delta Region
- CDFW, North Central Region

- CDFW, Northern Region
- California State Lands Commission
- Central Valley Regional Water Quality Control Board, Region 5
- City of Redding
- Colusa County
- Colusa Tribe – Cachil Dehe Band of Wintun Indians
- Glenn County
- Maxwell Irrigation District
- North Coast Regional Water Quality Control Board, Region 1
- Napa County
- Nevada County
- Placer County
- Princeton-Codora-Glenn Irrigation District
- Provident Irrigation District
- Reclamation District No. 108
- Reclamation District No. 1004
- Sacramento County
- Solano County
- Sutter County
- Tehama County
- Reclamation
- Woodland-Davis
- Yolo County
- Yuba County

Two comment letters were received during the scoping period from the following agencies:

- CDFW
- California Native American Heritage Commission (NAHC)

GCID separately held meetings with CDFW to discuss their comments on the NOP on August 5 and 20, 2024. The letters and a summary of the public and agency comments received on the NOP are included as Appendix A. Table 2 presents summaries of the key comments received during the scoping period. All comments were considered during development of the DEIR.

Table 2
Summary of Scoping Comments

Commenter	Key Issues Raised
State, Regional, and Local Agencies	
CDFW	<ul style="list-style-type: none"> • Recommended that the DEIR include the following: <ul style="list-style-type: none"> – A complete assessment of flora and fauna within the project area – Identification of aquatic features and their associated biological resources and habitats – A discussion of the project’s direct, indirect and cumulative impacts on biological resources – An evaluation of potential impact to groundwater supplies – Appropriate avoidance, minimization, and mitigation measures • Raised the question of whether the proposed project would need to obtain an Incidental Take Permit for fish and wildlife resources protected under the California Endangered Species Act and the Native Plant Protection Act
NAHC	<ul style="list-style-type: none"> • Proposed project should comply with Senate Bill (SB) 18 and Assembly Bill (AB) 52 requirements for tribal consultation

1.4.2 *Assembly Bill 52*

Assembly Bill (AB) 52 requires lead agencies to consider the effects of projects on Tribal cultural resources and to conduct notification and consultation with Native American Tribes early in the environmental review process.

One Native American Tribe, the Colusa Tribe – Cachil Dehe Band of Wintun Indians, has requested to be notified of CEQA documents prepared by GCID. GCID notified the Colusa Tribe – Cachil Dehe Band of Wintun Indians on May 24, 2024. To date, GCID has not received a response from the Colusa Tribe – Cachil Dehe Band of Wintun Indians.

1.5 California Environmental Quality Act Baseline

CEQA Guidelines Section 15125 requires that an EIR include a description of the physical environmental conditions in the vicinity of the proposed project. Further, CEQA Guidelines Section 15125(a) states that “this environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant [...]. The purpose of this requirement is to give the public and decision-makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts.” The environmental setting described in Section 2 serves as a general description of baseline conditions, with specific resource area discussions in Section 3.

1.6 Environmental Impact Report Organization

The content and format of this DEIR are organized into the following sections to meet the requirements of CEQA and the CEQA Guidelines:

- **Executive Summary.** Summarizes the proposed project and alternatives, potential impacts, and mitigation measures
- **Section 1: Introduction.** Describes the purpose and use of the DEIR and outlines the organization of the DEIR
- **Section 2: Project Description.** Describes the proposed project’s background, discloses objectives of the proposed project, and provides details on project elements, including construction and operational activities and considerations
- **Section 3: Environmental Impact Analysis.** Describes the environmental conditions existing in the project area as of the date of the NOP and discusses the environmental setting, significance criteria, environmental impacts, and mitigation measures specific to each environmental resource area analyzed in the Draft EIR
- **Section 4: Cumulative Impacts.** Identifies related projects and analyzes the potential for cumulative impacts from the proposed project in addition to related projects
- **Section 5: Other Required Analysis.** Identifies any unavoidable significant impacts, significant irreversible environmental changes, and direct and indirect growth-inducing impacts of the proposed project

- **Section 6: Alternatives.** Discusses a range of reasonable alternatives to the proposed project that would feasibly attain all or most of the basic objectives and would avoid or substantially lessen any of the potentially significant environmental effects of the proposed project
- **Section 7: References.** Provides a list of references used to provide information in preparation of the DEIR
- **Appendices.** The following appendices are attached to this DEIR:
 - Appendix A: Comments Received on the NOP
 - Appendix B: Potentially Present Special Status Species Lists

2 Project Description

Under the proposed project, the SRSCNC and individual members of the SRSC would enter into an Agreement with Reclamation to forego a larger percentage of their existing contracted water supply in specified drought years and develop drought-resiliency projects. The proposed project would occur within the SRSC service area, which is within the Sacramento Valley in California's Central Valley.

2.1 Environmental Setting

2.1.1 *Regional Setting*

California's Central Valley encompasses almost 20,000 square miles in the center of the state (Figure 2). It is bound by the Cascade Range to the north, the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coast Ranges and San Francisco Bay to the west. The valley is close to sea level, and its land surface has very low relief. Historically, this area was home to significant fish and wildlife populations but is now a vast agricultural region (USGS 2024).

The Central Valley watershed comprises 60,000 square miles. The northern third of the valley is drained by the Sacramento River, and the southern two-thirds of the valley is drained by the San Joaquin River. The Sacramento and San Joaquin River systems meet to form the Sacramento-San Joaquin River Delta (Delta), a large expanse of interconnected canals, streambeds, sloughs, marshes, and peat islands. The Delta empties into the San Francisco Bay and the Pacific Ocean (Congressional Research Service 2024).

2.1.2 *Project Setting*

The proposed project setting includes the area shown in Figure 1. The gross project area is approximately 560,000 acres, which includes approximately 454,000 acres of irrigable areas, roads, and other land types. The SRSC members are various irrigation districts, reclamation districts, mutual water companies, cities and other public entities, partnerships, corporations, tribes, and individuals that operate within the Sacramento Valley. The Sacramento Valley is the area of the Central Valley that lies north of the Delta and is drained by the Sacramento River.

Figure 2
Four Major Regions of the Central Valley



Source: <https://ca.water.usgs.gov/projects/central-valley/about-central-valley.html>

2.2 Background

2.2.1 *Settlement Contracts*

Prior to 1914, individual property owners, irrigation and reclamation districts, cities and mutual water companies throughout the region exercised water rights from the Sacramento River to irrigate farms and serve municipal uses across the region (SRSC 2024). In the 1930s, Reclamation began exploring the need for canals to deliver water to sustain people and farms in the Central Valley. The federal Central Valley Project (CVP), managed by Reclamation, was authorized in 1935. Recognized as one of the world's largest water supply projects, the CVP covers a complex, multi-purpose network of dams (including the Shasta Dam), reservoirs, canals, hydroelectric powerplants, and other facilities over an area of approximately 400 miles from Redding to Bakersfield (USBR 2024a). The CVP draws from two large river basins: the Sacramento and the San Joaquin. CVP water supports a variety of human uses, including municipal uses such as human consumption, toilets and showers, landscaping, car washing, businesses, and industrial processes, and it provides a major source of support for California agriculture, including irrigating more than 3 million acres of land. CVP flows also support fisheries habitat, wetlands and wildlife refuges, and habitat for migrating birds. The CVP is operated in coordination with the State Water Project, which provides much of its water to municipal users in the Bay Area and Southern California along with agriculture in the Central Valley (Congressional Research Service 2024).

Because the SRSC holds rights to divert water from the Sacramento River and its tributaries that are senior to the CVP, the SRSC protested the issuance of CVP water rights. In those protests, the SRSC water users contended that construction and operation of the CVP would reduce their ability to divert water from the Sacramento River under their senior rights. Agreements were reached with Reclamation to protect these senior water rights (SRSC 2024), dismiss the protests, and obtain water rights for the CVP and since then, SRSC members divert their water supplies in accordance with their "Settlement Contracts" with Reclamation. The Settlement Contracts provides the SRSC with the enjoyment and use of the regulated flow of the Sacramento River and the Delta. In return, the SRSC provides reimbursement to the United States for expenditures related to the economical operation of the CVP. The Settlement Contracts also identify how much water contractors can divert during the contract season. By specifying the monthly amount and timing of SRSC diversions, the contracts allow Reclamation to operate the CVP based on forecasted demand, and contractors are more certain of their water supplies in the summer and during drought conditions.

The first Settlement Contracts were executed in 1964 for a 40-year term and were renewed in 2005 for another 40 years (through 2045). The five largest rights holders on the Sacramento River under the contracts are GCID, Reclamation District 108, Sutter Mutual Water Company, Anderson-Cottonwood Irrigation District, and Natomas Central Mutual Water Company (SRSC 2024). SRSC-contracted water is fulfilled by Reclamation in part through releases from Shasta Lake. Under Settlement Contracts, contractors are entitled to divert 2.1 million acre-feet of water per year from April through October,

with some contractors having an alternative year-round schedule. SRSC members are typically entitled to receive and divert 100% of their contracted water quantities in most water-year types.

2.2.2 Ecosystem Management

Reclamation operates Shasta Dam as part of the larger CVP in accordance with multiple legal obligations (including obligations under the Settlement Contracts) and in coordination with California's State Water Project. Water releases from Shasta Lake are used to control river water flow and temperature downstream of Shasta Lake to support endangered and threatened fish species in accordance with obligations to support ecosystem management within the Sacramento River Basin. Salmonids and other fish of primary management concern in the project area include winter-, spring-, and fall-/late fall-run Chinook salmon (*Oncorhynchus tshawytscha*), Central

Salmonids are a fish family that includes salmon, trout, char, and whitefishes. They are important game fish and food sources to many animals. Salmonids are freshwater spawners with several species migrating from the ocean to freshwater rivers to spawn. Several species of salmonids are protected under the Endangered Species Act (ESA).

Valley steelhead (*O. mykiss*), Sacramento splittail (*Pogonichthys macrolepidotus*), American shad (*Alosa sapidissima*), striped bass (*Morone saxatilis*), white sturgeon (*Acipenser transmontanus*), and green sturgeon (*A. medirostris*). Many of these species rely upon water releases to provide cold water for spawning and incubation over the summer months and river flow levels that facilitate migration.

These fish species and wildlife that rely on the fish, including bald eagles (*Haliaeetus leucocephalus*) and bears (*Ursidae* spp.), are impacted by critically dry conditions that reduce river flow and increase water temperatures. Chinook salmon are especially sensitive to water temperatures, requiring a set range in water temperatures for eggs and juvenile salmon survival. Water is managed with a set goal of an average daily stream temperature during the temperature management season. However, higher air temperatures and lower water levels in Shasta Reservoir, behind the dam, causes the water to heat up faster, which hampers Reclamation's ability to maintain the water temperatures, especially during drought years (NOAA Fisheries 2015).

2.2.3 Existing Agreements

To address river levels and other water management goals and responsibilities, contracts between Reclamation and the SRSC and between Reclamation and other users with water rights (such as the San Joaquin River exchange contractors, North and South of Delta water service contractors, and Central Valley refuge water contractors) provide exceptions for Reclamation to reduce water deliveries due to hydrologic conditions and other conditions outside Reclamation's control. Specific to the SRSC, Reclamation has established Shasta Critical Years ("Critical Year") that trigger contract reductions.

A Critical Year is any year in which either of the following eventualities exists:

- The forecasted full natural inflow to Shasta Lake for the current Water Year, as such forecast is made by Reclamation on or before February 15 and reviewed as frequently thereafter as conditions and information warrant, is equal to or less than 3.2 million acre-feet.
- The total accumulated actual deficiencies below 4.0 million acre-feet in the immediately prior Water Year or series of successive prior Water Years, each of which had inflows of less than 4.0 million acre-feet, together with the forecasted deficiency for the current Water Year, exceed 800,000 acre-feet.

During Critical Years, SRSC members are bound to divert water not in excess of 75% of their contracted water amount, which represents a maximum supply for the SRSC of approximately 1.6 million acre-feet out of the 2.1 million acre-feet total contracted water amount.¹

2.3 Project Need and Objectives

Pursuant to the CEQA Guidelines and 14 CCR 15124, a “statement of the objectives sought by the proposed project” must be provided as part of the project description in an EIR. Currently, Reclamation operates Shasta Lake for multiple purposes in accordance with multiple legal obligations, including to meet SRSC-contracted supplies and other CVP water supplies, while also managing releases of water for fish and wildlife purposes, flood control requirements, and power generation. The purpose of the proposed project is to approve and facilitate reduced water contract supply to the SRSC during specified drought years to address water shortages at Shasta Lake. Reduced SRSC contract supply allows for Reclamation to respond to shortages in water supplies due to very dry hydrologic conditions, climatic variability, climate change, and regulatory requirements.

The proposed project would also develop implementable and supplemental water supplies and drought-resiliency projects to strengthen the resilience of the SRSC’s water systems and long-term water delivery capabilities.

In summary, the following are the project objectives:

- Approve and facilitate reduced water contract supply to the SRSC during specified drought years to address water shortages at Shasta Lake in accordance with the Agreement and generally meet existing municipal, agricultural, and habitat demands from 2025 to 2045.
- Develop implementable and supplemental drought-resiliency projects to strengthen the resilience of the SRSC’s water systems and long-term water delivery capabilities.

¹ In Critical Years, some SRSC members have the option to 1) irrigate not in excess of 75% of their irrigable acreages; or 2) divert from the Sacramento River not in excess of 75% of the contracted amount, subject to the installation of measurement equipment.

2.4 Proposed Agreement Phases

As noted in Section 2.2.3, currently, SRSC-contracted quantities may be reduced by amounts specified in each contract, up to 75% of their contracted amount during Critical Years.² Under the proposed project, the SRSCNC and individual members of the SRSC would enter into an Agreement with Reclamation to forego a larger percentage of their contracted supply in specified drought years under two phases: from 2025 to 2035 and from 2036 to 2045. Water reductions would be implemented during specified drought years, which may occur within a series of drier years such as during a multi-year drought sequence.

Under Phase 1 of the Agreement (2025 to 2035), the contractors would collectively incur a reduced contract supply of up to 500,000 acre-feet under their aggregated contracts during certain years (defined as Phase 1 Agreement Years) if the following four conditions are met:

- Reclamation forecasts end-of-April Shasta Lake storage to be less than 3.0 million acre-feet.
- Reclamation forecasts end-of-September Shasta Lake storage to be less than 2.0 million acre-feet.
- Combined actual and forecasted natural inflow to Shasta Lake from October 1 through April 30 is less than 2.5 million acre-feet.
- Reclamation forecasts a Critical Year under the Settlement Contracts.

Under Phase 2 (2036 to 2045), the contractors would agree to collectively incur a reduced contracted supply of up to 100,000 acre-feet under their aggregated contracts during certain years (defined as Phase 2 Agreement Years) if the following two conditions are met:

- Combined actual and forecasted natural inflow to Shasta Lake from October 1 through April 30 is less than 2.5 million acre-feet.
- Reclamation forecasts a Critical Year under the Settlement Contracts.

Table 3 presents the total maximum reductions in each phase including existing agreements and the proposed Agreement.

² The reduction requirements for the City of Redding and certain smaller SRSC (short form contractors) differ slightly from the other SRSC. The City of Redding uses contract supply for municipal water year-round. Short form SRSC have the option to irrigate "not in excess of 75 percent of its irrigable acreage".

Table 3**Contracted Water Supply Available for the SRSC in Phases 1 and 2 including Existing Contracts and Proposed Agreement**

Agreement Year	Total Contracted Water Amount	Maximum Contracted Water Amount in Critical Years	Additional Reductions per Proposed Agreement	Maximum Contracted Water Amounts in Agreement Years^a
Phase 1 Agreement Year	2,100,000 acre-feet ^b	1,600,000 acre-feet (75% of total)	Up to -500,000 acre-feet	1,100,000 acre-feet (about 50% of total)
Phase 2 Agreement Year			Up to -100,000 acre-feet	1,500,000 acre-feet (about 70% of total)

Note:

- a. Assuming maximum additional reduction under the proposed Agreement occurs in a single year.
- b. Contracted water amount rounded based on normal fluctuations.

To better predict project outcomes, Reclamation performed modeling to determine the overall potential frequency of Agreement Years during each phase. This modeling allowed contractors to better predict how they would manage water if the proposed Agreement was implemented. Modeling completed by Reclamation was based on simulated climate and operational conditions that are not meant to represent specific historical conditions but are representative of prolonged droughts that have occurred in the project area.

2.4.1 Phase 1

Based on Reclamation's modeling results, additional reductions in contract supply through this proposed Agreement would be anticipated to occur on average 0.66 times over the 10-year Phase 1 period. The maximum potential for there to be a Phase 1 Agreement Year over a 10-year period is four times, which would be similar to the conditions that occurred between 1924 and 1933 with prolonged droughts. Table 4 presents the approximate maximum expected water reduction per the SRSC during Phase 1 Agreement Years. Although there could be minor adjustments to individual SRSC-specific reductions, the maximum additional reduction for any Phase 1 Agreement Year would remain up to 500,000 acre-feet, collectively.

Table 4**Approximate Maximum Contract Water Reduction per the SRSC During Phase 1 Agreement Years**

SRSC	Maximum Annual Water Reduction (acre-feet)
Glenn-Colusa Irrigation District	197,555
Reclamation District No. 108	55,555*
Sutter Mutual Water Company	54,118*
Anderson-Cottonwood Irrigation	29,933*
Natomas Central Mutual Water	28,783
Reclamation District No. 1004	17,097
Princeton-Codora-Glenn Irrigation	16,238
Provident Irrigation District	13,106
Conaway Preservation Group, LLC	9,785*
Meridian Farms Water Company	8,381
Sycamore Family Trust	7,615
RRG Garden Properties, LLC	7,136
Pleasant Grove Verona Mutual Water	6,295
Redding	5,029
Maxwell Irrigation District	4,305
M&T Chico Ranch	4,300
Pelger Road 1700	2,411
Woodland-Davis	2,395*
Other	29,963
Total	500,000

Note:

Asterisk denotes individual SRSC-specific reductions that may be adjusted.

2.4.2 Phase 2

Based on Reclamation's modeling results, additional reductions in contract supply through this proposed Agreement would be anticipated to occur on average 0.88 times over the 10-year Phase 2 period. The maximum potential for there to be a Phase 2 Agreement Year over a 10-year period is 4 times. Table 5 presents the approximate maximum expected water reduction per the SRSC during Phase 1 Agreement Years. Although there could be minor adjustments to individual SRSC-specific reductions, the maximum additional reduction for any Phase 2 Agreement Year would remain up to 100,000 acre-feet, collectively.

Table 5**Approximate Maximum Contract Water Reduction per the SRSC During Phase 2 Agreement Years**

SRSC	Maximum Annual Water Reduction (acre-feet)
Glenn-Colusa Irrigation District	39,511
Reclamation District No. 108	11,111
Sutter Mutual Water Company	10,824
Anderson-Cottonwood Irrigation	5,987
Natomas Central Mutual Water	5,757
Reclamation District No. 1004	3,419
Princeton-Codora-Glenn Irrigation	3,248
Provident Irrigation District	2,621
Conaway Preservation Group, LLC	1,957
Meridian Farms Water Company	1,676
Sycamore Family Trust	1,523
RRG Garden Properties, LLC	1,427
Pleasant Grove Verona Mutual Water	1,259
Redding	1,006
Maxwell Irrigation District	861
M&T Chico Ranch	860
Pelger Road 1700	482
Woodland-Davis	479
Other	5,992
Total	100,000

2.5 Methods for Accomplishing Water Reductions

The contract supply reductions to be implemented in Phases 1 and 2 would be achieved by implementing surface water use reduction activities and drought-resiliency projects. These activities are further described in Sections 2.5.1 and 2.5.2.

2.5.1 Water Reduction Activities

Surface water use reduction activities include cropland idling, cropland shifting, groundwater substitution, and conservation. Contract supply reductions available through use reduction activities would contribute to storage volumes in Shasta Lake. These activities are further described in Sections 2.5.1.1 to 2.5.1.4. Surface water reduction activities would not involve the construction of any new development such as large structures, infrastructure, or roadways. Agreement participants

may choose to do a combination of cropland idling, crop shifting, groundwater pumping, and/or conservation.

2.5.1.1 Cropland Idling

Cropland idling involves idling agricultural land that would have been planted absent water restrictions, making surface water available that would have otherwise been used for agricultural production. Under the proposed Agreement, cropland idling could occur throughout the project area shown in Figure 1 during the irrigation season, which lasts from April or May through September for most crops in the Sacramento Valley. Rice is the most common type of cropland that would be idled due to extensive water demands and the relative ease of replanting the following year (rice is grown in flooded fields); however, it is possible that other types of croplands may be idled. Cropland idling would be temporary in nature and would not result in a permanent conversion of agricultural lands to non-agricultural use. Landowners would likely place fields back into production the following season.

The acreage of cropland idling would be calculated based on total irrigation needs, which consists of both consumptive and non-consumptive uses. For rice in the Sacramento Valley, consumptive uses have ranged from 3.0 to 3.3 acre-feet per acre. Additionally, there are non-consumptive components of irrigation water use, which may consist of soil types that effect groundwater recharge when water passes below the crop root zone, shallow groundwater moving laterally into non-irrigated fields, uncapturable return flows, and other crop cultural practices. For rice, these components may generally require another additional 3.0 to 4.0 acre-feet per acre that is additive to the consumptive use component, which results in a total average water application factor of approximately 6.0 to 7.0 acre-feet per acre for rice. Additionally, there are conveyance losses ranging from 5% to 30% of the water diverted from the SRSC points of diversion to water delivered to landowner lands which will also reduce the water available for crops. Applying a standard water application factor across the SRSC service area to the maximum 500,000 acre-feet reduction in a Phase 1 Agreement Year, and the maximum 100,000 acre-feet reduction in a Phase 2 Agreement Year, would not be consistent with the unique physical characteristics of each SRSC service area. Therefore, Table 6 includes the maximum annual cropland idling acreage that the SRSC would incur as a result of the proposed Agreement, considering that each contractor may have an assumed water application factor that varies between 6 and 7 acre-feet per acre for rice. As noted, it is anticipated that majority, if not all, of the idled croplands would be rice fields.

Table 6
Annual Cropland Idling within the SRSC Service Area

Phase	SRSC Max Reduction Volume (acre-feet)	Assumed Water Application Rate (acre-feet per acre)	Maximum Annual Cropland Idling (acre)
Phase 1	500,000	6.0 – 7.0	71,429 - 83,333
Phase 2	100,000	6.0 – 7.0	14,285 - 16,667

2.5.1.2 Cropland Shifting

Cropland shifting includes shifting from historically planted higher-water-intensive crops (such as rice) to lower-water-using crops, such as tomatoes, wheat, or safflower. Crop shifting makes water available by reducing the amount of surface water applied for irrigation. Additionally, the difference in evapotranspiration of applied water values contributes to the amount of water that is reduced. Historically, farmers generally rotate among several crops to maintain soil quality, so the SRSC may not know the specific type of crop that would have been planted in a given field in a given year.

2.5.1.3 Groundwater Substitution

Groundwater substitution occurs when a contractor chooses to pump groundwater in lieu of using surface water supplies. Agreement participants engaging in groundwater substitution would reduce surface water use from April through October. As a result of the proposed Agreement, an additional total of 167,100 acre-feet and 33,420 acre-feet of groundwater is anticipated to be pumped in Phases 1 and 2 respectively, as presented in Table 7.

Table 7
Potential Annual Groundwater Substitution within the SRSC Service Area

Phase	Water Reduction (acre-feet)
Phase 1	167,100
Phase 2	33,420

2.5.1.4 Conservation

Water conservation includes actions to reduce the diversion of surface water by improving water conservation and irrigation efficiencies. Effective water conservation and efficiency actions are described within the Regional Water Management Plan and/or individual contractor's water conservation plan as required under the applicable SRSC contract. The SRSC also complies with the Water Conservation Act of 2009 (Senate Bill [SB] X7-7). For many of the smaller contractors a written water conservation plan is not required, and water conservation actions would be based on state and local policies governing such actions. While the SRSC already implements water conservation actions, the SRSC would further implement water conservation actions, such as sending notices to landowners and water users to conserve water during Agreement Years.

2.5.2 Drought-Resiliency Projects

Drought-resiliency projects are a broad range of actions intended to strengthen the resilience of the SRSC's water system and long-term water delivery capabilities. The resiliency projects will assist Reclamation and the SRSC with withstanding and recovering from climatic variability in order to

support healthy rivers and landscapes (including but not limited to terrestrial ecosystems) and create durable water savings while sustaining a more drought-resilient economy that retains its vitality. Drought-resiliency projects are expected to be constructed and implemented during Phase 1, but it is possible some may still be constructed in Phase 2. It is anticipated that with the implementation of drought-resiliency projects, the need for the water reduction activities described in Section 2.5.1 may be reduced over time. The drought-resiliency projects would not involve the construction of any new large-scale development such as large structures, large-scale infrastructure, or roadways.

The following equipment are expected to be used to construct the proposed drought-resiliency projects as needed:

- Excavators
- Roller-compactors
- Small Cranes
- Dozers
- Backhoe loaders
- Concrete trucks
- Hand-held tools
- Skid steer loaders
- Graders
- Mulchers
- Dump trucks
- Percussion or rotary-drilling machines
- Construction vehicles

Sections 2.5.2.1 to 2.5.2.9 provide details on proposed drought-resiliency projects expected to be implemented as part of the proposed Agreement. Because these projects are in the very early stages of planning, details regarding design, scope, and locations remain undefined at this time.

2.5.2.1 Piping Open Ditches or Canals

Open ditches or canals are artificial waterways that are used to transport water from a water source for a variety of purposes, including agriculture uses. Open ditches or canals were typically constructed by excavating sloped, linear features or building embankments to contain and transport the water, without the use of a cover. Some of these ditches and canals are made of earth, whereas others are made of concrete with varying levels of permeability.

Piping open ditches or canals uses a series of interconnected pipes, valves, and pumps to convey water in an enclosed manner between the water source and the ultimate use. Piping offers numerous advantages for water conservation efforts. In comparison to open ditches or canals, piping allows for precise control and distribution of water, minimizing loss and ensuring optimal usage. Using pipelines instead of open ditches or canals reduces evaporation, and if maintained it can reduce leakages and seepages. Closed pipelines also protect water from external contaminants, which ensures better water quality. Compared to open channels, pipelines require less maintenance and have a longer lifespan.

To install a new pipe where an existing open ditch or canal exist, the following steps would likely be undertaken:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.
- **Existing Ditch or Canal Demolition:** If the existing ditch or canal is lined with concrete, a jackhammer or similar equipment would be used for demolition activities. Any concrete or other materials resulting from demolition activities would be disposed of at an approved landfill.
- **Excavation and Regrading:** Following site-specific demolition activities, soil would be excavated throughout the specific project site with an excavator or similar equipment. Any excess excavated soil material would either be reused on site or tested and disposed appropriately. If needed, clean soil material compatible with existing soil condition would be imported to regrade the site.
- **Pipeline Installation:** A pipeline made of high-density polyethylene (HDPE), polyvinyl chloride (PVC), or similar material would be assembled and installed on the specific project site. The pipeline may be above or below ground level and it may follow the footprint of existing open ditches or canals or be in new locations.
- **Backfilling:** Following below-ground pipeline installation, the pipeline would be covered with clean soil sourced from adjacent sites within the project area or imported. The clean fill would be compacted to ensure that the pipeline stays in place.
- **Demobilization:** Dewatering operations would be removed, and equipment would be demobilized using the same access roads used to access the site.
- **Operation:** The SRSC would continue operating the pipeline system as they would normally operate ditches or canals, with maintenance activities mainly consisting of removing tumbleweeds or other debris, burning of dead weeds and grass, repairing damage from rodents, removal of trees/shrubs that have encroached, and cleaning out sediment build-up.

2.5.2.2 Canal Lining

Although piping canals is the most efficient option in terms of water savings, it may not be available for all canals based on length or other environmental considerations. In such cases, canal lining and modernization can also provide for water savings. Canal lining is the process of reducing seepage loss of irrigation water by adding an impermeable layer to the trench. Seepage can result in losses of irrigation water from canals, so adding lining can make irrigation systems more efficient. Existing canals can benefit even more than new structures from being lined. Although a new bare soil canal will work properly for some amount of time before it begins to erode or collapse, older canals are already well into the cycle of damage caused by erosion. There would be two ways of lining existing canals: 1) canals that are composed of bare soil can be lined with a material such as geomembrane or concrete; and 2) for canals that are already made of geomembranes or concrete, a sealant such as

resin or spray-on polymer can be applied to fix cracks that are resulting in seepage. Additionally, existing canals already lined with concrete could be relined with new geomembranes or new concrete.

The following steps would likely be undertaken as part of canal lining and modernization:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.
- **Existing Canal Demolition (for Canal Lining Replacement):** If the existing canal is lined with concrete and the objective is to replace the canal lining with new lining, a jackhammer or similar equipment would be used for demolition activities. Any previous flexible liners or spray-on polymers would be removed as much as possible before a new liner is applied or installed. Leaving old, leaking materials in place increases the chances of problems with the new liner, especially if the old materials are uneven or lumpy. Dust control measures, including spraying water at the point where the jackhammer or similar equipment strikes, would be employed. Any concrete or other materials resulting from demolition activities would be disposed of at an approved landfill.
- **Sludge and Silt Removal (for New Canal Lining):** Any silt, sludge, debris, and other material would be scraped from the canal. Removing these materials would ensure that the liner rests against a compacted layer of natural soil, not a loose accumulation of sludge or silt and that any resin or spray-on polymer used to fill the concrete canal lays against clean concrete.
- **Excavation and Regrading:** The canal may need to be reshaping and stabilized if erosion or damage have occurred. If applicable, soil would be excavated throughout the specific project site with an excavator or similar equipment. Any excess excavated soil material would either be reused on site or tested and disposed appropriately. If needed, clean soil material compatible with existing soil condition would be imported to regrade the site.
- **Vegetation Removal (for New Canal Lining):** Existing dirt canals tend to establish heavy vegetation along the edges due to supplying a constant and steady source of water. Prior to installing any new liner (geomembrane, concrete, or any equivalent), or prior to applying resin, spray-on polymer or any equivalent, vegetation removal would be required.
- **Liner Installation/Application of Sealant:** Once the canal is clear of sludge and reinforced as needed, the liner would be installed. Because most canals are narrow, this step would generally involve rolling out the liner alongside the ditch and then laying it down into the channel. For concrete canal lining, the most common method would be cast-in-situ lining, which involves pouring liquid concrete into molds along the canal's sides and letting it flow to the bottom. However, other types of concrete liners could be used, including shotcrete and precast concrete. For sealant application, a spray-on polymer would be applied in the same way as spray paint. Other sealants would be applied by injecting the sealant into the cracks.
- **Demobilization:** Dewatering operations would be removed and equipment would be demobilized using the same access roads used to access the site.
- **Operation:** The SRSC would continue operating lined canals as they would normally operate existing canals, with maintenance activities mainly consisting of removing tumbleweeds or

other debris, burning of dead weeds and grass (with proper fire safety precautions taken), repairing damage from rodents, removal of trees/shrubs that have encroached, and cleaning out sediment build-up. To help recirculation and reduce seepage losses, some channels, ditches, or canals may be cleared of vegetation and recompacted or reconstructed after trees and other vegetation is removed.

2.5.2.3 Canal Automation Through Supervisory Control and Data and Acquisition Systems

Automation plays a crucial role in the management of irrigation canal networks to improve efficiency and optimize water use. Supervisory Control and Data and Acquisition (SCADA) systems are focused on the supervision and acquisition of real-time data from a network of irrigation canals. These systems allow centralized monitoring and control of devices and sensors in the network, such as gates, valves, and flow meters. The collected data are used to visualize network status, detect anomalies, and facilitate decision-making based on real-time information. SCADA systems make it easier to detect problems early, such as leaks or device failures, and allow for a quick response for repairs (Regaber 2024). Photograph 1 provides a typical example of a SCADA communications system.

All SCADA systems have the following components at a minimum: a sensor; some type of on-site apparatus that creates an electrical signal that can be transmitted; a local power supply to power the sensor and transmission unit; some type of communication system, such as hard wire, radio, satellite, or phone; a receiving unit on the other end of the communication system; and a mechanism to display the information, such as an alarm bell or computer screen (Burt and Piao 2005). As mentioned, SCADA systems may require electrical connections to power sensors and transmission units, which may require some excavation, grading, and fill if electrical lines are buried. Besides these requirements and the actual SCADA system itself, SCADA systems would not result in any other construction or operational changes.

Photograph 1
Wireless SCADA System Example



Source: Aqua Systems 2000 2024

2.5.2.4 Automated Gates Installation

Some contractors would install automated canal gates, such as Rubicon or Langemann gates, for more efficient, reliable, and accurate canal and ditch operations and water deliveries. In some instances, automated gates may be paired with SCADA systems, which would be expected to result in additional water distribution efficiency improvements. Photograph 2 shows a typical automated gate.

Photograph 2
Automated Gate Installation Example



Source: Rubicon 2024

To install a new automated gate, the following steps would likely be undertaken:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.
- **Gate Installation:** Following dewatering activities, a new gate would be installed. Minor excavation activities may be required to install the gate and would follow requirements mentioned in other drought-resiliency projects.
- **Demobilization:** Dewatering operations would be removed, and equipment would be demobilized using the same access roads used to access the site.
- **Operation:** Maintenance activities would mainly consist of maintaining gates in operational conditions through activities such maintenance dredging/excavation for sediment accumulation behind the gates, weed control, vegetation removal, and maintenance of flow gauges and other measuring devices.

2.5.2.5 On-Farm Improvements to Irrigation Systems

This drought-resiliency project involves converting certain types of on-farm irrigation systems and methods to more efficient irrigation systems and methods. As an example, flood/row irrigation is about 50% efficient, where a sprinkler-based system can be 75% efficient. Similarly, a properly installed drip or subsurface irrigation system, which applies water directly to crop root zones using buried drip lines or drip tape can also be typically more efficient than other irrigation systems. Since

drip tubing is placed in the soil between each crop row, this system only wets a small portion of the soil. Small and controlled amounts of water help avoid water logging. Another improvement to irrigation systems includes installing Variable Frequency Drives (VFDs). VFDs can be used to gradually ramp an irrigation pump motor to meet actual flow and pressure demands of the system, which can result in water savings.

The steps taken to implement on-farm improvements are dependent on the existing irrigation method and the proposed method. Construction would likely occur during the non-irrigation season to minimize the amount of time fields would be out-of-service. General construction steps for on-farm improvements could include the following:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.
- **Existing Irrigation Conveyance Equipment Removal:** This step could include deconstructing pipe systems, removing equipment from fields, or temporarily blocking existing water sources.
- **Field Preparation.** This step could include field regrading, digging trenches for below-ground pipe installation, or removing obstructions such as rocks or trees.
- **Proposed Irrigation Conveyance Installation.** This step could include installation of pipes aboveground or below ground surface, pump stations, sprinkler heads, and other equipment to convey the water from the farm delivery point to the fields.
- **Demobilization:** Dewatering operations would be removed, and equipment would be demobilized using the same access roads used to access the site.
- **Operation:** The SRSC would continue operating the irrigation system with maintenance activities mainly consisting of removing tumbleweeds or other debris, burning of dead weeds and grass, repairing pipes and sprinkler heads damage from rodents, removal of trees/shrubs that have encroached, and pump repairs.

2.5.2.6 Weirs or Check Structures

Weirs or check structures, are small dams that obstruct ditches, drains, or canals to collect water runoff from agricultural fields. By slowing down runoff, weirs and check structures help conserve existing water resources by adding capacity to canals and making water available for reuse. Weirs are often the size of a drainage ditch, with a channel in the center for water drainage.

To install a new weir or check structure, the following steps would likely be undertaken:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.
- **Weirs or Check Structure Construction/Installation:** First, the foundation of the weir or check structure would be installed to hold the weir or check structure weight and withstand the pressure chambers that the weir or check structure would create. Excavation and grading may be required, as would concrete work. Then, forms to pour concrete or similar material to

create the weir or check structure would be installed. Concrete trucks or other construction vehicles would be used to deliver concrete wherever necessary.

- **Demobilization:** Dewatering operations would be removed, and equipment would be demobilized using the same access roads used to access the site.
- **Operations:** Maintenance activities would mainly consist of maintaining weirs or check structures in operational conditions through activities such maintenance dredging/excavation for sediment accumulation behind the weirs or check structures, weed control, and vegetation removal.

2.5.2.7 Pipeline Recirculation Programs

Pipeline recirculation programs allow water to be used as efficiently as possible by recirculating it back to fields for irrigation purposes. The system consists of ditches for collecting runoff, a flow pump and power unit (either an electric motor or a diesel engine), and a pipeline to transport water to for reapplication to a field.

To install these types of programs, the following steps would likely be undertaken:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.
- **Excavation and Regrading:** Soil would be excavated throughout the specific project site with an excavator or similar equipment to prepare the site for pipelines. Any excess excavated soil material would either be reused on site or tested and disposed appropriately. If needed, clean soil material compatible with existing soil condition would be imported to regrade the site.
- **Pipeline Recirculation Installation:** Pipelines would be placed aboveground or within the excavated area if the pipeline is buried. A flow pump and power unit would be installed.
- **Backfilling:** For below-ground pipeline installation, the pipeline would be covered with clean soil sourced from adjacent sites within the project area or imported. The clean fill would be compacted to ensure that the pipeline stays in place.
- **Demobilization:** Equipment would be demobilized using the same access roads used to access the site.
- **Operations:** The SRSC would continue operating the pipeline recirculation systems with maintenance activities mainly consisting of removing tumbleweeds or other debris, burning of dead weeds and grass, repairing pipes damage from rodents, removal of trees/shrubs that have encroached, reservoir sediment build-up removal, and pump repairs.

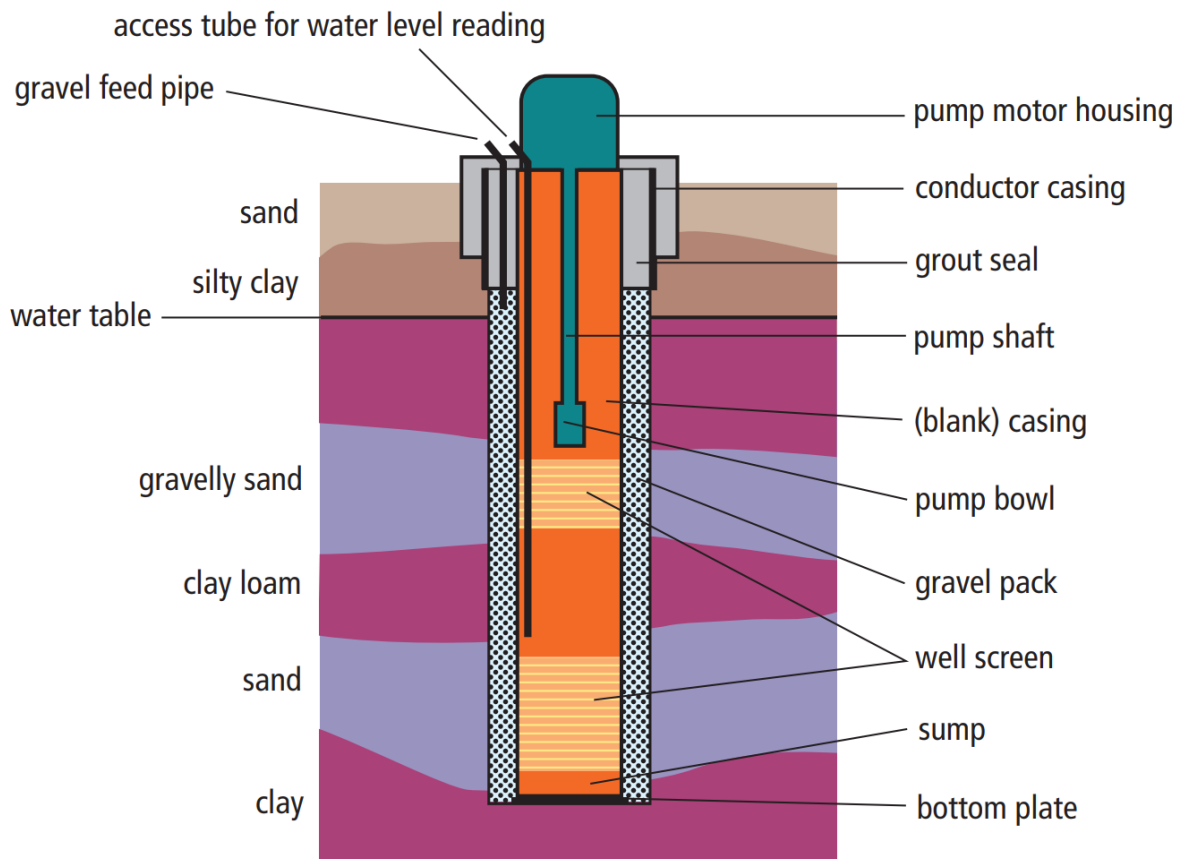
2.5.2.8 New Groundwater or Deep Aquifer Wells

To add to their water supply, some members of the SRSC would construct new groundwater wells as part of the proposed project. A maximum of 30 new wells are assumed to be constructed as part of the proposed project and would all comply with the minimum construction standards in California set under California Department of Water Resources (CDWR) Bulletin 74. CDWR Bulletin 74 sets the minimum standards for water, monitoring, cathodic protection, and geothermal heat exchange wells,

with the purpose of protecting California's groundwater quality. Coordination with the local applicable Groundwater Sustainable Agency (GSA) would also occur to ensure that the well locations and related construction activities would not be inconsistent with the targets set by Groundwater Sustainability Plans (GSPs) under the Sustainable Groundwater Management Act (SGMA) and Executive Order N-3-23, Paragraph 4.

A new well typically consists of a bottom sump, well screen, and well casing surrounded by a gravel pack and appropriate surface and borehole seals, as depicted in Figure 3. Water enters the well through perforations or openings in the well screen and is pumped to the surface with a motor that is typically located at the surface.

Figure 3
Well Components



Source: UC Davis 2024

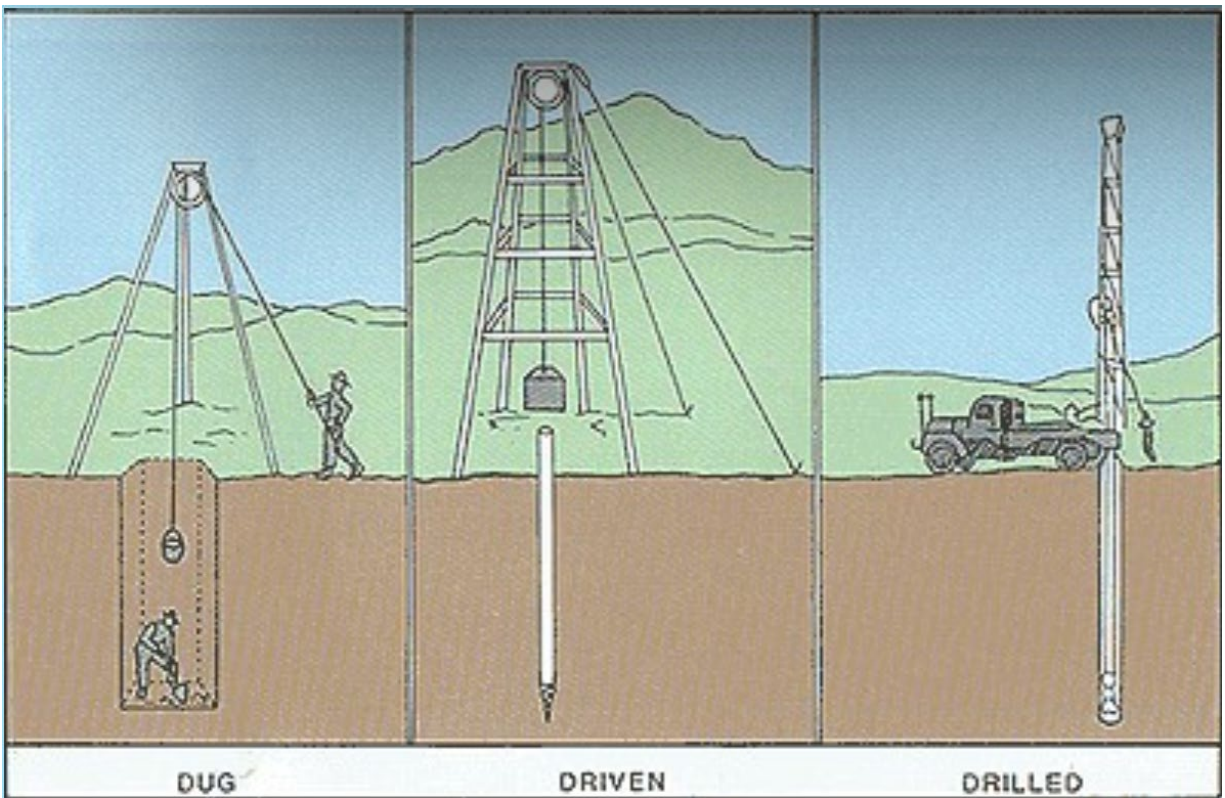
To install a new well, the following steps would likely be undertaken:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.

- **Well Drilling:** Wells are generally classified by construction method as dug/bored, driven, or drilled, as depicted in Figure 4. Dug/bored wells are holes in the ground dug by shovel or backhoe. Dug wells have a large diameter, are shallow, and are not cased continuously. Driven wells are constructed by driving pipe into the ground. Driven wells are shallow and cased continuously. Drilled wells are constructed by percussion or rotary-drilling machines. Drilled wells can be hundreds to thousands of feet deep and use continuous casing (CDWR 2024).
- **Well Casing and Well Screen Installation:** Once the well bore is drilled, the driller would install well casing and well screens as well as fill the ring around the casing with a gravel pack and the appropriate cement and bentonite seal (annular or sanitary seal) to prevent water from leaking between uncontaminated and contaminated aquifers or from the land surface into the well, as depicted in Figure 5. The purpose of installing well screens is to keep sand and gravel from the gravel pack out of the well while providing ample water flow to enter the casing.
- **Well Development:** After the well screen, well casing, and gravel pack have been installed, the well would be developed to clean the borehole and casing of drilling fluid and to properly settle the gravel pack around the well screen. A typical method for well development is to surge or jet water or air in and out of the well screen openings. This procedure may take several days or perhaps longer, depending on the size and depth of the well. A properly developed gravel pack keeps fine sediments out of the well and provides a clean and unrestricted flow path for groundwater.
- **Aquifer Test or Pump Test:** Once the well is completed and developed, an aquifer test (or pump test) would be conducted. For an aquifer test, the well is pumped at a constant rate or with stepwise increased rates, typically for 12 hours to 7 days, while the water levels in the well are checked and recorded frequently as they decline from their standing water level to their pumping water level. Aquifer tests are used to determine the efficiency and capacity of the well and to provide information about the permeability of the aquifer.
- **Pump and Power Source Installation:** After conducting the aquifer test or pump test, the pump and power source would be installed.
- **Wellhead Protection:** Construction of the final well seal is intended to provide protection from leakage and to keep runoff from entering the wellhead.
- **Demobilization:** Equipment would be demobilized using the same access roads used to access the site.
- **Operations:** Operational activities would consist of maintenance activities including regular inspections, pump maintenance, redevelopment through airlift pumping and agitation, mechanical surging and/or jetting (same procedure as well development described in Step 4, but the goal is to remove encrusted material in the gravel pack), and chlorination.

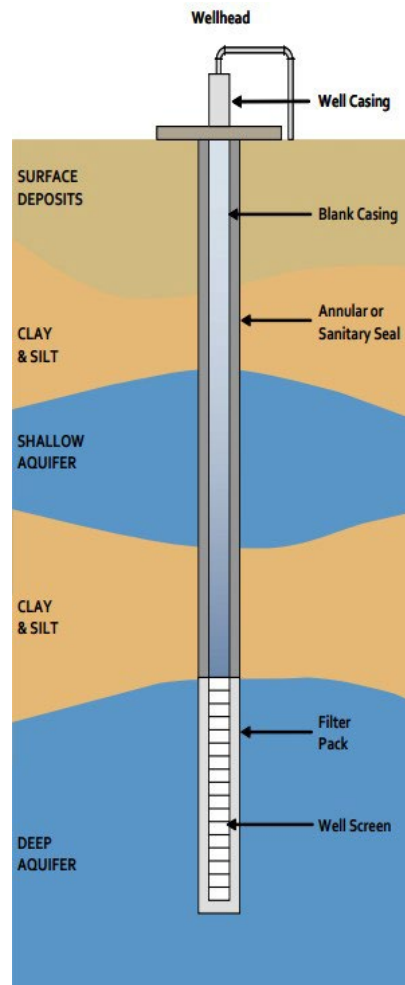
Bentonite is a special type of clay used to seal against water leaks. The “well casing” is a metal or plastic pipe that is centered in the hole and is the conduit for water movement through the well. The “well screen” is the perforated section of casing next to the aquifer. It allows water to enter the well, while preventing too much sediment from entering the well.

Figure 4
Well Construction Method



Source: CDWR 2024a

Figure 5
Typical Well Construction



Source: CDWR 2024a

2.5.2.9 Conjunctive Use Program

Conjunctive management is the coordinated operation of surface water, groundwater storage and use, and conveyance facilities to meet water management objectives. Although surface water and groundwater are sometimes considered to be separate resources, they are connected by the hydrologic cycle. Conjunctive management allows surface water and groundwater to be managed in an efficient manner by taking advantage of surface water supplies when they are available and groundwater supplies when surface water is less available. Groundwater aquifers serve as long-term storage (RWQCB 2005). For example, this could mean that surface water gets diverted by members of the SRSC in non-Agreement Years while groundwater is recharging, and then those members and/or their landowners would pump groundwater in Agreement Years when surface water is reduced.

To implement conjunctive use programs, new conveyance systems may be constructed, and the following steps would likely be undertaken:

- **Site Preparation:** The site would be prepared for construction, including proposed access roads and staging areas, prior to completing any mobilization or construction work.
- **Excavation and Regrading:** Soil would be excavated throughout the specific project site with an excavator or similar equipment to prepare the site for pipelines, ditches, or canals. Any excess excavated soil material would either be reused on site or tested and disposed appropriately. If needed, clean soil material compatible with existing soil condition would be imported to regrade the site.
- **Conveyance System Installation:** Pipelines or irrigation ditches and canals would be installed or constructed. This step may include pouring concrete to construct new ditches or canals with concrete trucks or other construction vehicles would be used to deliver concrete wherever necessary. If no concrete is used, a roller-compactor may be used to compact soil after a ditch or canal is excavated. If a pipeline is installed, it would be placed aboveground or within the excavated area if the pipeline is buried.
- **Backfilling:** For below-ground pipeline installation, the pipeline would be covered with clean soil sourced from adjacent sites within the project area or imported. The clean fill would be compacted to ensure that the pipeline stays in place.
- **Demobilization:** Dewatering operations would be removed, and equipment would be demobilized using the same access roads used to access the site.
- **Operations:** No operational needs would be necessary as part of implementing conjunctive use programs.

2.6 Alternatives Evaluated in this DEIR

The CEQA Guidelines (14 CCR 15126) require that a DEIR consider a range of reasonable alternatives to the project or to the location of the project that would feasibly attain most of the project's basic objectives but would avoid or substantially lessen any of the significant effects of the project. As discussed in Section 2.3, the following are the project objectives:

- Approve and facilitate reduced water contract supply to the SRSC during specified drought years to address water shortages at Shasta Lake in accordance with the Agreement and generally meet existing municipal, agricultural, and habitat demands from 2025 to 2045.
- Develop implementable and supplemental drought-resiliency projects to strengthen the resilience of the SRSC's water systems and long-term water delivery capabilities.

The following sections describe alternatives that were considered by GCID but eliminated from further analysis as well as the No Project Alternative and the Crop Idling Only Alternative, both of which are evaluated in this DEIR. The ability of these two alternatives to meet the project objectives and to avoid or substantially reduce significant environmental impacts as compared to the proposed project is provided in Section 6.

2.6.1 *Alternatives Considered but Eliminated*

GCID considered several alternatives to the project but determined that they were infeasible or do not meet stated project objectives. The alternatives considered but eliminated from further analysis in this DEIR are described in Sections 2.6.1.1 through 2.6.1.3.

2.6.1.1 Decreased Contract Supply Reductions

Decreased contract supply reduction alternatives would consist of similar water reduction programs to the proposed project, but with decreased contract supply reductions (e.g., less of a reduction in deliveries than the proposed project) in specified drought years. Instead of an up to 500,000-acre-foot reduction in Phase 1, a decreased contract supply reduction alternative would involve the SRSC foregoing less contract supply (for example, up to 250,000 acre-feet of their contract supply) in Phase 1. The Agreement between Reclamation and the SRSC is predicated on the agreed-upon terms for Phase 1 and Phase 2 Agreement Year contract supply reductions to address water shortages at Shasta Lake and generally meet existing municipal, agricultural, and habitat demands from 2025 to 2045. Because decreased contract supply reduction alternatives would not be capable of preserving sufficient water to address water shortages at Shasta Lake consistent with Reclamation's operational requirements and objectives, this alternative would not meet the project objectives or need and was not carried forward for full analysis.

2.6.1.2 No Cropland Idling Alternative

This alternative would involve accomplishing surface water use reductions through cropland shifting, groundwater substitution, and conservation activities, without idling croplands as a result of the Agreement. As detailed in Section 2.5.1.3, it is estimated that groundwater substitution could reduce surface water use annually by approximately 167,100 acre-feet in a Phase 1 Agreement Year and 33,420 acre-feet in a Phase 2 Agreement Year. Crop shifting and conservation may result in additional reductions, but these are too speculative to quantify. Surface water use reductions through groundwater substitution would not be capable of preserving sufficient water to address water shortages at Shasta Lake consistent with Reclamation's operational requirements and objectives, which call for up to 500,000 acre-feet during a Phase 1 Agreement Year. While new groundwater wells could be constructed to add groundwater storage and pumping capacity, it is not feasible to assume that new wells could be constructed and operable by the time that the first Phase 1 Agreement Year could be in effect in 2025 or that new wells would result in sufficient surface water use reductions to meet the 500,000 acre-feet requirement during a Phase 1 Agreement Year. For these reasons, this alternative would not meet the project purpose and need and was not carried forward for full analysis.

2.6.1.3 Alternative Site Locations

This alternative considers locating the proposed water reduction program on lands either outside of or confined to within a smaller portion of the project area depicted in Figure 1. Because lands outside of the SRSC service area are outside of the jurisdiction of the members of the SRSC who are

signatories to the Agreement with Reclamation, it is infeasible for the SRSC to require water reduction activities in these areas. While a smaller portion of the SRSC service area could be the focus of water reduction activities, the Agreement is between Reclamation, the SRSCNC, and the SRSC. Focusing the reductions on select areas would cause disproportionate impacts to certain members of the SRSC and, therefore, would not likely be agreeable to the Agreement signatories, rendering this alternative infeasible.

2.6.2 Alternative 1: No Project Alternative

The No Project Alternative, which is required by CEQA, represents what would reasonably be expected to occur in the foreseeable future if the proposed project were not approved. Under the No Project Alternative, the Agreement between the SRSC and Reclamation would not be signed, and water would continue to be managed based on current contracts, agreements, and management plans. Neither additional reductions during specified drought years nor drought-resiliency projects to address potential water loss and strengthen the resilience of the SRSC's water system and long-term water delivery capabilities would be implemented. The ability of this alternative to meet the project objectives and to avoid or substantially reduce significant environmental impacts as compared to the proposed project is provided in Section 6.

2.6.3 Alternative 2: No Groundwater Substitution Alternative

This alternative would involve accomplishing surface water use reductions through cropland idling, cropland shifting, and conservation activities, without groundwater substitution. Drought-resiliency projects would also be undertaken with this alternative. While more crop shifting could reduce water use, it is assumed most contractors would idle more cropland without access to the additional water provided by groundwater substitution. Crop shifting and conservation may result in additional reductions but these are too speculative to quantify. The ability of this alternative to meet the project objectives and to avoid or substantially reduce significant environmental impacts as compared to the proposed project is provided in Section 6.

3 Environmental Impact Analysis

This section discusses the CEQA requirements and terminology used in the environmental impact analysis. The environmental resource analysis sections discuss the possible effects of the proposed project on the specific environmental resource areas. To assist the reader in comparing information about the various environmental issues, Sections 3.1 through 3.20 each contain the following information for the specific resource area:

- **Environmental setting:** The physical conditions in the vicinity of the project, as they exist at the time of the Notice of Preparation for this EIR (May 2024), specific to the resource area
- **Regulatory setting:** The rules, regulations, and plans specific to the proposed project and resource area
- **Methodology for determining impacts:** A description of the quantitative or qualitative methods used to analyze potential impacts, including specific thresholds of significance (the criteria against which the analysis results are compared)
- **Impacts of the proposed project:** Potential impacts are compared to the thresholds of significance to determine their level of significance
- **Mitigation measures:** Mitigation measures, as well as a plan to implement measures and findings of significance after the measures are implemented, are provided where potentially significant impacts are identified.

In accordance with Section 15064 of the CEQA Guidelines, the environmental impact analysis for each resource section includes an evaluation of the direct physical changes in the environment that may be caused by the proposed project, as well as reasonably foreseeable indirect physical changes in the environment that may be caused by the proposed project. Factors that may be affected by the proposed project are evaluated using the criteria set forth in Appendix G of the CEQA Guidelines (Environmental Checklist) as amended (December 28, 2018). CEQA defines a significant impact on the environment as follows:

Substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant. (CEQA Guidelines Section 15382)

Short- and long-term impacts are also considered. Short-term impacts are of a limited duration, such as those that occur during a construction phase. Long-term impacts are those of a greater duration, such as those that would encompass the proposed project duration and beyond.

As reflected in CEQA Guidelines Section 15126, impacts resulting from the proposed project on environmental resources can be included in one of the following categories:

- **No impact:** No impact to the identified environmental resource would occur as a result of the proposed project.
- **Less than significant:** Some impacts to the environmental resource may result from the proposed project; however, the impacts do not reach the threshold of significance.
- **Potentially significant but mitigation measures are available to reduce impacts to a less-than-significant level:** Significant adverse impacts may occur; however, with appropriate mitigation, they can be reduced to a less-than-significant level.
- **Significant and unavoidable adverse impacts:** The environmental effect reaches or exceeds the threshold of significance even after mitigation measures have been applied to minimize their severity, or no mitigation is available to reduce the impacts to a less-than-significant level.

Mitigation measures are organized by the applicable resource topic for which they would reduce impacts (e.g., AGR, BIO, etc.) and are described in full where first introduced in the DEIR. All mitigation measures to be implemented as part of the proposed project are summarized in Table ES-2.

Potential cumulative impacts for the proposed project for each environmental resource area are summarized in Section 4. Irreversible environmental changes that would be caused by the proposed project and growth-inducing impacts of the proposed project are identified in Section 5. In Section 6, the alternatives are compared to the proposed project and CEQA baseline and ranked relative to each other based on anticipated impacts for each resource area to determine the environmentally preferred alternative.

3.1 Aesthetics

This section describes existing aesthetic and visual conditions in the project area and analyzes how the proposed project may affect those conditions. It also describes applicable rules and regulations pertaining to aesthetics that could affect the proposed project. For the purposes of the aesthetics analysis, the study area is defined as the regional and project area settings, which affect the visual character throughout the project area. The loss of identified scenic resources or the introduction of contrasting features that could degrade the visual character of the project area is the focus of the aesthetics analysis.

3.1.1 *Environmental Setting*

This section discusses the aesthetic and visual context in which the proposed project would be constructed and operate, including the regional land uses that affect the visual character at and around the project area as well as immediate surrounding properties.

3.1.1.1 Regional Setting

The Central Valley is defined largely by its agricultural land uses, which are an important resource both within the state and nationwide. The Central Valley produces approximately one-quarter of the Nation's total food and most notably 40% of the Nation's fruits, nuts, and other table foods. Predominant crops include rice, fruit, and nuts (USGS 2024). Agricultural uses define the visual landscape of the eight counties in which the project area is located, as depicted in Photographs 3 and 4. More detail on agricultural uses can be found in Section 3.2.1.

Photograph 3
Agriculture Uses Within the Project Area



Source: SRSC 2024

Photograph 4
Agriculture Landscape Within the Project Area



Source: SRSC 2024

The region is also divided by numerous rivers and tributaries. Water resources are an important landscape feature throughout the Central Valley, with the watershed encompassing approximately 60,000 square miles. The Sacramento River is the main river in Northern California and the largest river in the state. Shasta Dam and Shasta Lake, depicted in Photograph 5, are located on the upper Sacramento River and are also important landscape features as the largest human-made lake in the state with a capacity of 4,552,000 acre-feet (Northern California Water Association 2024a).

Photograph 5
Shasta Reservoir



Source: SRSC 2024

The Central Valley is a structural depression ringed by mountains serving as a backdrop to the valley's most expansive views. The valley is bounded by the Cascade Range to the north, the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coast Ranges and San Francisco Bay to the west. While the project area is predominantly rural, it also contains cities including Redding, Anderson, Williams, Woodland and Davis. Urban and suburban development and scattered rural development are also found throughout the valley, as depicted in Photograph 6.

Photograph 6
Redding



Source: SRSC 2024

3.1.1.2 Project Area Setting

The boundaries of the project area are depicted in Figure 1. Much of the project area consists of unincorporated rural and agricultural areas that are sparsely populated. Photograph 7 depicts a typical view within the project area. Agricultural landscapes include a variety of colors and shapes that vary seasonally. Almond trees, for example, which are grown throughout the Central Valley, reach an average height of between 10 and 25 feet (Planet Natural Research Center 2023). Facilities and equipment used for agricultural are typically muted colors that blend with the landscape. Some buildings, such as grain silos, can reach a typical height of 100 feet.

Rural land uses do not typically generate substantial amounts of light and glare. Daytime glare can be produced by direct sunlight beams and reflections, while nighttime light and glare can be produced by structure illumination, decorative landscape lighting, and lit parking lots. Residential and urban areas are more likely to be sources of nighttime glare compared to agricultural areas.

Photograph 7
Typical View Within the Project Area



Source: Glenn-Colusa Irrigation District

Other prominent geographic features in the project area include the Coast and Sierra Nevada ranges to the west and east, respectively, as well as the Sutter Buttes, Klamath, and Cascade ranges and various hills and peaks. There are also many rivers and creeks running through the project area that qualify as visual resources including but not limited to the Sacramento River, Butte Creek, Clear Creek, and Putah Creek.

There are numerous county designated roads and highways with scenic value throughout the project area. The project area contains no officially designated State Scenic Highway, but Route 299, Route 5, and Route 44, located in Shasta County and in the project area, are designated as eligible State Scenic Highways. There are no designated Wild and Scenic Rivers in the project area.

3.1.2 *Applicable Regulations*

3.1.2.1 **Regional and Local Regulations**

Applicable policies or actions pertaining to aesthetics from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.1.2.1.1 *Shasta County General Plan*

The following local policy pertaining to aesthetics is included in the Scenic Highways Element of the *Shasta County General Plan* (Shasta County 2004):

- **6.8.4 SH-a:** To protect the value of the natural and scenic character of the official scenic highway corridors and the County gateways dominated by the natural environment, the

following provisions, along with the County development standards, shall govern new development:

- setback requirements
- regulations of building form, material, and color
- landscaping with native vegetation, where possible
- minimizing grading and cut and fill activities
- requiring use of adequate erosion and sediment control programs
- siting of new structures to minimize visual impacts from highway

3.1.2.1.2 *Tehama County General Plan*

The following local policies and measures pertaining to aesthetics are included in the Open Space and Conservation Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy OS-11.2:** The County shall strive to protect the aesthetic and scenic beauty of its regional locations.
- **Implementation Measure OS-11.4a:** New development shall include provisions for the design of outdoor light fixtures to be directed/shielded downward and screened to avoid adverse night-time lighting spillover effects on adjacent land uses and night-time sky glow conditions.
- **Implementation Measure OS-11.4b:** All new structures shall be designed to minimize glare potential including the use of low-emissive glazing, the pre-finishing of metallic surfaces to avoid hot-spots, and non-reflective window treatments and exterior surfaces. The use of mirrored coatings, industrial brushed or polished features, aluminum, or other non-weathering materials shall be strictly prohibited. Reflectivity may be reduced or mitigated through the use of deep overhangs or other methods to provide shading or shadowing.

3.1.2.1.3 *Glenn County*

The following local policy pertaining to aesthetics is included in the Conservation and Open Space Element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy COS 3-10:** Discourage the removal of large, mature, native trees that provide wildlife habitat, visual screening, or contribute to the visual and biological quality of the environment.

3.1.2.1.4 *Butte County General Plan*

The following local policy pertaining to aesthetics is included in the Conservation and Open Space Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy COS-P18.1:** Views of Butte County's scenic resources, including water features, unique geological features, and wildlife habitat areas, shall be maintained.

3.1.2.1.5 *Sutter County General Plan*

The following local policies pertaining to aesthetics are included in the Environmental Resources and Land Use elements of the *Sutter County 2030 General Plan* (Sutter County 2011):

- **Policy ER 7.5 Lighting:** Support practices that reduce light pollution and preserve views of the night sky including the design and siting of light fixtures to minimize glare and light on adjacent properties.
- **Policy LU1.15 Views from Rural Roadways and Highways:** Prohibit new projects and activities that would obscure, detract from, or negatively impact the quality of views from the County's rural roadways and highways. Limit off-site advertising along County roadways and highways.

3.1.2.1.6 *Colusa County General Plan*

The following local policies and actions pertaining to aesthetics are included in the Open Space and Recreation Element of the *Colusa County General Plan* (Colusa County 2012):

- **Policy OSR 1-14:** Reduce light and glare from artificial lighting within open space and agricultural areas to the extent that it does not adversely impact the County's rural character.

3.1.2.1.7 *Yolo County General Plan*

The following local policies and pertaining to aesthetics are included in the Land Use and Community Character Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2018):

- **Policy CC-1.3:** Protect the rural night sky as an important scenic feature to the greatest feasible extent where lighting is needed.
- **Policy CC-1.8:** Screen visually obtrusive activities and facilities such as infrastructure and utility facilities, storage yards, outdoor parking and display areas, along highways, freeways, storage yards, outdoor parking and display areas, along highways, freeways, roads and trails.
- **Policy CC-1.15:** The following features shall be protected and preserved along designated scenic roadways and routes, except where there are health and safety concerns:
 - Trees and other natural or unique vegetation
 - Landforms and natural or unique features
 - Views and vistas
 - Historic structures (where feasible), including buildings, bridges and signs

3.1.2.1.8 *Sacramento County General Plan*

The following local policy pertaining to aesthetics is included in the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017a):

- **Policy OS-1:** Actively plan to protect, as open space, areas of natural resource value, which may include but are not limited to wetlands preserves, riparian corridors, woodlands, and floodplains associated with riparian drainages.

3.1.3 *Environmental Impacts and Mitigation Measures*

3.1.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, the project area is dominated by agriculture, rural land uses, and water resources with more urban and suburban views in cities such as Redding. Existing features within the project area are described in Section 3.1.1.2. Views of the project area primarily consist of agricultural landscapes and associated facilities and equipment.

3.1.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on aesthetics. Except as provided in PRC Section 21099, the proposed project would have an impact on aesthetics if the following apply:

- **AES-1:** The project would have a substantial adverse effect on a scenic vista.
- **AES-2:** The project would substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway.
- **AES-3:** The project would, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, the project would conflict with applicable zoning and other regulations governing scenic quality.
- **AES-4:** The project would create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

3.1.3.3 **Methodology for Determining Impacts**

The CEQA Guidelines define a substantial adverse effect on aesthetics as a significant effect on the environment. A substantial adverse effect would include impacts on scenic vistas and scenic resources, or associated with visual quality and view blockage, and nighttime illumination and glare. The loss of scenic resources or the introduction of contrasting features that could degrade the visual character of the project area is the focus of the aesthetics analysis. The analysis also addresses project consistency with applicable zoning and other regulations and policies.

An adverse visual impact may occur when an action perceptibly changes the existing physical features of the landscape that are characteristic of the region or local settings; an action introduces new features to the physical landscape that are perceptibly uncharacteristic of the region or local settings or become visually dominant in the viewshed; or an action blocks or totally obscures aesthetic features of the landscape (CPUC 2010).

3.1.3.4 Impact Analysis

3.1.3.4.1 *AES-1: Except as provided in PRC Section 21099, would the project have a substantial adverse effect on a scenic vista?*

Impacts to scenic vistas could occur if the proposed project were to alter conditions such that existing scenic views would no longer be accessible or if proposed project construction or operation were to block views of scenic vistas.

Water Reduction Activities

Cropland idling, cropland shifting, conservation activities, and groundwater substitution would have localized visual resources impacts from minor changes in agricultural uses. Agricultural fields that would be used for these activities would not themselves be considered scenic vistas, and the water reduction activities would be in line with the surrounding visual character. Cropland idling, cropland shifting, and conservation already occur in the project area under existing conditions. Although these activities could result in increases in incremental physical visual changes, these activities would not significantly alter views in the project area. These activities would also not block views of surrounding areas, potentially including scenic vistas, for nearby viewers. Groundwater substitution would not result in visual impacts as it would occur below ground.

Drought-Resiliency Projects

Drought-resiliency projects would cause temporary aesthetic changes during construction in areas where there are scenic vistas. In addition to the short-term nature of these potential impacts, the conditions during construction would be similar to those already present as part of ongoing agricultural operations and maintenance activities regularly conducted. For example, during construction of new groundwater wells, there would be temporary use of percussion or rotary-drilling machines during well drilling, construction staging, and construction worker trucks and vehicles. This type of equipment already is in widespread use throughout the project area, and not substantially different from farm equipment. Once constructed, most of the drought-resiliency projects would either not be visible to receptors due to distance or would be blocked by existing crops and agricultural activities. Drought-resiliency projects that occur below or close to ground level, including piping open ditches or canals, canal lining and modernization, on-farm improvements to irrigation systems, and pipeline recirculation programs, would not block any existing views. Other activities, such as automated gate installation or weirs or check structures, would result in permanent visual changes by placing small structures above ground. These structures would not be tall enough to significantly obstruct views and would be made of materials that are consistent with the existing visual landscape. Impacts would be considered to be less than significant.

Impact Determination: While crop idling and shifting could result in temporary increases in incremental physical visual changes, they would not significantly alter views or scenic vistas in the project area. While there may be minor visual changes from construction equipment and activities or the placement of aboveground structures, these activities and types of equipment are consistent

with the ongoing agricultural character and activity in the project area. Drought-resiliency projects are expected to be sited away from receptors and would not block views for nearby viewers. Impacts to scenic vistas from implementing water reduction activities and constructing and operating drought-resiliency projects would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.1.3.4.2 AES-2: Except as provided in PRC Section 21099, would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a scenic highway?

Scenic resources are the visible physical features of a landscape and historic structures that contribute to a unique and exemplary visual setting. Scenic resources constitute all scenery visible to people, including trees, rock outcroppings, and historic buildings within a state scenic highway. Rock outcroppings are visible exposures of bedrock or ancient superficial deposits on the surface of the earth. Scenic resources in the project area include trees and rock outcroppings; there are no scenic highways within the project area.

Neither water reduction activities or drought-resiliency projects would impact rock outcroppings or historic buildings. Trees in the project area may be removed during construction of drought-resiliency projects, but these trees would not be located within a scenic highway and likely would not be visible to nearby receptors.

Impact Determination: The proposed project would not impact scenic resources along a scenic highway. Therefore, impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.1.3.4.3 AES-3: Except as provided in PRC Section 21099, would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Water Reduction Activities

The majority of the proposed project would take place in non-urbanized areas. Cropland idling, cropland shifting, conservation activities, and groundwater substitution already occur under existing conditions in the project area. These activities would cause minor changes in agricultural uses but would be consistent with the surrounding agricultural visual character. Any potential incremental

physical visual changes that water reduction activities would result in would not significantly alter views in the project area or block views of surrounding areas for nearby viewers.

Drought-Resiliency Projects

As described under Impact AES-1, drought-resiliency projects would result in temporary visual changes during construction. In addition to the short-term nature of these changes, the conditions during construction would be similar to those already present as part of ongoing agricultural operations and maintenance activities regularly conducted. Once constructed, most of the drought-resiliency projects would either not be visible to receptors due to distance or would be blocked by existing crops and agricultural activity. Drought-resiliency projects that occur below or close to ground level, such as piping open ditches or canals, canal lining and modernization, on-farm improvements to irrigation systems, and pipeline recirculation programs, would not block any existing views. Other activities, such as automated gate installation or weirs or check structures, would result in permanent visual changes by placing small structures above ground. These structures would not be tall enough to significantly obstruct views and would be made of materials that are consistent with the existing visual landscape. Although there may be minor visual impacts from construction equipment and activities or the placement of aboveground structures, drought-resiliency projects are expected to be sited away from receptors and would not block views for nearby viewers. Some project activities could occur within the City of Redding; however, they are unlikely to be sited within urbanized areas and there are no applicable city zoning regulations governing scenic quality.

Impact Determination: Visual changes associated with the proposed project would not degrade the existing visual character or quality of public views of the site and its surrounding areas. Therefore, impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.1.3.4.4 AES-4: Except as provided in PRC Section 21099, would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Artificial light impacts are typically associated with light that occurs during the evening and nighttime hours, and may include streetlights, illuminated signage, vehicle headlights, and other point sources. Glare is primarily caused by the reflection of sunlight or artificial light from highly polished surfaces or reflective materials.

Water Reduction Activities

No changes to light and glare would occur as a result of cropland shifting, idling, conservation and groundwater substitution.

Drought-Resiliency Projects

While the drought-resiliency projects may introduce new sources of light and glare during construction, these new sources would be temporary in nature, likely not visible from residential areas or other sensitive visual receptors, and would be consistent with adjacent day and nighttime views in the project area. Drought-resiliency project-related construction would generally be limited to daylight hours, minimizing the need for nighttime construction lighting. Worker vehicles may travel through the project area before dawn or after dusk. Temporary lighting resulting from construction or worker vehicles would not produce a substantial amount of light. Operation of some drought-resiliency projects may introduce new permanent sources of light and glare into the landscape. For example, automated gates or wells may require a small amount of safety lighting. These projects would be sited in agricultural areas and would not be located near viewers who could be adversely impacted.

Impact Determination: Water reduction activities would not affect light or glare, thereby resulting in no impact. Drought-resiliency projects may introduce minor sources of light and glare that would not adversely affect day or nighttime views of the area. Impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.2 Agriculture and Forestry Resources

This section describes existing agriculture and forestry resources in the project area and analyzes how the proposed project may affect those resources. It also describes applicable rules and regulations pertaining to agriculture and forestry resources that could affect the proposed project. For the purposes of the agriculture and forestry resources analysis, the study area is defined as the regional and project area settings.

3.2.1 Environmental Setting

This section discusses the agriculture and forestry resources context in which the proposed project would be implemented, constructed, and operate.

3.2.1.1 Regional Setting

California is the leading state in agricultural production, providing hundreds of thousands of jobs statewide (USDA 2024). Approximately 24 million acres of land in California are dedicated to agriculture, comprising 24.07% of the total land acreage of the state (CDFA 2023; U.S. Census 2024). Almond production covers the most land of any other crop at 1.35 million acres (CDFA 2023). There are 68,400 farms and ranches that comprise the total agricultural land in California (CDFA 2023).

The state's agricultural production success can be attributed to the nearly year-long growing season made possible by the unique geography, mild climate, and access to water for irrigation in the dry season (CDFA 2023). The Central Valley provides 8% of agriculture output by value over 20,000 square

miles, which is less than 1% of United States farmland. Some of the predominant crop commodities include cereal grains, hay, cotton, vegetables, fruits, and nuts (USGS 2024). According to the California Department of Food and Agriculture, fruits, nuts and vegetables continue to be California's leading crop commodities, generating \$18.9 billion of revenue in 2022 (CDFA 2023).

The project area is in the northern region of Central Valley known as the Sacramento Valley (USGS 2024). The presence of mountains, including the Cascade Range to the north, the Sierra Nevada to the east, and the coast ranges to the west, along with the rivers and tributaries create ideal conditions for farming. Snowmelt from the higher elevation ranges and annual precipitation replenish the Sacramento, Feather, Yuba, Bear, and American Rivers and their tributaries and provide surface water for irrigation and urban use in the Sacramento Valley (USGS 2024). 70% of total agricultural and urban water use comes from surface waters. At the north end of the Sacramento Valley, the headwaters of the Sacramento River collect behind Shasta Dam, which holds approximately 4.5 million acre-feet of water (Water Education Foundation 2024a; 2024b). Additional water needed for agriculture and urban use in the Sacramento Valley is pumped from alluvial groundwater basins (USGS 2024). Decades of drought in California, increased prolonged periods of drought associated with climate change, and continued demand for agriculture commodities may increase pressure to pump more groundwater in the upcoming decades (CDWR 2024b; CNRA 2013; USDA 2024; Pathak et al. 2018).

3.2.1.2 Project Area Setting

The boundaries of the project area shown in Figure 1 follow the service areas for the SRSC. Agricultural land comprises most of the project area, with over 40 crops grown in the eight counties. Crops in the project area include permanent crops, annual crops, or pasture. Permanent crops are the lead revenue-generating agriculture commodities. These crops are typically perennial species that do not require annual replanting. Almonds, walnuts, apricots, cherries, grapes, olives, peaches, nectarines, pistachios, alfalfa, and pears are permanent crop types harvested in the project area. Annual crops consist of annual species, which are species that complete their life cycle within one growing season. These species often provide habitat resources in addition to economic value. Annual crops are listed as some of the highest value crops in the project area and include rice, grain, and seed crops such as corn, wheat, barley, soybeans, sunflowers, and most row crops, such as tomatoes, pumpkins, squash, beets, potatoes, yams, carrots, onions, garlic, turnips, and radishes. Rice is a flood-irrigated crop of seed-producing annual grasses. Rice fields are managed in a flooded state until harvesting time nears. Other cultivated crops include grain and seed crops, which are annual grasses that are grown in dense stands and include corn, wheat, barley, and others. Pasture crops are also mostly annual or perennial species. However, unlike permanent and annual crops, pasture crops are grown with the specific purpose of providing forage for livestock.

The crop types and associated acreages within the project area are listed by county in Table 8 based on the most recent data (2022)³ from the eight counties (Butte County Department of Agriculture 2022; Colusa County Agriculture Department 2022; County of Glenn Department of Agriculture 2022; County of Sacramento Department of Agriculture 2022; County of Tehama Department of Agriculture 2022; Shasta County Department of Agriculture 2022; Sutter County Agricultural Commissioner Sealer of Weights and Measures 2022; Yolo County Department of Agriculture 2022). In 2022, the total crop acreage in the project area was 453,569 acres. As presented in Table 8, the top five crops (based on acreages) in the project area were rice, walnuts, almonds, sunflowers, and tomatoes. Of the total crop acreage (453,569 acres), idle or unassigned croplands covered 280,260 acres. Field crops, including rice and sunflowers, had the highest harvest acreages covering 79,556 acres or 17.5% of the total crop acreage in the project area in 2022.⁴ Other prominent crop categories included row crops, orchard crops, and pasture crops. Colusa County contains the most crop acreage in the project area.

³ Year 2022 data was the most recent data available for the eight counties at the time of publication of the NOP. Year 2022 was a Critical Year.

⁴ Rice crop acreage was lower than typical in 2022; the typical maximum assumed for rice crop acreage in the SRSC service area is 220,000 acres.

Table 8
Crop Acreages in the Project Area Per County (2022)

Crop Type	Butte County	Colusa County	Glenn County	Sacramento County	Shasta County	Sutter County	Tehama County	Yolo County	Total
Field Crops									
Alfalfa and alfalfa mixtures	0	1,647	325	221	15	798	0	1,623	4,629
Beans	0	318	0	0	0	509	0	0	827
Corn, Sorghum, or Sudan	0	431	376	17	77	278	18	744	1,941
Cotton	0	136	0	0	0	0	0	0	136
Grain and Hay	2	815	803	2,358	375	3,708	78	2,320	10,459
Rice	0	8,163	7,417	2,961	0	11,250	0	4,957	34,748
Wild Rice	0	0	0	0	0	0	0	1,046	1,046
Sunflowers	0	1,834	409	470	0	9,079	0	2,501	14,293
Safflower	0	651	0	300	0	1,010	0	800	2,761
Wheat	0	2,181	247	314	740	3,333	0	1,869	8,684
Miscellaneous	0	0	0	0	0	0	0	32	32
Orchard Crops									
Vineyards	0	1	0	17	4	0	0	98	120

Crop Type	Butte County	Colusa County	Glenn County	Sacramento County	Shasta County	Sutter County	Tehama County	Yolo County	Total
Eucalyptus	0	2	0	0	0	0	0	0	2
Olives	0	9	240	0	6	0	6	26	287
Kiwis	0	0	0	0	2	0	0	0	2
Apples	0	0	0	0	1	0	0	0	1
Deciduous	0	10	2	6	5	0	0	113	136
Almonds	1,386	11,689	2,954	74	0	877	43	104	17,127
Walnuts	3,364	11,340	4,490	88	1,367	4,806	409	1,135	26,999
Pistachios	0	50	0	238	0	0	0	328	616
Pecans	0	239	1	0	0	76	0	0	316
Peaches and Nectarines	0	0	0	0	0	0	0	2	2
Prunes	565	0	59	0	0	44	206	0	874
Row Crops									
Tomatoes	0	3,369	71	439	0	4,649	0	5,569	14,097
Melons, Squash, and Cucumbers	0	1,058	0	401	0	981	8	1,277	3,725

Crop Type	Butte County	Colusa County	Glenn County	Sacramento County	Shasta County	Sutter County	Tehama County	Yolo County	Total
Onions and Garlic	0	0	0	0	0	0	0	156	156
Strawberries	0	0	0	4	6	0	0	0	10
Miscellaneous	7	234	9	7	19	11	0	228	515
Idle or Not Assigned									
Not Assigned	0	352	107	1,717	28,150	149	17	15,784	46,276
Not cropped, or unclassified	197	77,151	42,490	4,798	169	37,819	118	12,054	174,796
Idle (Cropped in last 3 years)	88	23,833	11,257	1,891	56	9,059	21	9,298	55,503
Idle (Four or more years)	35	520	56	1,318	46	43	12	1,655	3,685
Pasture									
Mixed	0	1,610	1,135	63	5,275	593	1,907	608	11,191
Native Improved	0	0	0	0	6	0	0	0	6

Crop Type	Butte County	Colusa County	Glenn County	Sacramento County	Shasta County	Sutter County	Tehama County	Yolo County	Total
Miscellaneous Grasses	0	640	234	0	79	142	166	404	1,665
Other Crops									
Flowers, nursery, and Christmas Tree Farms	0	5	0	0	39	3	0	89	136
Greenhouse	0	0	0	0	0	4	0	2	6
Sunflowers	0	1,834	409	470	0	9,079	0	2,501	14,293
Young Perennial	367	35	472	0	12	583	0	2	1,471
Total Crop Acreages	6,011	150,157	73,563	18,172	36,449	98,883	3,009	67,325	453,569

Notes: Totals are rounded to the nearest whole number.

Forest land within the project area is listed by county in Table 9 based on 2021 data from the National Land Cover Database (EROS 2021). As presented in Table 9, there are 800 acres of forest land in the project area (approximately 0.1% of the project area). Approximately 70% of the forest land within the SRSC service area is within Shasta County. The remaining forest area within the project area is in Butte, Colusa, Glenn, Sacramento, Sutter, Tehama, and Yolo counties, with all but 6 acres of this land being classified as woody wetland.

Timberland is defined as “privately owned land, or land acquired for State Forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre (*California Government Code* Section 51104). There are no mapped timberlands within the project area (CAL FIRE 2024a).

Table 9
Forest Land in the Project Area by County (2021)

Land Use Class	Butte County	Colusa County	Glenn County	Sacramento County	Shasta County	Sutter County	Tehama County	Yolo County	Total
Deciduous Forest	0	0	0	0	10	0	1	0	10
Evergreen Forest	0	0	0	0	230	0	5	0	235
Mixed Forest	0	0	0	0	93	0	0	0	94
Woody Wetlands	71	58	21	26	225	6	48	8	462
Total	71	58	21	26	557	6	54	8	800

Note:

Totals are rounded to the nearest whole number.

Source: NLCD 2021

3.2.2 *Applicable Regulations*

3.2.2.1 **State Regulations**

3.2.2.1.1 *Williamson Act*

The Land Conservation Act of 1965 or the Williamson Act was established by the California legislature to slow rapid development and protect agricultural lands. The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The Williamson Act establishes a framework ensuring continuation of local agricultural practices, continued stability for the agriculture industries, and open space buffers.

3.2.2.1.2 *California Farmland Conservancy Program*

In 1995, the California Farmland Conservancy Program Act resulted in a statewide grant program, the California Farmland Conservancy Program (CFCP) that aims to support efforts to conserve agricultural land in California. CFCP grants encourage voluntary long-term stewardship and conservation of agricultural lands and efforts that protect farming and ranching operations facing development pressure. The program prioritizes local land use planning for urban growth and conservation of agricultural land and encourages decisions that are consistent with the state's agricultural land conservation policies. Finally, it encourages improvements to enhance long-term sustainable agricultural uses.

3.2.2.1.3 *Farmland Mapping and Monitoring Program*

The Farmland Mapping and Monitoring Program (FMMP) was established by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) to establish criteria for mapping location quality and quantity of agricultural lands. Farmland maps combine soil characteristics and land use information to document current agricultural lands and conversion of agricultural lands over time. Under the Department of Conservation, Division of Land Resource Protection in the FMMP agricultural land is categorized by the following:

- **Prime Farmland.** Prime farmland constitutes the highest quality of land for sustained agriculture production. Agricultural land is designated Prime Farmland when land use criteria is met and when the chemical and physical soil characteristics meet the quality criteria established by the NRCS. Land use criteria is established by the FMMP and requires agricultural lands to have been used for irrigated agriculture production at some point within the 4 years prior to the Important Farmland Map Date, which occurs every 2 years.
- **Farmland of Statewide Importance.** Farmland of Statewide Importance land meets all the same criteria as Prime Farmland with minor physical or chemical shortcomings such as greater slopes or less ability to hold moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- **Unique Farmland.** Unique Farmland is farmland used to produce the state's leading agricultural crops. Soils are typically lesser quality than other designations. Land must have been cropped at some time during the four years prior to the mapping date.
- **Farmland of Local Importance.** Farmland of Local Importance land is in production or is capable of production and is characterized as being economically important by each county's board of supervisors and local advisory committee.

3.2.2.2 Regional and Local Regulations

Applicable policies or actions pertaining to agriculture and forestry resources from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.2.2.2.1 Shasta County General Plan

The following local policy pertaining to agriculture and forestry resources is included in the Agricultural Lands Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy AG-h:** The site planning, design, and construction of on-site and off-site improvements for nonagricultural development in agricultural areas shall avoid unmitigable short- and long-term adverse impacts on facilities, such as irrigation ditches, used to supply water to agricultural operations.

3.2.2.2.2 Tehama County General Plan

The following local policies and measures pertaining to agriculture and forestry resources are included in the Economic Development and Open Space and Conservation elements of the *Tehama County General Plan* (Tehama County 2009):

- **Policy ED-6.1:** The County shall work toward the protection of agricultural lands from development pressures or uses that will adversely impact or hinder existing or foreseeable agricultural operations and consider land use alternatives such as buffers, green belts, zoning and other methods whenever feasible.
- **Implementation Measure ED-6.1b:** Secure and develop water resources to sustain agriculture production.
- **Policy ED-7.1:** The County shall continue to preserve Tehama County's natural resources including: agriculture, timberlands, water and water quality, wildlife resources, minerals, natural resource lands, recreation lands, scenic highways, and historic and archaeological resources. The protection of natural resources is of the utmost importance and promoting business expansion, retention, and recruitment should compliment and enhance the natural resources while reducing negative impacts.
- **Policy OS-9.1:** The County shall strive for the protection and enhancement of resource lands for the continued benefit of agriculture, timber, grazing, recreation, waterfowl, wildlife habitat, watersheds, and quality of life.

- **Policy OS-12.3:** The County shall continue to encourage sound soil management, erosion prevention and control programs and projects, including the use of windbreaks, minimum tillage practices, grazing management, and riparian area rehabilitation.

3.2.2.2.3 *Glenn County General Plan*

The following local policies and actions pertaining to agriculture and forestry resources are included in the Land Use, Agricultural, and Economic Development elements of the *Glenn County General Plan* (Glenn County 2023):

- **Policy LU 3-1:** Ensure that future development and land use decisions protect the integrity of agriculture and do not create a hardship for the county's farmers.
- **Policy AG 2-5:** Promote best management practices in agricultural operations to reduce emissions, conserve energy and water, promote soil health, and utilize alternative energy sources.
- **Policy AG 5-3:** Support and promote water development projects which provide additional sources of water for agricultural uses, including local and regional groundwater recharge efforts.
- **Policy AG 5-6:** Assist landowners in resolving water rights, water delivery and water supply issues with other agencies such as the California Department of Fish and Wildlife, the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, and the California Department of Water Resources.
- **Policy AG 5-9:** Preserve water resources for agriculture, both in quantity and quality, from competition with development, non-agricultural uses, mitigation banks, and/or interests from outside of the County.
- **Action AG-5a:** Coordinate with irrigation districts to identify cost-effective and feasible BMPs for the application and use of water resources that address the range of agricultural activities in Glenn County. Work with entities such as the irrigation districts, Agricultural Commissioner, UC Extension Office, the Glenn County Natural Resource Conservation District, and the Natural Resources Conservation Service to distribute BMPs information to agricultural operations in the County.
- **Action AG-5b:** Collaborate with water suppliers and wastewater treatment plant operators to increase the availability of treated or recycled water for agricultural purposes.
- **Policy ED 2-6:** Protect agricultural water supplies, in terms of both quantity and quality, in order to support continued agricultural activity.
- **Action ED-2c:** Monitor and review proposed actions and activities for their potential impact on agricultural water supplies and discourage actions that would reduce agricultural water supply and/or quality unless adequate mitigation is provided.

3.2.2.2.4 *Butte County General Plan*

The following local goal and policies pertaining to agriculture and forestry resources are included in the Agricultural Resources Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy AG-P6.2:** The County shall preserve and protect adequate and affordable agricultural irrigation water supplies for commercial farmers and ranchers.
- **Policy AG-P6.3:** The County shall work with water agencies and irrigation districts to improve the distribution of water for agricultural uses.
- **Goal AG-7:** Support resilient agricultural lands and practices.
- **Policy AG-P7.1:** The County supports efforts by rice growers and other farmers to adopt drought- and flood-tolerant rice and other crop varieties as they become available and suitable to meet market demand.

3.2.2.2.5 *Sutter County General Plan*

The following local policies pertaining to agriculture and forestry resources are included in the Agricultural Element of the *Sutter County General Plan* (Sutter County 2011):

- **Policy AG 3.1: Efficient Water Management.** Support the efficient management and use of agricultural water resources where economically feasible to support agriculture.
- **Policy AG 3.3: Water Quality and Quantity.** Support efforts to maintain water resource quality and quantity for the irrigation of productive farmland.

3.2.2.2.6 *Colusa County General Plan*

The following local policies and action pertaining to agriculture and forestry resources are included in the Agriculture and Conservation elements of the *Colusa County General Plan* (Colusa County 2012):

- **Policy AG 1-12:** Agricultural uses shall continue to be protected through on--going adherence to and implementation of the County's right to farm ordinance (*Colusa County Code* Chapter 34, Farming Practices).
- **Policy AG 2-8:** Support and promote water development projects which provide additional sources of water for agricultural uses.
- **Policy AG 2-9:** Support the procurement of expanded and additional water rights which provide for contractual supply reliability for agricultural use.
- **Policy AG 2-10:** Seek to increase the County's influence regarding water rights and distribution legislation at the state and federal level, to the greatest degree feasible for both surface water and ground water sources. This may occur through County support for local farm interest groups seeking to influence water-related legislation at the state and federal levels.
- **Policy AG 2-11:** Assist landowners in resolving water rights, water delivery, and water supply issues with other agencies such as the California Department of Fish and Game, the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, and the California Department of Water Resources.

- **Policy AG 2-12:** Within conservation easements and habitat conservation lands, preclude the practice of fallowing fields for the purpose of water export.
- **Policy AG 2-14:** Preserve water resources for agriculture, both in quantity and quality, from competition with development, non-agricultural uses, mitigation banks, and/or interests from outside of the County.
- **Policy AG 2-15:** Promote best management practices in agricultural operations (including animal operations) to reduce emissions, conserve energy and water, and utilize alternative energy sources.
- **Action AG 2-F:** Coordinate with irrigation districts to identify cost-effective and feasible BMPs for the application and use of water resources that address the range of agricultural activities in Colusa County. Work with entities such as the irrigation districts, Agricultural Commissioner, UC Extension Office, the Colusa County Resource Conservation District, and the Natural Resources Conservation Service to distribute BMPs information to agricultural operations in the County.
- **Policy CON 2-9:** Support farmers and landowners in their effort to maximize the efficiency of agricultural practices and operations including carbon efficient farming methods (e.g., methane capture systems, no-till farming, crop rotation, cover cropping); installation of renewable energy technologies; protection of grasslands, open space, oak woodlands, riparian forest and farmlands from conversion to other uses; and development of energy-efficient structures.

3.2.2.2.7 *Yolo County General Plan*

The following local goal and policies pertaining to agriculture and forestry resources are included in the Agriculture and Economic Development and Land Use and Community Character elements of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Goal AG-2 Natural Resources for Agriculture:** Protect the natural resources needed to ensure that agriculture remains an essential part of Yolo County's future.
- **Policy AG-2.3:** Work proactively with regional and watershed based groups to protect and preserve Yolo County's agricultural water supply.
- **Policy AG-2.4:** Encourage the agricultural community to utilize Best Management Practices in the application and use of water resources.
- **Policy AG-2.7:** Encourage farmers and agricultural businesses to prepare for opportunities and adversities that may result from climate change.
- **Policy AG-2.12:** Encourage farmers to employ agricultural practices that supplement rather than deplete topsoil and conserve or minimize water use.
- **Policy LU-2.4:** Vigorously conserve, preserve, and enhance the productivity of the agricultural lands in areas outside of adopted community growth boundaries and outside of city SOIs [Spheres of Influence].

3.2.2.2.8 *Sacramento County General Plan*

The following local policy pertaining to agriculture and forestry resources is included in the *Sacramento County General Plan of 2005-2030* (Sacramento County 2019):

- **Policy AG-27:** The County shall actively encourage groundwater recharge, water conservation and water recycling by both agricultural and urban water users.

3.2.3 *Environmental Impacts and Mitigation Measures*

3.2.3.1 **Baseline**

Based on the most recent data available at the time of publication of the NOP for the proposed project, 453,569 acres within the project area were used for agricultural uses, with 79,558 acres used for field crops (including rice), 46,482 acres used for orchard crops, 18,503 acres used for row crops, 12,862 acres used for pasture crops, 15,906 acres used for other uncategorized crops, and 280,260 acres idled or unassigned. Additionally, 800 acres are forestland and no mapped timberlands occur in the project area.

3.2.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on agriculture/forestry resources. The proposed project would have an impact on agriculture and forestry resources if the following apply:

- **AGR-1:** The project would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- **AGR-2:** The project would conflict with existing zoning for agricultural use, or a Williamson Act contract.
- **AGR-3:** The project would conflict with existing zoning for, or cause rezoning of forest land.
- **AGR-4:** The project would result in the loss of forest land or conversion of forest land to non-forest use.
- **AGR-5:** The project would involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

3.2.3.3 **Methodology for Determining Impacts**

The CEQA Guidelines define a substantial adverse effect on agriculture and forestry resources as a significant effect on the environment. A substantial adverse effect on agriculture and forestry resources would include conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (farmland). Project-specific implementation, construction, and operation activities are considered to distinguish permanent impacts (land that cannot be returned to its prior use after

implementation or construction of the proposed project) from temporary impacts (land that can be returned to its prior use after implementation or construction of the proposed project).

3.2.3.4 Impact Analysis

3.2.3.4.1 *AGR-1: Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

Water Reduction Activities

Out of the 453,569 acres currently dedicated to agricultural practices in the project area, a maximum of 86,333 acres would be idled as a result of the proposed project, which represents less than a fifth of the total acreage of agricultural land within the project area. Within the larger Sacramento Valley region, which includes approximately 2 million acres of agricultural land, the maximum proportion of land that would potentially be idled as a result of the proposed project represents less than 5%. Impacts from cropland idling would generally be expected to be temporary in nature as agricultural fields would remain viable after idling ceases. According to the modeling conducted by Reclamation described in Section 2.4, additional reductions in contract supply resulting from the proposed project would be anticipated to occur on average 0.66 times over the 10-year Phase 1 period. Based on this modeling, the maximum potential for there to be a Phase 1 Agreement Year over a 10-year period is four times. Additional reductions in contract supply would be anticipated to occur on average 0.88 times over the 10-year Phase 2 period and the maximum potential for there to be a Phase 2 Agreement Year over a 10-year period is also four times. Project-related water reductions would not require permanent conversions of agricultural lands, including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, to non-agricultural use.

Cropland shifting would involve converting historically planted higher-water-intensive crops like rice to lower-water-using crops, such as tomatoes, wheat, or safflower. In the scenario where a rice field were to shift to a tomato crop, the land would still have an agricultural use.

Landowners or cities would continue to use existing wells in addition to using new wells constructed as drought-resiliency projects (see the section below for this analysis) for irrigation or domestic purposes for groundwater substitution. The use of existing wells would not result in converting croplands to non-agricultural uses.

Conservation activities to reduce contract water loss would not result in temporary or permanent conversion of agricultural land, as they would maintain the same use as existing conditions.

Drought-Resiliency Projects

Construction of the drought-resiliency projects could result in the installation of structures to support water delivery infrastructure, an essential agricultural use, on lands currently used for agriculture. Structures associated with pipeline recirculation programs, new groundwater wells, and

conjunctive use programs could occur on agricultural lands. The extent of farmland area that could potentially be used for water delivery infrastructure due to the minor footprints of pipeline recirculation program, new groundwater wells, and conjunctive use programs and access areas would be negligible in comparison with the size of the project area. For example, according to the CDWR, the standard requirement for well construction requires the surface base of the well to extend at least 2 feet laterally from the well boring (CDWR 2024b). This would result in a footprint of 4 square feet in addition to a small area for access to the well. While the immediate footprint of the pipeline recirculation program, new groundwater wells, and conjunctive use programs and permanent access areas would be permanently used for water delivery infrastructure to support agricultural uses, the remainder of the associated farmlands would remain available for agriculture. The purpose of the pipeline recirculation programs, new groundwater wells, and conjunctive use programs would be to improve water supply and maintain agricultural uses.

For other drought-resiliency projects, including piping open ditches or canals, on-farm improvements to irrigation systems, canal lining and modernization, installing weirs or check structures, and installing automated gates, the final construction footprint of these projects would be expected to occur in areas that are not used for planting (for example an existing ditch converted to a pipeline would not occur on actively farmed lands, but in an area that is already used for agricultural support infrastructure). All drought-resiliency projects would require access and staging that could temporarily obstruct farmland but would not result in the permanent conversion of farmlands to non-agricultural uses.

Impact Determination: Crop idling is not expected to result in the permanent conversion of farmland; agricultural fields would remain viable for production after idling ceases. Drought-resiliency projects that require built infrastructure to support water delivery could occur on lands currently used for agriculture; however, because the footprint would be so minor in size and water delivery is an essential agricultural use, impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.2.3.4.2 AGR-2: Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Water Reduction Activities

As discussed under Impact AGR-1, cropland idling as a result of the proposed project would be temporary in nature as agricultural fields would remain viable after idling ceases. During Agreement Years where crop idling is needed, Williamson Act contracted lands may be idled. Farmers idle crops as part of normal agricultural operations, and project-related idling would not introduce uses other than agricultural uses or uses compatible with agricultural uses on project area lands. Thus, the proposed project would not conflict with existing zoning or the terms of a Williamson Act contract. Cropland shifting, groundwater pumping, and conservation activities would not conflict with the

existing zoning for agriculture use or a Williamson Act contract as lands would still be used for agricultural production.

Drought-Resiliency Projects

As discussed under Impact AGR-1, drought-resiliency projects may result in the installation of structures to support water delivery infrastructure on lands currently used for agriculture. Water delivery infrastructure is essential for agricultural operations and would not interfere with existing zoning for agricultural use or a Williamson Act contract. Therefore, potential impacts would be less-than-significant.

Impact Determination: The proposed project includes water reduction activities and drought-resiliency projects that would not result in permanent changes to agricultural uses or conflict with existing zoning for agricultural use or a Williamson Act contract. Impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.2.3.4.3 AGR-3: Would the project conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?

No timberland or timberland production lands exist within the project area. 800 acres of forest land are located in the project area in Shasta, Butte, Colusa, Glenn, Sacramento, Sutter, Tehama, and Yolo counties.

Water Reduction Activities

Forest land would not be affected by water reduction activities because these activities would be limited to existing farmland areas.

Drought-Resiliency Projects

Certain types of drought-resiliency projects would not require installation directly on or immediately adjacent to farmlands, such as pipeline recirculation program, new groundwater wells, and conjunctive use programs and access areas. While not expected, if such drought-resiliency projects were to be sited within forest land, they could conflict with existing forest land zoning.

Impact Determination: The water reduction activities would not impact forest land or timberland; therefore, there would be no impact. Drought-resiliency projects sited within forest land would constitute a potentially significant impact.

Mitigation Measures: The following mitigation measure would be implemented to reduce potential impacts:

- **MM-AGR-1:** Site Drought-Resiliency Projects Outside of Forest Lands
 - Drought-resiliency projects will not be sited in forest lands.

Residual Impact: With implementation of MM-AGR-1, forest land impacts would be avoided. Impacts would be considered less than significant with mitigation.

3.2.3.4.4 *AGR-4: Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

Water Reduction Activities

Forest land would not be affected by water reduction activities because these activities would be limited to existing farmland areas.

Drought-Resiliency Projects

For the same reasons as outlined under Impact AGR-3, if drought-resiliency projects are sited within forest land, they would result in the loss or conversation of forest land.

Impact Determination: The water reduction activities would not impact forest land; therefore, there would be no impact. Drought-resiliency projects sited within forest land would constitute a potentially significant impact.

Mitigation Measures: The following mitigation measure would be implemented to reduce potential impacts:

- **MM-AGR-1:** Site Drought-Resiliency Projects Outside of Forest Lands

Residual Impact: With implementation of MM-AGR-1, forest land impacts would be avoided. Impacts would be considered less than significant with mitigation.

3.2.3.4.5 *AGR-5: Would the project involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?*

Water Reduction Activities

As discussed under Impacts AGR-1 and AGR-2, crop idling as a result of the proposed project would be temporary in nature as agricultural fields would remain viable after idling ceases. Cropland shifting, groundwater pumping, and conservation activities would not result in temporary or permanent impacts on agricultural lands.

As discussed under Impact AGR-3, forest land would not be affected by water reduction activities because they would be limited to farmland areas.

Drought-Resiliency Projects

As discussed under Impacts AGR-1 and AGR-2, drought-resiliency projects that require built infrastructure, such as pipeline recirculation program, new groundwater wells, and conjunctive use

programs and access areas, could result in the installation of structures to support water delivery infrastructure on lands currently used for agriculture. These areas would be negligible in size and water delivery infrastructure is in itself an essential agricultural use.

As discussed under Impact AGR-3, certain types of drought-resiliency projects would not require installation directly on or immediately adjacent to farmlands, such as pipeline recirculation program, new groundwater wells, and conjunctive use programs. If such drought-resiliency projects were sited within forest land, they would convert forest land use.

Impact Determination: Water reduction activities would result in less-than-significant impacts to forest lands because these activities would not occur on forest lands. Water reduction activities would not result in the permanent conversion of agricultural lands to non-agricultural uses; therefore, impacts would be less than significant. Drought-resiliency projects would not result in the permanent conversion of agricultural lands to non-agricultural uses; therefore, impacts would be less than significant. If drought-resiliency projects were sited within forest land, they would convert forest land use, constituting a potentially significant impact.

Mitigation Measures: The following mitigation measure would be implemented to reduce potential impacts:

- **MM-AGR-1:** Site Drought-Resiliency Projects Outside of Forest Lands

Residual Impact: With implementation of MM-AGR-1, forest land impacts would be avoided, and impacts would be considered less than significant with mitigation.

3.3 Air Quality

This section describes existing air quality conditions in the project area and analyzes how the proposed project may affect air quality. It also describes applicable rules and regulations pertaining to air quality, specifically the control of criteria air pollutants (CAPs) and toxic air contaminants (TACs) that could affect the proposed project. For the purposes of the air quality analysis, the study area is defined as the Sacramento Valley Air Basin (SVAB), which is overseen by several Air Districts. The focus of this analysis is construction equipment activity, which will result in emissions, and which could occur at nearly any location within the study area. The closest sensitive receptors are assumed to be located at a distance of 20 feet from the project activity, based on a presumed minimal separation between construction activity and a residence, school, or recreational area.

3.3.1 Environmental Setting

The proposed project would occur in the SVAB, which is managed by several Air Quality Management Districts (AQMDs) and Air Pollution Control Districts (APCDs), including Butte County AQMD, Colusa County APCD, Feather River AQMD, Glenn County APCD, Placer County APCD, Sacramento Metro AQMD, Shasta County AQMD, Tehama County APCD, and Yolo-Solano AQMD.

Climate effects and topography in the SVAB have a substantial influence on the area's air quality. Winters are generally wet and cool, and summers are hot and dry. The mountain ranges along the air basin's northern, western, and eastern boundaries serve to trap pollution from local sources as well as from neighboring air basins.

Air quality in the basin is impacted by several sources, including motor vehicle emissions, oil production and refining, agriculture, and inter-basin transport. Because of the project area's unique physical characteristics, the potential for pollution is very high. Several counties within the SVAB have ambient air quality issues, particularly with particulate matter with a diameter less than 2.5 microns ($PM_{2.5}$) and ground-level ozone (O_3). While $PM_{2.5}$ is emitted directly from various sources, including motor vehicles, both $PM_{2.5}$ and O_3 are formed by chemical reactions in the atmosphere and are heavily influenced by the abundance of oxides of nitrogen (NO_x), which is emitted through combustion.

3.3.1.1 Air Pollutants

Air pollutants are defined as two general types: 1) CAPs, representing pollutants for which the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (ARB) have set health- and welfare-protective ambient air quality standards (National Ambient Air Quality Standards [NAAQS] and California Ambient Air Quality Standards [CAAQS]); and 2) TACs, which may lead to serious illness or increased mortality even when present at relatively low concentrations. TACs generally do not have ambient air quality standards.

3.3.1.1.1 Criteria Air Pollutants

USEPA and ARB classify an area as attainment, unclassified, or non-attainment depending on whether the monitored ambient air quality data show compliance, lack of data, or noncompliance with the ambient air quality standards, respectively. The NAAQS and CAAQS relevant to the proposed project are provided in Table 10. Areas without monitoring data are considered unclassified and are generally treated as attainment areas. As discussed above, the NAAQS and CAAQS are health-based standards. Table 10 includes information on the main health effects associated with exceeding the standards. ARB monitors NAAQS and CAAQS to protect public health. For example, if the state annual average $PM_{2.5}$ standard was met, approximately 1,000 premature deaths would be avoided annually (ARB 2015). Local air districts use the NAAQS and CAAQS to develop localized thresholds based on regional risk factors such as weather patterns and geography.

The criteria pollutants of primary concern assessed in this DEIR are O_3 , PM_{10} , $PM_{2.5}$, carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Lead, hydrogen sulfide, and vinyl chloride would not be generated as part of the proposed project; therefore, these pollutants are not evaluated.

Table 10
National and California Ambient Air Quality Standards

Pollutant	Averaging Period	California Standards	National Standards	Health Effects
O ₃	1-hour	0.09 ppm	--	Breathing difficulties, lung tissue damage
	8-hour ^b	0.070 ppm	0.070 ppm	
PM ₁₀	24-hour	50 µg/m ³	150 µg/m ³	Increased respiratory disease, lung damage, cancer, premature death
	Annual	20 µg/m ³	--	
PM _{2.5}	24-hour ^c	--	35 µg/m ³	Increased respiratory disease, lung damage, cancer, premature death
	Annual	12 µg/m ³	9 µg/m ³	
CO	1-hour	20 ppm	35 ppm	Chest pain in heart patients, headaches, reduced mental alertness
	8-hour	9.0 ppm	9 ppm	
NO ₂	1-hour	0.18 ppm	0.100 ppm ^a	Lung irritation and damage
	Annual	0.030 ppm	0.053 ppm	
SO ₂	1-hour	0.25 ppm	0.075 ppm ^a	Increases lung disease and breathing problems for asthmatics
	24-hour	0.04 ppm	0.14 ppm	
	Annual	--	0.030 ppm	
Lead	30-day	1.5 µg/m ³	--	Increased body burden and impairment of blood formation and nerve conduction
	3-month	--	0.15 µg/m ³	
Sulfates	24-hour	25 µg/m ³	--	Decrease in ventilator function, aggravation of asthmatic symptoms, aggravation of cardiopulmonary disease
Visibility-reducing particles	8-hour	In sufficient amount to give an extinction coefficient of >0.23 inverse kilometers (visual range to less than 10 miles with relative humidity less than 70%)	--	--
Hydrogen sulfide	1-hour	0.03 ppm	--	Odor
Vinyl chloride	24-hour	0.01 ppm	--	Short-term exposure: central nervous system effects – dizziness, drowsiness, and headaches; Long-term exposure: liver damage, cancer

Notes:

Source: ARB 2024

- c. The federal 1-hour NO₂ and SO₂ standards are based on the 3-year average of the ninety-eighth and ninety-ninth percentile of daily maximum values, respectively.
- d. The federal 8-hour O₃ standard is based on the annual fourth highest daily maximum 8-hour concentration, averaged over 3 years.
- e. The federal 24-hour PM_{2.5} standard is based on the 3-year average of the ninety-eighth percentile of the daily values.

O₃ is a unique criteria pollutant because it is not directly emitted from proposed project-related sources. Rather, O₃ is a secondary pollutant, formed from the precursor pollutants reactive organic gases (ROG) and NO_x, which react to form O₃ in the presence of sunlight through a complex series of photochemical reactions. Thus, unlike inert pollutants, O₃ levels usually peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty in predicting photochemical pollutant concentrations, O₃ impacts are indirectly addressed by comparing proposed project-generated emissions of ROG and NO_x to daily emission thresholds set by the applicable AQMDs and APCDs.

Table 11 summarizes the federal and state attainment status of criteria pollutants for the counties in the project area based on the NAAQS and CAAQS, respectively.

Table 11
Nonattainment Status by County and Standard

County	Nonattainment Designations	
	Federal NAAQS	State CAAQS
Butte	Ozone (8-hour), 2008 & 2015 – Marginal	PM _{2.5} – Nonattainment PM ₁₀ – Nonattainment Ozone – Nonattainment
Colusa	Attainment/Unclassifiable, all pollutants	PM ₁₀ – Nonattainment
Glenn	Attainment/Unclassifiable, all pollutants	PM ₁₀ – Nonattainment
Sacramento	PM-2.5 (2006) – Moderate Ozone (8-hour), 2008 – Severe 15 Ozone (8-hour), 2015 – Serious	PM ₁₀ – Nonattainment Ozone – Nonattainment
Shasta	Attainment/Unclassifiable, all pollutants	Ozone – Nonattainment
Sutter	Ozone (8-hour), 2008 – Severe 15 Ozone (8-hour), 2015 – Serious (partial) & Marginal (partial)	PM _{2.5} – Nonattainment PM ₁₀ – Nonattainment Ozone – Nonattainment
Tehama	Ozone (8-hour), 2008 & 2015 – Marginal	PM ₁₀ – Nonattainment Ozone – Nonattainment
Yolo	PM-2.5 (2006) – Moderate Ozone (8-hour), 2008 – Severe 15 Ozone (8-hour), 2015 – Serious	PM ₁₀ – Nonattainment Ozone – Nonattainment-Transitional

Note:

Sources: ARB 2024b; USEPA 2024a

3.3.1.1.2 Toxic Air Contaminants

TACs are airborne compounds that are known or suspected to cause adverse human health effects after long-term or short-term exposure. Cancer risk can result from long-term exposure, and non-cancer health effects can result from either chronic or acute exposure. Examples of TAC sources are diesel- and gasoline-powered internal combustion engines in mobile sources; industrial processes and stationary sources such as dry cleaners, gasoline stations, and paint and solvent

operations; and stationary fossil fuel-burning combustion sources, such as power plants. Table 12 describes health effects of the possible TACs of concern monitored in California. Of the pollutants listed in Table 12, diesel particulate matter (DPM) from combustion engines in construction and agricultural equipment would be the primary TAC of concern.

Table 12
Toxic Air Contaminant Health Effects

Pollutant	Health Effects
Benzene	Central nervous system depression, nausea, tremors, drowsiness, dizziness, headache, irritation of the eyes and respiratory tract. Chronic exposure may reduce the production of both red and white blood cells resulting in aplastic anemia. Exposure to benzene may result in an increased risk of contracting cancer
Chlorobenzene	Headaches, numbness, sleepiness, nausea, and vomiting
DPM	Respiratory damage and premature death, and may result in increased risk of contracting cancer
Ethyl benzene	Eye and throat irritation; exposure to high levels can result in vertigo and dizziness
Ethylene glycol monobutyl ether	Eye, respiratory tract, and skin irritation and burns; inhalation may cause headaches and hemolysis (red blood cell breakage)
Hexane	Short-term exposure affects the nervous system and can cause dizziness, nausea, headaches, and even unconsciousness. Chronic exposure can cause more severe damage to the nervous system
Isopropyl alcohol	Skin rash, itching, dryness and redness, irritation of the nose and throat. Repeated high exposure can cause headache, dizziness, confusion, loss of coordination, unconsciousness and even death
Methanol	Chronic exposure can cause visual problems and blindness, convulsions, coma, loss of consciousness, kidney failure, liver damage, low blood pressure, respiratory arrest, and damage to the central nervous system
Naphthalene	May cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin
Propylene glycol monomethyl ether	Can irritate the nose, throat, and lungs causing coughing, wheezing, and/or shortness of breath, headaches, dizziness, lightheadedness, and passing out
Toluene	Irritation of the eyes and nose; weakness, exhaustion, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; numbness or tingling of the skin; dermatitis; liver and kidney damage
Xylenes (mixed)	Depression of the central nervous system, with symptoms such as headache, dizziness, nausea, and vomiting

Note:

Source: USEPA Integrated Risk Information System (USEPA 2021)

3.3.2 *Applicable Regulations*

3.3.2.1 **Federal**

3.3.2.1.1 *Clean Air Act*

USEPA is responsible for setting and enforcing the NAAQS for O₃, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and lead under the Clean Air Act (CAA). USEPA also establishes emission standards for on-road vehicles and off-road engines. The CAA forms the basis for national pollution control and delegates the enforcement of the federal standards to the states. In California, ARB and local air agencies have the shared responsibility for enforcing air pollution regulations, with the local agencies having primary responsibility for regulating stationary emission sources. In the SVAB, the AQMDs/APCDs identified in Section 3.3.1 hold this responsibility for counties within each independent jurisdictional area.

In federal nonattainment areas, the CAA requires preparation of a State Implementation Plan (SIP) detailing how the state will attain the NAAQS within mandated time frames. In response to this requirement, local air quality agencies, in collaboration with other agencies, such as ARB, periodically prepare Air Quality Management Plans (AQMPs) designed to bring the area into attainment with federal requirements and to incorporate the latest technical planning information. The AQMP for each nonattainment area is then incorporated into the SIP, which is submitted by ARB to USEPA for approval. USEPA often approves portions and disapproves other portions of submitted SIPs.

3.3.2.1.2 *Emission Standards for Non-Road Diesel Engines*

USEPA has established a series of progressively cleaner emission standards for new non-road (off-road) diesel engines. Tier 1 standards were phased in from 1996 to 2000; Tier 2 standards were phased in from 2001 to 2006; Tier 3 standards were phased in from 2006 to 2008; and Tier 4 standards, which may require add-on emission control equipment, were phased in from 2008 to 2015. For each tier, the phase-in schedule is driven by engine size. To enable sulfur-sensitive control technologies in Tier 4 engines, USEPA mandated reductions in the sulfur content of non-road diesel fuels to 15 parts per million (ppm; also known as ultra-low-sulfur diesel), effective 2010 (DieselNet 2017). The federal fuel standard is preempted by the California standard, which took effect in 2006. These standards would apply primarily to construction equipment associated with the proposed project as well as agricultural machines involved in farming operations affected by the proposed project.

3.3.2.2 **State**

3.3.2.2.1 *California Clean Air Act*

The California Clean Air Act (CCAA), adopted in 1988, requires nonattainment areas to achieve and maintain CAAQS and mandates that local air districts develop triennial plans for attaining CAAQS. ARB is responsible for establishing CAAQS, ensuring CCAA implementation, and regulating emissions from consumer products and motor vehicles. ARB established CAAQS for all pollutants for which

USEPA has established NAAQS, as well as for sulfates, visibility, hydrogen sulfide, and vinyl chloride. CAAQS are generally more stringent than NAAQS.

3.3.2.2.2 California Diesel Fuel Regulation

ARB has set sulfur limitations for diesel fuel sold in California for use in on- and off-road motor vehicles and to fulfill ARB's 2000 Diesel Risk Reduction Plan. Under this rule, diesel fuel used in motor vehicles applicable to the proposed project has been limited to 15 ppm sulfur since September 2006.

3.3.2.2.3 California Air Resources Board In-Use Off-Road Diesel Vehicle Rule

In July 2007, the ARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Diesel Regulation) to reduce DPM and oxides of nitrogen (NOx) emissions from in-use (existing) off road heavy-duty diesel vehicles in California. The regulation was adopted in April 2008, amended in 2011, and amended again in 2022. The regulation is applicable to all self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road two-engine sweepers, including vehicles that are rented or leased [rental or leased fleets]). Vehicles used solely for agriculture are exempted from this regulation.

The Off-Road Diesel Regulation is a multi-pronged approach that does the following:

- Imposes limits on idling to 5 minutes, requires a written idling policy, and requires a disclosure when selling vehicles
- Requires all vehicles to be reported to ARB in an online reporting system
- Restricts the adding of older vehicles into fleets starting on January 1, 2014
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits).

The 2022 Amendments include a staggered phase-out of Tier 0 through Tier 2 off-road engines and a restriction on new Tier 3 and Tier 4 vehicles. Beginning January 1, 2018, for large and medium fleets and January 1, 2023, for small fleets, a fleet may not add a vehicle with a Tier 2 engine to its fleet; the engine tier must be Tier 3 or higher.

3.3.2.2.4 Toxic Air Contaminant Regulations

California established the California TAC Program (AB 1807 and AB 2728) in 1983. This program sets provisions to implement the national program for control of hazardous air pollutants. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588), established in 1987, is designed to provide information to state and local agencies and to the public on the extent of airborne TAC emissions from stationary sources and the potential public health impact of those emissions. The Hot Spots Act requires that the Office of Environmental Health Hazard Assessment develop Health Risk Assessment (HRA) guidelines. The Hot Spots Act requires operators of certain stationary sources to inventory air toxic emissions from their operations and prepare an HRA, if directed by their local air district, to determine the potential health impacts of their air toxic emissions.

3.3.2.2.5 *Senate Bill 1000: The Planning for Healthy Communities Act*

The Planning for Healthy Communities Act (SB 1000) authored by Senator Connie Leyva and cosponsored by the California Environmental Justice Alliance and the Center for Community Action and Environmental Justice was passed in 2016. SB 1000 requires cities and counties to adopt an Environmental Justice element, or integrate environmental justice-related policies, objectives, and goals throughout other elements of their general plan. This law also includes a process for community members to become involved in the decision-making processes associated with land use planning.

3.3.2.3 **Regional and Local**

California's air quality is monitored and regulated at the state level by ARB and at the local and regional level by air pollution control authorities known as APCDs or AQMDs. The role of the air districts includes developing clean air plans and CEQA guidance. In the SVAB, the AQMDs/APCDs identified in Section 3.3.1 hold this responsibility for counties within each independent jurisdictional area. The AQMDs/APCDs are responsible for implementing federal and state regulations in the air basin, permitting stationary sources of air pollution, and developing the local elements of the SIP. In addition to permitting and rule compliance, air quality management by the AQMDs and APCDs are also accomplished through development of regional CEQA significance thresholds and mitigation measures. Thresholds of significance are generally based on the CAAQS and NAAQS and represent a regional approach to meeting CAAQS and NAAQS recognizing the air districts attainment status, emission sources, and regional geography.

Applicable policies or actions pertaining to air quality from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.3.2.3.1 *Shasta County General Plan*

The following local policies pertaining to air quality are included in the Air Quality Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy 6.5.3 AQ-2f:** Shasta County shall require appropriate Standard Mitigation Measures and Best Available Mitigation Measures on all discretionary land use applications as recommended by the AQMD in order to mitigate both direct and indirect emissions of non-attainment pollutants.
- **Policy 6.5.3 AQ-2j:** The County shall work toward measures to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

3.3.2.3.2 *Tehama County General Plan*

The following local policy pertaining to air quality is included in the Open Space and Conservation Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy OS-2.5:** The County shall encourage and support the Tehama County Air Pollution Control District in their efforts to enforce local, state, and federal air quality laws, rules, and regulations in order to meet Ambient Air Quality Standards (AAQS).

3.3.2.3.3 *Butte County General Plan*

The following local goal and policies pertaining to air quality are included in the Conservation and Open Space Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Goal COS-5:** Minimize air pollutant emissions.
- **Policy COS-A1.3:** Coordinate with the Butte County Air Quality Management District on anti-idling programs that will reduce idling by heavy duty vehicles.
- **Policy COS-P5.6:** New sources of toxic air pollutants shall comply with the permitting requirements of the Butte County Air Quality Management District and Section 44300 et. seq. of the California Health and Safety Code.

3.3.2.3.4 *Sutter County General Plan*

The following local policy pertaining to air quality is included in the Air Quality Element of the Sutter County General Plan (Sutter County 2011):

- **Policy ER 9.1: Ambient Air Quality Standards.** Work with the California Air Resources Board and the Feather River Air Quality Management District (FRAQMD) to meet State and federal ambient air quality standards.

3.3.2.3.5 *Colusa County General Plan*

The following local policies or actions pertaining to air quality are included in the Conservation Element of the *Colusa County General Plan* (Colusa County 2012):

- **Policy CON 2-16:** Cooperate with the Colusa County Air Pollution Control District to monitor air pollution within the County, enforce APCD, state, and federal air quality rules, and require mitigation of significant impacts to the maximum extent feasible.
 - **Action CON 2-E:** Refer development, infrastructure, and planning projects to the Colusa County Air Pollution Control District (APCD) for review. Require project applicants to prepare air quality analyses to address APCD and General Plan requirements, which include analysis and identification of:
 - a. Air pollutant emissions associated with the project during construction, project operation, and cumulative conditions.
 - b. Significant air quality impacts associated with the project for construction, project operation, and cumulative conditions.
 - c. Mitigation measures to reduce significant impacts to less than significant or the maximum extent feasible where impacts cannot be mitigated to less than significant.
 - **Action CON 2-F:** Coordinate with the APCD to develop: 1) thresholds for criteria pollutants associated with construction activities, and 2) a list of standard best management practices (BMPs) to be implemented during construction activities.
 - **Action CON 2-G:** Continue to implement measures and strategies contained in the Northern Sacramento Valley Air Quality Attainment Plan.

3.3.2.3.6 *Yolo County General Plan*

The following local policy pertaining to air quality is included in the Conservation and Open Space Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy CO-6.6:** Encourage implementation of YSAQMD Best Management Practices, such as those listed below, to reduce emissions and control dust during construction activities:
 - Water all active construction areas at least twice daily.
 - Haul trucks shall maintain at least two feet of freeboard.
 - Cover all trucks hauling soil, sand, and other loose materials.
 - Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut-and-fill operations and hydroseed area.
 - Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
 - Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
 - Plant vegetative ground cover in disturbed areas as soon as possible.
 - Cover inactive storage piles.
 - Sweep streets if visible soil material is carried out from the construction site.
 - Treat accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips or mulch.
 - Treat accesses to a distance of 100 feet from the paved road with a 6-inch layer of gravel.

3.3.2.3.7 *Sacramento County General Plan*

The following local policy pertaining to air quality is included in the *Sacramento County General Plan* of 2005-2030 (Sacramento County 2022a):

- **Policy AQ-3:** Buffers and/or other appropriate exposure reduction measures shall be established on a project-by-project basis and incorporated during review to provide for protection of sensitive receptors from sources of air pollution or odor. The California Air Resources Board's "Strategies to Reduce Air Pollution Exposure Near High Volume Roadways" Technical Advisory and the AQMD's "Mobile Sources Air Toxics Protocol" or applicable AQMD guidance shall be utilized when establishing these exposure reduction measures.

3.3.3 *Environmental Impacts and Mitigation Measures*

3.3.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, most of the project area is used for agriculture. Agriculture impacts to air quality arise from various sources, including tailpipe emissions from farm equipment and on-road product transport vehicles, dust from traversal of unpaved roads and grain processing, and fermentation product emissions from rice farming in inundated fields.

3.3.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on the Appendix G of the CEQA Guidelines (Environmental Checklist), San Joaquin Valley APCD guidance, and applicable air district thresholds, were used to determine whether the proposed project would result in air quality impacts. The proposed project would have an impact on air quality if the following apply:

- **AIR-1:** The project would conflict with or obstruct implementation of the applicable air quality plan.
- **AIR-2:** The project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.
- **AIR-3:** The project would expose sensitive receptors to substantial pollutant concentrations.
- **AIR-4:** The project would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

3.3.3.3 Methodology for Determining Impacts

Impacts to air quality were assessed qualitatively. The proposed activities are programmatic in nature and spread over a large project area and therefore, were not quantified. Project elements were evaluated individually to assess the level of impact that could be expected if each element were adopted widely, and overall impacts were determined based on the reasonably foreseeable worst-case scenario.

3.3.3.4 Impact Analysis

3.3.3.4.1 *AIR-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?*

Water Reduction Activities

Water reduction activities would only occur during Agreement Years and would not involve construction activities. In the specific case of crop idling, farm equipment would not be used to farm the idled crop during Agreement Years, resulting in reduced air quality impacts. Tailpipe emissions associated with farm equipment used to seed, plow, harvest, and apply fertilizer and pesticides, would be eliminated on a per/acre basis for each season a field is idle, along with emissions from agricultural workers who would otherwise have traveled to work on crop lands. Emissions of fugitive dust, ammonia, and chemical pesticides would also decrease accordingly.

Cropland shifting and conservation would not result in any meaningful changes to air quality. Crop shifting could generate small levels of increased or decreased emissions depending on the types of crops that are shifted and on the type of equipment needed to farm the crop. However, these effects are expected to be minor as the general mix of farm equipment is similar. Shifting from rice to a non-irrigated crop may increase dust emissions. However, crop shifting would be a temporary

measure during Agreement Years and would not result in long-term changes to air quality, nor result in excess levels of PM or O₃.

Groundwater pumping would include the use of pumps, which could contribute new emissions if the pumps are powered by fossil fuels. However, these pumps are generally small in terms of horsepower and often powered by electricity.

Drought-Resiliency Projects

Emissions would be generated directly in exhaust emissions from fossil fuel-powered construction equipment, including trucks used to transport material on-site and limited off-site movements, and worker vehicles associated with construction activities, as well as from secondary dust arising from construction activities in unpaved areas. Construction activities that could generate direct tailpipe emissions and dust under the proposed project include piping open ditches or canals, canal lining, automated gate installation, on-farm irrigation system improvements, installing weirs and check structures, pipeline recirculation systems, and installation of new wells. As noted in Section 2.5.2, the type of construction equipment used would include as needed per individual project: excavators, roller-compactors small cranes, dozers, backhoe, loaders, concrete trucks, hand-held tools, skid steer loaders, graders, mulchers, dump trucks, and percussion or rotary-drilling machines. Individual project construction start dates, specific mix of equipment, and specific construction design parameters are unknown at this time. However, construction of individual projects is expected to be limited in scope and duration and to use only a few pieces of construction equipment per project over a few days to a couple of months. Construction equipment would meet all applicable and required emission standards required as through ARB's In-Use Off-Road Diesel Vehicle Rule, including idling limits and emissions are not expected to exceed applicable District thresholds.

Impact Determination: Activities resulting from water reduction would result in minor changes in emissions, with temporary net reductions from crop idling and water conservation and slight increases possible from crop shifting, mainly from dust generation, and groundwater. These changes are unlikely to lead to a significant impact to concentrations of PM and O₃. Impacts from drought-resiliency activities would not differ from an average, small-scale infrastructure construction project. The drought-resiliency projects described would not require a large amount of diesel equipment to be operated at any one time in one location. Collectively, these would be minor, short-term, and less-than-significant impacts.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, the following mitigation measures would be implemented to further reduce potential emissions:

- **MM-AIR-1: Construction Truck Idling Requirements**
 - During construction of drought-resiliency projects, SRSC contractors will require construction contractors to minimize heavy-duty construction equipment idling time to 2 minutes where feasible. Currently, the In-Use Off-Road Diesel Vehicle Rule restricts construction equipment idling to 5 minutes. This measure would further reduce the time allowance for idling to 2 minutes to reduce emissions. Exceptions include

equipment that needs to idle to perform work, vehicles being serviced, or vehicles in a queue waiting for work consistent with the In-Use Off-Road Diesel Vehicle Rule.

- **MM-AIR-2: Dust Reduction Measures**

- During drought-resiliency project construction in non-Agreement Years, the following dust control measures will be implemented as applicable to the drought-resiliency project:
 - Active construction areas will be watered at least twice daily.
 - Haul trucks will maintain at least two feet of freeboard.
 - Trucks hauling soil, sand, and other loose materials will be covered.
 - Non-toxic binders (e.g., latex acrylic copolymer) will be applied to exposed areas after cut-and-fill operations and hydroseed area.
 - Inactive storage piles will be covered.
- During Agreement Years, a speed limit of 20 miles per hour for vehicles driving on unpaved roads or farmland devoid of crops will be established and enforced. Speed limits will be posted, and workers will be notified in writing of restrictions. In addition, the following measures will be implemented as applicable to the drought-resiliency project:
 - Haul trucks will maintain at least two feet of freeboard.
 - Trucks hauling soil, sand, and other loose materials will be covered.
 - Non-toxic binders (e.g., latex acrylic copolymer) will be applied to exposed areas after cut-and-fill operations and hydroseed area.
 - Inactive storage piles will be covered.

Residual Impact: Implementation of MM-AIR-1 and MM-AIR-2 would further reduce construction and operational emissions and impacts would remain less than significant.

3.3.3.4.2 AIR-2: *Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*

As discussed under Impact AIR-1, water reduction activities would result in low to no changes in emissions, particularly crop idling and water conservation. Crop shifting could be expected to result in slight increases or decreases in emissions, based on the gross emissions associated with these activities compared to the baseline emissions that would cease in these cases. Groundwater pumping could result in direct emissions from fossil-fueled groundwater pumps or indirect emissions from additional electricity consumption. However, incremental emission increases could be offset by reductions in crop idling or shifting (e.g., due to reduced farming activity and at agricultural commodity processing facilities that use electricity) and is unlikely to lead to a significant impact to concentrations of PM and O₃.

The emissions from other drought-resiliency projects would stem from exhaust emissions from fossil fuel-powered construction equipment and vehicles and from dust arising from disturbed earth. As

discussed in Impact AIR-1, these emissions are not expected to differ from an average, small-scale infrastructure construction project and would not lead to a significant impact to concentrations of PM and O₃.

Impact Determination: Emissions related to water reduction activities and drought-resiliency projects would result in minor, short-term impacts to air quality. Drought-resiliency projects would be subject to state and local regulations and policies on equipment idling, dust control measures, and best practices for protection of air quality. Therefore, impacts would be less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, the following mitigation measures would be implemented to further reduce potential emissions:

- **MM-AIR-1:** Construction Truck Idling Requirements
- **MM-AIR-2:** Dust Reduction Measures

Residual Impact: While not required to avoid a cumulatively considerable net increase in PM or O₃, MM-AIR-1 and MM-AIR-2 would further reduce emissions and lessen the chance of an impact. Impacts would remain less than significant.

3.3.3.4.3 AIR-3: Would the project expose sensitive receptors to substantial pollutant concentrations?

A significant impact would occur if a project would emit TACs that could cause a significant increase in health risks, including both carcinogenic and non-carcinogenic risks. A project is considered to have a significant TAC impact if it exceeds the thresholds set by the applicable air district. These thresholds evaluate: 1) the risk of the maximally exposed individual (MEI) developing cancer from carcinogenic TAC exposure; and 2) the acute or chronic hazard index for the MEI from exposure to non-carcinogenic TACs. TAC thresholds vary by district, but the Sacramento Metropolitan AQMD thresholds are included for reference, as they are the most stringent in the project area:

- Ground-level concentrations of carcinogenic TACs that would increase the probability of contracting cancer for the MEI by 10 in 1 million or more (SMAQMD 2020a)
- Increase in ground-level concentrations of non-carcinogenic TACs that would result in an acute or chronic hazard index exceeding 1 for the MEI receptor (SMAQMD 2020a)

Impacts to sensitive receptors are typically evaluated in terms of exposure to TACs. ARB classifies DPM as a TAC and uses PM₁₀ emissions from diesel exhaust as a surrogate for DPM. Health effects from carcinogenic TACs are described in terms of individual cancer risk, which is based on a 30-year lifetime exposure to TACs. More than 90% of DPM is less than 1 micrometer in diameter, and thus is a subset of PM_{2.5}. PM_{2.5} comes from a variety of sources, but primarily from the burning of carbon-based fuels, such as gasoline, diesel, and wood. Numerous scientific studies have linked exposure to airborne PM_{2.5} to increased severity of asthma attacks, development of chronic bronchitis, decreased lung function in children, respiratory and cardiovascular hospitalizations, and even premature death in people with existing heart or lung disease (ARB 2021). Because DPM is a subset of PM_{2.5}, DPM also

contributes to the same non-cancer health effects as PM_{2.5} exposure. These effects include premature death, hospitalizations, and emergency department visits for exacerbated chronic heart and lung disease, including asthma, increased respiratory symptoms, and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies. Those most vulnerable to non-cancer health effects are children whose lungs are still developing and the elderly, who often have chronic health problems (ARB 2021).

CEQA does not require comprehensive quantification of health risk for every project. Rather, projects are evaluated or screened for a need to quantify health risks and a quantitative HRA is conducted if it is determined that impacts could potentially exceed thresholds of significance. An HRA is dependent on several key variables: TAC emissions, TAC potency, exposure duration, and distance from sensitive receptors. If one of these variables (such as TAC emissions) is low, that, by itself, is not a basis for determining whether an HRA is needed. However, taken together these variables make a compelling argument for determining the need for a quantitative HRA. For example, low TAC emissions emitted far from sensitive receptors and for a short duration would indicate that impacts are unlikely to exceed thresholds of significance.

As noted in Impact AIR-1, emissions generated by water reduction activities are expected to be minor. These emissions would occur on agricultural lands, which are not in the vicinity of any sensitive human land uses. Drought-resiliency projects would also generate emissions; there may be limited situations in which construction may occur adjacent to sensitive receptors, such as improvements to canal segments adjacent to a residential area. However, these emissions would be limited and occur for only a short duration.

Impact Determination: Water reduction activities would likely reduce DPM emissions, especially if croplands are idled and no crops are planted. Proposed construction activities associated with drought-resiliency projects would result in temporary DPM emissions, from the combustion of diesel fuel in off-road construction equipment engines. New groundwater wells would necessitate pumps which could contribute to operational emissions, but any diesel-powered pumps would likely be too small and remote to contribute significant amounts of DPM to sensitive receptors. Other drought-resiliency projects would not contribute to significant DPM emissions. Therefore, impacts would be less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, the following mitigation measures would be implemented to further reduce potential impacts:

- **MM-AIR-1:** Construction Truck Idling Requirements
- **MM-AIR-2:** Dust Reduction Measures

Residual Impact: While not required to meet health risk thresholds, MM-AIR-1 and MM-AIR-2 would further reduce emissions and result in less risk. Impacts would remain less than significant.

3.3.3.4.4 *AIR-4: Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

Diesel exhaust produced by off-road construction or farm equipment could generate odors; however, several pieces of equipment would need to operate concurrently in a relatively small area close to a substantial number of people to generate a constant plume of diesel exhaust that would cause objectionable odors for a substantial number of people. These circumstances would not occur as part of the proposed project because equipment would occur over a broad area, generally removed from areas with substantial numbers of people, and would not all operate at the same time.

Impact Determination: Equipment related odors would not affect a substantial number of people. Therefore, this impact is considered to be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.4 Biological Resources

This section describes existing biological resources conditions in the project area and analyzes how the proposed project may affect these resources. It also describes applicable rules and regulations pertaining to biological resources that could affect the proposed project. For the purposes of the biological resources analysis, the study area is defined as the project area as presented on Figure 1.

3.4.1 *Environmental Setting*

Most of the project area consists of disturbed farmed lands that lack native wildlife habitats. The majority of the lands within the project area consists of irrigated croplands (including pastures) and irrigation and drainage ditches that facilitate agricultural operations. Adjacent open water, wetlands, and riparian habitats are restricted to areas adjacent to Shasta Lake and the Sacramento River and its tributaries. This section describes the environmental setting for biological resources by describing: 1) agricultural lands broken into several categories based on the crops, including alfalfa, irrigated pasture, row crops, orchards, and vineyards; 2) jurisdictional waters adjacent to agricultural lands including Shasta Lake, the Sacramento River and its tributaries, wetlands, and, potentially, certain agricultural ditches; 3) special status animal and plant species with the potential to occur in the project area; and 4) wildlife movement corridors in the project area.

3.4.1.1 Agricultural Lands

The dominant land cover within the project area consists of agricultural croplands which are used for both seasonal and perennial crop types. In addition to active agricultural lands, there are unvegetated areas adjacent to fields, fallow fields that are disced or support volunteer weed species, gravel and dirt farm roads, and water conveyance ditches and canals for agriculture. Seasonal crops such as tomatoes, corn, legumes, rice, or peppers within the project area vary depending on location, soils, crop rotation, and market demands. Perennial crops within the project area may consist of

alfalfa, vineyards, and fruit and nut orchards. Agricultural practices create monotypic stands of vegetation for maximum production during the growing season and the lands are often bare in the winter. Special status species associated with agricultural lands, further described in Section 3.4.1.3, may include Swainson's hawk (*Buteo swainsoni*), giant garter snake (*Thamnophis gigas*; GGS), and white-tailed kite (*Elanus leucurus*). Special status plants are not associated with actively cultivated or fallow agricultural fields. The following sections describe specific crop types that are found in the project area and their wildlife habitat values.

3.4.1.1.1 Alfalfa

Alfalfa (*Medicago sativa*), a legume, is a perennial crop which is generally flood irrigated, mowed, and harvested two to four times per year. Vegetation height varies with the growing, harvesting, and fallowing cycles. With its perennial growth habit, alfalfa is not disced throughout the year and subsequently it can support large populations of small mammals (e.g., voles) and invertebrate species. High-value foraging habitat for wildlife can be found on alfalfa fields where wading and shore birds can forage during flood irrigation. Blackbirds and hawks find foraging opportunities as the alfalfa grows. Additionally, when mowing and baling occur, hawks find ample opportunity to forage rodents. Alfalfa is known to be used in particular by Swainson's hawk, white-tailed kite, and other raptor species, which capitalize on high prey densities and cycles of increased prey availability when the fields are being irrigated and mowed.

3.4.1.1.2 Irrigated Pasture

Irrigated pastures are perennial grasslands which are not tilled throughout the year. Replanting of perennial grass species can occur as needed in 3- to 10-year cycles where the land may be disced and new species planted. They are usually managed with a low structure of native herbaceous plants, cultivated species, or a mixture of both. Irrigated pastures provide breeding opportunities for ground-nesting birds and burrowing animals, such as burrowing owl (*Athene cunicularia*), western meadowlark (*Sturnella neglecta*), California ground squirrel (*Otospermophilus beechyi*), and Botta's pocket gopher (*Thomomys bottae*). The open structure of irrigated pastures provides foraging habitat for grassland-foraging wildlife, such as red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), and coyote (*Canis latrans*).

3.4.1.1.3 Rice

Rice is a flood-irrigated crop of seed-producing annual grasses. Rice fields are managed in a flooded state until harvesting time nears. Rice is usually grown in areas with a hard pan that can perch water on lands that previously supported historic wetlands. Many wildlife species use and depend on rice fields, especially GGS, waterfowl, and shorebirds when fields are flooded. Grain spillage that is not harvested also provides food for species such as ring-necked pheasant (*Phasianus colchicus*) and sandhill crane (*Grus canadensis*). Aquatic wildlife found in rice fields include bullfrog (*Lithobates catesbeianus*) and wading birds that forage on aquatic invertebrates such as red swamp crayfish (*Procambarus clarkii*) and small fishes.

Rice fields provide habitat for a range of wintering waterfowl species in the Yolo Bypass, located in the Sacramento Valley west of Sacramento between Fremont Weir and Lindsey Slough. In particular, the practice of flooding rice fields in winter to allow rice stubble to rot, instead of burning rice stubble in the fall, provides a wide variety of ducks and geese an opportunity to loaf or forage in rice fields in winter and important foraging habitat for shorebirds. Fallow rice fields also provide important habitat for geese, cranes, large herons, and egrets, and can also provide breeding habitat for waterfowl such as mallards (*Anas platyrhynchos*) and gadwall (*Mareca strepera*).

3.4.1.1.4 Row Crops

Other cultivated crops include grain and seed crops, as well as row crops and silage. Grain and seed crops are annual grasses that are grown in dense stands and include corn, wheat, barley, and others. Because the dense growth makes it difficult to move through these fields, most of the value to wildlife is derived during the early growing period and especially following the harvest, when waste grain is accessible to waterfowl and other birds, such as sandhill cranes. In some areas of the Delta, grain fields support a substantial proportion of the sandhill crane population that winters in California and are used by tricolored blackbird (*Agelaius tricolor*) for foraging as well.

Although generally of lesser value to wildlife than native habitats, row crop and silage fields often support abundant populations of small mammals, such as western harvest mouse (*Reithrodontomys megalotis*) and California vole (*Microtus californicus*). These species in turn attract predators such as gopher snake (*Pituophis catenifer*), western racer (*Coluber constrictor*), American kestrel, and red-tailed hawk. Other reptile and bird species prey on the insect populations abundant in row crop and silage fields, including western fence lizard (*Sceloporus occidentalis*), Brewer's blackbird (*Euphagus cyanocephalus*), American crow (*Corvus brachyrhynchos*), and the non-native European starling (*Sturnus vulgaris*).

3.4.1.1.5 Orchards

Orchards are habitats dominated by fruit or nut tree species. Orchards usually are grown on fertile land that formerly supported diverse and productive natural habitats and wildlife. Orchard habitats are used by several common woodland-associated species, such as western gray squirrel (*Sciurus griseus*), American robin (*Turdus migratorius*), red-tailed hawk, bats, and the non-native black rat (*Rattus rattus*). The western red bat (*Lasiurus blossevillii*) is known to roost in orchards, which may serve as an alternative habitat to the species' more preferred habitat of large cottonwoods, sycamores, and oaks (Pierson et al. 2006).

3.4.1.1.6 Vineyards

Vineyards are single-species vines grown in rows on trellises. Rows are normally formed by intertwining vines, with open spaces between the rows. The spaces between rows either are barren soil or are composed of a cover crop of natural or domesticated herbaceous plants. Except for some common species, such as mourning dove (*Zenaidura macroura*) and raptors such as barn owl (*Tyto alba*) and American kestrel that use perches and nest boxes, vineyards provide little wildlife habitat.

3.4.1.2 Jurisdictional Wetlands and Other Waters

3.4.1.2.1 *Shasta Lake*

Shasta Lake is California's largest human-made lake located on the upper Sacramento River in Northern California approximately 9 miles northwest of the City of Redding. The entire reservoir is within Shasta County. The reservoir controls runoff from about 6,421 square miles from four major tributaries including the Sacramento, McCloud, and Pit Rivers, Squaw Creek, and from numerous minor creeks and streams. Historically, essentially all outflow from Shasta Dam travels through Northern California to the Sacramento-San Joaquin Delta southwest of Sacramento. The total drainage area of the Sacramento River at the Delta is about 26,300 square miles and water flow from this system represents approximately 62% of the total inflows to the Delta. Reclamation constructed Shasta Dam and Lake from 1938 to 1945 as an integral element of the CVP to provide irrigation water supply, municipal and industrial water supply, flood control, hydropower generation, fish and wildlife conservation, and navigation.

3.4.1.2.2 *Riverine Habitats*

The Sacramento River, a navigable water of the United States, is one of the two major rivers flowing into the north end of San Francisco Bay. Fed by the snowmelt from Mount Shasta, the river flows south past Dunsmuir into Shasta Lake. Below Shasta Dam, it flows through Redding and Red Bluff and west of Chico. It joins Butte Creek near Colusa, the Feather River outside of Sacramento, and the American River at the center of Sacramento. From there it flows southwesterly until joined by the San Joaquin River near Pittsburg. The mingled waters of the two rivers then flow west into San Pablo Bay and ultimately San Francisco Bay (SF District 2024).

Riverine habitats include all the natural channels or relocated channels that convey water from watersheds to downstream receiving bodies. The Sacramento River and its larger tributaries are riverine habitats that exhibit perennially flowing waterbodies, while smaller intermittent to seasonal creeks and streams that exhibit an ordinary high water mark, vegetation change, and a break in the natural slope are also considered riverine. Substrates within the riverine habitats include mud, sand, gravel, or cobble depending on location within the watershed.

3.4.1.2.3 *Wetlands*

Wetlands along the Sacramento River and across the greater study area are varied in vegetation, soils, and hydrology and can be represented by seasonal wetlands, emergent wetland, scrub-shrub wetland, and forested wetland. Vegetation communities in wetlands range dramatically with dominant vegetation ranging between annual hydrophytes to perennial tree species with some areas supporting a gradient between annuals and perennials.

Seasonal wetlands are generally characterized by ephemeral hydrology periods and support plant species which are annual hydrophytes. Temporary inundation or saturation within seasonal wetlands corresponds to winter or spring precipitation and changes in vegetation are visible on aerial

photography that exhibits ponded water or darker growth signatures during the winter and growing season contrasted with golds and brown colors as the summer dries the feature.

Emergent wetlands are supported by a longer hydroperiod with inundation or saturation for a long enough duration to allow the growth of perennial herbaceous species such as rushes (*Juncus*, *Cyperus*, and *Schoenoplectus* spp.), sedges (*Carex* spp.), and floating species such as water primrose (*Ludwigia peploides*). These areas typically occur on the edges of ponds, lakes, ditches, channels, rivers (where water flows are slower), or other perennial water features. These features are visible as perennially inundated with vegetation growth through the year and little change in the aerial signatures.

Scrub-shrub wetland communities persist with a long hydroperiod, and perennial shrub and tree species commonly observed consist of willows (*Salix* spp.), dogwood (*Cornus* spp.), California rose (*Rosa californica*), and Himalayan blackberry (*Rubus armeniacus*). This vegetation type occurs around the perimeter of ponds, lakes, rivers, creeks, and other perennial waterbodies in the Sacramento River system and its tributaries.

Riparian wetland forests are characterized by woody vegetation that exceeds 20 feet in height with a canopy cover greater than 25 percent with species such as mature Fremont cottonwood (*Populus fremontii*), black willow (*Salix gooddingii*), California black walnut (*Juglans hindsii*), and valley oak (*Quercus lobata*). This vegetation type occurs along the terraces and banks of the major rivers within the Sacramento River system and its tributaries in addition to oxbows and lake margins.

Wetlands including marshes and riparian vegetation are found within preserves in the project area, including national wildlife refuges, wildlife management areas, and local wildlife preserves. Examples include large preserves encompassing thousands of acres of wetlands associated with the Natomas Basin Conservancy (approximately 54,000 acres) and Delevan and Colusa National Wildlife Refuges (5,757 acre and 4,507 acres, respectively) as well as smaller preserves like the Davis Wetlands (400 acres), among others. Additional preserves of varying types are found adjacent to the Sacramento River as well as to the east and west of the levees. A wide diversity of wetlands form a mosaic in preserve areas providing annual and perennial herbaceous vegetation as well as scrub-shrub to mature riparian trees that are important for both resident and migratory waterfowl in the Pacific Flyway.

3.4.1.2.4 Agricultural Ditches

Agricultural ditches consisting of linear or curved, human-made canals for the conveyance of irrigation water or the removal of irrigation water or seasonal precipitation that sheet flows across agricultural lands throughout the project area. The network of agricultural ditches enables the growth of crops and drainage of water from uplands. Agricultural ditches are generally constructed by the removal of earth and compaction of a V-shaped or trapezoidal-shaped conveyance channel.

Vegetation in agricultural ditches can be absent to abundant when maintenance does not remove volunteer species along earthen banks. Agricultural ditches constructed through farmed wetlands

may be considered jurisdictional by federal and state regulatory agencies, while agricultural ditches constructed in uplands are not considered jurisdictional. Agricultural ditches provide habitat for GGS.

3.4.1.3 Special Status Species and Habitats

Special status species known or with the potential to occur in the project area were identified by querying the following:

- California Natural Diversity Database (CNDDDB) list of state species of special concern and state and federal proposed endangered, threatened, and candidate species
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) list of federally listed and proposed endangered, threatened, and candidate species (USFWS 2024)
- California Native Plant Society (CNPS) online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2024)
- National Marine Fisheries Service West Coast Region species list of endangered and threatened species and critical habitat (NMFS 2024)

The database queries for CNDDDB, IPaC, and CNPS were each based on a search of the greater project vicinity, which includes the counties of Butte, Colusa, Glenn, Tehama, Sacramento, Shasta, Sutter, and Yolo.

3.4.1.3.1 *Vegetation Communities and Wildlife Habitat Overview*

The CNDDDB and IPaC identify numerous special status (i.e., threatened or endangered under the federal Endangered Species Act [ESA] or California Endangered Species Act [CESA], state species of special concern, or CDFW fully protected species) plant and wildlife species within the project area, as identified through a search of the eight counties in which the project area occurs. Appendix B includes a table of all species identified by CNDDDB and IPaC. Potential species occurrences identified in Appendix B were determined based on habitat requirements and general agricultural field conditions.

The project area consists of actively managed agricultural lands and their associated irrigation ditches which make it unlikely that most special status wildlife species listed in Appendix B would be present, although several special status wildlife species have a moderate to high potential for occurrence. The riverine habitats adjacent to agricultural fields provide nesting habitat for several raptors and passerines; the ditches and levees provide burrow sites for burrowing owl; and the rivers, creeks, and ditches provide habitat for western pond turtle and GGS. The riparian areas could support elderberry shrubs and valley elderberry longhorn beetle.

Fish species which are entirely dependent on riverine habitat were not considered in this evaluation. None of the fish species, with the exception of green sturgeon (*Acipenser medirostris*), identified in Appendix B have the potential to be present in the project area. Special status vernal pool invertebrates and amphibians were eliminated based on lack of suitable habitat in the project area. Other special status terrestrial species with specific habitat absent from the project area were

eliminated from the discussion below including gray wolf (*Canis lupus*), north American wolverine (*Gulo gulo luscus*), California spotted owl (*Strix occidentalis occidentalis*), northern spotted owl (*Strix occidentalis caurina*), western snowy plover (*Charadrius nivosus nivosus*), and yellow-billed cuckoo (*Coccyzus americanus*). Special status plants associated with vernal pool and alkali playa habitat were also not considered to be potentially occurring in the project area.

Special status species with the potential to use lands within the project area include the following:

- Swainson's hawk (state threatened)
- White-tailed kite (CDFW fully protected)
- Tricolored blackbird (state threatened)
- Burrowing owl (*Athene cunicularia*; state species of special concern)
- Northwestern pond turtle (*Actinemys marmorata*; federal proposed threatened, state species of special concern)
- Loggerhead shrike (*Lanius ludovicianus*; state species of special concern)
- Valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*; federal threatened)
- GGS (federal and state threatened)
- Green sturgeon (*Acipenser medirostris*; federal threatened)
- GGS (federal and state threatened)
- Northwestern pond turtle (*Actinemys marmorata*; federal proposed threatened, state species of special concern)

The project area may also provide roosting habitat for bats and suitable nesting habitat for Migratory Bird Treaty Act (MBTA)-protected bird species where riparian wetland forest or scrub-shrub wetland communities occur.

3.4.1.3.2 Special Status Species

3.4.1.3.2.1 Swainson's Hawk

Swainson's hawk is a long-distance migrant species. Central Valley populations winter primarily in Mexico and arrive at their Central Valley breeding grounds in mid-March to early April. Nests are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. Egg laying generally occurs in April, and young are present in May and June. Most young have fledged the nest by the end of July and are relatively independent of parental protection; however, fledged young remain with their parents until they depart in the fall for migration. Migration to wintering grounds generally occurs around September; however, some individuals or small groups may winter in California. Swainson's hawks are regularly observed throughout the Central Valley nesting in riparian areas or solitary trees where they forage in alfalfa fields or other agricultural lands. Trees along the Sacramento River and its tributaries to the Sacramento watershed and mature trees located between agricultural lands are known to provide nesting habitat for Swainson's hawk.

3.4.1.3.2.2 White-Tailed Kite

White-tailed kites nest and forage in a variety of settings. They hunt over grassland, savanna, cultivated fields, marshes, and riparian woodland, and are also commonly observed foraging along freeway medians and edges. Kites prey primarily on voles and other small rodents but also eat birds, snakes, lizards, frogs, and large insects. They build stick nests in the tops of trees, preferentially near an open foraging area, and typically forage within 0.5 mile of the nest during the breeding season, which extends from February through October. White-tailed kites nest throughout the Central Valley and are found along the Sacramento River watershed nesting among trees and foraging in agricultural fields. As with Swainson's hawk, trees along the riparian areas along the Sacramento River and its tributaries and the solitary trees between agricultural fields within the project area may provide nesting habitat for white-tailed kites.

3.4.1.3.2.3 Tricolored Blackbird

Tricolored blackbird requires very dense thickets of vegetation for nesting, such as blackberry (*Rubus* spp.), cattails (*Typha* spp.), or tules (*Schoenoplectus* spp.). Breeding colonies require a nearby source of water, suitable nesting substrate, and natural grassland, woodland, or agricultural cropland biomes in which to forage. Frequently, tricolor blackbird can be observed foraging in fallow agricultural fields during the winter among multi-species flocks including red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), and European starlings. Recorded occurrences of tricolored blackbird are known throughout the project area (CDFW 2024). There is a moderate potential for this species to forage within fields and nest in vegetation adjacent to irrigation and drainage ditches and riparian areas in the project area.

3.4.1.3.2.4 Burrowing Owl

Burrowing owl is a year-round resident of open spaces, such as grasslands and agricultural fields, in the Central Valley. Burrowing owls eat small mammals and insects, which can be found across the agricultural fields and adjacent lands of the Central Valley. Nest sites are typically found in abandoned ground squirrel burrows and other small mammal tunnels. They are occasionally known to occupy small culverts, pipes, and other human-made structures. The project area contains abundant foraging habitat to support nesting populations of burrowing owl. Burrowing owls have only been recorded in the southern and eastern portions of the project area (CDFW 2024). However, this species could be observed within the project area anywhere a nest burrow is available and undisturbed through agricultural practices.

3.4.1.3.2.5 Loggerhead Shrike

Loggerhead shrike is present year-round throughout parts of California, including the Central Valley, although regional population levels have recently declined (Shuford and Gardali 2008). This bird species breeds mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. It requires tall shrubs, trees, fences, or power lines for hunting perches and open areas of short grasses, forbs, or bare ground for hunting. Loggerhead shrikes are residents of the

Sacramento River watershed and its tributaries. Based on the presence of riparian vegetation along waterways for nesting sites and the presence of adjacent agricultural fields which can provide foraging habitat, there is a moderate potential for this species to occur in the project area.

3.4.1.3.2.6 Bald Eagle

Bald eagles occur around the perimeter of Shasta Lake, nesting in trees surrounding the lake and hunting fish within the lake body. They require mature, branching trees to build their large stick nests and raise their young. Foraging requirements include lakes, reservoirs, bays, and the ocean in which they can actively fish or scavenge. Multiple records for nesting bald eagles are documented at Shasta Lake, and these raptors are expected to occur in the project area (CNDDDB 2024).

3.4.1.3.2.7 Valley Elderberry Longhorn Beetle

VELB is a medium-sized beetle endemic to riparian habitats in the Sacramento and San Joaquin valleys that is dependent upon elderberry shrubs (*Sambucus* spp.) during its entire life cycle. Adult beetles emerge in the spring from pupation inside the wood of these trees as they begin to bloom. Emerging adults form distinctive, small oval exit holes in elderberry shrubs. Valley elderberry longhorn beetle is nearly always found on or close to its host plant. Throughout its range, this species is estimated to inhabit 20% of all suitable elderberry shrubs. Elderberry shrubs are found in or near riparian and oak woodland habitats. The presence of exit holes in elderberry stems indicates previous VELB habitat use (USACE 2017). VELB is known to occur in the Sacramento River system and along its tributaries which occur within the project area; elderberry shrubs which host VELB are known throughout the Sacramento River watershed and can be expected to occur throughout the project area. If elderberry shrubs are present in the project area, it is possible that they support VELB populations; therefore, there is a moderate potential for this species to be present in the vicinity of the project area.

3.4.1.3.2.8 Green Sturgeon

Green sturgeon is an anadromous fish, spawning and juvenile rearing in rivers followed by migrating to saltwater to feed, grow, and mature before returning to freshwater to spawn. It is a long-lived, slow-growing fish with high spawning fidelity known to use the Sacramento, Feather, and Yuba Rivers for reproduction. Adults which are not spawning occupy marine and estuarine waters of the San Francisco Bay and Carquinez Straights. Juveniles are believed to depend on the Delta estuary for rearing. There are CNDDDB records of historic spawning within the channels of the Sacramento River, McCloud River, and Pit River, although no access to this spawning area is possible with Keswick, Shasta, and Pit Dams. Green sturgeon cannot reach the waters of their former spawning grounds due to the dams.

3.4.1.3.2.9 Giant Garter Snake

GGs inhabit wetlands along rivers, creeks, and streams as well as agricultural wetlands and other waterways such as rice fields, irrigation and drainage canals, sloughs, ponds, small lakes, low gradient

streams, and adjacent uplands in the Central Valley. GGS feed primarily on small fishes, tadpoles, and frogs. It inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout the winter dormancy period, and requires emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season (early April to mid-October; USACE 2017). GGS require enough water to submerge themselves for foraging and predator escape and that this water be immediately adjacent to basking and hiding sites such as emergent vegetation and steep canal banks. If water is not present in canals or over potential habitat within agricultural fields, these areas no longer function as GGS habitat (IFC 2023). When rice fields or canals transporting water are dry, they cease to function as GGS habitat. GGS is more common in the southern counties within the project area, occurring in higher numbers within Sacramento, Yolo, Sutter, and Colusa counties (CDFW 2024). There is a moderate to high potential for GGS to be present within canals, drainage ditches, and flooded rice fields in the project area.

3.4.1.3.2.10 Northwestern Pond Turtle

Northwestern pond turtle is a highly aquatic species found in ponds, marshes, rivers, streams, lakes, creeks, and irrigation ditches throughout central and coastal California up to 6,000 feet above mean sea level. Suitable habitat typically includes aquatic areas with rocky or muddy bottoms, aquatic vegetation, and basking habitat (e.g., logs, rocks, or riprap). The northwestern pond turtle is known to occur in the Sacramento River and its tributaries and could use larger perennial to semi-perennial drainage and irrigation ditches to complete its lifecycle (CDFW 2024). The CNDDDB describes multiple records of the northwestern pond turtle in Shasta Lake. Northwestern pond turtles are reportedly found in canals, sloughs and irrigation ditches adjacent to rice fields throughout the northern Sacramento Valley. They may benefit from the abundant invertebrate prey found in flooded rice fields (California Rice 2024). Recent studies have observed northwestern pond turtle are more common in wider canals (Fulton et al. 2022). Opportunity for foraging, basking, and egg laying are primarily along undisturbed lake, river, and creek banks but could extend into agricultural drainages with adequate passage and lack of disturbance. There is a low potential for western pond turtle in wider perennially inundated agricultural ditches in the project area.

3.4.1.3.3 *Special Status Plant Species*

Within the counties in which the project area occurs, there are dozens of plant species considered rare, threatened, or endangered by the CNPS (California Rare Plant Rank [CRPR] 1 or 2 species); however, these species are not associated with agricultural lands. Their rarity is due to their intolerance of disturbance to their specific micro habitat, and out competition by non-native invasive species after discing, leveling, and agriculture disrupts their niche. A list of rare plants known within the counties of the project area is provided in Appendix B (CDFW 2024). Due to the lack of suitable habitats within agricultural lands in the project area, none of the special status plant species with recorded occurrences have the potential to occur. In non-agricultural lands, there is a potential for the special status species identified in Appendix B to occur.

3.4.1.3.4 Migratory Bird Treaty Act Protected Birds and Raptors

Several species of birds protected by the MBTA may occur in the project area. MBTA-protected birds could nest in fallow fields or barren areas within the project area and could also roost or nest in emergent wetland vegetation or mature trees located along the Sacramento River and its tributaries. MBTA-protected birds include, but are not limited to, the following (USFWS 2023):

- Barn swallow (*Hirundo rustica*)
- Bushtit (*Psaltiriparus minimus*)
- Belted kingfisher (*Megaceryle alcyon*)
- House finch (*Haemorhous mexicanus*)
- Cliff swallow (*Petrochelidon pyrrhonota*)
- White-tailed kite (*Elanus leucurus*)
- American robin (*Turdus migratorius*)
- Swainson's hawk (*Buteo swainsoni*)
- Common raven (*Corvus corax*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Lawrence's goldfinch (*Spinus lawrencei*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Yellow headed blackbird (*Xanthocephalus xanthocephalus*)

3.4.1.4 Wildlife Movement Corridors

Wildlife movement corridors, also called dispersal corridors or landscape linkages, are linear features that function primarily by connecting at least two wildlife habitat areas (Beier and Loe 1992). These corridors increase connectivity between habitats that have become isolated by fragmentation, caused primarily by urbanization, agriculture, and forestry. They function by facilitating the movement of individuals through dispersal and migration to maintain gene flow and diversity between local populations. Other definitions of corridors and linkages are as follows:

- A corridor is a specific route that is used for movement and migration of species. A corridor might be different from a "linkage" because it represents a smaller or narrower avenue for movement.
- A linkage is a habitat area that provides connectivity between habitat patches and year-round foraging, reproduction, and dispersal habitat for resident plants and animals. "Linkage" shall mean an area of land that supports or contributes to the long-term movement of wildlife and genetic material.

Wildlife corridors and linkages are important features in the landscape, and the viability and quality of a corridor or linkage depends on site-specific factors. Topography and vegetative cover are important factors for corridors and linkages. These factors should provide cover for both predator and prey species. They should direct animals to areas of contiguous open space or resources and away from humans and development. The corridor or linkage should be buffered from human

encroachment and other disturbances (e.g., light, loud noises, and domestic animals) associated with developed areas that have caused habitat fragmentation (Schweiger et al. 2000). Wildlife corridors and linkages can function at various levels, depending on these factors and, for this reason, the most successful wildlife corridors and linkages will accommodate all or most of the necessary life requirements of predator and prey species.

Irrigation ditches and canals and associated vegetation in the project area provide movement corridors for a variety of resident wildlife species that occupy agricultural areas, including many species of birds, reptiles, and amphibians. Permanent vegetation associated with irrigation and drainage infrastructure provides essential cover and foraging opportunities for smaller migratory bird species to travel. Some migratory passerines move east to west (and west to east) across the agricultural lands and available vegetation within the project area, while other species move north to south through the Central Valley and along the West Coast passing through and landing, resting, and foraging along in the project area. The project area is within the Pacific Flyway, an established air route of waterfowl and other birds migrating between wintering grounds in Central and South America and nesting grounds in Pacific Coast states and provinces. Locally common reptiles (snakes and lizards, etc.) move shorter distances along the dry ground at the top of irrigation infrastructure banks and amphibians move through the aquatic corridors.

3.4.2 *Applicable Regulations*

3.4.2.1 Federal

3.4.2.1.1 *Federal Endangered Species Act*

Under the ESA, the Secretary of the Interior and the Secretary of Commerce have the joint authority to list a species as threatened or endangered (16 *United States Code* [USC] 1533[c]). Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the project area and determine whether the proposed project may affect or “take” such species. Per the ESA, take means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct” (16 USC 1532[19]). Section 7 of the ESA requires U.S. Army Corps of Engineers (USACE) to consult with the USFWS and/or National Marine Fisheries Service to determine whether the proposed project is likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat or habitat proposed to be designated for such species (16 USC 1536[a][3]). Reclamation is consulting with USFWS under Section 7 of the ESA for the proposed project.

3.4.2.1.2 *Migratory Bird Treaty Act*

The MBTA of 1918 (16 USC 703–712) is the primary legislation in the United States to conserve migratory birds. It implements the United States’ commitment to four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The MBTA prohibits the taking,

killing, trading, or possessing of migratory birds. This includes disturbance that causes nest abandonment or loss of reproductive effort (e.g., killing or abandonment of eggs or young).

3.4.2.1.3 *Bald and Golden Eagle Protection Act*

The Bald and Golden Eagle Protection Act (16 USC 668-668d), enacted in 1940, and amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part (including feathers), nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Regulations further define "disturb" as "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" (50 CFR 22.6). In addition to immediate impacts, this definition also covers effects that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

3.4.2.2 State

3.4.2.2.1 *California Endangered Species Act*

Under CESA, CDFW is responsible for maintaining a list of threatened, endangered, and candidate species (*California Fish and Game Code* [FGC] 2070). CDFW also designates "fully protected" or "protected" species as those that may not be taken or possessed. Species designated as fully protected or protected may or may not be listed as endangered or threatened. CDFW also tracks species of special concern, which are animal species whose populations have diminished and may be considered for listing if declines continue. Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed project would have a potentially significant impact on such species. "Take" of a species, under the CESA, means to "hunt, pursue, catch, capture, kill, or attempt to hunt, pursue, catch, capture, or kill" (FGC 86). The CESA definition of "take" does not include "harm" or "harass," as is included in the ESA. As a result, the threshold for a take under the CESA may be higher than under ESA because take is not defined to include habitat modification under the CESA. CDFW may issue incidental take permits when adequate minimization measures are met, and issuance of the permit would not jeopardize the continued existence of a state-listed species. Should the project applicant

receive authorization to take federally listed species under ESA, take authorization may also be sought as a “consistency determination” from CDFW under FGC 2080.1.

3.4.2.2.2 *California Native Plant Protection Act*

The CNPS (FGC 1900–1913), Natural Communities Conservation Planning Act, and CESA provide guidance on the preservation of plant resources. Vascular plants listed as rare or endangered by the CNPS, but which may have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- Rank 1A: Plants presumed to be extirpated in California and either rare or extinct elsewhere.
- Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- Rank 2A: Plants presumed to be 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 listed as with CRPRs 1A, 1B, 2A, or 2B also meet the definition of FGC 1901, Chapter 10 of the Native Plant Protection Act, and FGC 2062 and 2067.

3.4.2.2.3 *California Fish and Game Code 3503, 3511, 3513, 4700, 5050, and 5515*

Provisions of the MBTA are adopted through the FGC. Under FGC 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or related regulations. FGC 3513 prohibits take or possession of any designated migratory non-game bird or any part of such migratory non-game bird. The state code offers no mechanism for obtaining an incidental take permit for the loss of non-game migratory birds.

The FGC strictly prohibits the incidental or deliberate take of fully protected species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock; therefore, avoidance measures may be required to avoid a take (FGC 3511 for birds, 4700 for mammals, 5050 for reptiles and amphibians, and 5515 for fish).

3.4.2.3 Regional and Local

Applicable policies or actions pertaining to biological resources from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.4.2.3.1 *Shasta County General Plan*

The following local policy pertaining to biological resources is included in the Fish and Wildlife Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy 6.7.4 FW-c:** Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or

the U. S. Fish and Wildlife Service, shall be designed or conditioned to avoid any net adverse project impacts on those species.

3.4.2.3.2 *Tehama County General Plan*

The following local policies and measures pertaining to biological resources are included in the Open Space Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy OS-3.1:** The County shall preserve and protect environmentally-sensitive and significant lands and water valuable for their plant and wildlife habitat, natural appearance, and character.
- **Policy OS-3.2:** The County shall protect areas identified by the California Department of Fish and Game and the California Natural Diversity Data Base as critical riparian zones.
- **Policy OS-3.4:** The County shall endeavor to provide for wildlife circulation in and around new development projects, major transportation facilities, roads, railroads, and canals.
- **Policy OS-3.7:** The County shall promote best management practices of natural resources that will enhance wildlife habitat.
- **Implementation Measure OS-3.7a:** Water diversions/dams constructed along anadromous fish streams shall be designed to protect fish populations and to ensure adequate flow levels for spawning activity during migratory seasons in accordance with State and Federal regulations.

3.4.2.3.3 *Glenn County General Plan*

The following local policies or actions pertaining to biological resources are included in the Agricultural, Conservation and Sustainability, and Community Services and Facilities elements of the *Glenn County General Plan* (Glenn County 2023):

- **Policy AG 5-11:** Promote wildlife-friendly farm practices, such as tailwater ponds, native species/grassland restoration in field margins, hedgerows, ditch management for riparian habitat, and restoration of riparian areas in a manner consistent with ongoing agricultural activities, water delivery systems, responsible use of pesticides, and other appropriate measures.
- **Policy COS 3-1:** Preserve natural riparian habitats throughout the planning area, and specifically along Stony Creek, the Sacramento River, and Shasta Creek.
- **Policy COS 3-4:** Coordinate with State and Federal agencies, private landowners and preservation and conservation groups in habitat preservation and protection of rare, endangered, threatened, and special concern species, to ensure consistency in efforts and to encourage joint planning and development of areas to be preserved.
- **Policy COS 3-5:** Recognize the Sacramento River corridor, the Sacramento National Wildlife Refuge, the migratory deer herd areas, naturally occurring wetlands, and stream courses such as Shasta and Stony Creeks as areas of significant biological importance.

- **Policy COS 3-6:** Direct development away from naturally occurring wetlands and other areas of sensitive and critical habitat throughout the County Planning Area.
- **Policy COS 3-7:** Preserve and enhance biological communities that contribute to the region's biodiversity including, but not limited to, grasslands, freshwater marshes, wetlands, vernal pools, riparian areas, aquatic habitat, oak woodlands, and agricultural lands.
- **Policy COS 3-9:** Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.
- **Policy COS 3-10:** Discourage the removal of large, mature, native trees that provide wildlife habitat, visual screening, or contribute to the visual and biological quality of the environment.
- **Action COS-3b:** Review development project proposals, infrastructure projects, long-range projects, and other projects that may potentially impact special-status species and sensitive resources to determine whether significant adverse impacts will occur. Where adverse impacts are identified, develop appropriate mitigation measures, in conformance with the General Plan policies and relevant State and Federal laws, to reduce or avoid the impacts to the greatest extent feasible.
- **Action COS-3c:** Where sensitive biological habitats have been identified on or immediately adjacent to a project site, the project shall include appropriate mitigation measures identified by a qualified biologist, which may include, but are not limited to the following:
 - Pre-construction surveys for species listed under the State or Federal Endangered Species Acts, or species identified as special-status by the resource agencies, shall be conducted by a qualified biologist;
 - Construction barrier fencing shall be installed around sensitive resources and areas identified for avoidance or protection; and
 - Employees working on the project site shall be trained by a qualified biologist to identify and avoid protected species and habitat.
- **Action COS-3d:** Make available a list of plants and trees native to the region that are suitable for use in landscaping, consistent with the requirements of California's Model Water Efficient Landscape Ordinance. The plant and tree species should be drought tolerant, and consideration should be given to the suitability of the plant and tree species for use as habitat to native animals, birds and insects.
- **Action COS-6g:** Coordinate with the California Department of Fish and Wildlife to identify adversely impacted aquatic habitat within the County and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to rivers, lakes, reservoirs, and streams.
- **Policy CSF 3-5:** Where feasible, developments should avoid excessive grading and disturbance of vegetation and soils, retain native vegetation and trees, and maintain natural drainage patterns to the greatest extent feasible.

3.4.2.3.4 Butte County General Plan

The following local goals and policies pertaining to biological resources are included in the Conservation and Open Space Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Goal COS-7:** Conserve and enhance habitat for protected species and sensitive biological communities.
- **Policy COS-P7.3:** Creeks shall be maintained in their natural state whenever possible, and creeks and floodways shall be allowed to function as natural flood protection features during storms.
- **Policy COS-P7.7:** Construction barrier fencing shall be installed around sensitive resources on or adjacent to construction sites. Fencing shall be installed prior to construction activities and maintained throughout the construction period.
- **Policy COS-P7.8:** Where sensitive on-site biological resources have been identified, construction employees operating equipment or engaged in any development-associated activities involving vegetation removal or ground disturbing activities in sensitive resource areas shall be trained by a qualified biologist and/or botanist who will provide information on the on-site biological resources (sensitive natural communities, special-status plant and wildlife habitats, nests of special-status birds, etc.), avoidance of invasive plant introduction and spread, and the penalties for not complying with biological mitigation requirements and other State and federal regulations.
- **Policy COS-P7.9:** A biologist shall be retained to conduct construction monitoring in and adjacent to all habitats for protected species when construction is taking place near such habitat areas.
- **Goal COS-9:** Protect identified special-status plant and animal species.

3.4.2.3.5 Sutter County General Plan

The following local policies pertaining to biological resources are included in the Agricultural Resources and Biological Resources elements of the *Sutter County General Plan* (Sutter County 2011):

- **Policy AG 3.8: Habitat Protection.** Promote wildlife friendly agricultural practices. Encourage habitat protection and management that is compatible with and does not preclude or restrict onsite agricultural production.
- **Policy ER 1.1: Natomas Basin HCP.** Ensure compliance with the adopted Natomas Basin Habitat Conservation Plan to promote biological conservation within the Natomas Basin portion of Sutter County.
- **Policy ER 1.6: Mitigation.** Mitigate biological and open space effects that cannot be avoided in accordance with an applicable Habitat Conservation Plan or federal, state, and local regulations.
- **Policy ER 3.1: Special-Status Species.** Preserve special-status fish, wildlife, and plant species (e.g., rare, threatened, or endangered species) and habitats consistent with an applicable Habitat Conservation Plan or federal, state, and local regulations.

- **Policy ER 3.3: Fisheries.** Support the preservation and re-establishment of fisheries in the rivers and streams within Sutter County.
- **Policy ER 3.4: Waterfowl Resources.** Preserve and protect waterfowl resources along the Pacific Flyway Migration Corridor.

3.4.2.3.6 *Colusa County General Plan*

The following local policies pertaining to biological resources are included in the Agriculture and Conservation elements of the *Colusa County General Plan* (Colusa County 2012):

- **Policy AG 2-16:** Promote wildlife-friendly farm practices, such as tailwater ponds, native species/grassland restoration in field margins, hedgerows, ditch management for riparian habitat, and restoration of riparian areas in a manner consistent with ongoing agricultural activities, water delivery systems, responsible use of pesticides, and other appropriate measures.
- **Policy CON 1-7:** Conserve and enhance those biological communities that contribute to the County's rich biodiversity including, but not limited to, blue oak woodlands, annual grasslands, mixed chaparral, pine woodlands, wetlands, riparian areas, aquatic habitat, and agricultural lands.
- **Policy CON 1-8:** Conserve existing native vegetation where possible and integrate existing native vegetation into new development if appropriate.
- **Policy CON 1-13:** Sensitive habitats include oak woodlands, wetlands, vernal pools, riparian areas, wildlife and fish migration corridors, native plant nursery sites, waters of the U.S., and other habitats designated by state and federal agencies and laws.
- **Policy CON 1-14:** Require any proposed project that may affect special-status species, their habitat, or other sensitive habitat to submit a biological resources evaluation as part of the development review process. Evaluations shall be carried out under the direction of the Colusa County Department of Planning and Building and consistent with applicable state and federal guidelines. Additional focused surveys shall be conducted during the appropriate season (e.g., nesting season, flowering season, etc.), if necessary.
- **Policy CON 1-15:** Require that impacts to wetlands and riparian habitat protected by State or Federal regulations be avoided to the greatest extent feasible. If avoidance is not possible, fully mitigate impacts consistent with applicable local, State and Federal requirements.
- **Policy CON 1-17:** All discretionary public and private projects that identify special-status species or sensitive habitats in a biological resources evaluation shall avoid impacts to special-status species and their habitat to the maximum extent feasible. Where impacts cannot be avoided, projects shall include the implementation of site-specific or project-specific effective mitigation strategies developed by a qualified professional in consultation with state or federal resource agencies with jurisdiction (if applicable) including, but not limited to, the following strategies:

- a. Preservation of habitat and connectivity of adequate size, quality and configuration to support the special-status species. Connectivity shall be determined based on the specifics of the species' needs.
 - b. Project design measures, such as clustering of structures or locating project features to avoid known locations of special-status species and/or sensitive habitats.
 - c. Provision of supplemental planting and maintenance of grasses, shrubs, and trees of similar quality and quantity to provide adequate vegetation cover to enhance water quality, minimize sedimentation and soil transport, and provide adequate shelter and food for wildlife.
 - d. Protection for habitat and the known locations of special-status species through adequate buffering or other means.
 - e. Provision of replacement habitat of like quantity and quality on- or off-site for special-status species.
 - f. Enhancement of existing special-status species habitat values through restoration and replanting of native plant species.
 - g. Provision of temporary or permanent buffers of adequate size (based on the specific of the special-status species) to avoid nest abandonment by nesting migratory birds and raptors associated with construction and site development activities.
 - h. Incorporation of the provisions or demonstration of compliance with applicable recovery plans for federally listed species.
 - i. Monitoring of construction activities by a qualified biologist to avoid impacts to on-site special status species.
- **Policy CON-18:** Where sensitive biological habitats have been identified on or immediately adjacent to a project site, the following measures shall be implemented:
 - Provision of supplemental planting and maintenance of grasses, shrubs, and trees of similar quality and quantity to provide adequate vegetation cover to enhance water quality, minimize sedimentation and soil transport, and provide adequate shelter and food for wildlife.
 - Pre-construction surveys for species listed under the State or Federal Endangered Species Acts, or species identified as special-status by the resource agencies, shall be conducted by a qualified biologist;
 - Construction barrier fencing shall be installed around sensitive resources and areas identified for avoidance or protection; and
 - Employees shall be trained by a qualified biologist to identify and avoid protected species and habitat
 - **Action CON 1-C:** Review development project proposals, infrastructure projects, long range planning projects, and other projects that may potentially impact special-status species and sensitive resources to determine whether significant adverse impacts will occur. Where adverse impacts are identified, develop appropriate mitigation measures, in conformance with

General Plan policies and relevant state and federal laws, to reduce or avoid impacts to the maximum extent feasible and practical.

- **Policy CON 1-22:** Maintain lakes, rivers, streams, creeks, and waterways in a natural state whenever possible. These water features may be actively managed and/or improved or modified in order to function as natural flood protection and storm water management features during storms and flooding events.
- **Policy CON 1-24:** If a proposed project may result in impacts to wetlands or other Waters of the U.S., require the project proponent to consult with the appropriate regulatory agency and implement all applicable permit requirements as a condition of project approval.

3.4.2.3.7 *Yolo County General Plan*

The following local policies pertaining to biological resources are included in the Agriculture and Economic Development and Conservation and Open Space elements of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy AG-2.10:** Encourage habitat protection and management that does not preclude or unreasonably restrict on-site agricultural production.
- **Policy AG-2.13:** Promote wildlife-friendly farm practices, such as tailwater ponds, native species/grasslands restoration in field margins, hedgerows, ditch management for riparian habitat, restoration of riparian areas in a manner consistent with ongoing water delivery systems, reduction of pesticides, incorporating winter stubble and summer fallow, etc.
- **Policy CO-2.3:** Preserve and enhance those biological communities that contribute to the county's rich biodiversity including blue oak and mixed oak woodlands native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.
- **Policy CO-2.16:** Existing native vegetation shall be conserved where possible and integrated into new development if appropriate.
- **Policy CO-2.17:** Emphasize and encourage the use of wildlife-friendly farming practices within the County's Agricultural Districts and with private landowners, including:
 - Establishing native shrub hedgerows and/or tree rows along field borders.
 - Protecting remnant valley oak trees.
 - Planting tree rows along roadsides, field borders, and rural driveways.
 - Creating and/or maintaining berms.
 - Winter flooding of fields.
 - Restoring field margins (filter strips), ponds, and woodlands in non-farmed areas.
 - Using native species and grassland restoration in marginal areas.
 - Managing and maintaining irrigation and drainage canals to provide habitat, support native species, and serve as wildlife movement corridors.
 - Managing winter stubble to provide foraging habitat.

- Discouraging the conversion of open ditches to underground pipes, which could adversely affect giant garter snakes and other wildlife that rely on open waters.
 - Widening watercourses, including the use of setback levees.
- **Policy CO-2.27:** Evaluate the need for additional water to support future riparian enhancement efforts, including the benefits of conjunctive management of groundwater and surface water resources.
- **Policy CO-2.37:** Where applicable in riparian areas, ensure that required state and federal permits/approvals are secured prior to development of approved projects.
- **Policy CO-2.38:** Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds). Preserve the functional value of movement corridors to ensure that essential habitat areas do not become isolated from one another due to the placement of either temporary or permanent barriers within the corridors. Encourage avoidance of nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds) during periods when the sites are actively used and that nursery sites which are used repeatedly over time are preserved to the greatest feasible extent or fully mitigated if they cannot be avoided.
- **Policy CO-2.41:** Require that impacts to species listed under the State or federal Endangered Species Acts, or species identified as special-status by the resource agencies, be avoided to the greatest feasible extent. If avoidance is not possible, fully mitigate impacts consistent with applicable local, State, and Federal requirements.
- **Policy CO-2.42:** Projects that would impact Swainson's hawk foraging habitat shall participate in the Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County entered into by the CDFG and the Yolo County HIP/NCCP Joint Powers Agency, or satisfy other subsequent adopted mitigation requirements consistent with applicable local, State, and federal requirements.

3.4.2.3.8 *Sacramento County General Plan*

The following local policies pertaining to biological resources are included in the Conservation Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017b):

- **Policy CO-58:** Ensure no net loss of wetlands, riparian woodlands, and oak woodlands.
- **Policy CO-59:** Ensure mitigation occurs for any loss of or modification to the following types of acreage and habitat function:
 - vernal pools,
 - wetlands,
 - riparian,
 - native vegetative habitat, and
 - special status species habitat.
- **Policy CO-61:** Mitigation should be consistent with Sacramento County-adopted habitat conservation plans.

- **Policy CO-88:** Where removal of riparian habitat is necessary for channel maintenance, it will be planned and mitigated so as to minimize unavoidable impacts upon biological resources.
- **Policy CO-121:** No grading, clearing, tree cutting, debris disposal or any other despoiling action shall be allowed in rivers and streams except for normal channel maintenance, restoration activities, and road crossings.
- **Policy CO-122:** River and stream maintenance should allow natural vegetation in and along the channel to assist in removal of nutrients, pollutants, and sediment and to increase bank stabilization, while minimizing impacts on conveyance.
- **Policy CO-123:** The use of native plant species shall be encouraged on revegetation plans.
- **Policy CO-124:** Maintain and manage rivers and streams to encourage special status species.
- **Policy CO-126:** Prohibit obstruction or underground diversion of natural waterways.
- **Policy CO-127:** Protect, preserve, and restore migratory routes for anadromous species.
- **Policy CO-128:** Require screens on diversion pumps or similar bypass apparatus to reduce fish mortality.
- **Policy CO-129:** Require screening on all public water diversion facilities.
- **Policy CO-130:** Protect, enhance and restore riparian, in-channel and shaded riverine aquatic habitat for:
 - spawning and rearing of fish species, including native and recreational nonnative, non-invasive species, where they currently spawn;
 - potential areas where natural spawning could be sustainable; and
 - supporting other aquatic species

3.4.3 *Environmental Impacts and Mitigation Measures*

3.4.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, the project area mostly consists of land that is used for agricultural operation or urban development and has previously been disturbed. Agricultural lands, including irrigation canals and ditches, and adjacent riparian areas may include areas subject to regulation by the USACE, CDFW, and Regional Water Quality Control Board (RWQCB) and may provide habitat for a variety of special status wildlife species.

3.4.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts on biological resources. The proposed project would have an impact on biological resources if the following apply:

- **BIO-1:** The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

- **BIO-2:** The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- **BIO-3:** The project would have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, and coastal wetlands) through direct removal, filling, hydrological interruption, or other means.
- **BIO-4:** The project would 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 would impede the use of native wildlife nursery sites.
- **BIO-5:** The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- **BIO-6:** The project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.4.3.3 Methodology for Determining Impacts

Potential impacts on biological resources were qualitatively evaluated based on the habitat preferences for various species known or suspected to be in the project area, as well as the quantity and quality of existing habitat. Potential impacts were analyzed based on recent USFWS and CDFW lists for special status species with the potential to inhabit the project area, local observations, and professional expertise and judgment in evaluating how the proposed project could interact with biological resources.

The proposed measurement indices used to evaluate impacts on biological resources include impacts on special status species or habitats and consistency with applicable regulations and policies protecting biological resources. The proposed project would be considered to have a significant impact if it would have a substantial adverse effect on special status species or habitats or if it is determined to be inconsistent with applicable regulations and policies protecting biological resources.

3.4.3.4 Impact Analysis

3.4.3.4.1 BIO-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Water Reduction Activities

Crop Idling Impacts. While croplands are idled, growers could potentially allow the growth of volunteer plant species (usually ruderal weeds) and disc this vegetation into the soil during the

growing season. If the fields are not disced while idled, they could support a ruderal weed plant community that provides nesting and foraging habitat for special status passerines (i.e., perching birds), MBTA passerines, and raptors. Fallow lands often support pioneer plant species such as thistles that may provide habitat for rodents or other special status raptor food sources. Migratory waterfowl nest in fallow fields and, with an increase in idled croplands, there could be an increase in migratory waterfowl nesting on lands adjacent to waterways and wetlands, which could potentially include project areas. If present, nests could be impacted by any discing practices used to manage weeds while the fields are idled during the growing season.

The proposed project would reduce diversions of water from the Sacramento River to canals and irrigation ditches during certain drought years. Irrigation canals and ditches are not considered a required habitat type to support the breeding and foraging of most special status species with the potential to be present in the project area. Less water flow in the irrigation ditches and canals would not affect birds as aquatic habitat is not required for their survival in the project area.

GGs and northwestern pond turtle use ditches and canals in the project area. The movement and dispersal of GGs would be affected by the reduction of water within major irrigation and drainage canals and from the dewatering of smaller drains and conveyance infrastructure through their lack of use for irrigation. The loss of water in ditches and canals could result in a lack of connectivity between natural wetland habitats that could be used by GGs, which are known to use the canals and ditches between rice fields as aquatic movement corridors. Without aquatic movement corridors, GGs would be limited to the locations where permanent water exists. Populations could become isolated and genetic diversity would decrease in years in which aquatic movement corridors are limited due to lack of water in certain irrigation ditches and canals. Maintaining connectivity between extant GGs habitat would require the continued availability of suitable water-filled canals that link the wetland reserves in core habitat zones. Therefore, crop idling could have negative and potentially significant impacts to GGs within irrigation ditches and canals that provide suitable habitat for this species.

GGs are documented most numerous in rice-growing regions, where it is believed that the rice fields provide a mix of habitat that the snake can use year-round. The active period of GGs (March 1 through October 31) corresponds roughly with the flooding of fields for rice cultivation (April through October). This species is dormant or in a state of low activity between November and March. The upland levees surrounding rice fields are also used by GGs as upland refugia as rodent burrows in dry ground at higher elevations provide sheltering areas over winter (USFWS 2024). When flooded with water in the spring and summer, the rice fields provide foraging habitat where GGs feed on small aquatic species and use the vegetation for cover. If GGs overwinter in rice field levees and emerge to areas without water for long distances surrounding them, it is not known how they would reach aquatic habitat.

The reduction in rice production in the project area, with idled rice fields lacking summertime water, would potentially result in adverse effects on GGs as potential foraging grounds would not be available. If the reduction in rice production areas is large enough, GGs reproduction rates could also

be affected. Rice fields and canals no longer function as GGS habitat if they do not contain water. Field management that prevents winter runoff could potentially retain water on the idled fields for a longer duration than what would be implemented if the fields were to be planted. Winter precipitation could possibly be retained in idled fields until GGS emerge from winter hibernation in March.

Rice fields have been cultivated on lands which were former natural wetland areas that have hard pan or a restrictive layer with low permeability that prevents the infiltration of water. Rice fields are built by surrounding the perimeter with low levees and gates are used to retain winter water that floods the fields. If it is anticipated that a field will be fallowed and winter precipitation is not drained, it is possible that natural wetland vegetation could re-establish and provide habitat for GGS during fallow periods. However, when the fallow period ends and a field is put back into rice cultivation, the field would no longer be attractive to GGS and habitat alterations would occur once again, reverting to the characteristics of land under cultivation. As such, it is possible that a widely varying and unpredictable fluctuation in available habitat for GGS would result from proposed project implementation due to fallowing.

It is known that the quality of habitat provided by rice fallowing during drought years is less than that of a natural or well managed marsh habitat. However, rice fields and canals provide the benefit of connectivity between other more suitable habitats for GGS and rice fields are the only agricultural habitat in which GGS can exist (IFC 2023). During fallow periods, the reduction or elimination of water within a rice field and connecting drainage canals and ditches would likely cause stress to GGS from the loss of essential cover from predators that is provided by the rice vegetation, reduction in foraging habitat, and loss of areas with water. This could lead to a decline in GGS population and a possible decline in genetic diversity of the species from the loss of movement corridors available between natural GGS habitat areas.

While unlikely to occur in abundance in the project area, the northwestern pond turtle could potentially occur in larger irrigation ditches or canals with semi-permanent water that are connected to natural tributaries with suitable breeding habitat. It is unlikely smaller irrigation canals would be suitable for northwestern pond turtle with intermittent and seasonal water associated with delivery to agricultural fields or winter runoff from uplands. Water reduction activities associated with dewatering larger and wider irrigation ditches and canals that provide suitable habitat for this species could have negative impacts to northwestern pond turtle. Populations of northwestern pond turtle could be impacted by reduced habitat and limited foraging opportunities from less or no water in certain irrigation ditches and canals in the project area.

Crop idling would increase the amount of water in Shasta Lake. The proposed project would change the timing and volume of storage within Shasta Lake, preventing further reductions in lake storage during certain drought years. Special status wildlife species that could benefit from additional water volume in Shasta Lake during drought years compared to existing conditions include northwestern pond turtle and bald eagle. These species are dependent on aquatic resources to complete their life cycle and would benefit from the availability of habitat within Shasta Lake associated with increased

water levels as a result of the water reduction activities. The CNDDDB shows historic spawning of green sturgeon within the Sacramento River, McCloud River, and Pit River within the footprint of Shasta Lake but this fish cannot reach these areas due to physical barriers of dams.

Crop idling would not impact special status plants species due to the lack of habitat within fields to support them.

Groundwater Substitution Impacts. Groundwater pumping is not expected to have any direct impacts on special status wildlife species. Incrementally increased noise impacts of groundwater pumping on potentially present special status bird species would be minimal because noise levels from pumps are expected to be low and species can move out of the area during pumping activities.

Increased use of groundwater to irrigate crops instead of diverting water from the Sacramento River could potentially affect fish and amphibian habitats reliant on groundwater resources. In areas where creeks, streams, or other drainages are highly influenced by groundwater infiltration, the interception of groundwater by the additional pumping of the aquifer could potentially reduce surface flows during and after pumping until the groundwater aquifer refills. Increased subsurface drawdown on groundwater that normally discharges to surface waters nearby would potentially affect fish and amphibian habitats, within riverine, riparian, seasonal wetland, and managed wetland habitats reliant on groundwater resources.

Direct or indirect impacts to special status plant species are not anticipated due to pumping from established wells within agricultural areas.

Crop Shifting Impacts. The shift in land use from irrigated crops to less irrigated or rainfall irrigated crops would likely result in additional foraging habitat for special status passerines, MBTA passerines, and raptors. Changes that are anticipated from the prevalence of less water-intensive crops could include the shift to dryland farming where one crop is harvested per year which can be planted in the winter/spring and harvested without any supplemental irrigation at maturity between April and June. Market forces would drive the crop type. If a dryland crop such as oat hay, wheat, or other annual species is grown and harvested, a field with stubble could persist until the following planting season in the fall. The presence of stubble on a field that has been harvested as annual crop could provide suitable foraging habitat for special status bird species. Fields that were harvested for their dryland crops that are disced would not provide the same wildlife foraging habitat because seeds, insects, and rodents would be less abundant with the lack of vegetation, stubble, or roots associated with a harvested crop.

Impacts to other special status wildlife species or special status plant species are not anticipated to occur from crop shifting in upland agricultural fields.

Drought-Resiliency Projects

Drought-resiliency projects and associated construction staging and access routes may be situated on agricultural lands, other developed or undeveloped lands, or in irrigation ditches or canals.

Drought-resiliency projects have the potential to cause temporary disturbance of upland habitat or

result in the removal of existing native and non-native mature trees in the project area. Removal of mature trees may impact roosting, foraging, and nesting sites for migratory bird species or raptors within and adjacent to project areas. Site grading, excavation, and construction activities associated with these projects could directly impact, temporarily affect, or displace potential special status bird species nesting. Construction has the potential to result in accidental spills if equipment and staging is improperly managed. Various contaminants, such as fuel oils, grease, and other petroleum products used in construction activities, could be introduced into farmlands, conveyance systems or adjacent habitats either directly or through surface runoff. Contaminants may be toxic to wildlife. Ongoing operations and maintenance of the drought-resiliency projects would generally be consistent with existing conditions in the project area.

Ditch/canal work with physical alterations to the conveyance feature could have potential impacts on GGS or northwestern pond turtle if they occur in the project area. Piping open ditches or canals between rice fields, canal lining and modernization, and automated canal gates could potentially disturb or directly affect GGS or northwestern pond turtle during their installation and use. Installation of weirs or check structures or other drought-resiliency projects that would be situated in irrigation infrastructure could potentially directly affect GGS or northwestern pond turtle if they are present during construction. Ongoing operations and maintenance of the drought-resiliency projects would generally be consistent with baseline conditions.

There is no potential for special status plant species to occur on agricultural lands, but there is potential for these species to occur on non-agricultural lands with generally undisturbed habitat. If a drought-resiliency project is sited on non-agricultural lands with generally undisturbed habitat, potentially present special status plants could be directly impacted from construction activities. Impacts would be considered potentially significant.

Impact Determination: Discing idled croplands could directly affect nests present in the vegetation. Fallowed rice fields and reduced water in connecting drainage canals and ditches could reduce foraging habitat, impact GGS genetic diversity, disconnect natural GGS habitats, and stress GGS from the loss of essential cover from predators. Dewatered irrigation ditches could reduce habitat and foraging opportunities for northwestern pond turtle. These would constitute potentially significant impacts.

Impacts from crop shifting and conservation activities would be less than significant. Increased subsurface drawdown on groundwater that normally discharges to surface waters nearby from increased groundwater substitution would potentially affect fish and amphibian habitats reliant on groundwater resources, constituting potentially significant impacts.

Drought-resiliency projects have the potential to remove roosting, foraging, and nesting sites for migratory bird species or raptors within and adjacent to project areas. Ditch/canal work associated with certain drought-resiliency projects could impact GGS or northwestern pond turtle during construction if they occur in the project area. Drought-resiliency projects on non-agricultural lands

with generally undisturbed habitat could impact special status plants during construction activities. These would constitute potentially significant impacts.

Mitigation Measures: The following mitigation measures would be implemented to reduce the potential impacts to biological resources:

- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
 - Prior to implementing a drought-resiliency project that involves grading, vegetation removal, or other form of construction in irrigation and drainage canals or upland areas outside of established agricultural croplands with a history of discing, planting, and maintenance, a qualified biologist will conduct a desktop evaluation of the site using digital web-based aerial photography. The purpose of the desktop evaluation will be to determine the potential for special-status wildlife and plant species habitat or aquatic resources subject to regulation by the USACE, RWQCB, or CDFW to occur on site. A qualified biologist will also perform a review of the USFWS Information for Planning and Consultation, CNDDDB, CNPS, and Calflora databases to identify known records or potential for special-status plant or wildlife species to occur in the project vicinity. If through this assessment, the biologist determines that potential habitat for special-status wildlife or plants or jurisdictional aquatic resources exist, then site-specific survey(s) will be conducted per MM-BIO-2, MM-BIO-3, MM-BIO-4, MM-BIO-5, and MM-BIO-6, as applicable.
- **MM-BIO-2:** Conduct Special-Status Plant Species Surveys and Avoidance for Drought-Resiliency Projects
 - If the drought-resiliency project site survey indicates that the project site contains suitable habitat for special-status plant species, surveys using USFWS, CDFW, and California Native Plant Society protocols will be conducted by a qualified biologist. If present, special-status plant species will be flagged for avoidance. If avoidance is not possible, USFWS and/or CDFW will be consulted to determine the appropriate approach for minimizing impacts to special-status plant species and compensating for unavoidable impacts, and the project proponents will implement all necessary minimization and compensation measures.
- **MM-BIO-3:** Conduct Special-Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects
 - If the drought-resiliency project site survey indicates that the project site provides habitat for special-status wildlife, site-specific pre-construction surveys using USFWS and/or CDFW protocols will be conducted by a qualified biologist. If special-status wildlife species are actively using an area within the site, work shall not be permitted to occur within 100 feet until the animals have left on their own or, if necessary, are relocated in accordance with MM-BIO-5. Setback areas will be flagged. A qualified biologist shall be present during construction to monitor construction activities.

- **MM-BIO-4:** Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects
 - If the drought-resiliency project site survey indicates that the project site provides habitat for nesting birds that may be affected by construction and construction would occur between March 1 and September 15, pre-construction nesting bird surveys (two site visits at least one week apart) will be conducted by a qualified biologist within 14 days prior to construction to detect the presence of nesting birds. If an active nest is found, then the qualified biologist will establish an appropriate buffer (minimum 100 feet for non-raptors and 250 feet for raptors) based on site-specific factors such as the topography, the type of work to be performed, natural visual and/or auditory barriers between the nest and proposed work area, and the species. If work must be performed within the established buffer zone, a qualified biologist should monitor the nest prior to work activities to determine baseline nesting behaviors. Work shall be permitted to occur within the buffer zone with a qualified biologist present to monitor the work for signs of disturbance, to adjust (increase) the buffer size as needed, and to exercise stop work authority if nest disturbance is observed. No further work may occur within the buffer zone until nesting birds have fledged from nests on their own. Setback areas will be flagged.
- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
 - The construction contractor and operations personnel shall implement the following general biological resources protection measures during drought-resiliency project construction:
 - Limit construction and operations activities to daylight hours to the extent feasible. If nighttime activities are unavoidable, then workers shall direct all lights for nighttime lighting into the work area and shall minimize the lighting of natural habitat areas adjacent to the work area. Light glare shields shall be used to reduce the extent of illumination into sensitive habitats. If the work area is located near surface waters, the lighting shall be shielded such that it does not shine directly into the water.
 - Vegetation clearing will be limited to only those areas necessary for construction.
 - Any excavated and stockpiled soils will be placed outside of designated special-status species habitat.
 - Dispose of cleared vegetation and soils at a location that will not create habitat for special-status wildlife species.
 - Dispose of food-related and other garbage in wildlife-proof containers and remove the garbage from the project area daily during construction. Vehicles carrying trash will be required to have loads covered and secured to prevent trash and debris from falling onto roads and adjacent properties.

- Store all construction-related vehicles and equipment in the designated staging areas. These areas shall not contain native or sensitive vegetation communities and shall not support sensitive plant or wildlife species.
- Construction-related vehicles and equipment will not exceed a 20 mile-per-hour speed limit at the construction site, staging areas, or on unpaved roads.
- The qualified biologist will provide the contractor with worker environmental awareness training.
- Prior to the initiation of work each day, the contractor will inspect construction pipes, culverts, or similar features; construction equipment; or construction debris left overnight in areas that may be occupied by special-status species that could occupy such structures prior to being used for construction.
- Avoid wildlife entrapment by completely covering or providing escape ramps for all excavated steep-walled holes or trenches more than 1 foot deep at the end of each construction work day. The qualified biologist shall inspect open trenches and holes and shall remove or release any trapped wildlife found in the trenches or holes prior to filling by the construction contractors.
- Capture and relocation of trapped or injured wildlife listed under ESA or CESA can only be performed by personnel with appropriate state and/or federal permits. Any sightings and any incidental take (mortality) shall be reported to CDFW via email within one working day of the discovery. Notification shall include the date, time, and location (U.S. Geological Survey [USGS] 7.5-minute quadrangle and/or similar map at a scale that will allow others to find the location in the field) of the incident or of the discovery of an individual special-status species that is dead or injured (type of injury shall be included). For each special-status species encountered, the biologist shall submit a completed CNDDDB field survey form (or equivalent) to CDFW no more than 90 days after completing the last field visit to the project site.
- **MM-BIO-6:** Implement GGS Avoidance Measures for Drought-Resiliency Projects
 - If the need for a drought-resiliency project site survey is identified as part of MM-BIO-1, and the initial assessment indicates that the project site provides habitat for GGS, avoidance measures must be implemented to avoid GGS during construction. Construction activities within GGS habitat will be restricted to between May 1 and October 1, to the extent feasible. If work must be conducted within GGS habitat between October 2 and April 30, two GGS pre-construction surveys will be conducted in any area within 200 feet of GGS aquatic habitat by a qualified biologist. The first survey will occur within 15 days prior to onset of construction and the second will occur within 24 hours prior to the onset of construction. The information collected from the first pre-construction survey will serve primarily to alert the biologist and construction crews of the general level of GGS activity at the site and borrow area, and the second survey will serve to minimize potential for take of GGS. If GGS is found in the project area, then to

avoid direct impacts on GGS, the following measures will be implemented during construction of the drought-resiliency project:

- Temporary fencing will be installed to exclude GGS from the work area. The design of the fence will be approved by the CDFW prior to installation.
 - Fence installation will be supervised by a qualified biologist.
 - The qualified biologist will provide the contractor with worker environmental awareness training, including instructing the contractor on how to inspect the exclusion fence.
 - Prior to the initiation of work each day, the contractor will inspect the exclusion fence to ensure it is functional for the intended purpose.
 - If GGS is observed within the temporary fencing around the construction site, the contractor will stop work and allow the species to leave the site of its own volition or the snake will be captured by a qualified biologist with appropriate collecting/handling permits and relocated to the nearest suitable habitat beyond the influence of the project work area. “Take” of a state or federal special-status species is prohibited without appropriate permits from the USFWS and CDFW.
- **MM-BIO-7:** Obtain Incidental Take Authorization for Take of Listed Species from Drought-Resiliency Project Impacts
 - If species avoidance is not expected to be possible through implementation of MM-BIO-1, MM-BIO-3, MM-BIO-4, MM-BIO-5, or MM-BIO-6, USFWS and/or CDFW will be consulted to determine the appropriate approach for minimizing impacts to special-status wildlife species and compensating for potential incidental take. Incidental take authorization will be obtained for take of listed species resulting from construction of a drought-resiliency project.
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects
 - If it is determined through implementation of MM-BIO-1 and MM-BIO-3 that a drought-resiliency project site includes high-quality foraging or breeding habitat for special-status wildlife species and there will be a permanent loss of such habitat resulting from construction, impacts will be compensated for through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Based on the findings of MM-BIO-3, the qualified biologist will prepare a plan that outlines proposed compensatory mitigation and coordinate with USFWS and CDFW. Compensatory lands will be of similar or better quality than habitat lost, preferably located in the vicinity of the drought-resiliency project site, and be permanently preserved through a conservation easement. The plan will identify conservation actions to ensure that the compensatory lands are managed to provide for the continued existence of the species. The plan will also identify an approach for funding assurance for the long-term management of the conserved land, as relevant.

- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
 - Avoid native tree removal where practicable through adjustments to the alignment of ditches, pipelines, or other construction features. If protected or heritage native tree removal is not avoidable, local county requirements for replacement would be prescribed at the ratio specified in their general plan. Replanting ratios vary between counties. For trees known to be used by nesting raptors, preservation efforts shall be pursued to the maximum extent possible. Nest tree losses in HCP covered areas could be subject to replacement at 15:1 such as in the Natomas Basin HCP.
- **MM-BIO-10:** Timing Requirements for Discing in Fallow Fields During Agreement Years
 - If discing occurs in idled croplands during an Agreement Year, the following will be adhered to:
 - Between February 15 and September 15, discing will occur when vegetation is on average 12 inches or less in height.
 - Between September 15 and February 15, discing may occur without vegetation height restriction.
- **MM-BIO-11:** Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years
 - Certain croplands abut or are immediately adjacent to areas with known important GGS populations that may be in or connected to areas with specific management plans for GGS either for mitigation or as wildlife refuges. Croplands abutting or immediately adjacent to the following areas are considered important GGS populations:
 - Butte Creek between Upper Butte Basin and Gray Lodge Wildlife areas
 - Colusa Basin drainage canal between Delevan and Colusa National Wildlife Refuges
 - Gilsizer Slough
 - Colusa Drainage Canal
 - Land side of the Toe Drain along the Sutter Bypass
 - Willow Slough and Willow Slough Bypass in Yolo County
 - Hunters and Logan Creeks between Sacramento and Delevan National Wildlife Refuges
 - Lands in the Natomas Basin
 - To the extent practicable, irrigation and drainage canal water depths in areas that are considered important GGS populations will be similar to years when the Agreement is not in effect or, where information on baseline water depths is limited, at least 2 feet deep.
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
 - To ensure that contaminants are not accidentally introduced into irrigation ditches and canals, the following measures will be implemented during construction of drought-resiliency projects:

- BMPs (e.g., filter fabric or sandbags) be used to prevent pollutants from entering drainage channels
- Equipment be inspected daily for leaks or spills
- Materials for cleanup of spills be available on site
- Flammable materials be stored in appropriate containers
- Spill prevention kits be in close proximity when using hazardous materials
- Spills and leaks be cleaned up immediately and disposed of in accordance with local, state, and federal regulations
- Vehicles and equipment be kept clean
- Construction personnel to be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills
- For drought-resiliency projects involving over an acre of land disturbance, a NPDES Construction Stormwater General Permit will be obtained, and a construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared.
- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with Groundwater Sustainability Plans (GSPs) for All Groundwater Pumping Activities Undertaken Under the Agreement
 - The installation of any new groundwater wells and the operation of existing and new groundwater wells will be in accordance with targets and requirements set by applicable GSPs managed by Groundwater Sustainability Agencies in the project area.

Residual Impact:

Water Reduction Activities

Implementation of MM-BIO-10 would require that discing occurring between February 15 and September 15 during an Agreement Year be conducted when vegetation is on average 12 inches or less in height, reducing potential impacts on nesting birds. Discing between September 15 and February 15 during an Agreement Year may occur without vegetation height restriction. Impacts would be reduced to less than significant with mitigation.

Implementation of MM-BIO-11 would require to the extent practicable that minimum water depths are maintained in drainage canals in key areas during Agreement Years for the benefit of GGS and northwestern pond turtle. While this mitigation measure could reduce impacts to GGS associated with loss of genetic diversity, disconnected natural habitats, and stress from the loss of essential cover from predators, as well as to northwestern pond turtle from reduced habitat and foraging opportunities, because there could be areas where sufficient water cannot be left in irrigation canals and ditches due to inadequate surface water, impacts on GGS and northwestern pond turtle would remain significant and unavoidable with mitigation.

Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation occur in accordance with targets and requirements set by applicable GSA-managed GSPs. As the local authorities for sustainable groundwater management, complying

with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken. Implementation of MM-HYD-2 would prevent the dewatering of surface waters from groundwater pumping, maintaining the minimum level of flow to avoid impacts to fish and amphibian habitats reliant on groundwater resources. Aquifers that contribute to adjacent creeks would not be depleted by groundwater pumping to levels that would reduce water flows for aquatic organisms dependent upon riverine habitat. Impacts would be reduced to less than significant with mitigation.

Drought-Resiliency Projects

Implementation of MM-BIO-1, MM-BIO-2, and MM-BIO-3 would map and flag potential special status wildlife or plant species habitats to avoid or minimize impacts on potential habitat and individuals from drought-resiliency project construction. Implementation of MM-BIO-4 and MM-BIO-6 would ensure that impacts to any potentially present nesting birds and GGS, respectively, avoided or minimized during drought-resiliency project construction. Implementation of MM-BIO-5 would ensure that other types of direct and indirect impacts on potentially present special status species and habitats are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and CDFW CNDDDB reporting, among other measures during drought-resiliency project construction. If take of special status wildlife species is likely as a result of a drought-resiliency project even after implementation of the avoidance, minimization, and the mitigation measures above, implementation of MM-BIO-7 requires coordinating with USFWS and/or CDFW and obtaining an Incidental Take Permit, which could include providing compensatory mitigation. Issuance of the Incidental Take Permit would be considered to mitigate to a less-than-significant level the individual impacts on special status species. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status wildlife species from drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Implementation of MM-BIO-9 would require that any native trees removed for drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable, to ensure that special status species habitat is not lost. Implementation of MM-HYD-1 would require that erosion and spill control measures be implemented during drought-resiliency project construction. Impacts would be reduced to less than significant with mitigation.

3.4.3.4.2 *BIO-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

Water Reduction Activities

Idled rice fields could indirectly impact riparian vegetation where present within irrigation canals and ditches. Reduced water levels in canals and ditches could result in vegetation dying back earlier in

the year with summer or early fall dormancy, or potentially dying, which would temporarily reduce the amount of riparian habitat available in the project area. After crop idling associated with an Agreement Year ceases, vegetation would be expected to recover from lack of summer water and hold its leaves until normally deciduous in the late fall and winter, and re-establish; therefore, permanent impacts are not expected.

Groundwater substitution could potentially result in indirect impacts to riparian plant communities from pumping lowering the groundwater table and affecting the relative difference between groundwater and surface water elevations. The water pumped from a groundwater well could potentially reduce the amount of surface water compared with pre-pumping conditions through the following:

- Induced leakage: Lowering of the groundwater table causes a condition in which the groundwater table is lower than the surface-water level. This condition causes leakage out of surface waterbodies and could increase percolation rates on irrigated lands.
- Interception of groundwater: A well used for groundwater substitution pumping can intercept groundwater that normally might have discharged to the surface water.

As part of the proposed project, there would be an increased use of groundwater to irrigate crops, which could potentially result in reduced groundwater levels in the vicinity of pumps. Most agricultural wells would be pumping from at least 50 feet below the surface, which would likely have little effect to plant root systems located in the top 20 to 30 feet of the soil surface. Increases in subsurface drawdown would be too far below the root growth zones when drawing from aquifers at least 50 feet below the surface to affect natural communities such as riverine, riparian, seasonal wetland, and managed wetland habitats, which rely on groundwater for all or part of their water supply. In pumping locations adjacent to or in association with riparian vegetation where groundwater elevations are less than 20 feet below ground, surface and natural communities are reliant on groundwater, these habitats would be more likely to be impacted.

Riparian vegetation associated with preserves depend on surface waters to inundate their habitats during the summer. Portions of national wildlife refuges and wildlife management areas occur within the project area and surface water delivery from SRSC members to these areas would be reduced during Agreement Years, which has the potential to affect riparian habitats that may be present within preserves. Reduced water allocation in a preserve after the end of seasonal rainfall in an Agreement Year could result in a less robust growth of riparian vegetation in the summer and fall. When rainfall occurs the following winter, riparian vegetation would resume a growth pattern matching rainfall quantity, which is consistent with how riparian areas evolve naturally under seasonal and annual variations in precipitation. It is assumed that preserve managers would comply with legal requirements, including for surface water, applicable to the site, which may involve pumping from their own groundwater wells or using other surface waters to augment water used to sustain riparian habitat areas. Crop shifting would not alter or affect riparian habitats in the project area.

Drought-Resiliency Projects

Riparian vegetation that has formed on large, perennial irrigation canals and ditches could be potentially impacted by drought-resiliency project construction activities that involve work in the canal or ditch or in immediately adjacent riparian areas. Smaller irrigation ditches that are maintained between fields generally do not support riparian vegetation and construction in these types of ditches would be expected to have no impacts on riparian vegetation.

Impact Determination: Reduced water deliveries and increased crop idling would reduce water levels in canals and ditches, causing riparian vegetation to prematurely drop leaves before seasonally appropriate or potentially die and temporarily reducing the amount of riparian habitat available in the project area. Because riparian habitat would re-establish after idling ceases, impacts would be considered less than significant.

Increased subsurface drawdown on groundwater that normally discharges to surface waters nearby from increased groundwater substitution would potentially impact riparian habitats reliant on groundwater resources, constituting a potentially significant impact.

Riparian vegetation that has formed on large, perennial irrigation canals and ditches could be potentially impacted by drought-resiliency project construction activities that involve work in the canal or ditch or in immediately adjacent riparian areas, constituting a potentially significant impact.

Mitigation Measures: The following mitigation measures would be implemented to reduce the potential impacts to riparian habitats:

- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects
- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
- **MM-BIO-11:** Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with GSPs for All Groundwater Pumping Activities Undertaken Under the Agreement

Residual Impact:

Water Reduction Activities

While impacts to riparian habitats from crop idling would be less than significant, implementation of MM-BIO-11 would further ensure impacts are minimized by requiring to the extent practicable that minimum water depths are maintained in drainage canals in key areas during Agreement Years. This

mitigation measure would reduce impacts associated with premature leaf loss, die back, or loss of riparian vegetation in irrigation ditches and canals, as most riparian vegetation occurs in association with larger irrigation canals and drainages. Reduced water levels in canals and drainages would still allow extant vegetation to leaf out in the spring and be sustained by the minimum water depths. After crop idling associated with an Agreement Year ceases, vegetation would be expected to re-establish. Impacts would remain less than significant.

Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs. Complying with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken and that substantial loss of groundwater reliant riparian vegetation is avoided. Impacts would be reduced to less than significant with mitigation.

Drought-Resiliency Projects

Implementation of MM-BIO-1 would map potential riparian vegetation so that impacts can be avoided or minimized during drought-resiliency project construction. Implementation of MM-BIO-5 would ensure that other types of direct and indirect impacts on riparian habitat are avoided or minimized through requiring inspections, clearing requirements, and clean working conditions, among other measures, during drought-resiliency project construction. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status wildlife species (which may include riparian habitat) from drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Implementation of MM-BIO-9 would require that any native trees removed, including from riparian habitat, for drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable. Implementation of MM-HYD-1 would require that erosion and spill control measures be implemented during drought-resiliency project construction. Impacts would be reduced to less than significant with mitigation.

3.4.3.4.3 *BIO-3: Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?*

Water Reduction Activities

Neither crop idling nor crop shifting require construction activities and thus would not result in direct impacts on jurisdictional wetlands or waters. Idled rice fields could indirectly impact wetland vegetation communities where present within irrigation canals and ditches. Changes in water availability within feeder canals could reduce the amount of emergent wetland habitat and banks side vegetation that grows adjacent to rice field areas. After idling ceases, emergent vegetation would be expected to recover and re-establish.

As described in Section 3.4.3.4.2, increased groundwater substitution could potentially result in the reduction of available groundwater within the root zones of jurisdictional wetlands or waters adjacent to pumping locations. Vegetation within wetlands generally have more shallow root systems than riparian vegetation, and as such vegetation in the upper soils profile are not likely to be impacted by lowering the groundwater table from wells that draw at elevations of below 50 feet.

Wetland vegetation associated with preserves depend on surface waters to inundate their habitats during the summer. Portions of national wildlife refuges and wildlife management areas occur within the project area and surface water delivery from SRSC members to these areas would be reduced during Agreement Years, which has the potential to affect wetland habitats that may be present within preserves. Reduced water allocation in a preserve after the end of seasonal rainfall in an Agreement Year could result in a less robust growth of wetland vegetation in the summer and fall. When rainfall occurs the following winter, wetland vegetation would resume a growth pattern matching rainfall quantity, which is consistent with how wetlands evolve naturally under seasonal and annual variations in precipitation. It is assumed that preserve managers would comply with legal requirements, including for surface water, applicable to the site, which may involve pumping from their own groundwater wells or using other surface waters to augment water used to sustain wetland vegetation areas. Crop shifting would not alter or affect wetland habitats in the project area.

Drought-Resiliency Projects

Drought-resiliency projects could potentially result in the filling of a jurisdictional wetland or water if a natural stream or creek was channelized in an agricultural area or if a project required siting in a jurisdictional wetland. If a jurisdictional feature that has been converted to an irrigation/drainage ditch is proposed for underground piping, it could result in the loss of wetlands or waters of the United States. The process of lining ditches to reduce groundwater infiltration could result in the fill of jurisdictional wetland or waters which are currently being used for agricultural conveyance purposes. This could constitute a potentially significant impact.

Impact Determination: Wetland vegetation occurs within and adjacent to the project area and it is possible water reduction activities could indirectly affect jurisdictional wetlands and waters in ditches and canals. Because impacts would be temporary and emergent wetland vegetation would re-establish once idling ceases, impacts would be less than significant.

Water drawdown that reaches upper levels of the soil surface have the potential to impact wetland vegetation survival. Nonetheless, due to the broad range of well conditions in the project area, impacts are considered potentially significant.

If jurisdictional wetlands or waters are present in drought-resiliency project areas where physical changes to the land are proposed, construction activities have the potential to fill and significantly impact wetlands. Impacts to state or federally protected wetlands or waters would be considered potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts on jurisdictional wetlands and waters:

- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-5:** Implement General Biological Resources Protection Measures During Drought-Resiliency Project Construction
- **MM-BIO-11:** Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years
- **MM-BIO-12:** Conduct Aquatic Resources Surveys and Avoidance for Drought-Resiliency Projects
 - If the drought-resiliency project site survey identified in MM-BIO-1 indicates that the project site contains potentially jurisdictional aquatic resources, including wetlands, other waters, and riparian habitat, that may be affected by construction, an aquatic resources delineation to identify and delineate wetlands and other waters shall be conducted. Wetlands and waters identified on site will be flagged as environmentally sensitive areas and avoided to the extent practicable. Permanent impacts to jurisdictional aquatic resources will be mitigated per MM-BIO-13.
- **MM-BIO-13:** Obtain Required Permits and Implement Wetland Mitigation for Drought-Resiliency Projects
 - If it is determined through implementation of MM-BIO-1 and MM-BIO-12 that drought-resiliency project impacts to jurisdictional wetlands or other waters cannot be avoided, then required permits, potentially including permits from the USACE, RWQCB, and CDFW will be obtained. All permit conditions will be complied with. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved bank. Based on the findings of MM-BIO-12, the qualified biologist will prepare a plan that outlines proposed compensatory mitigation. Compensatory lands will be of similar or better quality than habitat lost, preferably located in the vicinity of the drought-resiliency project site, and be permanently preserved through a conservation easement. The plan will identify conservation actions to ensure that the compensatory lands are managed to provide for the continued existence of the species. The plan will also identify an approach for funding assurance for the long-term management of the conserved land, as relevant.
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with GSPs for All Groundwater Pumping Activities Undertaken Under the Agreement

Residual Impact:

Water Reduction Activities

While impacts to wetlands from crop idling would be less than significant, implementation of MM-BIO-11 would further ensure that wetland vegetation in key areas would persist through the year and not suffer from early die back. Impacts would remain less than significant.

Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs. Complying with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken and significant impacts to groundwater-dependent wetlands and waters are avoided. Impacts would be reduced to less than significant with mitigation.

Drought-Resiliency Projects

Implementation of MM-BIO-1 and MM-BIO-12 would map and delineate wetland and water areas so that impacts can be avoided or minimized during drought-resiliency project construction.

Implementation of MM-BIO-5 would ensure that other types of direct and indirect impacts on riparian habitat are avoided or minimized through requiring inspections, clearing requirements, and clean working conditions, among other measures, during drought-resiliency project construction. If impacts to wetlands and waters cannot be avoided, then required permits, potentially including permits from the USACE, RWQCB, and CDFW would be obtained and complied with per MM-BIO-13. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved bank. Implementation of MM-HYD-1 would require that erosion and spill control measures be implemented during drought-resiliency project construction. Impacts would be reduced to less than significant with mitigation.

3.4.3.4.4 *BIO-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Water Reduction Activities

Crop idling could result in impacts to resident native wildlife species. Irrigation ditches and canals and associated vegetation in the project area provide movement corridors for a variety of resident native wildlife species that occupy agricultural areas, including many common species of birds, reptiles, and amphibians. The lack of water in ditches that would result from idling agricultural fields could reduce the size of or eliminate local migratory corridors for wildlife. As discussed under Impact BIO-1, the project area is along the Pacific Flyway, an established air route of waterfowl and other birds migrating between wintering grounds in Central and South America and nesting grounds in Pacific Coast states and provinces of North America. The large project area is currently used for stopover by waterfowl during migration. With crop idling and the reduction of grain spoilage,

stopover areas with feed sources for migrating wildlife would be reduced. Crop shifting and groundwater substitution would not interfere with the movement of native wildlife in migratory corridors or impede the use of native wildlife nursery sites.

Drought-Resiliency Projects

Removal of mature trees may impact roosting, foraging, and nesting sites for migratory bird species within and adjacent to project areas. Site grading, excavation, and construction activities associated with these projects could directly impact, temporarily affect, or displace potential bird species nesting. There would be temporary increases in noise and human activity from construction of drought-resiliency projects. Construction has the potential to result in accidental spills if equipment and staging are improperly managed. Various contaminants, such as fuel oils, grease, and other petroleum products used in construction activities, could be introduced into farmlands, conveyance systems or adjacent habitats either directly or through surface runoff. Contaminants may be toxic to wildlife.

Impact Determination: Local wildlife species and migratory birds are found throughout the project area within existing habitats throughout the year. Interrupted water connections from water reduction activities and direct construction impacts from drought-resiliency projects have the potential to interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery site. Impacts would be considered potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-3:** Conduct Special-Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-4:** Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects
- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
- **MM-BIO-10:** Timing Requirements for Discing in Fallow Fields During Agreement Years
- **MM-BIO-11:** Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years

Residual Impact:***Water Reduction Activities***

Implementation of MM-BIO-10 would require that discing occurring between February 15 and September 15 during an Agreement Year be conducted when vegetation is on average 12 inches or less in height, would prevent potential impacts on nesting birds. Discing between September 15 and February 15 during an Agreement Year may occur without vegetation height restriction. Impacts would be reduced to less than significant with mitigation.

Implementation of MM-BIO-11 would require to the extent practicable that minimum water depths are maintained in drainage canals in key areas during Agreement Years. This mitigation measure would reduce temporary impacts to movement corridors for common wildlife species. Except as otherwise discussed under Impact BIO-1 for GGS and northwestern pond turtle, for which there could be significant and avoidance impacts, other impacts on migratory species, wildlife corridors, or nursery sites would be reduced to less than significant with mitigation.

Drought-Resiliency Projects

Implementation of MM-BIO-1, MM-BIO-2, and MM-BIO-3 would map and flag potential species habitats to avoid or minimize impacts from drought-resiliency project construction. Implementation of MM-BIO-4 and MM-BIO-6 would reduce impacts to migratory birds and snake species, respectively, during drought-resiliency project construction. Implementation of MM-BIO-5 would ensure that other types of direct and indirect impacts on species are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and proper agency reporting, among other measures during drought-resiliency project construction. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status wildlife species (which would include habitat for common wildlife species) from drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Implementation of MM-BIO-9 would require that any native trees removed for drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable. Impacts on migratory species, wildlife corridors, or nursery sites would be reduced to less than significant with mitigation.

3.4.3.4.5 *BIO-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Relevant local policies and ordinances within the project area include those that require or encourage the following:

- No net loss of waters
- Avoidance, minimization, and full mitigation for impacts on special status species, wetlands and other waters of the United States, and other sensitive natural communities.

- Pre-construction surveys for special status species
- Protection of native plant species, riparian habitats, wetlands, other sensitive communities, and migration routes through regulation of vegetation removal, restriction of sediment input to streams, and establishment of setbacks
- Tree protection standards that discourage removal of mature trees that provide wildlife habitat
- Installation of barrier fencing during construction to protect environmentally sensitive resources
- Avoidance of the introduction and spread of invasive plant species
- Environmental training for employees working around environmentally sensitive areas
- Restriction of construction to times that will avoid impacts on special status species
- Promotion of wildlife-friendly farm practices (e.g., tailwater ponds, native grass restoration in field margins, use of hedgerows, ditch management for riparian habitat, restoration of riparian areas, and responsible use of pesticides)
- Avoiding the conversion of open ditches to underground pipes, to avoid adversely affecting GGS and other wildlife that rely on open waters

Impact Determination: As described in Section 3.4.3.4.1, discing idled croplands could directly affect nests present in the vegetation. Fallowed rice fields and dewatered connecting drainage canals and ditches could eliminate foraging habitat, impact GGS population numbers and genetic diversity, disconnect natural GGS habitats, and stress GGS from the loss of essential cover from predators. Dewatered irrigation ditches could reduce habitat and foraging opportunities for northwestern pond turtle.

Although significant tree removal is not anticipated, drought-resiliency projects have the potential to remove roosting, foraging, and nesting sites for migratory bird species or raptors within and adjacent to project areas through minor and selective tree removal or vegetation clearing. Ditch/canal work associated with certain drought-resiliency projects could impacts GGS or northwestern pond turtle during construction if they occur in the project area. Drought-resiliency projects on non-agricultural lands with generally undisturbed habitat could impact special status plants during construction activities.

As described in Section 3.4.3.4.3, if jurisdictional wetlands or waters are present in drought-resiliency project areas where physical changes to the land are proposed, construction activities have the potential to fill and significantly impact wetlands.

These impacts could potentially conflict with local policies or ordinances to protect biological resources. This would be considered a potentially significant impact.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-2:** Conduct Special-Status Plant Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-3:** Conduct Special-Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-4:** Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
- **MM-BIO-6:** Implement GGS Avoidance Measures for Drought-Resiliency Projects
- **MM-BIO-7:** Obtain Incidental Take Authorization for Take of Listed Species from Drought-Resiliency Project Impacts
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects
- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
- **MM-BIO-10:** Timing Requirements for Discing in Fallow Fields During Agreement Years
- **MM-BIO-11:** Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years
- **MM-BIO-12:** Conduct Aquatic Resources Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-13:** Obtain Required Permits and Implement Wetland Mitigation for Drought-Resiliency Projects
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with GSPs for all Groundwater Pumping Activities undertaken under the Agreement

Residual Impact:

Water Reduction Activities

Implementation of MM-BIO-10 would require that discing occurring between February 15 and September 15 during an Agreement Year be conducted when vegetation is on average 12 inches or less in height, which would prevent potential impacts on nesting birds. Discing between September 15 and February 15 during an Agreement Year may occur without vegetation height restriction. With mitigation, discing as part of the proposed project would present no conflict with local policies or ordinances protecting biological resources.

Implementation of MM-BIO-11 would require to the extent practicable that during crop idling minimum water depths are maintained in drainage canals in key areas during Agreement Years for the benefit of GGS and northwestern pond turtle. While this mitigation measure could reduce impacts to GGS associated with loss of population and genetic diversity, disconnected natural

habitats, and stress from the loss of essential cover from predators, as well as reduce impacts to northwestern pond turtle from reduced habitat and foraging opportunities, there could still be areas where sufficient water cannot be maintained due to inadequate surface water. Therefore, crop idling impacts on GGS and northwestern pond turtle could represent a conflict with local policies or ordinances protecting biological resources, constituting a significant and unavoidable impact.

Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs. Complying with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken. With mitigation, groundwater substitution would present no conflict with local policies or ordinances protecting biological resources.

Drought-Resiliency Projects

Implementation of MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-12 would require mapping and flagging potential special status wildlife or plant species habitats to avoid or minimize impacts on potential habitat and individuals from drought-resiliency project construction. Implementation of MM-BIO-4 and MM-BIO-6 would ensure that impacts to any potentially present nesting birds and GGS, respectively, are avoided or minimized during drought-resiliency project construction.

Implementation of MM-BIO-5 would ensure that other types of direct and indirect impacts on potentially present special status species and habitats are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and CDFW CNDDDB reporting, among other measures during drought-resiliency project construction. If take of special status wildlife species is likely as a result of a drought-resiliency project even after implementation of the avoidance, minimization, and the mitigation measures above, implementation of MM-BIO-7 requires coordinating with USFWS and CDFW and obtaining an Incidental Take Permit, which could include providing compensatory mitigation. Issuance of the Incidental Take Permit would be considered to mitigate to a less-than-significant level the individual impacts on special status species. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status wildlife species from drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Implementation of MM-BIO-9 would require that any native trees removed for drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable. If impacts to wetlands and waters cannot be avoided, then required permits, potentially including permits from the USACE, RWQCB, and CDFW would be obtained and complied with per MM-BIO-13. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved bank. Implementation of MM-HYD-1 would require that erosion and spill control measures be implemented during drought-resiliency project construction. With mitigation, construction of drought-resiliency projects would present no conflict with local policies or ordinances protecting biological resources.

In summary, while numerous mitigation measures would be implemented to reduce the proposed project's potential environmental impacts, due to the potentially significant and unavoidable impacts on GGS and northwestern pond turtle from crop idling, the proposed project could conflict with local policies or ordinances protecting biological resources. Impacts would remain significant and unavoidable.

3.4.3.4.6 *BIO-6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

In Sacramento and Sutter counties, the Natomas Basin Habitat Conservation Plan (NBHCP) was adopted in November 1997 to minimize incidental take of species covered in the plan area and to mitigate the impacts of covered activities and their habitats. Mitigation is accomplished primarily through the acquisition and management of reserve lands for the benefit of covered species. The primary biological goal of the NBHCP is to create a system of reserves that contain both wetland and upland components that will support viable populations of Swainson's hawk, GGS, and other species covered under the NBHCP.

The Butte Regional Conservation Plan (BRCP), a joint HCP/NCCP, was adopted in 2015. It is a comprehensive, countywide plan that streamlines the environmental permitting process and includes water and irrigation district projects and canal maintenance activities as covered activities. The BRCP includes coverage for 40 species of plants, fish, and wildlife within the plan area, including Swainson's hawk, GGS, and others.

The Yolo Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo NCCP/HCP) was adopted in April 2018 as a comprehensive, countywide plan to provide for the conservation of 12 sensitive species and the natural communities and agricultural land on which they depend, as well as a streamlined permitting process to address the effects of a range of future anticipated activities on them. The Yolo HCP/NCCP will improve habitat conservation efforts in Yolo County; encourage sustainable economic activity; and maintain and enhance agricultural production.

Impact Determination: As described in Section 3.4.3.4.1, discing idled croplands could directly affect nests present in the vegetation. Fallowed rice fields and connecting drainage canals and ditches could eliminate foraging habitat, impact GGS genetic diversity, disconnect natural GGS habitats, and stress GGS from the loss of essential cover from predators. Dewatered irrigation ditches could reduce habitat and foraging opportunities for northwestern pond turtle.

Drought-resiliency projects have the potential to remove roosting, foraging, and nesting sites for migratory bird species or raptors within and adjacent to project areas. Ditch/canal work associated with certain drought-resiliency projects could impact GGS or northwestern pond turtle during construction if they occur in the project area. Drought-resiliency projects on non-agricultural lands with generally undisturbed habitat could impact special status plants during construction activities.

These activities could conflict with the provisions of HCPs/NCCPs and would constitute potentially significant impacts.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-2:** Conduct Special-Status Plant Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-3:** Conduct Special-Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-4:** Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
- **MM-BIO-6:** Implement GGS Avoidance Measures for Drought-Resiliency Projects
- **MM-BIO-7:** Obtain Incidental Take Authorization for Take of Listed Species from Drought-Resiliency Project Impacts
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects
- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
- **MM-BIO-10:** Timing Requirements for Discing in Fallow Fields During Agreement Years
- **MM-BIO-11:** Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years
- **MM-BIO-12:** Conduct Aquatic Resources Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-13:** Obtain Required Permits and Implement Wetland Mitigation for Drought-Resiliency Projects
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with GSPs for All Groundwater Pumping Activities Undertaken Under the Agreement

Residual Impact:

Water Reduction Activities

Implementation of MM-BIO-10 would require that discing occurring between February 15 and September 15 during an Agreement Year be conducted when vegetation is on average 12 inches or less in height, which would prevent potential impacts on nesting birds. Discing between September 15 and February 15 during an Agreement Year may occur without vegetation height restriction. With mitigation, discing as part of the proposed project would present no conflict with the provisions of HCPs/NCCPs.

Implementation of MM-BIO-11 would require to the extent practicable that minimum water depths are maintained in drainage canals in key areas during Agreement Years for the benefit of GGS and northwestern pond turtle. While this mitigation measure could reduce impacts to GGS associated with loss of genetic diversity, disconnected natural habitats, and stress from the loss of essential cover from predators, as well as to northwestern pond turtle from reduced habitat and foraging opportunities, because there could be areas where sufficient water cannot be left in irrigation canals and ditches due to inadequate surface water, crop idling impacts on GGS and northwestern pond turtle could represent a conflict with the provisions of HCPs/NCCPs, constituting a significant and unavoidable impact.

Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs. Complying with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken. With mitigation, groundwater substitution would present no conflict with the provisions of HCPs/NCCPs.

Drought-Resiliency Projects

Implementation of MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-12 would map and flag potential special status wildlife or plant species habitats to avoid or minimize impacts on potential habitat and individuals from drought-resiliency project construction. Implementation of MM-BIO-4 and MM-BIO-6 would ensure that impacts to any potentially present nesting birds and GGS are respectively avoided or minimized during drought-resiliency project construction. Implementation of MM-BIO-5 would ensure that other types of direct and indirect impacts on potentially present special status species and habitats are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and CDFW CNDDDB reporting, among other measures during drought-resiliency project construction. If take of special status wildlife species is likely as a result of a drought-resiliency project even after implementation of the avoidance, minimization, and the mitigation measures above, implementation of MM-BIO-7 requires coordinating with USFWS and CDFW and obtaining an Incidental Take Permit, which could include providing compensatory mitigation. Issuance of the Incidental Take Permit would be considered to fully mitigate to a less-than-significant level the individual impacts on special status species. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status wildlife species from drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Implementation of MM-BIO-9 would require that any native trees removed for drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable. If impacts to wetlands and waters cannot be avoided, then required permits, potentially including permits from the USACE, RWQCB, and CDFW would be obtained and complied with per MM-BIO-13. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved

bank. Implementation of MM-HYD-1 would require that erosion and spill control measures be implemented during drought-resiliency project construction. With mitigation, construction of drought-resiliency projects would present no conflict with the provisions of HCPs/NCCPs.

In summary, while numerous mitigation measures would be implemented to reduce the proposed project's potential environmental impacts, due to the potentially significant and unavoidable impacts on GGS and northwestern pond turtle from crop idling, the proposed project could conflict with the provisions of HCPs/NCCPs. Impacts would remain significant and unavoidable.

3.5 Cultural Resources

This section describes existing historical and archaeological resources within the project area and analyzes how the proposed project may affect those resources. It also describes applicable rules and regulations pertaining to cultural resources that could affect the proposed project. The information presented in this section is largely based on historical maps and documents pertaining to development of the project area. For the purposes of this analysis, the study area is defined as the project area as presented on Figure 1.

3.5.1 *Environmental Setting*

The project area spans a large geographic area with diverse cultural resources. Existing documentation of resources and previous cultural resources surveys are maintained by the California Historical Resources Information System (CHRIS). CHRIS is comprised of eight active information centers, each responsible for maintaining records within a distinct geographic area. The project spans portions of the Northwest Information Center, North Central Information Center, and Northeast Information Center (NEIC). The NEIC alone, which is responsible for the largest portion of the project, maintains more than 45,500 records for historic resources (CalState Chico 2024). The context below provides information regarding the prevalence and range of resources that may be present within the overall project area.

The earliest evidence of people within the project area and its periphery is found in archaeological resources near Tracy Lake to the south, and Samwel Cave, McCloud, and Big Springs to the north. These sites contain artifacts related to Fluted Point and Western Pluvial Lakes Traditions dating to up to 11,500 Before Present (BP; Beck and Jones 1988; Moratto 2004). Assessments on early behaviors and patterns such as subsistence and transportation or migration are speculative because the archaeological record near the project area is sparse. It is postulated that the earliest people in the area were highly mobile, following rich and diverse seasonal resources. Groups may have focused on heavily on vegetative or faunal resources (Moratto 2004; White et al. 2009). The archaeological record remains sparse throughout the early Holocene as localized traditions associated with the Lower Archaic Period emerged around the American west, represented west of the project area by the Borax Lake Pattern. Lithic artifacts associated with other early sites include cores from the bifacial reduction sequence, chipped stone crescents, scrapers, and choppers (Elston 1986).

Substantial terminal Pleistocene through middle Holocene archaeological resources may be deeply buried by geological processes associated with the extreme climate variations (White et al. 2009; Erlandson 1997). Mount Mazama erupted approximately 7,000 BP and deposited diagnostic lenses of volcanic ash. Sites that postdate the Mazama ash appear more common, and lithic artifact assemblages include a wider variety of projectile points, including side-notched, corner-notched, stemmed, and smaller darts (King et al. 2004). The archaeological record remains relatively sparse, which may represent poor preservation or low populations during this period (Beck and Jones 1988), while trends throughout the remainder of the Holocene indicate sustained presence and continued adaptation to life and changing conditions in the Sacramento Valley.

Prolonged drought on a continental scale between approximately 6,400 BP and 3,800 BP and pronounced drying and warming between 6,000 BP and 4,800 BP roughly coincides with initial cultural changes and population changes during the Middle Archaic (Erlandson 1997). Climatic disruption may have led to depopulation, increased sedentism, changed subsistence behaviors shifting a focus to xeric resources, or regional movements including populations shifting from deserts east of the project area into the Sacramento Valley (White et al. 2009; Rosenthal et al. 2007; Kennett et al. 2007). Smaller projectile points, suspected to be related to a shift to bow and arrow technology, appear following the emergence of Rose Spring points in the Great Basin to the east. Millstones, indicating a new approach or reliance on seeds, acorns, and other vegetative material also emerge (Elston 1986). Additionally, greater diversity of artifacts within site assemblages suggests lower reliance on the seasonal round and greater sedentism. Despite these changes in settlement, processing, and technology, the archaeological record remains somewhat sparse (White et al. 2009). After approximately 3,000 BP, climate conditions became cooler with increased moisture, likely leading to increased resources to sustain larger populations (Erlandson 1997). Archaeological resources related to the Late Archaic demonstrate increased prevalence of small projectile points suggesting further adoption of bow and arrow technology, further centralization and sedentism in settlements, increased exploitation of resources, and possible reduced foraging ranges brought on by higher populations.

Large populations developed after approximately 900 BP and settlements from the Archaic Tradition were abandoned (Rosenthal et al. 2007). Prior to the introduction of smallpox and other diseases by non-native settlers, the project area was home to one of the densest populations of hunter gatherers (Erlandson 1997). Despite climate variations that led to very low populations elsewhere, the people within the Sacramento Valley were supported by a diversity of aquatic and terrestrial resources, seasonal variation in resources, and navigation along the water courses. The broader Central Valley and Sierra foothills were home to an estimated 100,000 people in the early 19th century. Groups speaking Maiduan (Konkow and Nisenan dialects), Wintuan (Patwin, Nomlaki, and Wintu dialects), Hokaan (Yana dialect) languages were present within and near the project area (Shipley 1978; UC Berkeley 2024). Generally, individuals were organized around familial groups which would congregate in winter to share food surpluses. Smaller families were responsible for oak stands and

collecting seasonal resources. A variety of terrestrial, aquatic, and avian species were important food resources (Lightfoot et al. 2009).

European explorers and trappers of the early 19th century were among the earliest non-natives in the project area. Initial permanent settlement soon gave way to sudden, multiethnic population growth to feed the gold mining boom of 1848 (Hoover et al. 1990). Early systems of canals were constructed to provide mining endeavors with large quantities of water. Some individuals who failed to earn a fortune through mining made additional improvements to convey water for irrigation (Davis 1984).

The high population and deep history of Native American settlement in the project area may correlate to an expected high frequency of archaeological and traditional cultural resources. Ephemeral settlements associated with early settlement and mining may also be encountered. Existing structures, including canals that were historically significant to local development, may also be present within and near individual projects.

3.5.2 *Applicable Regulations*

3.5.2.1 *State*

3.5.2.1.1 *California Environmental Quality Act*

CEQA and the CEQA Guidelines include procedures for identifying, analyzing, and disclosing potentially significant adverse impacts of a project to historical and unique archaeological resources, including resources listed in or formally determined eligible for the National Register of Historic Places (NRHP), the CRHR, or local registers. CEQA requires the lead agency to consider the effects of a project on archaeological resources and determine whether any identified archaeological resource is a historical resource (i.e., if the archaeological resource meets the criteria for listing in the CRHR) (CEQA Guidelines Sections 15064.5[a][1],[3] and 15064.5[c][1–2]). An archaeological resource that qualifies as a historical resource under CEQA generally qualifies for listing under Criterion 4 of the CRHR (CEQA Guidelines Section 15064.5[a][3][D]; NRHP Criterion D). An archaeological resource may qualify for listing under Criterion 4 when it can be demonstrated that the resource has the potential to significantly contribute to questions of scientific or historical importance. Archaeological resources that are not historical resources according to the above definitions may be “unique archaeological resources,” as defined in PRC 21083.2, which generally provides that “non-unique archaeological resources” do not receive any protection under CEQA. If an archaeological resource is neither a unique archaeological resource nor a historical resource, the effects of a project on those resources are not considered significant under CEQA.

3.5.2.1.2 *California Executive Order W-26-92*

California Executive Order (EO) W-26-92 affirms that all state agencies shall recognize, preserve, and maintain significant heritage resources of the state.

3.5.2.2 Regional and Local

Applicable policies or actions pertaining to cultural resources from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.5.2.2.1 Shasta County General Plan

The following local policy pertaining to cultural resources is included in the *Shasta County General Plan* (Shasta County 2004):

- **Policy 6.10.4 HER-a:** Development projects in areas of known heritage value shall be designed to minimize degradation of these resources. Where conflicts are unavoidable, mitigation measures which reduce such impacts shall be implemented. Possible mitigation measures may include clustering, buffer or nondisturbance zones, and building siting requirements.

3.5.2.2.2 Tehama County

The following local policies and measures pertaining to cultural resources are included in the Open Space element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy OS-10.1:** The County should protect and preserve significant archaeological and cultural resources.
- **Implementation Measure OS-10.1a:** Refer all new development proposals on undisturbed land to the Northwest Information Center at California State University, Chico for an evaluation of potential impacts to archaeological and cultural resources.
- **Implementation Measure OS-10.1d:** Require appropriate surveys and site investigations when needed as part of the initial environmental assessment for development projects in accordance with the California Environmental Quality Act (CEQA). Surveys and investigations shall be performed under the supervision of a professional archaeologist or other person qualified in the appropriate field, and approved by the County. It is recognized that Timber Harvest Plans have been declared by the State to be functionally equivalent to environmental assessments required by CEQA.
- **Implementation Measure OS-10.1e:** Impose the following conditions on all discretionary projects in areas which do not have a significant potential for containing archaeological or paleontological resources: The Planning Dept. shall be notified immediately if any prehistoric, archaeological, or paleontological artifact is uncovered during construction. All construction must stop and an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology shall be retained to evaluate the finds and recommend appropriate action.
- **Policy OS-10.4:** The County shall encourage and support inter-agency cooperation to protect historic, archaeological, and cultural resources.

- **Implementation Measure OS-10.4a:** Consult with local, State, and federal agencies as well as local Native American communities in cases where new development may result in disturbance to historic, archaeological, and/or cultural resources.

3.5.2.2.3 *Glenn County*

The following local policies and actions pertaining to cultural resources are included in the Conservation and Sustainability element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy COS 2-1:** Review proposed developments and infrastructure improvements in conjunction with the California Historical Resources Information System, Northwest Information Center to determine whether project areas contain known archaeological resources, either prehistoric and/or historic-era, or have the potential for such resources.
- **Policy COS 2-2:** If found during construction, ensure that human remains are treated with sensitivity and dignity, and ensure compliance with the provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98.
- **Action COS-2a:** Require a cultural and archaeological survey prior to approval of any project which would require excavation in an area that is sensitive for archaeological or cultural resources. If significant cultural or historical resources, including historic and prehistoric resources, are identified, appropriate measures shall be implemented, such as documentation and conservation, to reduce adverse impacts to the resource.
- **Action COS-2b:** Require all development, infrastructure, and other ground-disturbing projects to comply with the following conditions in the event of an inadvertent discovery of cultural resources or human remains:
 - If construction or grading activities result in the discovery of significant historic or prehistoric archaeological artifacts or unique paleontological resources, all work within 100 feet of the discovery shall cease, the County Planning and Community Development Services Agency shall be notified, the resources shall be examined by a qualified archaeologist, paleontologist, or historian for appropriate protection and preservation measures; and work may only be resume when appropriate protections are in place and have been approved by the County Planning and Community Development Services Agency.
 - If human remains are discovered during any ground disturbing activity, work shall stop until the County Sheriff and Coroner and County Planning and Community Development Services Agency have been contacted; if the human remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) and the most likely descendants have been consulted; and work may only resume when appropriate measures have been taken and approved by the County Planning and Community Development Services Agency.

3.5.2.2.4 Butte County

The following local policies pertaining to cultural resources are included in the Conservation and Open Space element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy COS-P15.2:** As part of CEQA and NEPA projects, evaluations of surface and subsurface cultural resources in the county shall be conducted. Such evaluations should involve consultation with the Northeast Information Center.
- **Policy COS-P16.1:** Areas found during construction to contain significant historic or prehistoric archaeological artifacts shall be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation. Historic or prehistoric artifacts found during construction shall be examined by a qualified consulting archaeologist or historian to determine their significance and develop appropriate protection and preservation measures.

3.5.2.2.5 Sutter County

The following local policies pertaining to cultural resources are included in the Cultural Resources element of the *Sutter County General Plan* (Sutter County 2011):

- **Policy ER 8.2: Preservation:** Ensure the preservation of significant cultural and paleontological resources, including those recognized at the national, state, and local levels.
- **Policy ER 8.5: Consultation:** Consult with the appropriate organizations and individuals early in the development process (e.g., Information Centers of the California Historical Resources Information System, Native American Heritage Commission, and Native American groups and individuals) to minimize potential impacts to cultural resources.

3.5.2.2.6 Colusa County

The following local policies pertaining to cultural resources are included in the Conservation element of the *Colusa County General Plan* (Colusa County 2012):

- **Policy CON 3-1:** Require a cultural and archaeological survey prior to approval of any project which would require excavation in an area that is sensitive for cultural or archaeological resources. If significant cultural or archaeological resources, including historic and prehistoric resources, are identified, appropriate measures shall be implemented, such as documentation and conservation, to reduce adverse impacts to the resource.
- **Policy CON 3-2:** Require all development, infrastructure, and other ground-disturbing projects to comply with the following conditions in the event of an inadvertent discovery of cultural resources or human remains:
 - If construction or grading activities result in the discovery of significant historic or prehistoric archaeological artifacts or unique paleontological resources, all work within 100 feet of the discovery shall cease, the County Department of Planning and Building shall be notified, the resources shall be examined by a qualified archaeologist, paleontologist, or historian for appropriate protection and preservation measures; and

work may only resume when appropriate protections are in place and have been approved by the County Department of Planning and Building.

- If human remains are discovered during any ground disturbing activity, work shall stop until the County Coroner and County Department of Planning and Building have been contacted; if the human remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) and the most likely descendants have been consulted; and work may only resume when appropriate measures have been taken and approved by the County Department of Planning and Building.

3.5.2.2.7 *Yolo County General Plan*

The following local policies pertaining to cultural resources are included in the Conservation and Open Space element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy CO-4.12:** Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.
- **Policy CO-4.13:** Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

3.5.2.2.8 *Sacramento County*

The following local policies pertaining to cultural resources are included in the Conservation Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017b):

- **Policy CO-150:** Utilize local, state and national resources, such as the NCIC, to assist in determining the need for a cultural resources survey during project review.
- **Policy CO-152:** Consultations with Native American tribes shall be handled with confidentiality and respect regarding sensitive cultural resources on traditional tribal lands.
- **Policy CO-153:** Refer projects with identified archeological and cultural resources to the Cultural Resources Committee to determine significance of resource and recommend appropriate means of protection and mitigation. The Committee shall coordinate with the Native American Heritage Commission in developing recommendations.
- **Policy CO-159:** Request a Native American Statement as part of the environmental review process on development projects with identified cultural resources.
- **Policy CO-162:** Projects located within areas known to be sensitive for paleontological resources, should be monitored to ensure proper treatment of resources and to ensure crews follow proper reporting, safeguards and procedures. CO-163. Require that a certified geologist or paleoresources consultant determine appropriate protection measures when resources are discovered during the course of development and land altering activities.
- **Policy CO-164:** Structures having historical and architectural importance shall be preserved and protected.

- **Policy CO-165:** Refer projects involving structures or within districts having historical or architectural importance to the Cultural Resources Committee to recommend appropriate means of protection and mitigation.

3.5.3 *Environmental Impacts and Mitigation Measures*

3.5.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, the project area mostly consists of land that has been used for agricultural operation or urban development and is previously disturbed. CHRIS information centers with information regarding cultural resources within the project area contain the records of tens of thousands of resources.

3.5.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on cultural resources. The proposed project would have an impact on cultural resources, including Tribal cultural resources, if the following apply:

- **CUL-1:** The project would cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- **CUL-2:** The project would cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
- **CUL-3:** The project would disturb any human remains, including those interred outside of formal cemeteries.

3.5.3.3 **Methodology for Determining Impacts**

Cultural resources are defined as buildings and structures, archaeological sites, places of traditional cultural importance, and objects any of which are associated with California's history, Native American history, architecture, archaeology, engineering, or culture. Definable areas with historically associated collections of these resources may also comprise historic districts and cultural landscapes (California State Parks 2019). Properties shall be considered to be historically significant if they meet the following criteria (14 CCR 15064.5):

- Listed in or eligible for listing in the California Register of Historical Resources (CRHR)
- Listed in a local preservation register
- Identified as significant in a historical resource survey (unless the preponderance of evidence demonstrates that it is not historically or culturally significant)
- Determined to be significant by the CEQA lead agency, provided the determination is supported by substantial evidence considering the whole record
- Cultural resources to be considered at the project level include those that are recorded and yet to be recorded. A unique archaeological resource is a site, artifact, or object that is considered to have high probability to meet any of the following criteria (PRC Sec. 21083.2):

- Contains information needed to answer important scientific research questions and that 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 define a substantial adverse change in the significance of a historical resource as a significant effect on the environment. A substantial adverse change to archaeological or historical resources is defined to include physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired (CEQA Guidelines Section 15064.5[b][1]). The significance of a historical or archaeological resource is materially impaired when a project diminishes the characteristics that convey its historical significance and that justify its inclusion on a historic register. Following these criteria, an adverse change may include physical impacts or changes to a property's setting and environment. This is consistent with the criteria for determination of adverse effect in the National Historic Preservation Act (NHPA) Section 106 regulations and guidelines.

3.5.3.4 Impact Analysis

3.5.3.4.1 *CUL-1: Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?*

Water Reduction Activities

Farming and irrigation practices that can take place with no permanent modification to farms and irrigation systems have limited potential to cause substantial change to historical resources. Crop idling and crop shifting may result in changes in vegetation within a historic environment. However, alterations to the visual setting may accompany crop changes and any effect would be minor, temporary, and expected to be reversed in non-Agreement Years. Similarly, groundwater substitution and conservation practices would not result in impacts to historical resources.

Drought-Resiliency Projects

Construction of drought-resiliency projects has the potential to affect historical resources. Ditches and canals altered by piping, lining, or gate installation may be substantially changed as a result of the drought-resiliency projects. It is anticipated some ditches and canals, especially trunk canals of some systems, may be considered significant to the history of the project area—specifically, the historic development that these irrigation features facilitated. Physical alterations, including coating, lining, piping, and gating may result in substantial adverse changes to these resources, if present. If ditches and canals that are physically altered contribute to districts and other nearby historic resources, the historic character of these districts or nearby historic resources may also be adversely changed. Steps to reverse the effects of piping, lining, and gating on historically significant ditches

and canals, if present, may be difficult or impossible to reverse without risk of further damage to a historic structure, so these activities are considered to be substantial and permanent in nature.

Small appurtenances such as SCADA systems, weirs and check structures, and new groundwater wells have limited potential for substantial and adverse change; however, specific siting of the structures, utilities, access roads, and staging areas may affect historical resources permanently or for decades. Modern SCADA systems and well structures may interfere with the historic setting when placed within, on, or near historical resources and within historic districts. Other projects may affect historic resources and their setting depending on design and location. Improvements to on-farm improvements irrigation systems, pipeline recirculation programs, and conjunctive use programs may substantially change historic resources. Large irrigation systems and other associated structures may be visually obtrusive. The historic character of resources where these improvements take place may be historically significant or contribute to a district or a property's historical setting.

Vegetation clearing, sediment removal, re-compaction, and other ditch maintenance activities are ongoing practices and do not have potential for substantial changes.

Impact Determination: Although implementation of the water reduction activities does not have the potential to result in significant impacts to historical resources, individual drought-resiliency projects could have the potential to impact historical resources. Therefore, impacts are considered to be potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-CUL-1:** Conduct CHRIS Review and Desktop Evaluation for Drought-Resiliency Projects
 - Prior to the start of any drought-resiliency project, a qualified historian/archaeologist will request information regarding cultural resources already recorded in CHRIS to determine whether a drought-resiliency project may be located in an area where cultural resources are recorded. If through this review, a cultural resource is identified within the specific drought-resiliency project area or the historian/archaeologist determines through desktop review that the specific project area has potential to contain cultural resources, then implementation of MM-CUL-2 will be required.
- **MM-CUL-2:** Conduct Pre-Construction Surveys and Establish Buffers for Drought-Resiliency Projects
 - If determined required by the qualified historian/archaeologist in MM-CUL-1, a site-specific pre-construction field survey will be conducted by a qualified historian/archaeologist prior to the start of construction activities. The pre-construction survey will be designed to identify historic structures, archaeological sites, and potential Tribal cultural resources that may be present at the specific location of the drought-resiliency project that is to be implemented. Reports would be made available to the Office of Historic Preservation (OHP) and Native American Tribes that have requested consultation (if any), and these entities would be afforded an opportunity to comment

prior to the start of construction. Any historical or archaeological resources identified during the survey would be recorded and flagged with a 30-foot buffer (or based on topography and access points to protect the find, as determined appropriate by the qualified historian/archeologist).

- **MM-CUL-3:** Develop and Implement Applicable Monitoring and Mitigation for Drought-Resiliency Project Impacts
 - If the pre-construction survey conducted in MM-CUL-2 identifies any historic or archaeological resources and a Tribe(s) has requested consultation, then that Tribe(s) will be notified. If historic structures, archaeological sites, and potential Tribal cultural resources are identified and flagged, but impacts cannot be avoided or adequately minimized, then OHP and Tribes that have requested consultation (if any) will be provided a project-specific monitoring and mitigation plan. Impacts will be mitigated through implementation of this plan, with mitigation expected to include but not be limited to monitoring, resource investigation, documentation, recovery, or preservation as well as interpretive measures.
- **MM-CUL-4:** Develop Inadvertent Discovery Plan (IDP) to be Implemented if Prehistoric or Historical Archaeological Resources Are Encountered during Drought-Resiliency Project Construction
 - A qualified archaeologist will develop an IDP for the proposed project to be provided to onsite personnel involved in drought-resiliency projects that involve excavation below depths routinely disced or disturbed through routine agricultural operations. The IDP will include steps to be taken in the event that cultural resources, any artifact, or an unusual amount of bone, shell, or non-native stone are identified during construction. Work will immediately stop, and activities will be relocated to another area beyond 10 meters (30 feet) of the discovery. In the case of potential human remains, the find must be reported to local law enforcement. The IDP will specify steps to notify and consult with the OHP and Tribes. If the resources are found to be significant, they would be avoided or if avoidance is not possible, mitigated in accordance with MM-CUL-3.

Residual Impact: Implementation of MM-CUL-1 would ensure that CHRIS search information for specific drought-resiliency project locations is reviewed and that qualified historians evaluate the need for pre-construction field surveys. Implementation of MM-CUL-2 would ensure that any historical resources at specific drought-resiliency project locations are identified and flagged for avoidance. Implementation of MM-CUL-3 would ensure that applicable monitoring and mitigation is provided for any historical resources that cannot be avoided during construction of drought-resiliency projects. Implementation of MM-CUL-4 would ensure that any inadvertent discoveries—whether at a drought-resiliency project location that was surveyed or not—are handled in accordance with the appropriate protocols. Implementation of MM-CUL-1 through MM-CUL-4 would eliminate the potential for a significant impact to historical resources. Impacts would be reduced to less than significant with mitigation.

3.5.3.4.2 *CUL-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?*

Water Reduction Activities

Water reduction activities would involve no ground disturbance activities. Therefore, they would not affect archaeological resources.

Drought-Resiliency Projects

Drought-resiliency projects may involve ground disturbance varying from minor excavation activities to larger-scale project construction footprints. Archaeological resources may be impacted by ground disturbance associated with these projects. Significant changes to an archaeological site could occur from maneuvering construction equipment or from construction activities, such as compression, trampling, rutting, mixing soils, excavating by drills or heavy machinery, and restricting access. These impacts could even affect archaeological resources within previously disturbed agricultural fields and other previously disturbed areas.

Construction or installation of weirs or check structures and SCADA systems have the lowest potential to encounter archaeological resources; however, due to the need for access routes, potential power/communications connections, and minimal excavation, there remains potential for disturbance. New groundwater or deep aquifer wells, improvements to ditches and canals (including piping and lining), and automated gates installation have moderate potential to encounter archaeological resources. Equipment and vehicle traffic on access routes, material storage within larger staging areas, utility construction, and excavation could disturb archaeological resources. Similarly, improvements to irrigation systems, pipeline recirculation programs, on-farm reservoirs, and conjunctive use programs may include larger excavation areas, utility and irrigation line construction and decommissioning, and other project elements with potential to cause destruction to archaeological resources.

Impact Determination: While water reduction activities do not have the potential to result in significant impacts to archaeological resources, construction of the drought-resiliency projects could potentially result in substantial changes in the significance of an archaeological resources. Impacts would be considered potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-CUL-1:** Conduct CHRIS Review and Desktop Evaluation for Drought-Resiliency Projects
- **MM-CUL-2:** Conduct Pre-Construction Surveys and Establish Buffers for Drought-Resiliency Projects
- **MM-CUL-3:** Develop and Implement Applicable Monitoring and Mitigation for Drought-Resiliency Project Impacts
- **MM-CUL-4:** Develop IDP to be Implemented if Prehistoric or Historical Archaeological Resources Are Encountered during Drought-Resiliency Project Construction

Residual Impact: Implementation of MM-CUL-1 would ensure that CHRIS search information for specific drought-resiliency project locations is reviewed and that qualified archaeologists evaluate the need for pre-construction field surveys. Implementation of MM-CUL-2 would ensure that any archaeological resources at specific drought-resiliency project locations are identified and flagged for avoidance. Implementation of MM-CUL-3 would ensure that applicable monitoring and mitigation is provided for any archaeological resources that cannot be avoided during construction of drought-resiliency projects. Implementation of MM-CUL-4 would ensure that any inadvertent discoveries—whether at a drought-resiliency project location that was surveyed or not—are handled in accordance with the appropriate protocols. Implementation of MM-CUL-1 through MM-CUL-4 would eliminate the potential for a significant impact to archaeological resources. Impacts would be reduced to less than significant with mitigation.

3.5.3.4.3 CUL-3: Would the project disturb any human remains, including those interred outside of formal cemeteries?

Water Reduction Activities

Water reduction activities would involve no ground disturbance activities. Therefore, there would be no potential to encounter human remains.

Drought-Resiliency Projects

Construction, staging, and maneuvering equipment and vehicles during implementation of the drought-resiliency projects may disturb human remains, if present, including those outside formal cemeteries. The project area was densely populated, even prior to non-native settlement. Individuals may be interred throughout the project area. Therefore, human remains may be encountered during construction of the drought-resiliency projects.

Impact Determination: Implementation of the drought-resiliency projects may result in disturbance of human remains, and therefore impacts would be considered potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-CUL-1:** Conduct CHRIS Review and Desktop Evaluation for Drought-Resiliency Projects
- **MM-CUL-2:** Conduct Pre-Construction Surveys and Establish Buffers for Drought-Resiliency Projects
- **MM-CUL-3:** Develop and Implement Applicable Monitoring and Mitigation for Drought-Resiliency Project Impacts
- **MM-CUL-4:** Develop IDP to be Implemented if Prehistoric or Historical Archaeological Resources Are Encountered during Drought-Resiliency Project Construction

Residual Impact: Implementation of MM-CUL-1, MM-CUL-2, and MM-CUL-3 would ensure that drought-resiliency project locations are reviewed, evaluated, and surveyed, as determined necessary by a qualified archaeologist and that the appropriate applicable monitoring and mitigation is

conducted during construction activities. Implementation of MM-CUL-4 would ensure that any inadvertent discoveries, including potentially discovery of human remains—whether at a drought-resiliency project location that was surveyed or not—are handled in accordance with the appropriate protocols. Implementation of MM-CUL-1 through MM-CUL-4 would ensure that the appropriate steps are handled in the event that human remains are encountered. Impacts would be reduced to less than significant with mitigation.

3.6 Energy

This section describes the existing energy usage in the study area and analyzes how the proposed project may affect the consumption of energy resources and plans for renewable energy or energy efficiency. It also describes applicable rules and regulations pertaining to energy resources that could affect the proposed project. For the purposes of this analysis, the study area is defined as the project area as presented on Figure 1.

3.6.1 Environmental Setting

Due to the size of its population, California’s energy consumption ranks as the second highest in the country, with an estimated total consumption of 6,882 trillion British thermal units (Btu) in 2022. Total utility-scale electric generation for California was 287,220 gigawatt-hours (GWh) in 2022, up 3.4% (9,456 GWh) from 2021. The state’s energy consumption per capita, however, ranks as the fourth lowest because of its mild climate and policies related to energy efficiency (USEIA 2024). California is the seventh highest producer of energy, producing 2,152 trillion Btu in 2021. It is the nation’s top producer of solar and geothermal energy and the second highest producer of biomass and hydroelectric power generation (USEIA 2024).

In 2023, California was the fourth-largest electricity producer in the nation. It is also the nation’s third-largest electricity consumer and imports more electricity than any other state. In 2023, renewable resources, including hydroelectric power and small-scale solar power, supplied 54% of California’s in-state electricity generation. Natural gas fueled 39% and nuclear power fueled most of the remaining 7%. Electricity demand, usage, and production in the state is projected to increase in the near future due to population growth and other factors, including climate change (CEC 2024).

Most of the project area is served by PG&E for electricity, except for the City of Redding, which is served by Redding Electric Utility (REU), and Sacramento County, by the Sacramento Municipal Utility District (SMUD). County-level electricity consumption and generation values for 2022 are shown in Table 13.

Table 13
Electricity Consumption and Generation by County (2022)

County	Consumption (GWh)	Generation (GWh)
Butte	1,445	2,055

County	Consumption (GWh)	Generation (GWh)
Colusa	314	2,710
Glenn	495	8
Sacramento	11,410	3,864
Shasta	1,617	4,357
Sutter	662	2,898
Tehama	531	69
Yolo	1,797	256
Total	18,271	16,217

Most of the region uses natural gas for heating. Pacific Gas & Electric (PG&E) is the natural gas utility servicing all counties within the Sacramento Valley. Natural gas consumption by county is presented in Table 14.

Table 14
Natural Gas Consumption by County in Millions of Therms (2022)

County	Total Usage
Butte	26.40
Colusa	11.80
Glenn	37.14
Sacramento	21.79
Shasta	62.35
Sutter	10.87
Tehama	32.83
Yolo	303.72
Total	506.89

Note:

Source: California Energy Commission 2016

Gasoline is the most used transportation fuel in California, with 97% percent of all gasoline being consumed passenger vehicles and light-duty trucks. In 2022, 13.6 billion gallons of gasoline were sold in California Diesel fuel is the second largest source of transportation fuel used in California. In 2002, 3.6 billion gallons of diesel (including off-road diesel) was sold in California (CEC 2024).

3.6.2 *Applicable Regulations*

3.6.2.1 **Federal**

3.6.2.1.1 *Energy Policy and Conservation Act and CAFÉ Standards*

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Pursuant to this act, the National Highway Traffic and Safety Administration, part of the U.S. Department of Transportation (DOT), is responsible for revising existing fuel economy standards and establishing new vehicle economy standards.

3.6.2.2 **State**

Energy in California is regulated by a series of bills, regulations, and executive orders aimed at decreasing total energy demand and increasing the availability and production of renewable energy for all energy needs.

3.6.2.2.1 *State of California Energy Action Plan*

CEC is responsible for preparing the state energy plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 2003 Energy Action Plan (2008 update), which 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. To further this policy, the plan identifies a number of strategies, including assisting public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, as well as encouraging urban design that reduces vehicle miles traveled (VMT) and accommodates pedestrian and bicycle access.

3.6.2.2.2 *Senate Bill 350: Clean Energy and Pollution Reduction Act*

The Clean Energy and Pollution Reduction Act (SB 350), enacted in 2015, established clean energy, clean air, and GHG reduction goals, including reducing GHG to 40% below 1990 levels by 2030 and to 80% below 1990 levels by 2050. The California Energy Commission is working with other state agencies to implement the bill. The bill increases California's renewable electricity procurement goal from 33% by 2020 to 50% by 2030. In addition, SB 350 requires California to double statewide energy efficiency savings in electricity and natural gas end use by 2030.

3.6.2.2.3 *California Air Resources Board In-Use Off-Road Diesel Vehicle Rule*

In July 2007, the ARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Diesel Regulation) to reduce diesel PM and oxides of nitrogen (NOx) emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. The regulation was adopted in April 2008, amended in 2011, and amended again in 2022. The regulation is applicable to all self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road

two-engine sweepers, including vehicles that are rented or leased [rental or leased fleets]). Vehicles used solely for agriculture are exempted from this regulation.

The Off-Road Diesel Regulation is a multi-pronged approach to emissions controls that does the following:

- Imposes limits on idling to 5 minutes, requires a written idling policy, and requires a disclosure when selling vehicles
 - All medium and large fleets are required to develop a written idling policy that informs operators of the fleets' vehicles that idling is limited to 5 consecutive minutes or less and to make it available to operators by March 1, 2009. Small fleets are not required to maintain a written idling policy but are accountable for meeting the idling limits.
- Requires all vehicles to be reported to ARB in an online reporting system
- Restricts the adding of older vehicles into fleets starting on January 1, 2014
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits).

The 2022 Amendments include a staggered phase-out of Tier 0 through Tier 2 off-road engines and a restriction on new Tier 3 and Tier 4 vehicles. Beginning January 1, 2018, for large and medium fleets, and January 1, 2023, for small fleets, a fleet may not add a vehicle with a Tier 2 engine to its fleet; the engine tier must be Tier 3 or higher. In addition to reducing tailpipe emissions, most newer equipment meeting higher Tier standards are also more energy efficient than older models.

3.6.2.2.4 California Green Building Standards Code

The California Green Building Standards Code (CALGreen; 24 CCR Part 11) is a state-mandated green building code. Its purpose is to improve public health, safety, and general welfare through enhanced design and construction of buildings using concepts that reduce negative impacts and promote those principles that have a positive environmental impact and encourage sustainable construction practices. CALGreen was adopted to address planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality.

3.6.2.3 Local

Applicable policies or actions pertaining to energy from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.6.2.3.1 Glenn County General Plan

The following local policy pertaining to energy is included in the Agricultural Element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy AG 2-5:** Promote best management practices in agricultural operations to reduce emissions, conserve energy and water, promote soil health, and utilize alternative energy sources.

3.6.2.3.2 *Sutter County General Plan*

The following local policy pertaining to energy is included in the Agricultural Element of the *Sutter County General Plan* (Sutter County 2011):

- **Policy AG 3.7: Alternative Energy.** Support the use of energy-saving technologies and alternative energy sources (solar, wind, biofuels) in all agricultural industries and operations such as the pumping of irrigation water, food processing, and water treatment. Support the use of alternative energy-powered farm vehicles and trucks.

3.6.2.3.3 *Colusa County General Plan*

The following local policy pertaining to energy is included in the Conservation Element of the *Colusa County General Plan* (Colusa County 2012):

- **Policy CON 2-9:** Support farmers and landowners in their efforts to maximize the efficiency of agricultural practices and operations, including carbon efficient farming methods (e.g. methane capture systems, no-till farming, crop rotation, cover cropping) and other methods.

3.6.2.3.4 *Yolo County General Plan*

The following local policies pertaining to energy are included in the Agriculture and Economic Development Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy AG-3.21:** Promote best management practices in agricultural operations (including animal operations) to reduce emissions, conserve energy and water, and utilize alternative energy sources.
- **Policy ED-5.11:** In all agricultural, industrial, and commercial endeavors, promote use of solar technology, water reuse systems, biomass systems, and other systems to capture alternative sources of energy. Strongly encourage businesses to incorporate water and energy conservation measures.

3.6.2.3.5 *Sacramento County General Plan*

The following local policy pertaining to energy is included in the Economic Development Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017c):

- **Policy ED-5.11:** In all agricultural, industrial, and commercial endeavors, promote use of solar technology, water reuse systems, biomass systems, and other systems to capture alternative sources of energy. Strongly encourage businesses to incorporate water and energy conservation measures.

3.6.3 *Environmental Impacts and Mitigation Measures*

3.6.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, the project area consists of agricultural lands in operation, with various utility connections. Energy use from existing agricultural operations is not considered as part of the energy assessment.

3.6.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts on energy. The proposed project would have an impact on energy if the following applies:

- **ENE-1:** The project would result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
- **ENE -2:** The project would conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.6.3.3 **Methodology for Determining Impacts**

The energy analysis considered the proposed project's energy use to determine if such use would result in wasteful, inefficient, or unnecessary use of energy or wasteful use of energy resources. This analysis considered the proposed project's energy use for all project phases and components, during construction and operation, as well as whether overall scope of the proposed project (including such factors as size, location, orientation, equipment use, and any renewable energy features) would result in potential impacts. Potential impacts on energy were qualitatively evaluated based on a review of the proposed project's energy usage, including from utilities and fuels to support transportation.

3.6.3.4 **Impact Analysis**

3.6.3.4.1 *ENE-1: Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*

Water Reduction Activities

The potential for increased energy impacts due to water reduction activities would largely stem from groundwater substitution. Energy intensity for water delivery in the Sacramento River geologic region has been roughly quantified by the California Public Utilities Commission for surface water and groundwater (CPUC 2010). Groundwater energy intensity was estimated at about 177 kilowatt hours per acre-foot. Assuming the anticipated groundwater pumping volumes shown in Section 2.5, groundwater pumping would require 29,500 MWh annually during Phase 1 Agreement Years and 5,900 MWh annually during Phase 2 Agreement Years, which, represents about 0.1% or less of the

total electricity consumption in the project area and would be offset somewhat by the disuse of surface water pumping stations during these years.

Other water reduction activities would be beneficial in terms of energy consumption as compared to baseline. Cropland idling and conservation activities would reduce fuel consumption related to equipment used for farming, produce drying, and transportation; and reduce energy used for irrigation purposes and water delivery. Additionally, pumping plants used to move water through aqueducts and canals require substantial quantities of energy to convey large amounts of water over long distances with significant changes in elevation. By foregoing water that is diverted by the SRSC and letting it stay in Shasta Lake rather than need to pump it to the SRSC, the proposed project would result in energy savings during Agreement Years.

Drought-Resiliency Projects

Construction of the drought-resiliency projects would result in the short-term consumption of energy from construction of the project components, which would vary depending on the nature of the project and construction duration. Minimal energy consumption from typical construction practices would be required for piping open ditches or canals, canal lining and modernization, canal automation through SCADA, automated gates installation, on-farm improvements to irrigation, weir or check structures, pipeline recirculation programs, new groundwater or deep aquifer wells, and conjunctive use programs. Energy would be used during construction activities in the form of diesel and gas fuel use from construction equipment. However, construction projects would be small in scope and would not represent any wasteful or unnecessary consumption of energy as contractors have a financial incentive to minimize costs associated with transportation fuel and energy. In addition, construction equipment is regulated under the In-Use Off-Road Diesel Vehicle Rule, which require cleaner construction fleets that are often more energy efficient and idling limits of 5 minutes to reduce unnecessary fuel use. For the same reasons, associated construction would not result in any inefficient or wasteful construction methods.

Long-term energy (electricity) consumption from operations and maintenance of some drought-resiliency projects would be expected to slightly increase as compared to baseline conditions. Minor increases in energy consumption would be expected for:

- Operations and maintenance of automated gates installation from gate electrical usage
- Pipeline recirculation programs from recirculation equipment
- New groundwater or deep aquifer wells for the same reasons as described for groundwater substitution, although impacts may be even less as new wells would likely be sited nearer to croplands served

Long-term, the following drought-resiliency projects would result in efficiencies that would result in small reductions in energy use by conserving more water: piping open ditches or canals, canal lining

and modernization, on-farm improvements to irrigation, and weir or check structures, and conjunctive use programs.

Impact Determination: Construction and operation of the proposed project would not include energy consumption that is wasteful, inefficient, or unnecessary compared to projects of a similar size and scope. Impacts would be considered less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, the following mitigation measure would be implemented to further reduce impacts:

- **MM-AIR-1:** Minimize Construction Truck Idling

Residual Impact: Implementation of MM-AIR-1 would further reduce fuel use in construction trucks by limiting unnecessary idling to 2 minutes (as opposed to the 5 minutes already required through ARB Rules) and impacts would remain less than significant.

3.6.3.4.2 ENE-2: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

State and local plans consider conservation of water to correspond to a conservation of energy due to the amount of energy that is spent recovering, moving, and treating water. Groundwater pumping activities do not directly improve energy efficiency, but do not conflict with or obstruct any state or local plans related to energy. Drought-resiliency projects support these plans by increasing the efficiency of the water delivered. Construction of the drought-resiliency projects would result in the short-term consumption of energy from construction of the facilities and would vary depending on the nature and duration of construction but would not conflict with any state or local plan for renewable energy or energy efficiency.

Impact Determination: The proposed project would conserve energy and improve energy efficiency; minor increases in long-term operational energy consumption from operations and maintenance of drought-resiliency projects would not conflict with any state or local plan for renewable energy or energy efficiency. Impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.7 Geology and Soils

This section describes geology and soils in the project area and analyzes how the proposed project may affect these resources. It also describes applicable rules and regulations pertaining to geology and soils that could affect the proposed project. For the purposes of this analysis, the study area is defined as the project area as presented on Figure 1.

The project area is within an area with a diverse geological history. Tectonic activity from the convergence of the Pacific and North American plates is the primary driver behind this diversity

(CDWR 2014). This activity initiated the formation of the mountain ranges that encompass the project area, including the Sierra Nevada, Klamath, Cascade, and Coast ranges. Erosion and deposition of sediment from these ranges contributed to the geological profile of the project area.

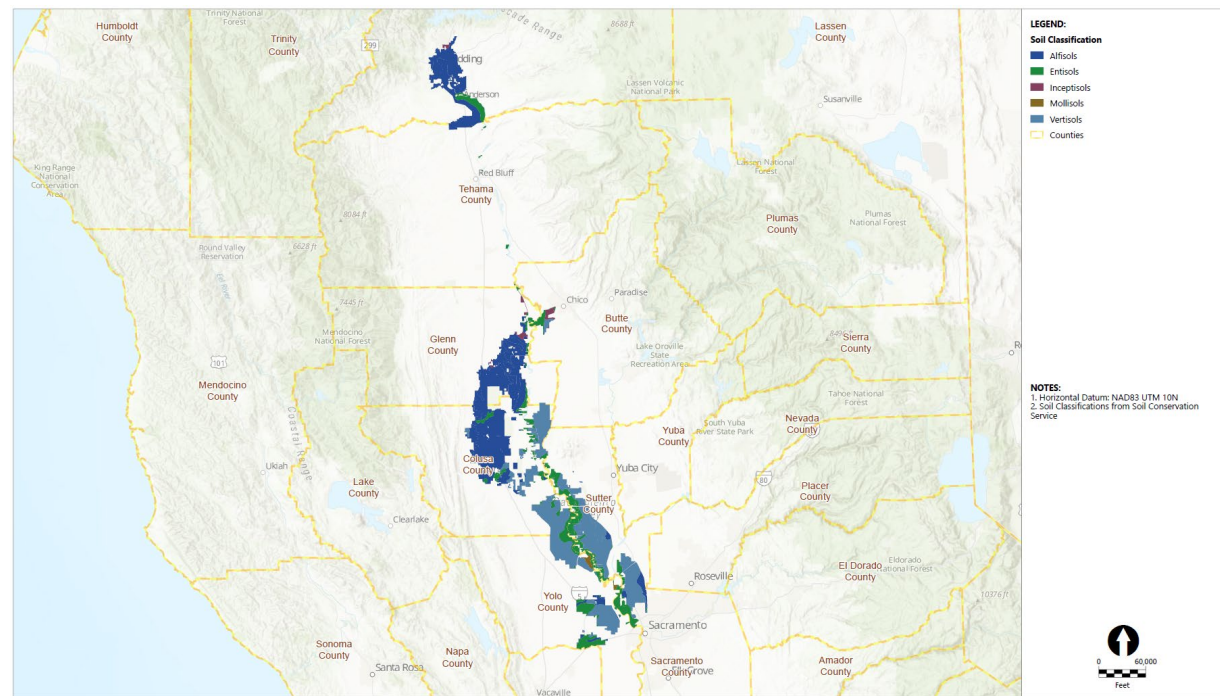
Underlying the Sacramento Valley and the Sierra Nevada, Klamath, Cascade, and Coast mountain ranges are rocks that range in age from the Paleozoic and Mesozoic age to unconsolidated alluvium of Recent age, which are subdivided into 20 geologic units. Within these two units are two distinct groups; rocks that yield little water and rocks yield water freely (Olmsted and Davis 1961). Rocks that yield little water primarily consist of marine sedimentary rocks of the Late Jurassic, Cretaceous, and Early Tertiary age. Rocks consisting of nonmarine valley-filling sediments of the late Tertiary and Quaternary age dominate the second group of rocks which yield water freely. This group of rocks are also representative of the principal ground-water reservoir within the Sacramento Valley.

3.7.1 *Environmental Setting*

3.7.1.1 Soils

Soil orders within the project area and larger Sacramento Valley area are outlined in Figure 6. One of the most prevalent soil orders within the project area are Alfisols. Soils within this order are moderately leached soils with high native fertility. Texture classes within this order range from loamy-skeletal to fine. Inceptisols are another notable order that occupy a significant portion of the project area. Soils within this order exhibit moderate degrees of soil weather and development and can often be found in topographic settings that are susceptible to soil erosion and waterlogging. Texture classes within this order found within the project area range from loamy-skeletal to very fine. In the areas immediately surrounding the Sacramento River and its surrounding tributaries, Entisols are the dominant soil order. Soils within this order show little to no evidence of horizon formation and are commonly found on recent alluvial plains and valleys (Eswaran and Reich 2005). Texture classes within this order range from loamy-skeletal to fine-silty texture.

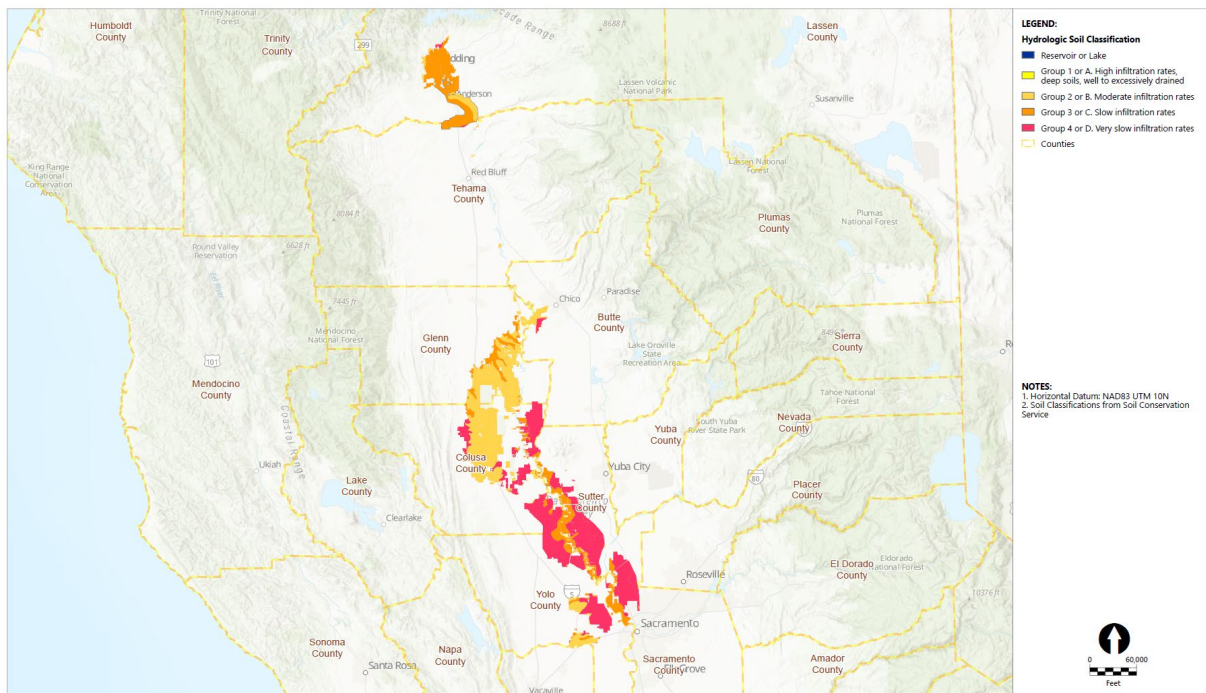
Figure 6
Sacramento Valley Soil Order Map



Source: Data Basin 2024 <https://databasin.org/datasets/1ff4328039f948529c33e7e71bb9b5fc/>

Soils within the project area largely fall into hydrologic soil groups (HSGs) "C" and "D," which are indicative of soils that exhibit slow infiltration rates, and very slow infiltration rates, respectively. A smaller subset of soils within the project area holds a HSG designation of "B," indicating that these soils exhibit moderate infiltration rates, as presented in Figure 7.

Figure 7
Sacramento River Basin Hydrologic Soil Order Map



Source: USGS 2007

3.7.1.2 Fault Rupture

Surface fault rupture is defined as slip on a fault plane that has spread to the Earth's surface and caused a rupture or disturbance. Fault rupture almost always follows pre-existing faults, which are zones of weakness. Seismic sources or faults can generally be described by one of three activity classes as defined by California Geological Survey (CGS): active, potentially active, or inactive. When referring to events along seismic sources, the term "active" is used to designate historical and Holocene faults that display evidence of rupture during the Holocene (i.e., within the past 11,000 years). "Potentially active" describes faults showing evidence of displacements during Quaternary time (the past 1.6 million years). Pre-Quaternary age faults with no subsequent offset are classified as "inactive." An "inactive" designation by the CGS does not mean that a fault will not rupture in the future, but only that it has not been shown to have ruptured within the past 1.6 million years. Seismologists assume that the probability of fault rupture by inactive faults is low. For this reason, only the potential seismic impacts from active or potentially active faults are discussed in this section.

As it is throughout the rest of the state of California, seismic activity is prevalent within the project area. The Sacramento Valley is surrounded by the San Andreas fault system to the west, and the Sierra Nevada fault system to the east. The San Andreas has the potential to create earthquakes with the largest magnitude (up to 8) within the project area, but events of a smaller magnitude can still cause

damaging levels of ground shaking. Table 15 presents a summary of notable faults within the project area and their associated regional risk.

Table 15
Notable Faults Within the Project Area and Associated Regional Risk

Counties	Notable Faults	Additional Regional Risk
Butte	Cleveland, Sierra Nevada	<20 miles from active fault
Colusa	Cleveland Hills, Sierra Nevada & San Joaquin Fault Zone	Landslides, liquefaction, or levee failure
Glenn	Cleveland Hills, Sierra Nevada	<20 miles from active fault
Napa	Hayward, San Andreas	<10 miles from active fault
Nevada	Cleveland Hills, Sierra Nevada & San Joaquin Fault Zone	Landslides, liquefaction, or levee failure
Placer	Cleveland Hills, Sierra Nevada & San Joaquin Fault Zone	Landslides, liquefaction, or levee failure
Sacramento	Cleveland Hills, Sierra Nevada & San Joaquin Fault Zone	Landslides, liquefaction, or levee failure
Shasta	Cleveland, Sierra Nevada	<20 miles from active fault
Solano	Hayward, San Andreas	<10 miles from active fault
Sutter	Cleveland Hills, Sierra Nevada & San Joaquin Fault Zone	Landslides, liquefaction, or levee failure
Tehama	Cleveland, Sierra Nevada	<20 miles from active fault
Yolo	Cleveland Hills, Sierra Nevada & San Joaquin Fault Zone	Landslides, liquefaction, or levee failure
Yuba	Cleveland Hills, Sierra Nevada & San Joaquin Fault Zone	Landslides, liquefaction, or levee failure

3.7.1.3 Ground Shaking

Ground shaking is the most widespread effect of earthquakes. The estimated likelihood of at least one magnitude 7.0 or greater earthquake occurring in the northern California region (generally the area north of Fresno) by 2044 is 76% (USGS 2015). Regional seismic activity could cause accelerations severe enough to cause major damage to structures and foundations not designed to resist the forces generated by earthquakes. Underground utility lines are also susceptible where they lack sufficient flexibility to accommodate the seismic ground motion.

3.7.1.4 Liquefaction

Liquefaction normally occurs under saturated conditions in soils such as sand in which the strength is purely frictional. Soil liquefaction is a state of soil particle suspension caused by a complete loss of strength when the effective stress drops to zero. Primary factors that trigger liquefaction are moderate to strong ground shaking (seismic source); relatively clean, loose granular soils (primarily

poorly graded sands and silty sands); and saturated soil conditions (shallow groundwater). Because of the increasing overburden pressure with depth, liquefaction of granular soils is generally limited to the upper 50 feet of a soil profile. However, liquefaction has occurred in soils other than clean sand. The CGS and USGS have not mapped any seismically induced liquefaction hazard zones in the project area.

3.7.1.5 Lateral Spreading

Lateral spreading is a form of liquefaction that results in lateral ground movement during which cohesive soil layers may fracture, subside, rotate, or disintegrate as a result of seismic activity. During an earthquake, lateral spreading usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spreading has generally been observed to take place in the direction of a free face (i.e., retaining wall, slope, and channel) but has also been observed to a lesser extent on ground surfaces with very gentle slopes. As noted, the project area does not have seismically induced liquefaction hazard zones and therefore is not likely susceptible to lateral spreading.

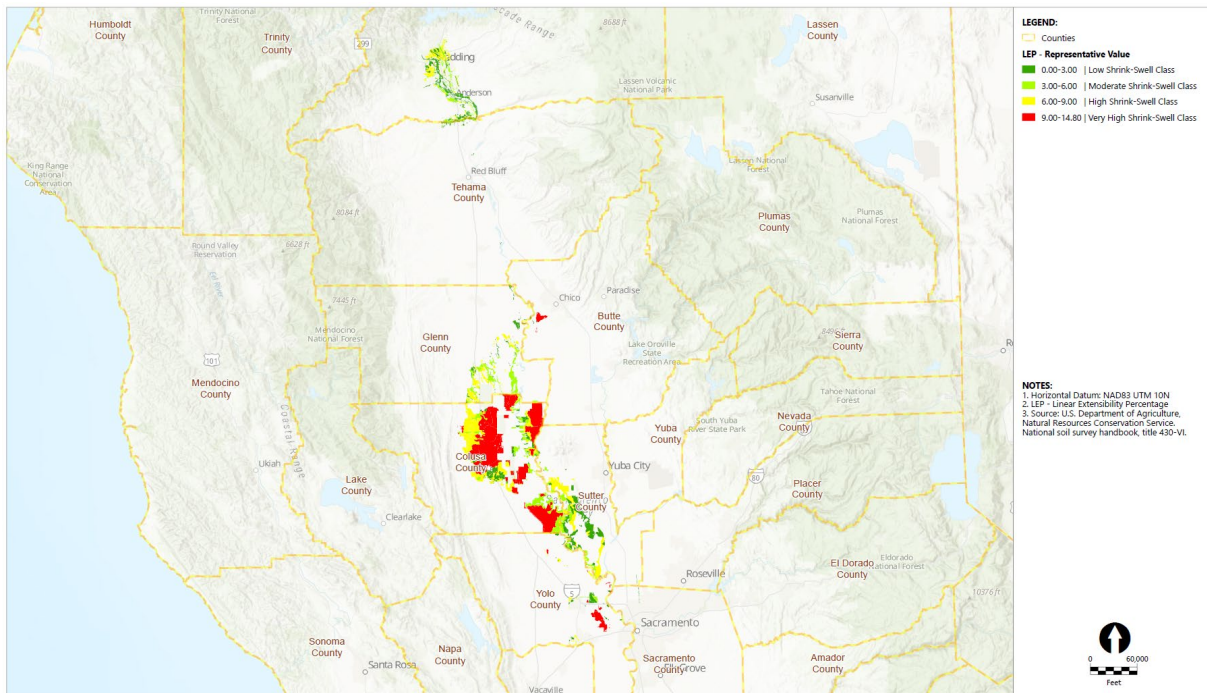
3.7.1.6 Slope Failure and Slope Stability

Earthquakes can cause significant slope stress, potentially resulting in earthquake-induced landslides. Landslides most commonly occur in areas with steep slopes or within slide-prone geologic units that contain excessive amounts of water. Subsidence involves a sudden sinking or gradual settling and compaction of soil and other surface material with little or no horizontal motion. Other factors that affect slope stability include site geology, climate, and human activity. The project area primarily has flat topography, reducing susceptibility to seismic-induced slope failure. Steep slopes are present within the mountainous cradle surrounding the project area. While at the regional scale, slope stability is a concern, the CGS has not explicitly mapped any landslide hazard zones in the project area or in its immediate vicinity.

3.7.1.7 Expansive Soils

Expansive soils are high in clay content and increase and decrease in volume upon wetting and drying, respectively. The change in volume exerts stress on buildings and other loads placed on these soils. Expansive soils are common throughout California and can cause damage to foundations and slabs unless properly treated during construction. Grading, site preparations, and backfill operations associated with subsurface structures can often eliminate the potential for expansion. Within the project area, approximately 288 square miles are designated with a “very high” linear extensibility percentage (LEP), and 570 square miles are designated with a “high” LEP, as shown in Figure 8.

Figure 8
Project Area Linear Extensibility Percentages Map



Source: USDA n.d.

3.7.1.8 Subsidence and Settlement

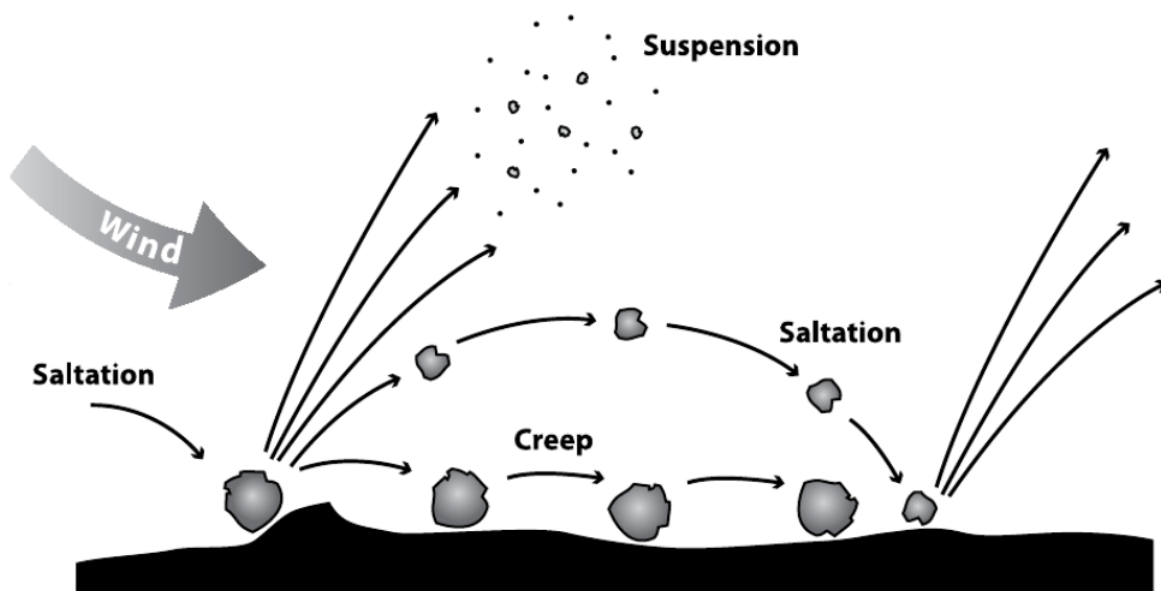
Subsidence involves a sudden sinking or gradual settling and compaction of soil and other surface material with little or no horizontal motion. Land surface subsidence can result from both natural and artificial phenomena, including tectonic deformation, consolidation, hydrocompaction, collapse of underground cavities, oxidation of organic-rich soils, rapid sedimentation, and the withdrawal of groundwater. Expansive soils and materials are more susceptible to subsidence, including estuarine sediments, organic detritus, or thick organic deposits. Settlement occurs when ground shaking reduces the amount of pressure existing between soil particles, resulting in a reduction of the volume of the soil. Areas are susceptible to differential settlement if they are underlain by compressible sediments, such as poorly engineered artificial fill. Differential settlement can damage structures, pipelines, and other subsurface entities. Earthquakes and seismic activity can accelerate and accentuate settlement. The project area is mapped as containing soils susceptible to expansion or subsidence.

3.7.1.9 Erosion

The project area is within a Mediterranean climate, which is exemplified by moist winters and dry summers. Therefore, during the winter the project area is more prone to water erosion, while in the summer the project area is more prone to wind erosion. Erosion is the detachment and movement of

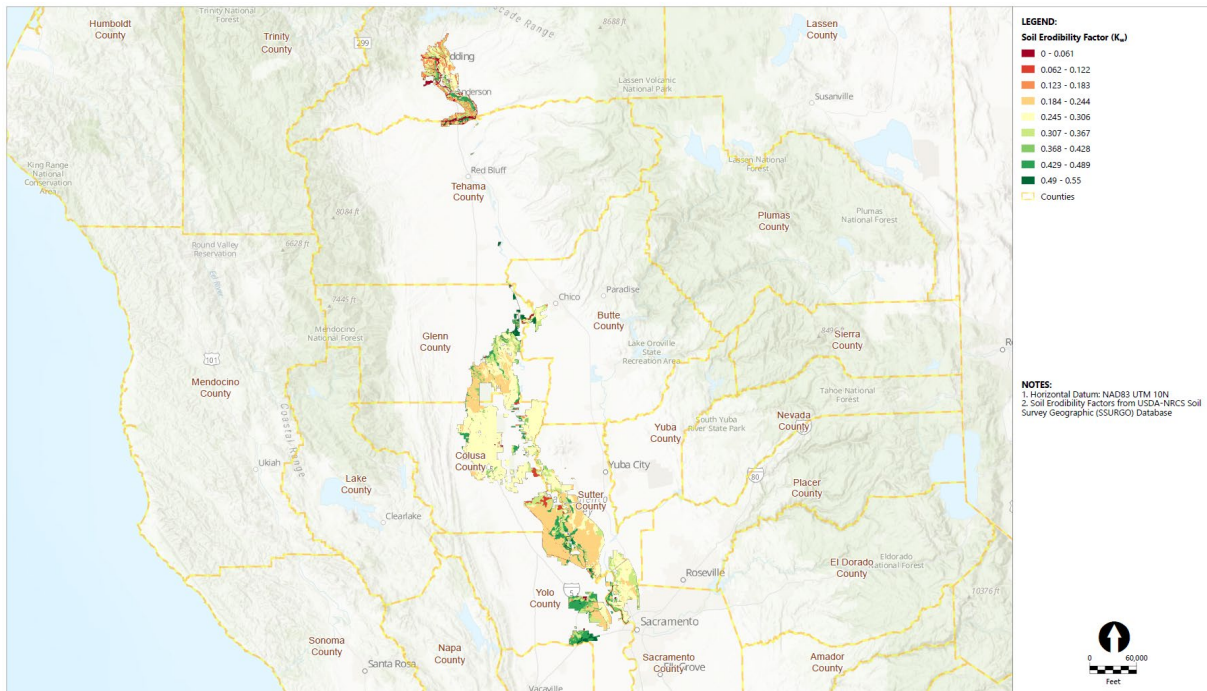
soil materials through natural processes or human activities. Soil erosion by wind is a complex process involving detachment, transport, sorting, abrasion, avalanching, and deposition of soil particles. Winds above a threshold velocity (13 miles per hour at one foot above ground) blowing over erodible soils can cause erosion in three ways (James et al. 2009). The first way is via saltation, which is presented on Figure 9. Accounting for 50% to 80% of total transport by wind, saltation is the process by which individual particles are driven from the soil surface by wind. When these particles eventually return to the land surface, the impact dislodges other particles, contributing to the second type of wind erosion; suspension. As the direct result of larger particles dislodging them, smaller particle (>0.1 mm in diameter), are moved upward and suspended in the air. Depending on soil texture and wind velocity, suspension accounts for 20% to 60% of total sediment transport by wind. The third process by which soils erosion is driven by wind is through surface creep. Driven by the effect of saltating particles, surface creep results in sand-sized particles slowly creep along the land surface, which can account for up to 25% of wind-driven total sediment transport. The extent to which these processes impact a given area depend on factors such as soil erodibility, climate, soil surface roughness, width of field, and the quantity of vegetative coverage. As shown in Figure 10, average soil erodibility factor (K_w) within the project area is mostly in the medium range, with the north portion of the project area exhibiting less erodibility and the south portion of the project area exhibiting more erodibility. Exacerbating the vulnerability of this area to erosion is abundance of agricultural activity, leads to further destabilization of soil particles.

Figure 9
Wind Erosion Processes



Source: Tatarko and Presley 2009

Figure 10
Soil Erodibility Factor (K_w) values within the Sacramento Valley Area



Source: Soil Survey Staff 2024

3.7.1.10 Paleontology

The proposed project is located in already disturbed agricultural areas. Prior to historic land modifications, the region was characterized by extensive wetlands, with dry land available only on small hills and natural levees (Wagner et al. 1981).

The Bureau of Land Management has developed a classification system based on the potential for the occurrence of significant paleontological resources in a geologic unit and the associated risk for impacts to the resource (BLM 2007, 2008). Any rock material that contains fossils has the potential to yield fossils that are unique or significant to science. However, paleontologists consider that geological formations having the potential to contain vertebrate fossils are more sensitive than those likely to contain only invertebrate fossils. Invertebrate fossils found in marine sediments are usually not considered by paleontologists to be unique resources, because the geological contexts in which they are encountered are widespread and fairly predictable. Invertebrate fossil species are usually abundant and well-preserved. In contrast, vertebrate fossils are much rarer than invertebrate fossils, and are often poorly preserved. Therefore, when found in a complete state, vertebrate fossils are more likely to be a significant resource than are invertebrate fossils. Thus, geologic formations having the potential to contain vertebrate fossils are considered the most sensitive. Vertebrate fossil sites are usually found in nonmarine upland deposits (BLM 2007).

3.7.2 *Applicable Regulations*

3.7.2.1 **State**

3.7.2.1.1 *Alquist-Priolo Earthquake Fault Zoning Act*

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. According to the act, buildings for human occupancy cannot be constructed in regulatory earthquake fault zones established and mapped around the surface traces of active faults. This typically includes areas within approximately 200 to 500 feet of major fault lines. The construction of habitable structures is not proposed as part of the proposed project; therefore, the act would not apply to the proposed project.

3.7.2.1.2 *Seismic Hazards Mapping Act*

The Seismic Hazards Mapping Act of 1990 was developed to reduce threats to public health and safety and to minimize property damage caused by earthquakes, including the effects of ground shaking, liquefaction, landslides, other ground failure, and other hazards. The act directs CGS to identify and map seismic hazard zones for the purpose of assisting cities, counties, and other local permitting agencies to regulate certain development projects in these zones. Before a development permit may be granted for a site in a seismic hazard zone, a geotechnical investigation of the site must be conducted, and appropriate mitigation measures must be incorporated into the project's design.

3.7.2.1.3 *California Building Code*

The California Building Code contains the minimum standards for design and construction in California. The standards provide requirements for general structural design and include means for determining earthquake loads, as well as other loads (e.g., flood, snow, and wind), for inclusion into building codes. The provisions of the California Building Code apply to the construction, alteration, movement, replacement, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures throughout California.

3.7.2.1.4 *Regulatory Design Codes and Standards for Project Structures*

Numerous state, federal, and professional association design codes and standards regulate and guide structure construction. These codes and structures establish minimum design and construction requirements including for concrete and steel structures, weirs, pipelines, canals, buildings, and pumping stations.

3.7.2.2 **Regional and Local**

Applicable policies or actions pertaining to geology and soils from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.7.2.2.1 *Shasta County General Plan*

The following local policy pertaining to geology and soils is included in the Seismic and Geologic Hazards Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy 5.1.4 SG-e:** When soil tests reveal the presence of expansive soils, engineering design measures designed to eliminate or mitigate their impacts shall be employed.

3.7.2.2.2 *Tehama County General Plan*

The following local policy pertaining to geology and soils is included in the Safety Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy SAF-4.1:** The County shall require that all construction comply with the California Building Code, including the requirements for seismic design.
 - **Implementation Measure SAF-4.1a:** Ensure that the requirements of the California Building Code, including seismic requirements, are included as part of the building permits issuance and inspection process.

3.7.2.2.3 *Glenn County General Plan*

The following local policies pertaining to geology and soils are included in the Safety Element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy SA 1-1:** Require development to reduce risks to life and property associated with earthquakes, liquefaction, erosion, landslides, and unstable soil conditions.
- **Policy SA 1-2:** Ensure that all new development and construction is in conformance with applicable building standards related to geologic and seismic safety.
- **Policy SA 1-3:** Require geotechnical investigations to be completed prior to approval of any public safety or other critical facilities, in order to ensure that these facilities are constructed in a way that mitigates site-specific seismic and/or geologic hazards.
- **Policy SA 1-4:** Development in areas subject to unstable soil and/or geologic conditions shall be reviewed by qualified engineers and or geologists prior to development in order to ensure the safety and stability of all new construction.
- **Policy SA 1-6:** Require erosion and sediment control plans for development proposed on sloping land or lands subject to erosion.
 - **Action SA-1d:** Require the submission of geologic and soils reports for all new developments. The geologic risk areas that are determined from these studies shall have standards established and recommendations shall be incorporated into development.

3.7.2.2.4 *Butte County General Plan*

The following local policy pertaining to geology and soils is included in the Health and Safety Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy HS-P10.1:** Continue to work with Groundwater Sustainability Agencies to ensure that groundwater withdrawals do not lead to inelastic subsidence.

3.7.2.2.5 *Sutter County General Plan*

The following local policy pertaining to geology and soils is included in the Public Health and Safety Element of the *Sutter County General Plan* (Sutter County 2011):

- **Policy PHS 2.1: Review Standards.** Review Standards. Review and enforce seismic and geologic safety standards and require the use of best management practices in site design and building construction methods.

3.7.2.2.6 *Colusa County General Plan*

The following local action pertaining to geology and soils is included in the Safety Element of the Colusa County General Plan (Colusa County 2012):

- **Action SA 1-H:** Require a geotechnical analysis for construction in areas with potential geological hazards and require that recommendations from the geotechnical analysis are incorporated into the project's design and engineering.

3.7.2.2.7 *Yolo County General Plan*

The following local policy pertaining to geology and soils are included in the Conservation and Open Space Element of the *Yolo County General Plan* (Yolo County 2009):

- **Policy CO-3.5:** Preserve and protect the County's unique geologic and physical features, which include geologic or soil "type localities", and formations or outcrops of special interest.

3.7.2.2.8 *Sacramento County General Plan*

The following local policy pertaining to geology and soils is included in the Conservation Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017b, 2017d):

- **Policy CO-100.** Encourage construction of structures for flood control and stormwater quality purposes using currently approved scientific methods to prevent erosion and stabilize the banks.

3.7.3 *Environmental Impacts and Mitigation Measures*

3.7.3.1 **Baseline**

At the time of publication of the NOP, the areas where the proposed project would occur are mostly used for agriculture and related facilities, with some areas located in a more urbanized setting.

3.7.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts related to geology and soils. The proposed project would have an impact related to this topic if the following apply:

- **GEO-1:** The project would 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.
- **GEO-2:** The project would result in substantial soil erosion or the loss of topsoil.
- **GEO-3:** The project would 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-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- **GEO-4:** The project would 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.
- **GEO-5:** The project would 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.
- **GEO-6:** The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

3.7.3.3 Methodology for Determining Impacts

Impacts to or associated with geological conditions were qualitatively evaluated based on the potential for the alternatives to temporarily or permanently alter the geology of the project area. In addition, because geological hazards such as earthquakes happen independently of the proposed project, the potential for damage to proposed structures or increased risk of injury due to geologic and seismic hazards were also qualitatively evaluated. The evaluation of impacts associated with geology, soils, or seismicity is defined by the risk to the public or the environment associated with geologic processes. A project would be considered to have a major impact if it would result in substantial changes in risks to the public and the environment throughout the project area.

3.7.3.4 Impact Analysis

- 3.7.3.4.1 *GEO-1: Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); ii) strong seismic ground shaking; iii) seismic-related ground failure, including liquefaction; or iv) landslides?*

Water Reduction Activities

Water reduction activities would not involve any construction. While crop idling would result in increases of dry soil from fallow croplands, the project area primarily has flat topography, reducing susceptibility to slope failure or landslides and soils mapped as occurring in the project area do not include soils susceptible to seismically induced liquefaction.

Drought-Resiliency Projects

The project area has several notable faults related to the San Andreas and the Sierra Nevada fault systems. These fault systems can cause damaging levels of ground shaking and major damage to facilities and foundations not designed to resist earthquake-generated forces. Drought-resiliency projects would generally not involve foundations or facilities that could be significantly affected by fault rupture or ground shaking.

The soils mapped as occurring in the project area do not include soils susceptible to seismically induced liquefaction. Some surrounding areas may be susceptible to lateral spreading; these areas are focused in the mountainous cradle. The Sacramento Valley, which is where the project area is focused, has flat topography which reduces lateral spreading potential.

The project area primarily has flat topography, reducing susceptibility to slope failure or landslides. Steep slopes are present in the mountainous cradle surrounding the project area; however, there are no mapped landslide hazard zones in the project area or in its immediate vicinity. The proposed project would not result in changes that would increase the potential for slope failure or landslides. The site preparation measures described in Section 2.5.2.1 would prevent the potential for slope failure or landslides.

Impact Determination: The project area has relatively flat topography and soils mapped do not include soils susceptible to seismically induced liquefaction. Drought-resiliency projects would generally not involve foundations or facilities that could be significantly affected by fault rupture or ground shaking. The proposed project would result in less-than-significant impacts related to seismic liquefaction, landslides, and ground shaking.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, the following mitigation measures would be implemented to further reduce potential impacts:

- **MM-GEO-1:** As-Needed Implementation of Geotechnical Recommendations for Drought-Resiliency Projects
 - Recommendations from geotechnical assessments or reports for specific project elements would be implemented as needed, including use of materials and construction techniques specifically addressing potential seismic and geologic hazards.
- **MM-GEO-2:** Unstable Area Buffer for Drought-Resiliency Projects
 - Within a 50-foot-wide buffer around unstable areas regardless of percent slope, no drought-resiliency project construction would occur without approval from an earth sciences/physical sciences professional.
- **MM-GEO-3:** Adhere to Applicable Seismic Design Parameters for Drought-Resiliency Projects
 - Drought-resiliency projects would adhere to all applicable seismic design parameters.

Residual Impact: Implementation of MM-GEO-1 and MM-GEO-2 would include as-needed adherence to geotechnical recommendations and unstable area buffers, which would reduce the potential for impacts related to seismic liquefaction, landslides, and ground shaking. Implementation of MM-GEO-3 requires that drought-resiliency project adhere to applicable seismic design standards to minimize potential impacts. Impacts related to seismic liquefaction, landslides, and ground shaking would remain less than significant.

3.7.3.4.2 GEO-2: Would the project result in substantial soil erosion or the loss of topsoil?

The project area includes large areas of soil, and agricultural activity within the project area leads to additional vulnerability of soil erosion. The proposed project includes elements that can subject soil to additional erosion potential and loss of topsoil, specifically cropland idling and piping open ditches or canals. Additionally, any construction with excavation or grading actions increases the potential for soil erosion or loss of topsoil.

Impact Determination: Impacts associated with soil erosion and loss of topsoil during cropland idling, construction activities in piping open ditches or canals, and other soil excavation or grading activities would be less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, the following mitigation measure would be implemented to further reduce potential impacts:

- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Residual Impact: Implementation of MM-HYD-1 would include implementing erosion control measures, which would reduce the potential erosion impacts. Impacts would remain less than significant.

3.7.3.4.3 *GEO-3: Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

The soils mapped as occurring within the project area include soils susceptible to expansion or subsidence. The project area is not located in an area considered subject to lateral spreading or landslides. During construction of drought-resiliency projects, adherence to Occupational Safety and Health Administration (OSHA) excavation safety guidelines would minimize the potential for worker injury associated with unstable soils. The proposed project would not increase the potential for slope failures or landslides, and risk from lateral spreading is minimal due to the project area's flat topography. No changes to the existing geology and soils at the site and immediate adjacent areas would occur from implementing proposed project elements.

Impact Determination: Based on the analysis presented above, the proposed project would result in less-than-significant impacts related to geologic unit or soils instability.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, implementation of the following mitigation measures would further reduce the potential for impacts:

- **MM-GEO-1:** As-Needed Implementation of Geotechnical Recommendations for Drought-Resiliency Projects
- **MM-GEO-3:** Adhere to Applicable Seismic Design Parameters for Drought-Resiliency Projects

Residual Impact: Implementation of MM-GEO-1 would include as-needed adherence to geotechnical recommendations, which would reduce the potential for impacts related to geologic unit or soils instability, including seismic liquefaction and ground shaking. Implementation of MM-GEO-3 would ensure that drought-resiliency projects would be constructed or installed in adherence with applicable seismic standards, which would reduce the potential for slope failure or landslides. Impacts related to seismic liquefaction and ground shaking would remain less than significant.

3.7.3.4.4 *GEO-4: Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*

The project area has significant portions that are designated as having expansive soils, with 288 square miles having a very high linear extensibility percentage and 570 square miles having a high linear extensibility percentage. Expansive soils can cause stress on loads placed on the soils. The proposed drought-resiliency projects include construction of small structures such as weirs or check structures that could potentially be located on expansive soil, and therefore be impacted by settlement or subsidence, cracking, or lift once constructed. If these projects are sited near property or residences, impacts from settlement or subsidence, cracking, or lift could result in risks to property or life. Additionally, grading activities on expansive soils, if sited near property or residences, could

create substantial risks to property or life because expansive soils have the potential to undergo changes with movement of earth and changes in moisture content, which could cause soil swelling.

Impact Determination: Because construction of drought-resiliency projects on expansive soils could create substantial risks to life or property project, impacts related to siting on expansive soils could be potentially significant.

Mitigation Measures: Implementation of the following mitigation measures would reduce the potential for impacts:

- **MM-GEO-1:** As-Needed Implementation of Geotechnical Recommendations for Drought-Resiliency Projects
- **MM-GEO-3:** Adhere to Applicable Seismic Design Parameters for Drought-Resiliency Projects

Residual Impact: Implementation of MM-GEO-1 would include as-needed adherence to geotechnical recommendations, which would reduce the significance of impacts related to expansive soils. Implementation of MM-GEO-3 would ensure that drought-resiliency projects are constructed in adherence with applicable seismic standards. Impacts related to expansive soils would be reduced to less than significant with mitigation.

3.7.3.4.5 GEO-5: Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Wastewater demand would not be impacted by the proposed project; the proposed project would not require the use of septic tanks or alternative wastewater disposal systems or affect any such systems.

Impact Determination: Because wastewater demand would not be impacted by the proposed project, the proposed project would result in no impact related to septic tanks or alternative wastewater disposal systems.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.7.3.4.6 GEO-6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

There are no known unique geological or paleontological resources in the project area. Construction of proposed project elements would include excavation and consolidation of soils on site, fill, and compaction of soils. However, because of its geomorphological history, the project area is not likely to contain any fossils other than invertebrate fossils that are in a re-deposited context.

Impact Determination: Because the project area is not likely to contain unique geological or paleontological resources, impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.8 Greenhouse Gas Emissions

This section describes the GHG impacts of the proposed project and analyzes how the proposed project may affect global climate change. It also describes applicable rules and regulations pertaining to GHG emissions. Because GHG emissions are global and the state includes a comprehensive GHG reduction program required to be implemented at state, regional, and local levels, the study area is defined as California.

3.8.1 *Environmental Setting*

Global climate change results from GHG emissions caused by several activities, including fossil fuel combustion, deforestation, and land use change. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface, which otherwise escapes to space. The most prominent GHGs contributing to this process include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Global warming potential (GWP) is a measure of how much a given mass of GHG contributes to global warming relative to CO₂. Using each pollutant's GWP, emissions of CO₂, CH₄, and N₂O can be converted into CO₂ equivalents (CO₂e). In this analysis, GWP factors from the Intergovernmental Panel on Climate Change (IPCC) *Sixth Annual Report (AR6)* (IPCC 2021) are used. These include 298 for N₂O, 29.8 for fossil derived CH₄, and 27.2 for non-fossil CH₄.

Emissions of GHGs are responsible for the enhancement of the greenhouse effect and contribute to what is termed "global warming," a trend of unnatural warming of the Earth's natural climate. Increased concentrations of GHGs in the Earth's atmosphere increase the absorption of radiation and further warm the lower atmosphere. This process increases evaporation rates and temperatures near the surface. Climate change is a global problem and GHGs are global pollutants, unlike criteria pollutants.

Recent environmental changes linked to global warming include rising temperatures, shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (CCCC 2018; USGCRP 2018; IPCC 2021). In California, an assessment of climate change impacts predicts that temperatures will increase between 5.6°F to 8.8°F by 2100, based on low and high global GHG emission scenarios (CCCC 2018). Predictions of long-term negative environmental impacts in California include worsening of air quality problems; an increase in the frequency of heat waves; a reduction in municipal water supply from the Sierra snowpack; sea level rise; an increase in wildfires; damage to marine and terrestrial ecosystems; and an increase in the incidence of infectious diseases, asthma, and other human health problems (CCCC 2018).

3.8.2 *Applicable Regulations*

3.8.2.1 **Federal**

3.8.2.1.1 *Greenhouse Gas Endangerment Finding (December 7, 2009)*

In the 2007 *Massachusetts v. Environmental Protection Agency* case, the U.S. Supreme Court gave USEPA the authority to regulate GHGs as air pollutants under the CAA. The endangerment finding was published by USEPA on December 15, 2009 (74 *Federal Register* 239).

3.8.2.1.2 *Heavy-Duty Vehicle National Program*

In September 2011, USEPA and the National Highway Traffic Safety Administration (NHTSA) developed a program designed to reduce fuel consumption (and GHG emissions by association) from medium- and heavy-duty vehicles. The program was directed at model year 2014 to 2018 vehicles and is projected to reduce GHG emissions by approximately 270 million metric tons.

3.8.2.1.3 *Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*

In May 2010, USEPA and NHTSA developed a program designed to reduce fuel consumption (and GHG emissions by association) from light-duty vehicles. The program was directed at model year 2012 to 2016 vehicles. In October 2012, USEPA and NHTSA expanded the program to vehicle model years 2017 through 2025. Fuel efficiency standards are expected to cumulatively reduce CO₂ emissions by 960 million metric tons for model years 2012–2016 and 2 billion metric tons for model years 2017 through 2025 over the lifetime of the vehicles. The requirements of this program apply to light-duty vehicles, such as worker vehicles, used as a part of the proposed project.

3.8.2.1.4 *Renewable Fuel Standard*

In 2005, USEPA's Renewable Fuel Standard established the first renewable fuel volume mandate in the United States. The original Renewable Fuel Standard program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The program was expanded in 2007 and currently requires that 36 billion gallons of renewable fuel be blended into gasoline by 2022. This program, although not directly relevant to proposed project activities, serves to highlight the developing GHG regulatory framework.

3.8.2.2 **State**

3.8.2.2.1 *Assembly Bill 1493: State Standards Addressing Vehicle Emissions*

The California Greenhouse Gas Vehicle Emission Standards (AB 1493), enacted on July 22, 2002, required ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. ARB estimated that the regulation will reduce climate change emissions from the light-duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030.

3.8.2.2.2 California Executive Order S-3-05

EO S-3-05, signed by then-Governor Schwarzenegger on June 1, 2005, established the following GHG reduction targets for California: 1) by 2010, reduce GHG emissions to 2000 levels; 2) by 2020, reduce GHG emissions to 1990 levels; and 3) by 2050, reduce GHG emissions to 80% below 1990 levels. EO S-3-05 also called for the California Environmental Protection Agency to prepare biennial reports on: 1) progress made towards achieving these goals; 2) impacts to California from global warming; and 3) mitigation and adaptation plans to combat these impacts. The most recent of these Climate Action Team reports was completed in December 2023 (CAT 2023).

3.8.2.2.3 California's Renewables Portfolio Standard

Established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2, California's Renewables Portfolio Standard is an ambitious renewable energy standard. The Renewables Portfolio Standard requires that 33% of total retail sales of electricity be procured from eligible renewable sources by the end of 2020. Renewables Portfolio Standard requirements were conservatively excluded from emission calculations associated with electricity use. On April 12, 2011, then-Governor Brown signed SB 2, which requires one-third of the state's electricity to come from renewable sources by 2020. The legislation increases California's former 20% renewable portfolio standard target for 2010 to a 33% renewable portfolio standard by December 31, 2020. Resolution 10-23 adopted by ARB found that the proposed regulation to adopt the 33% renewable standard was expected to reduce GHG emissions from California's utility sector by at least 12 MT CO_{2e} per year by 2020 (ARB 2010). In October 2015, SB 350 was signed into law. SB 350 requires a 50% increase in California's renewable portfolio standard and a doubling of energy efficiency by 2030.

3.8.2.2.4 Assembly Bill 32: California Global Warming Solutions Act of 2006, Scoping Plan (2008), Scoping Plan Update (2014), and Scoping Plan 2030 (2017)

The California Global Warming Solutions Act of 2006, widely known as AB 32, required ARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. ARB was directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner. AB 32 also required ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

On December 11, 2008, ARB adopted the AB 32 Scoping Plan, which set forth the framework for meeting the state's GHG reduction goal set by EO S-3-05. On October 20, 2011, ARB adopted the final cap-and-trade regulation. ARB also approved an adaptive management plan that monitors the progress of reductions and recommends corrective actions if progress is not as planned or there are unintended consequences in other environmental areas (e.g., concentration of local criteria pollutants).

In 2014, ARB adopted an update to the 2008 Scoping Plan, which builds upon the initial scoping plan with new strategies and recommendations. The 2008 Scoping Plan and 2014 Scoping Plan Update require that reductions in GHG emissions come from virtually all sectors of the economy and be

accomplished from a combination of policies, regulations, market approaches, incentives, and voluntary efforts. These efforts target GHG emission reductions from cars and trucks, electricity production, fuels, and other sources. In 2022, the Scoping Plan was also updated and designed to achieve targets for carbon neutrality and reduce GHG emissions by 85% below 1990 levels no later than 2045 (ARB 2022).

3.8.2.2.5 Senate Bill 32: California Global Warming Solutions Act of 2006

Approved in 2016, SB 32 extends the climate targets adopted by California under AB 32, which required California to reduce GHG emissions to 1990 levels by 2020. The California Global Warming Solutions Act of 2006 designates ARB as the state agency charged with monitoring and regulating sources of emissions of GHG. ARB is required to approve a statewide GHG emissions limit equivalent to the statewide GHG emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG emissions reductions. This bill would require ARB to ensure that statewide GHG emissions are reduced to 40% below the 1990 level by 2030.

3.8.2.2.6 Assembly Bill 197: State Air Resources Board

AB 197, enacted in 2016, is a companion law to SB 32 and requires ARB to report regularly to the state legislature on its progress in implementing the state's climate and air pollution-related policies. The laws also require California officials to create a committee to oversee the state's climate programs and require regulators to take stronger action to cut pollution from refineries and other facilities, especially in low-income and minority communities.

3.8.2.2.7 Senate Bill 97 and Amendments: CEQA Greenhouse Gas Emissions

SB 97, enacted in 2007, directed OPR to develop CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions." In December 2009, OPR adopted amendments to Appendix G of the CEQA Guidelines (Environmental Checklist), which created a new resource section for GHG emissions and indicated criteria that may be used to establish the significance of GHG emissions.

3.8.2.2.8 Governor's Executive Order S-01-07 (January 2007) and Low Carbon Fuel Standards (approved April 2009, effective April 2010)

EO S-01-07 was enacted by then-Governor Schwarzenegger on January 18, 2007. The executive order mandated that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020, and that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California.

3.8.2.2.9 Senate Bill 350: Clean Energy and Pollution Reduction Act

The Clean Energy and Pollution Reduction Act (SB 350), enacted in 2015, established clean energy, clean air, and GHG reduction goals, including reducing GHG to 40% below 1990 levels by 2030 and

to 80% below 1990 levels by 2050. The California Energy Commission is working with other state agencies to implement the bill. This law established clean energy, clean air, and GHG reduction goals. The bill increases California's renewable electricity procurement goal from 33% by 2020 to 50% by 2030. In addition, SB 350 requires California to double statewide energy efficiency savings in electricity and natural gas end use by 2030.

3.8.2.2.10 Senate Bill 100: California Renewables Portfolio Standard Program

California Renewables Portfolio Standard Program (SB 100) enacted in 2018 sets a goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources (such as solar and wind energy) that do not emit climate-altering GHG by 2045. SB 100 updates the state's Renewables Portfolio Standard to ensure that by 2030 at least 60% of California's electricity is renewable. It requires the California Energy Commission, California Public Utilities Commission, and ARB to use programs under existing laws to achieve 100% clean electricity and issue a joint policy report on SB 100 by 2021 and every 4 years thereafter.

3.8.2.2.11 Executive Order B-30-15

In April 2015, EO B-30-15 established an interim, statewide GHG emissions reduction target of 40% below 1990 levels by 2030 and directed the legislature to develop legislation to address that target. This interim target was established in order to ensure the state meets the EO S-3-05 target of reducing GHG emissions to 8% below 1990 levels by 2050. To facilitate achievement of this goal, EO B-30-15 called for an update to ARB's Scoping Plan. ARB approved the 2022 Climate Change Scoping Plan, which sets the state targets for carbon neutrality and reduce GHG emissions by 85% below 1990 levels no later than 2045 (ARB 2022).

3.8.2.2.12 Executive Order B-55-18

Signed in September 2018 by Governor Brown, EO B-55-18 requires the state to achieve statewide carbon neutrality by 2045 and to achieve and maintain net negative GHG emissions thereafter. The EO calls on ARB to address this goal in future scoping plans, which affect other major sectors of California's economy, including transportation, agriculture, development, industrial, and others.

3.8.2.3 Regional and Local

Multiple cities in the project area have adopted Climate Action Plans, including the cities of Redding, Anderson, Williams, Woodland, and Davis. These plans generally rely on state and air district climate policy, as it pertains to this proposed project. Applicable policies or actions pertaining to GHG emissions from regional and local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.8.2.3.1 *Air Quality Management District/Air Pollution Control District Climate Guidelines and Local Climate Change Action Plans*

Several counties in the project area have final or draft climate action plans with GHG reduction targets and strategies, policies, and measures relevant to the proposed project. The counties of Colusa, Glenn, and Tehama do not currently have active climate action plans.

3.8.2.3.1.1 Butte County Climate Action Plan

The Butte County 2021 Climate Action plan (Placeworks 2021) has a GHG emission target of 2.0 MT CO₂e per capita by 2050. It contains the following strategies, measures, or policies related to the project:

- **Strategy 5:** Continue efforts to promote water conservation for all residents, building/property owners, and businesses in the unincorporated county, including support and promotion of programs for lower-income and disadvantaged populations, and large water users.
- **Strategy 9:** Encourage hybrid and clean-fuel construction and landscaping equipment countywide.
- **Strategy 13:** Track trends in agricultural operations and encourage existing and new farming techniques that reduce GHG emissions from crop cultivation.

The Butte County AQMD CEQA Handbook (BCAQMD 2024) states that, “projects that are consistent with an approved GHG Emissions Reduction Plan would have a less-than significant impact upon global climate change and, unless modeling indicates otherwise, would not require further analysis.”

3.8.2.3.1.2 Sacramento County Climate Action Plan

The Sacramento County 2024 Climate Action plan (Sacramento County 2024) has a GHG emission target of zero net GHG emissions by 2045. It contains the following strategies, measures, or policies related to the proposed project:

- **Measure GHG-01:** Develop a Carbon Farming Program
- **Measure GHG-16:** Expand the Use of Zero-Emission Construction and Agricultural Equipment

The Sacramento Metropolitan AQMD has published GHG thresholds for projects in Sacramento County (SMAQMD 2020b), including *de minimis* classification for projects resulting in fewer than 110 trips per day.

3.8.2.3.1.3 Shasta County Climate Action Plan

The Shasta County 2012 Climate Action plan (Shasta County 2012) has a GHG emission target of 83% below 2008 levels by 2050. It contains no strategies, measures, or policies relevant to the proposed project.

3.8.2.3.1.4 Sutter County Climate Action Plan

The Sutter County 2010 Climate Action plan (PBS&J 2010) has a GHG emission target of 80% below 1990 levels by 2050. It contains the following strategies, measures, or policies related to the proposed project:

- **Measure R2-A1:** Agricultural Water Management.
 - Encourage the agricultural community to be cognizant of the necessity of water conservation and to provide access to information on technologies to reduce potable water usage where feasible. This measure enhances the Agricultural policies AG 3.1 (Efficient Water Management), AG 3.2 (Water Conservation and Recycling), AG 3.3 (Water Quality and Quantity), and AG 3.5 (Groundwater Resources).

3.8.2.3.1.5 Yolo County Climate Action Plan

The Yolo County 2024 Draft Climate Action and Adaptation plan (Yolo County 2024) has a GHG emission target of net negative GHG emissions by 2030. It contains the following strategies, measures, or policies related to the proposed project:

- **Strategy 4:** Optimize Water Use
- **Strategy 5:** Measure SW2: Increase Construction and Demolition Waste Diversion
- **Strategy 7:** Measure AG2: Support Agricultural Innovation that Promotes Resilience

3.8.3 *Environmental Impacts and Mitigation Measures*

3.8.3.1 Baseline

At the time of publication of the NOP for the proposed project, baseline activity includes agricultural machine activity, surface and domestic water delivery, and irrigation of crops of varying degrees of water use intensity, with rice representing the most water-intensive end of the spectrum. Agricultural equipment is typically powered by non-road diesel engines and are a source of GHGs. Surface and domestic water pumping stations are primarily power by grid electricity, and there are associated GHG emissions from electric generating facilities which consume fossil fuels to power these pumping stations. Rice farming, which involves flooding of the field to control weeds and promote crop success, is a significant source of methane (CH₄), a greenhouse gas with a global warming potential equivalent to 27.2 times its weight in CO₂ (IPCC 2021).

3.8.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in GHG impacts. The proposed project would have a GHG impact if:

- **GHG-1:** The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

- **GHG-2:** The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

SB 97 identifies the need to analyze GHG emissions as a part of the CEQA process. In determining the significance of a project's impacts, the lead agency may consider a project's consistency with the state's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans, goals, or strategies (CEQA Guidelines Section 15064.4[b][3]).

CEQA Guidelines, Section 15064.4, includes the following provisions regarding the method for analyzing GHG impacts in CEQA documents:

- Lead agencies must analyze the GHG emissions of proposed projects and shall have discretion to determine whether to assess these impacts quantitatively or qualitatively in the context of a particular project (CEQA Guidelines Section 15064.4[a]).
- The focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions (CEQA Guidelines Section 15064.4[b]).
- The impacts analysis of greenhouse gas emissions is global in nature and thus should be considered in a broader context. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions (CEQA Guidelines Section 15064.4[b]).
- A lead agency's analysis must reasonably reflect evolving scientific knowledge and state regulatory schemes (CEQA Guidelines Section 15064.4[b]). Lead agencies may rely on plans prepared pursuant to Section 15183.5 (Plans for the Reduction of Greenhouse Gases) in evaluating a project's GHG emissions (CEQA Guidelines Section 15064.4[b][3]).
- The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision-makers to intelligently take into account the project's incremental contribution to climate change (CEQA Guidelines, § 15064.4[c]).

Project area AQMD and APCDs have generally declined to set a quantified threshold of significance above which GHG emissions would have a significant impact on the environment, instead generally recommending compliance with the Lead Agency's qualified Climate Action Plan or consistency with a qualified GHG reduction strategy such as the most recent State Scoping Plan.

3.8.3.3 Methodology for Determining Impacts

Direct GHG emissions from the proposed project include those produced by diesel-fueled construction and farm equipment and on-road vehicle travel by workers. Indirect GHG emissions would also be generated from agricultural lands and groundwater pumping. As permitted by CEQA Guidelines Section 15064.4[a][1], GHG impacts for this analysis were evaluated qualitatively, as there are insufficient defined project parameters and data to conduct a quantitative analysis. Quantitative

metrics are provided where possible to illustrate the relative scale of impacts from various proposed project components.

3.8.3.4 Impact Analysis

3.8.3.4.1 *GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Water Reduction Activities

Crop idling has the potential to result in significant reductions to GHGs related to rice production, specifically methane. Rice is typically grown in fields flooded by irrigation water. While all organic matter decomposes in soil, organic matter submerged in water undergoes anaerobic decomposition due to the lack of oxygen. The organic matter in these fields consists of soil amendments, plant residues, and root exudates. This anaerobic decomposition of organic matter in rice fields produces methane emissions. Methane production varies according to the duration of flooding, the variety or rice crop and the amount of organic matter present. In North America, each acre of flooded rice cropland emits on average 0.65 kg CH₄ per hectare per day (one hectare contains about 2.47 acres) and has an average cultivation period of 139 days per year (IPCC 2019, Ch. 5). To provide a quantitative example of the GHG emissions reductions, idling 1,000 acres of flooded rice cropland would result in a reduction of about 36.56 metric tons (MT) of methane per year, or 994 MT of CO₂e. The average maximum acres to be idled for the project's Phases 1 and 2 are 83,333 acres and 16,667 acres, respectively. Additionally, this idling would result in reduced GHG emissions associated with reduced operation of irrigation equipment, farm machinery, and product transportation. Idling of non-flooded cropland would not result in any reduction in methane emissions, but reductions in GHG emissions from reduced use of farm equipment would be expected in all cases.

Crop shifting would not result in substantial changes in GHG emissions as there would be negligible increases or reductions depending on the changes in farm equipment associated with this component.

Groundwater substitution and new groundwater or deep aquifer wells have the potential to increase GHG emissions. Groundwater pumps consume energy in the form of diesel fuel, natural gas, or, most often, electricity. Each of these energy sources has a carbon footprint, and the extent to which groundwater is used to replace surface water for irrigation would determine the extent of the impact to GHGs. There is not a clear comparison between the energy used to deliver surface water and the energy used to deliver groundwater, because both cases depend on several factors, including distance and elevation from the water source to the destination cropland. Generally, however, groundwater requires more energy to pump to the surface than surface water pumping plants use to move the same volume of water.

Conservation would have a small positive impact on GHG emissions, due to the reduced pumping activity at surface water pumping plants, resulting in lower electrical demand and associated GHG emissions.

Drought-Resiliency Projects

Several drought-resiliency projects would have negligible impacts related to GHG beyond small reductions in emissions from reduced electricity use at surface water pumping plants. The project components to which this applies include piping open ditches or canals, canal lining and modernization, on-farm improvements to irrigation systems, weirs or check structures, and conjunctive use programs. Canal automation through SCADA systems, automated gates installation, and pipeline recirculation systems each would result in minor GHG emissions impacts from operations, due to the electricity required for their operation. This would be offset to an extent by the reduced pumping activity at surface water pumping plants.

Impact Determination: Some water reduction activities could result in reduced GHG emissions, while others would produce additional GHG emissions compared to existing conditions. In the worst-case scenario, the total GHG emissions increase from groundwater pumping activity would not be likely to result in a significant impact to GHGs, and when considering the various beneficial impacts, the likelihood of a significant impact is diminished further. Impacts would be less than significant.

Construction and operation of drought-resiliency projects would not be expected to a significant source of GHG emissions, as none are expected to require an abnormal or significant amount of time or equipment activity to complete.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, implementation of the following mitigation measure would further reduce the potential for impacts:

- **MM-AIR-1:** Construction Truck Idling

Residual Impact: Impacts would remain less than significant.

3.8.3.4.2 GHG-2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As discussed in Section 3.8.2, there are numerous statewide regulations and initiatives related to overall GHG reductions. The proposed project is subject to future state and local requirements imposed by ARB's 2022 Climate Change Scoping Plan Update (ARB 2022). The Climate Change Scoping Plan Update describes how California will reduce its GHG emissions by 85% below 1990 levels by 2045. There are several County Climate Action Plans in the project area. Several of them note water conservation as climate strategies. Drought-resiliency projects would comply with such strategies. As noted in Section 3.2.3.4.1, the proposed project is expected to result in negligible changes to GHG levels and therefore, would not conflict with any state or regional plan or regulation for the reduction of GHGs.

Impact Determination: The proposed project would include components specifically aimed at reducing water usage, which itself reduces GHG emissions. Also included are components which reduce activity of carbon-intensive practices, such as rice farming. These components support state

GHG reduction plans and targets. Other project components would not conflict with any rules, plans, or policies adopted with the purpose of GHG emissions reduction. Therefore, impacts would be considered less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, implementation of the following mitigation measure would further reduce the potential for impacts:

- **MM-AIR-1:** Construction Truck Idling

Residual Impact: Impacts would remain less than significant.

3.9 Hazards and Hazardous Materials

This section describes the known hazards and hazardous materials conditions in the project area and analyzes how the proposed project may affect those conditions. It also describes applicable rules and regulations pertaining to hazards and hazardous materials that could affect the proposed project. For the purposes of this analysis, the study area is defined as the eight counties encompassing the project area shown on Figure 1. The analysis in this section is based on information and data from both the EnviroStor and GeoTracker databases, the regional emergency response plans, fire hazard maps, and public records for school and airfields.

3.9.1 *Environmental Setting*

Land use within the Sacramento Valley is composed primarily of agriculture, covering 2.16 million acres of the watershed. More than 2 million people live in the Sacramento Valley, with urban land use concentrated within the cities of Redding, Anderson, Williams, Woodland and Davis. Similarly, in the project area, land consists mostly of agricultural fields with some areas more urbanized, including the cities of Redding, Anderson, Williams, Woodland and Davis.

3.9.1.1 Project Area Hazardous Material Sites

The boundaries outlined in Figure 1 were utilized as the extent of the project area when conducting the evaluation of hazardous materials sites within the project area. The Department of Toxic Substances Control (DTSC) EnviroStor database lists 64 cleanup sites, with 3 of these sites having active statuses, and identifies 4 hazardous waste sites within the boundaries outlined in Figure 1. The State Water Resources Control Board (SWRCB) GeoTracker database identifies 541 cleanup sites, 98 of which are in open status; 3 of the open sites are active.

Additionally, within the project area, there are human-related hazards, including hazardous materials and waste from agricultural, urban and industrial land uses, electrical transmission infrastructure, oil and gas wells, and pipelines. Hazardous materials are found in soils, sediments, and groundwater as a result of activities in the project area such as the use of pesticides, fertilizers, and industrial waste.

3.9.1.2 Hazardous Materials in Groundwater

The Groundwater Ambient Monitoring and Assessment Program (GAMA) is a program created by the State Resources Control Board that aims to improve groundwater monitoring (State Water Resources Control Board 2023). Utilization of GAMA's GIS interface revealed that 592 (34%) of wells within the Sacramento Valley groundwater basin had maximum sampling values of trace elements (aluminum, antimony, arsenic, barium, beryllium, boron, bromate, cadmium, chromium, manganese, mercury, perchlorate, selenium, thallium, vanadium, and zinc) above comparison concentration for at least one trace element under consideration for the past 3 years. Arsenic and manganese have been the two trace elements where maximum contaminant levels (MCL) have been most frequently exceeded by wells within the Sacramento Valley groundwater basin in the past 3 years, with 1,215 wells exceeding the MCL for arsenic (10 µg/L), and 1,563 wells exceeding the MCL for manganese (50 µg/L). Within the Redding Area groundwater basin, 28 (21.1%) of wells within the basin had maximum values of trace elements above comparison concentration for at least one of the trace elements under consideration for the past 3 years. Arsenic and chromium have been the two trace elements where MCLs have been most frequently by wells within the Redding Area groundwater basin within the past 3 years, with 97 wells exceeding the MCL for arsenic, and 108 wells exceeding the MCL for chromium.

3.9.1.3 Wildfire Hazards

Wildfires in California are becoming more frequent, larger, and more severe, and this trend is likely to continue with future climate change (ARB 2024). The warming climate has created conditions that raise the risk of fires. While natural wildfires support ecosystem health and are critical to maintaining the structure and function of ecosystems, they still pose a significant threat to life, public health, infrastructure, properties, and natural resources. In undeveloped areas with extensive areas of non-irrigated vegetation, wildfire is a serious hazard.

In California, the responsible agency for fire prevention and suppression determines two types of designations for lands. Lands for which the state has financial responsibility for wildland fire protection are designated as "State Responsibility Areas." In State Responsibility Areas, the California Department of Forestry and Fire Prevention (CAL FIRE) is the primary emergency response agency responsible for fire prevention and suppression. Lands for which cities, counties, or districts have financial responsibility for preventing and suppressing fires are designated as "Local Responsibility Areas." First responders in Local Responsibility Areas are typically the local fire districts.

CAL FIRE has mapped areas or zones of significant fire hazards in State Responsibility Areas based on fuels, terrain, weather, and other relevant factors. The zones are referred to as Fire Hazard Severity Zones (FHSZs) and represent the risks associated with wildland fires. FHSZs are classified as "Moderate," "High," and "Very High" hazard, and the classification is based on the physical conditions that "create a likelihood and expected fire behavior over a 30- to 50-year period without considering mitigation measures" (CAL FIRE 2024b). Under CAL FIRE regulations, areas within a Very High FHSZ must comply with specific building and vegetation requirements intended to reduce property damage and loss of life within these areas. Most of the Very High and High FHSZs in California are

located in the Coast Ranges and the Sierra Nevada foothills with scattered areas of mostly Very High FHSZs in southern part of the state (California Department of Forestry and Fire Protect 2023c). According to the FHSZ maps maintained by CAL FIRE, portions of the project area are located within zones that present a Very High fire hazard severity risk (CAL FIRE 2024b). The majority of the project area is located in locally responsible areas, while small portions are located in state and federal responsible areas (CAL FIRE 2024c).

Stored water in water supply reservoirs, including water stored in Shasta Lake, may be used for fighting wildfires with helicopter transport of water. Wildfires are also managed by applying chemical fire retardants and fire suppressants, controlled or prescribed burning, pumping water from streams, and placement of containment lines, which are physical barriers that can help inhibit embers from spreading, such as rivers or areas of bare soils (Brooks 2018).

3.9.1.4 Emergency Plans

The 2022 Butte County Operational Area Emergency Operations Plan (EOP; BCOEM 2022) was developed by the Butte County Office of Emergency Management (BCOEM) to address the planned response of the county to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting the Butte County Operational Area. Among a multitude of other incidents, this EOP includes a protocol to respond to incidents involving hazards and hazardous materials.

The 2018 Colusa County Local Hazard Mitigation Update Plan (LHMP; CCOES 2018) was developed by the Colusa County Office of Emergency Services (CCOES) to put forward strategies to help mitigate natural hazards of concern within Colusa County. This plan is currently being updated and is anticipated to be completed later this year (2024).

The 2019 Glenn County Operational Area EOP (GCOES 2019), developed by the Glenn County Office of Emergency Services (GCOES) provides the structure and organization of emergency operations within the Glenn County Operational Area. The Glenn County Operational Area EOP also identifies individual roles and responsibilities for emergency response and provides a description of how the County and Glenn County Operational Area are integrated into the State and Federal emergency management operations systems.

The 2022 Sacramento County EOP (SCOES 2022) was developed by the Sacramento County Office of Emergency Services (SCOES) to address the County's planned response to extraordinary emergency situations as a result of natural or human-caused disasters. The EOP focuses on operational procedures that would be implemented during large-scale disasters that pose a major threat to life, property, and the environment.

The 2014 Shasta County EOP (SHCOES 2014), developed by the Shasta County Office of Emergency Services (SHCOES), is an all-hazard plan that describes how Shasta County will respond to large-scale emergencies and disasters within the County. This plan provides the framework to coordinate response and recovery activities during such events.

The 2022 Sutter County Operational Area EOP (SUCOEM 2022), Sutter County Office of Emergency Management (SUCOEM) created to provide a basis for a coordinated response before, during and after a disaster incident affecting the Sutter County Operational Area. As a part of this EOP, SUCOEM has included an Emergency Function (EF) document, specifically pertaining to the response to and recovery from hazardous materials releases, which includes oil spills.

The Tehama County Office of Emergency Services (TCOES) created the 2022 Tehama County Operational Area EOP (TCOES 2022), to provide a framework to help coordinate response to emergencies and disasters within the County. Response protocol to hazardous materials is covered under Appendix 5 (Hazardous Material Release) of this EOP.

The Yolo County Office of Emergency Services (YCOES) created the 2024 County of Yolo EOP (YCOES 2024), to provide an overview of the municipalities approach to operations during emergency events. As a part of this EOP, YCOES has included an EF document, specifically pertaining to the response to and recovery from hazardous materials releases.

3.9.2 *Applicable Regulations*

3.9.2.1 **Federal**

3.9.2.1.1 *Resource Conservation and Recovery Act*

The Resource Conservation and Recovery Act (RCRA) established a regulatory system to track hazardous wastes from the time of generation to final disposal, frequently described as “cradle-to-grave.” The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous wastes. RCRA’s provisions give state regulatory agencies authority to regulate solid and hazardous wastes. In California, DTSC is authorized to implement RCRA in lieu of USEPA.

3.9.2.1.2 *U.S. Department of Transportation Hazardous Materials Regulations (49 Code of Federal Regulations 100–185)*

The DOT Hazardous Materials Regulations cover all aspects of hazardous materials packaging, handling, and transportation. Under DOT regulations, a hazardous material is “a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under Section 5103 of Federal hazardous materials transportation law (49 USC 5103).” Potentially applicable parts include Part 171 (“General Information, Regulations and Definitions”) and Part 172 (“Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans”).

3.9.2.1.3 *Emergency Planning and Community Right-to-Know Act (42 USC 11001 et seq.)*

Also known as Title III of the Superfund Amendments and Reauthorization Act, the Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted by Congress as the national

legislation on community safety. This law was designated to help local communities protect public health, safety, and the environment from chemical hazards. To implement EPCRA, Congress required each state to appoint a State Emergency Response Commission. These commissions were required to divide their states into Emergency Planning Districts and to name a Local Emergency Planning Committee for each district. EPCRA provides requirements for emergency release notification, chemical inventory reporting, and toxic release inventories for facilities that handle chemicals.

3.9.2.1.4 National Oil and Hazardous Substances Pollution Contingency Plan

More commonly called the National Contingency Plan (NPC), the National Oil and Hazardous Substances Pollution Contingency Plan establishes principles to respond to both oil spills and hazardous substance releases. Among others, the NPC establishes the National Response Team, the Regional Response Teams, and general responsibilities of On-Scene Coordinators; requires notification of any discharge or release to the National Response Center; and identifies the responsibilities for federal agencies that may be called upon during response planning.

3.9.2.2 State

3.9.2.2.1 Hazardous Waste Control Law

The Hazardous Waste Control Law (*California Health and Safety Code* [HSC], Division 20, Chapter 6.5) is the basic hazardous waste law for California. The Hazardous Waste Control Law implements the federal RCRA cradle-to-grave waste management system in California, although this program regulates more materials as hazardous wastes than the federal program. California hazardous waste regulations can be found in 22 CCR 4.5, "Environmental Health Standards for the Management of Hazardous Wastes." The program is administered by DTSC.

3.9.2.2.2 Porter-Cologne Water Quality Control Act

The Porter-Cologne Act (Division 7 of the California Water Code) is the primary state regulation that addresses water quality standards. Under the act, SWRCB has the ultimate authority over water rights and water quality policy. The act also established nine RWQCBs to oversee water quality on a day-to-day basis at the regional level. The state and regional boards regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Jurisdictional resources in the project area are expected to be under the jurisdiction of the RWQCB. Under oversight by USEPA, SWRCB and RWQCB have the responsibility for establishing regulatory standards and objectives for water quality, developing Total Maximum Daily Loads (TMDLs) for impaired waterbodies, and issuing NPDES permits. The proposed project may require waste discharge requirements (WDR) if waters on site are considered jurisdictional.

3.9.2.2.3 Hazardous Material Release Response Plans and Inventory Law

The Hazardous Material Release Response Plans and Inventory Law (HSC Division 20, Chapter 6.95) is a right-to-know law requiring businesses to develop a Hazardous Materials Management

Plan (HMMP) or a business plan for hazardous materials emergencies if they handle more than 500 pounds, 55 gallons, or 200 cubic feet of hazardous materials. In addition, the business plan must include an inventory of all hazardous materials stored or handled at the facility above these thresholds. This law is designed to reduce the occurrence and severity of hazardous materials releases. The HMMP or business plan must be submitted to the Certified Unified Program Agency (CUPA). The state has integrated the federal EPCRA reporting requirements into this law, and once a facility is in compliance with the local administering agency requirements, submittals to other agencies are not required.

3.9.2.2.4 Standards Applicable to Transporters of Hazardous Waste

Standards Applicable to Transporters of Hazardous Waste (HSC Chapter 13; 22 CCR-66263.10-66263.50) establishes standards that apply to persons transporting hazardous waste within, into, out of, or through the state if the transportation requires a manifest under Section 25160 of the HSC. "Transporter" means a person engaged in the off-site transportation (or movement) of hazardous waste by air, rail, highway, or water. This hazardous waste regulation applies to carriers transporting hazardous waste when that waste is subject to the manifesting requirements of Chapter 12. In general, transporters of hazardous waste must comply with these requirements and statutory requirements in HSC, Division 20, Chapter 6.5, Articles 6 and 6.5, as well as the specific DOT requirements referenced throughout the transporter regulations.

3.9.2.2.5 Occupational Health and Safety, Including 29 Code of Federal Regulations

The California Division of Occupational Safety and Health (Cal/OSHA) and OSHA are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. Pursuant to the Occupational Safety and Health Act of 1970, OSHA has adopted numerous regulations pertaining to worker safety, contained in *29 Code of Federal Regulations* (CFR). These regulations set standards for safe workplaces and work practices, including standards relating to hazardous material handling. Cal/OSHA assumes primary responsibility for developing and enforcing state workplace safety regulations. Because California has a federally approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in 29 CFR. Cal/OSHA standards are generally more stringent than federal regulations.

Cal/OSHA regulations concerning the use of hazardous materials in the workplace, as detailed in 8 CCR, include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites. The hazard communication program requires that Material Safety Data Sheets be available to employees and that employee information and training programs be documented.

3.9.2.3 Regional and Local

Applicable policies or actions pertaining to hazards and hazardous materials from regional and local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.9.2.3.1 Tehama County

The following local policy pertaining to hazards and hazardous materials is included in the Land Use Element of the *Tehama County General Plan Update 2009-2029* (Tehama County 2009):

- **Implementation Measure OS-1.3a:** Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.

3.9.2.3.2 Glenn County

The following local policy pertaining to hazards and hazardous materials is included in the Conservation and Sustainability Element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy COS 5-5:** Ensure that special waste including hazardous materials, tires, medications, infectious waste, asbestos waste, construction waste, and electronic waste are recycled and disposed of in a manner that is safe for the environment, residents, and employees.

3.9.2.3.3 Yolo County

The following local policy pertaining to hazards and hazardous materials is included in the Public Facilities and Services Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy PF-9.8:** Require salvage, reuse or recycling of construction and demolition materials and debris at all construction sites.

3.9.2.3.4 Sacramento County

The following local policy pertaining to hazards and hazardous materials is included in the Hazardous Materials Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017e):

- **Policy HM-4.** The handling, storage, and transport of hazardous materials shall be conducted in a manner so as not to compromise public health and safety standards.

3.9.3 Environmental Impacts and Mitigation Measures

3.9.3.1 Baseline

At the time of publication of the NOP for the proposed project, the site consists of primarily agricultural land. The project area includes four hazardous waste sites and three active cleanup sites in the EnviroStor database, and 98 open cleanup sites (three active) in the GeoTracker database.

3.9.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to hazards and hazardous materials. The proposed project would have an impact if the following apply:

- **HAZ-1:** The project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- **HAZ-2:** The project would 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.
- **HAZ-3:** The project would emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- **HAZ-4:** The project would 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 create a significant hazard to the public or the environment.
- **HAZ-5:** The project would be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and would result in a safety hazard or excessive noise for people residing or working in the project area.
- **HAZ-6:** The project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- **HAZ-7:** The project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

3.9.3.3 Methodology for Determining Impacts

Analysis of impacts pertaining to hazards and hazardous materials was based on existing hazardous material conditions recorded on- and off-site; planned emergency action plans; and siting relative to schools, residents, airports, or other sensitive receptors.

3.9.3.4 Impact Analysis

3.9.3.4.1 *HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

Water Reduction Activities

Water reduction activities, including cropland idling, cropland shifting, groundwater pumping, and conservation activities would only result in operational changes. Instead of applying pesticides on certain farmed croplands during Agreement Years, SRSC contractors would idle these lands, which may result in an environmental benefit with a reduction in hazardous materials use during Agreement Years. Some crops that would be shifted may use more or less pesticides than others, but

overall, there would be no significant change in the use of hazardous materials as a result of crop shifting. Groundwater pumping and conservation activities would have no impact on use of hazardous materials.

Drought-Resiliency Projects

Drought-resiliency projects, specifically piping open ditches or canals, canal lining, automated gates installation, on-farm improvements to irrigation systems, weirs or check structures, pipeline recirculation programs, and new groundwater or deep aquifer wells, include elements that can disturb soils during construction, which may potentially contain contaminants such as pesticides, fertilizers, or arsenic. Additionally, the proposed project would involve temporary transport and handling of small quantities of hazardous substances (e.g., fuels and lubricants) during construction of the drought-resiliency projects. If these fuels and lubricants were released into the water or ground during application or equipment refueling or maintenance, contamination and harm to the environment could result in a significant hazard to the public or the environment. Operation of the proposed drought-resiliency projects would not increase transport, use, or disposal of hazardous materials.

Impact Determination: Construction of the proposed drought-resiliency projects is designed to minimize potential hazardous material impacts to workers and the environment (for instance, by ensuring that potential hazardous materials resulting from construction of the drought-resiliency projects are disposed at appropriate landfills). However, the proposed project involves handling of limited hazardous materials, potentially including contaminated soils, and there is potential for construction equipment spills. Impacts would be considered potentially significant impact.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-HAZ-1:** Soil Testing in Accordance with Disposal Site Requirements
 - To address potential impacts to people and the environment from management of potentially contaminated soils, any excavated soils that would not be reused on site would be tested in accordance with disposal site requirements.
- **MM-HAZ-2:** Spill Kits
 - All heavy construction equipment vehicles would maintain spill kits with oil-absorbent material and tarps to contain minor releases.
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Residual Impact: Implementation of MM-HAZ-1, MM-HAZ-2, and MM-HYD-1 would address potential impacts from project construction by establishing appropriate soil management and emergency response measures, requiring spills kits, and developing and implementing hazardous material spill prevention and cleanup plans. Impacts would be reduced to less than significant with mitigation.

3.9.3.4.2 HAZ-2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

As discussed under Impact HAZ-1, while excavation activities are expected to be limited and contained within the proposed drought-resiliency projects footprint, associated construction activities include potential excavation of soils, which could be contaminated and result in the release of hazardous materials into the environment. Associated construction activities also include the use of heavy construction equipment that could result in inadvertent fuel and lubricants spills.

Impact Determination: Construction of the drought-resiliency projects may disturb soils that may be contaminated and the use of construction equipment could result in inadvertent fuel and lubricants spills. This is considered a potentially significant impact.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-HAZ-1:** Soil Testing in Accordance with Disposal Site Requirements
- **MM-HAZ-2:** Spill Kits
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Residual Impact: Implementation of MM-HAZ-1, MM-HAZ-2, and MM-HYD-1 would address potential impacts from project construction by establishing appropriate soil management and emergency response measures, requiring spills kits, and developing and implementing hazardous material spill prevention and cleanup plans. Impacts would be reduced to less than significant with mitigation.

3.9.3.4.3 HAZ-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

There are 145 distinct school districts within the project area, with a combined student population of approximately 550,000 students as of the 2022 to 2023 school year.

Water Reduction Activities

Water reduction activities would be sited away from schools; therefore, there would be no impacts from these activities on sensitive receptors.

Drought-Resiliency Projects

Drought-resiliency projects would involve temporary transport and handling of small quantities of hazardous substances such as diesel fuels, lubricants, and solvents for equipment during construction and periodic maintenance activities that would be used in accordance with local, state, and federal regulations. Construction of the proposed drought-resiliency projects would also generate DPM and gasoline fuel combustion emissions, which are considered to be TACs. The majority of TAC emissions would be generated during construction due to the use of heavy-duty

off-road equipment. There would be no operational transport, use, or disposal of hazardous materials.

It is possible that schools could be located within a 0.25-mile buffer from a drought-resiliency project construction site where emissions are temporarily produced or that vehicles traveling to a drought-resiliency project construction site and potentially transporting small quantities of hazardous substances could need to travel within 0.25 miles of a school. While these activities could potentially occur within 0.25 miles of a school, they are not expected to increase risks associated with hazardous emissions or handling hazardous materials beyond average, small-scale infrastructure construction projects that frequently occur throughout the project area under existing conditions.

Impact Determination: Based on the analyses presented above, the proposed project would result in less-than-significant impacts.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.9.3.4.4 *HAZ-4: Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

Water Reduction Activities

Water reduction activities involve no construction activities.

Drought-Resiliency Projects

While unlikely, a drought-resiliency project could be sited to occur on an active cleanup site. If such drought-resiliency project involved excavation or grading, it could cause a hazard to the public or environment.

Impact Determination: If construction and operation of drought-resiliency projects were to overlap with active cleanup sites, impacts would be considered potentially significant.

Mitigation Measures: The following mitigation measure would be implemented to reduce potential impacts:

- **MM-HAZ-3:** Site Drought-Resiliency Projects Away from Active Cleanup Sites
 - Drought-resiliency projects will be sited away from active cleanup sites.

Residual Impact: With implementation of Mitigation Measure HAZ-4, drought-resiliency projects would avoid active cleanup sites. Impacts would be reduced to less than significant with mitigation.

3.9.3.4.5 *HAZ-5: 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?*

There are 62 private airstrips and 25 public airports in the project area.

Water Reduction Activities

Water reduction activities may occur within an airport land use plan or less than 2 miles of a public airport but would not result in safety hazards or excessive noise.

Drought-Resiliency Projects

Although drought-resiliency projects may occur in proximity to airports, products that would be transported from the project area would be primarily non-hazardous, and any potentially hazardous materials would be transported per applicable regulations. Additionally, even if the drought-resiliency projects may be located within the vicinity of a private airstrip or an airport land use plan, their construction and operation would not expose people residing or working in the project area to excessive noise levels.

Impact Determination: Based on the analyses presented above, the proposed project would result in less-than-significant impacts.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.9.3.4.6 *HAZ-6: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Regional emergency response plans are summarized in Section 3.9.1.2.1. The plans discuss topics such as natural hazards, emergency management, mitigation programs, emergency preparedness, roles and responsibilities. Under the plans, considerations have been made for hazardous materials. Other hazard plans for the region and throughout California would also apply to the proposed project. There would be little traffic or change in safety conditions resulting from implementation of the water reduction activities and the drought-resiliency projects. Therefore, there would be no physical interference with implementation of an emergency response plan or emergency evacuation plan due to the proposed project.

Impact Determination: The proposed project would not interfere with implementation of any regional response or hazardous material plans. The proposed project would not interfere with implementation of emergency response or emergency evacuation plans in the project area. Impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.9.3.4.7 HAZ-7: Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Water Reduction Activities

The proposed water reduction activities would occur in Agreement Years, which are defined as years where water is already scarce and the potential for wildland fires is already higher than in non-Agreement Years. CAL FIRE FHSZs exist within the project area. Most of the zones are designated as "Very High," with many zones located within the mountainous area of regions of the project area. Areas in the valley regions of the project area are not as prevalent but still have a threat of wildland fires.

Even if the potential for wildland fire in Agreement Years would be higher than non-Agreement Years, given that most of the project area is outside of an area designated as a Very High or High FHSZ, and given that there are multiple methods that are used in suppressing wildfires, including fire retardants and suppressants and containment lines, implementation of water reduction activities would not result in a substantial increase in wildfire risks or substantially impair the ability to fight wildland fires. Cropland idling would result in bare land with very low potential for vegetation to grow, actually acting as a barrier against propagation of wildland fires. Cropland shifting would not significantly shift existing conditions or create an increased risk for wildland fires. Groundwater pumping would not increase the risk for wildland fires. Conservation activities may result in minimal increases in risk for wildland fires, but as discussed, the ability to fight wildland fires would not decrease due to implementation of these conservation activities. Finally, the proposed project would increase the amount of stored water in Shasta Lake because less water would be delivered to SRSC members. Therefore, the proposed project would not reduce access to stored water supply reservoirs to fight wildland fires.

Drought-Resiliency Projects

Construction of the drought-resiliency projects could involve the use of heavy equipment and entail activities that have the potential to ignite fires, such as the use of flammable and combustible materials. The potential for adverse effects related to wildfires, however, would likely be similar to existing conditions because projects would generally occur in the same geographic area and present a similar risk to other maintenance or agricultural practices, during both construction and operation. In the future, higher temperatures and drier conditions due to climate change are likely to increase the number and intensity of wildfires. Drought-resiliency projects would comply with all pertinent fire prevention laws and regulations to avoid exposing people or structures to impacts from wildfires.

Impact Determination: Water reduction activities would not affect access to stored water supply reservoirs to fight wildland fires. While drought-resiliency projects involve construction, the potential for adverse effects related to wildfires would be similar to existing conditions because projects would generally occur in the same geographic area and present risk similar to baseline activities. Impacts would be considered less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.10 Hydrology and Water Quality

This section describes hydrology and water quality conditions in the project area and analyzes how the proposed project may affect those conditions. It also describes rules and regulations pertaining to hydrology and water quality applicable to the proposed project. For the purposes of this hydrology and water quality analysis, the northernmost extent of the study area is defined as the Sacramento Valley below Shasta Lake, and the southernmost extent is defined as the City of Sacramento. This analysis is based in part on publicly available flood hazard data from FEMA and local government agencies and hydrology conditions identified in regional and site-specific investigations.

3.10.1 *Environmental Setting*

The following sections provide additional information on water resources, hydrology, surface water and groundwater quality, and flood hazards within the study area.

3.10.1.1 Water Resources

California's water resources are affected by variability and unpredictability, as precipitation is the primary source of water supply and it varies from year to year, geographically, and depending on the time of the year. On average, California receives approximately 200 million acre-feet per year in precipitation, and about two-thirds evaporates, percolates into the ground, or is absorbed by plants, leaving approximately 71 million acre-feet in average annual runoff (Water Education Foundation 2024a). The total volume of water received from precipitation varies dramatically between dry and wet years. For example, in 2011, which was a wet year, California received approximately 250 million acre-feet of precipitation while in 2014, a critical year, California received approximately 100 million acre-feet (USBR 2024b). Additionally, most of the precipitation occurs between November and March in the northern portion of the state (CDWR 2023).

3.10.1.2 Hydrology

Hydrology in the project area starts at Shasta Lake. As stated in Section 3.4.1.2.1, Shasta Lake is California's largest human-made reservoir. It is located on the upper Sacramento River in northern California about 9 miles northwest of the City of Redding. The entire reservoir is within Shasta County. The reservoir controls runoff from about 6,421 square miles from four major tributaries including the Sacramento, McCloud, and Pit Rivers, Squaw Creek, and from numerous minor creeks and streams. Historically, essentially all outflow from Shasta Dam travels through northern California to the Sacramento-San Joaquin Delta southwest of Sacramento. The total drainage area of the Sacramento River at the Delta is about 26,300 square miles, and water flow from this system represents about 62% of the total inflows to the Delta. Reclamation constructed Shasta Dam and Lake from 1938 to 1945 as an integral element of the CVP to provide irrigation water supply,

municipal and industrial water supply, flood control, hydropower generation, fish and wildlife conservation, and navigation.

Most of the project area is situated in the lower central portion of the Sacramento River watershed, with a small portion situated between Shasta Lake and Redding. Average annual precipitation within this watershed is 944 millimeters (approximately 37.2 inches), most of which falls as either rain or snow between the months of November and March (USGS 2016). The riparian ecosystem of the Sacramento Valley has undergone substantial changes since the second half of the 19th century, when an influx of people, spurred by the discovery of gold at Sutter's Mill in 1848, settled in California. This influx was followed by substantial development within the Sacramento Valley, supplementing both agricultural and hydraulic mining operations within the region. Hydraulic mining operations in the region caused an increase in sediment deposition within the streams encompassing the watershed, increasing water surface elevations, which in turn, increased flooding. An increase in flooding served as the impetus behind the construction of levees within the area, which were subsequently utilized for agricultural purposes. In summary, the natural hydrology of the study area has been highly modified, influenced, and altered by adjacent land use practices.

The Sacramento Valley can be broadly characterized as a flow-through system, in which most of the water not consumed for irrigation or other purposes eventually returns to the river via various tributaries or percolates to groundwater that recharges local aquifers. There are still winter flood flows in the Sacramento Valley, which constitutes a major management issue. From Butte City downstream, flooding in the Sacramento River is controlled by an elaborate system of levees and bypasses. When river flows reach a certain height, water spills into the Colusa, Sutter, and Yolo Bypass channels in order to minimize risk of flooding to adjacent agricultural lands and major urban centers (Sacramento River Watershed Program 2024).

The main regional watershed encompassing the project area is the Lower Sacramento River (Hydrologic Unit Code: 180201). The Sacramento River is the primary river within the project area, comprising a length of approximately 360 miles from below Shasta Lake to the City of Sacramento. The Sacramento is California's largest river, accounting for 31% of the state's surface water runoff. Draining the inland slopes of the Cascade, Coast, and Klamath mountain ranges, the Sacramento River watershed encompasses an area of 27,000 square miles. Fed by the snowmelt from Mount Shasta, the river flows south past Dunsmuir into Shasta Lake. Below Shasta Dam, it flows through Redding and Red Bluff and west of Chico. It is joined by Butte Creek near Colusa, the Feather River outside of Sacramento, and the American River at the center of Sacramento. From there it flows southwesterly until joined by the San Joaquin River near Pittsburg. The mingled waters of the two rivers then flow west into San Pablo Bay and ultimately San Francisco Bay (SF District 2024).

Beyond the Lower Sacramento River, there are many riverine habitats such as natural channels and relocated channels that convey water from watersheds to downstream receiving bodies. Local watersheds within the project area are summarized in Table 16.

Table 16
Summary of Hydrologic Unit Codes Within the Project Area

Name	HUC-8	Area (mi2)
Big Chico Creek-Sacramento River	18020157	952
Butte Creek	18020158	820
Clear Creek-Sacramento River	18020154	686
Honcut Headwaters-Lower Feather	18020159	774
Lower Sacramento	18020163	1229
Paynes Creek-Sacramento River	18020155	424
Sacramento-Stone Corral	18020104	1884
Upper Coon-Upper Auburn	18020161	434

Agricultural ditches are also integral parts of the project area. They consist of linear or curved, human-made canals for the conveyance of irrigation water or the removal of irrigation water or seasonal precipitation that sheet flows across agricultural lands throughout the project area. The network of agricultural ditches enables the growth of crops and drainage of water from uplands. Agricultural ditches are generally constructed by the removal of earth and compaction of a V-shaped or trapezoidal-shaped conveyance channel.

To summarize the various water elements within the project area, data was gathered from the National Hydrography Dataset (NHD), an extensive dataset representing the water drainage network of the United States (USGS 2023). The NHD divides the drainage network within the project area into six distinct categories: "Connector," "Canals and Ditches," "Underground Conduits," "Pipelines," "Streams and Rivers," and "Artificial Paths," as presented in Table 17. As presented, the largest category within the project area drainage network is Canal and Ditches, which includes approximately 3,084 miles.

Table 17
Drainage Network within Project Area

NHD Flow Type	Total Length by NHD Flow Type Within Project Area (miles)
Connectors	5
Canals and Ditches	3,084
Underground Conduits	0.01
Pipelines	15
Streams and Rivers	521
Artificial Paths	391

The most prominent surface-water conducting complex and one of the largest water conservation developments in the United States, the CVP, lies within the project area. During the turn of the century, agricultural practices shifted heavily towards irrigation farming methods that currently characterize the region. Spurred by the need for a reliable water supply in the region and with the help of the Rivers and Harbors Act of 1935, Reclamation took over construction and operation of the CVP and construction of initial units began in October of 1937 with the Contra Costa Canal. A contract for the construction of Shasta Dam, an integral component of water supply within the project area, was awarded on July 6, 1938, with work completed on the Dam in 1945. Today, the CVP holds long-term agreements to supply water for agricultural, industrial, municipal, water quality, and wildlife purposes in 29 of California's 58 counties (USBR 2024a) and provides water to 6 of the top 10 agricultural counties within California. On an annual basis, the CVP manages approximately 9 million acre-feet of water. 5 million acre-feet of this supply are delivered on an annual basis for agricultural purposes, enough to irrigate approximately one-third of total agricultural land in California. 600,000 acre-feet is dedicated for municipal and industrial purposes, enough to meet the yearly water needs of nearly 1 million households. Pursuant to the Central Valley Improvement Act of 1992, 800,000 acre-feet per year are dedicated to fish and wildlife habitat, and an additional 410,000 acre-feet are allocated to state and federal wildlife refuges and wetlands (Stern et al. 2024). The CVP works in conjunction with the State Water Project (SWP) of California, which diverts water from the Feather River to the Central Valley.

Groundwater within the project area is represented by the Sacramento Valley basin and the Redding Area basin. These basins can be divided into 15 distinct subbasins, as defined by the CDWR, through Bulletin 118, a publication that serves as the State's official publication on the occurrence and nature of groundwater within California (CDWR 2021). Subbasins defined by Bulletin 118 that fall within the boundary of the project area are included in Table 18.

Table 18
CDWR Bulletin 118 Groundwater Subbasins within Project Area

Groundwater Basin Name	Basin Number	Basin Area (square miles)
Redding Area – Anderson	5-006.03	154.2
Redding Area – Bowman	5-006.01	191.5
Redding Area – Enterprise	5-006.04	95.8
Redding Area – Millville	5-006.05	102.5
Redding Area – South Battle Creek	5-006.06	52.7
Sacramento Valley – Antelope	5-021.54	29.8
Sacramento Valley – Bend	5-021.53	35.4
Sacramento Valley – Butte	5-021.70	416.5
Sacramento Valley – Colusa	5-021.52	1129.4
Sacramento Valley – Corning	5-021.51	324.0

Groundwater Basin Name	Basin Number	Basin Area (square miles)
Sacramento Valley – North American	5-021.64	534.8
Sacramento Valley – Solano	5-021.66	554.2
Sacramento Valley – Sutter	5-021.62	446.6
Sacramento Valley – Vina	5-021.57	288.9
Sacramento Valley – Yolo	5-021.67	844.8

CDWR monitors a robust network (3,590 total) of groundwater monitoring wells throughout the State, with 117 of these wells located within the project area. Among monitoring wells within the project area, almost 55% (64 total) have been designated as having a “decreasing”⁵ trend in water level for the last 20 years (1998 through 2018) of data collection. Approximately 44% (51 total) of the wells within the project area demonstrated a neutral trend and approximately 2% (2 total) of the wells within the project area have been designated as having an “increasing” trend in water level for the last 20 years of data collection (CDWR 2021).

Since the 2000s, the project area has periodically been subjected to drought conditions of variable severity. Utilizing data specific to the Lower Sacramento River Hydrologic Unit Code (180201) from the U.S. Drought Monitor’s website, average drought conditions were analyzed. Since 2012, only 3 years have not been categorized as falling within drought monitoring categories, with 5 out of 13 years not falling as “severe drought,” “extreme drought,” and “exceptional drought” conditions. In recent years, from 2021 to 2022, average drought conditions within the Lower Sacramento River HUC were mostly categorized as “severe drought,” “extreme drought,” and “exceptional drought” conditions. These drought conditions have not only affected surface water quantity, but also groundwater recharge. While recent droughts, ending in 2023, have caused the driest hydrologic period on record in portions of the project area, causing impacts to hydrology, water deliveries, and agricultural operations, 2023 and 2024 were more wet, included full water supply and reservoir storage recovery, and generally have seen recovery of these impacts.

3.10.1.3 Water Quality

3.10.1.3.1 Surface Water Quality

Surface water quality is often characterized by physical, chemical, or biological factors. These include temperature, turbidity, pH, dissolved oxygen, and salinity and can also be related to chemical constituents or biological presence such as algae and phytoplankton. Section 303(d) of the CWA requires states, territories and authorized tribes to develop a list of water quality-impaired segments of waterways. The 303(d) list includes waterbodies that do not meet water quality standards for their

⁵ Decreasing trends are defined as having a statistically significant trend (using the Mann-Kendall non-parametric test) and a negative slope (using the Theil-Sen method). In other words, any decreasing trends are captured in these statistics, unless trends are not statistically significant, which could be caused by outlier data, changing trends (shifting between increasing and decreasing trends), or other factors.

beneficial uses. The CWA requires that these jurisdictions establish priority rankings for water on the lists and develop action plans, called TMDLs, to improve water quality (USEPA 2012). A TMDL is the sum of the allowable loads within an individual waterbody of a single pollutant from all contributing point and nonpoint sources (USEPA 2012). TMDLs are tools for implementing water quality standards and establish the allowable daily pollutant loadings or other quantifiable parameters (e.g., pH or temperature) for a waterbody. Out of the 38 listed waterbodies within the project area, 25 are on the 303(d) list as being impaired waters. The 25 waterbodies appearing on the 303(d) list as impaired waters and their pollutants of concerns are detailed in Table 19. Waterbodies listed are spread throughout all eight counties with a variety of listed pollutants. Several pollutants listed in Table 19 can be directly or indirectly related to runoff from agricultural activities, including return water that runs off fields to irrigation drains.

Table 19
Waterbodies Listed in 2020-2022 Integrated Report for Clean Water Act Sections 303(d)
Within the Project Area

Waterbody	County	Pollutants
Sutter Bypass	Sutter, Yolo	Mercury, Dissolved Oxygen
Tule Canal (Yolo County)	Yolo	Bacteria, Boron, Salinity
Willow Slough Bypass (Yolo County)	Yolo	Malathion, Boron, Bacteria, Selenium, Specific Conductivity, Toxicity, Chlorpyrifos, Diuron
Sacramento River (Cottonwood Creek to Red Bluff)	Shasta, Tehama	Mercury, Temperature, Toxicity
Sacramento River (Keswick Dam to Cottonwood Creek)	Shasta, Tehama	Toxicity, Temperature
Clear Creek (below Whiskeytown Lake, Shasta County)	Shasta	Mercury
Anderson Creek (Shasta County)	Shasta	Bacteria
Sacramento River (Knights Landing to the Delta)	Sutter, Yolo	Mercury, Temperature, Toxicity, Chlordane, DDT, Dieldrin, PCBs,
Willow Slough (Yolo County)	Yolo	Boron, Toxicity
Sacramento River (Red Bluff to Knights Landing)	Butte, Colusa, Glenn, Sutter, Tehama, Yolo	DDT, Dieldrin, Mercury, PCBs, Toxicity, Dissolved Oxygen
Natomas East Main Drainage Canal (aka Steelhead Creek, upstream of confluence with Arcade Creek)	Placer, Sacramento, Sutter	PCBs
Coon Creek, Lower (from Pacific Avenue to Main Canal, Sutter County)	Sutter	Bacteria, Toxicity, Dissolved Oxygen
Natomas Cross Canal (Sutter County)	Sutter	Mercury
Sycamore Slough (Yolo County)	Colusa, Yolo	Dissolved Oxygen
Colusa Basin Drain	Colusa, Glenn, Yolo	Azinphos-methyl (Guthion), DDT, Dieldrin, Mercury, Dissolved Oxygen, Pesticides
Stony Creek	Glenn, Tehama	pH, Toxicity, Chlorpyrifos

Waterbody	County	Pollutants
Walker Creek (Glenn County)	Glenn	Bacteria, Dissolved Oxygen, Toxicity, Chlorpyrifos
Butte Slough	Colusa, Sutter	Dissolved Oxygen, Toxicity, Dichlorvos
Butte Creek (Butte County)	Butte, Colusa, Glenn	Mercury
Big Chico Creek (Butte and Tehama Counties)	Butte, Tehama	Mercury, Bifenthrin, Chromium, Bacteria, Nickel, Dissolved Oxygen, Pyrethroids, Toxicity, pH
Little Chico Creek (Butte County)	Butte	pH
Spring Creek (Colusa County)	Colusa	Chlorpyrifos, Diazinon, Aldicarb, Dissolved Oxygen, Salinity, Toxicity,
Freshwater Creek (Little Valley to Salt Creek, Colusa County)	Colusa	Bacteria
Stone Corral Creek	Colusa	Dissolved Oxygen
Sand Creek (Colusa County)	Colusa	Dissolved Oxygen

Source: State Water Resources Control Board, 2022

3.10.1.3.2 Groundwater Quality

The water quality of groundwater in the Sacramento Valley is generally good. Several areas have localized aquifers with high nitrate, total dissolved solids (TDS), or boron concentrations. High nitrate concentrations frequently occur because of residuals from agricultural operations or septic systems. High TDS, a measure of salinity concentration, can be an indicator of brackish or connate water when it occurs in high concentrations. High boron concentration usually is associated with naturally occurring deposits but can also be a marker for effects of wastewater discharge.

GAMA is a comprehensive program created by the State Water Resources Control Board that aims to improve groundwater monitoring and, subsequently, to make information pertaining to water quality readily accessible to the public (SWRCB 2024). Utilization of GAMA's GIS interface revealed that wells within the 15 groundwater basins that constitutes the project area had above comparison concentration sampling values of trace elements including arsenic, manganese, chromium, boron, aluminum, selenium, antimony, barium, perchlorate, vanadium, mercury, beryllium, and cadmium for the past 3 years. Arsenic, manganese, chromium, and boron have been the four trace elements where MCL have been most frequently exceeded by wells within the 15 groundwater basins in the past 3 years, with 1,013 samples out of 3,430 exceeding the MCL for arsenic (10 micrograms per liter [$\mu\text{g/L}$]), 882 out of 2,853 samples exceeding the MCL for manganese (50 $\mu\text{g/L}$), 238 out of 1,900 samples exceeding the MCL for chromium (50 $\mu\text{g/L}$), and 117 out of 708 samples exceeding the MCL for boron (1 mg/L). For other trace elements, exceedances constituted less than 3% of the total samples that were taken for these elements. As mentioned above, besides a few exceedances for arsenic, manganese, chromium, and boron within the project area, groundwater quality within the project area was generally good.

3.10.1.4 Flood Hazards

Counties within the project area maintain Flood Insurance Rate Maps (FIRMs), as required by the Federal Emergency Management Agency (FEMA). These FIRMs indicate the potential of flooding for various locations. Flood Zones "A," "AE," and "X" are all present within the project area. Flood Zone A is indicative of an area with a 1% annual flood risk. Areas designated as Flood Zone AE also share this 1% annual flood risk but are distinct from areas designated as Flood Zone A by the fact that detailed analyses to determine base flood elevation have been performed in these areas. Areas designated as Flood Zone X have a 0.2% annual flood risk associated with them or an area with a 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, as well as areas protected by levees from a 1% annual chance of flood (FEMA 2009). Flood Insurance Studies (FIS) are available for each county within the project area and are summarized in Table 20. Flooding in the project area, as mapped by FIRMs, is caused mainly from the Sacramento River and its tributaries.

Table 20
Flood Insurance Studies Within the Project Area

FIS Number	Applicable County	Effective Date
06007CV000A	Butte	1/6/2011
06011CV000B	Colusa	3/27/2024
06021CV000A	Glenn	8/5/2010
06067CV001-004E	Sacramento	2/22/2024
06089CV001-005C	Shasta	5/22/2024
060394V000B	Sutter	6/16/2015
06103CV000A	Tehama	9/29/2011
06113CV000B	Yolo	5/16/2012

Many areas within the project area are protected from floods by levees, canal systems, reservoirs, and pump systems. Levees within the project area consist of both accredited levees (which reduce floodplain areas as mapped by FEMA) and non-accredited levees (which do not impact FEMA floodplain areas but may help to alleviate flooding).

In Butte County, the 100-year floodplains of Little Chico Creek, Big Chico Creek, and the Sacramento River encompass most of the project area within the county (FEMA 2011a). In Colusa County, most of the northeast project area is within the Sacramento River 100-year floodplain. Southeast project areas within Colusa County are within the Colusa Trough 100-year floodplain. Other areas of Colusa County within the project area are within 100-year floodplains of various rivers and creeks (FEMA 2024a). In Glenn County, the 100-year floodplains of Willow Creek and the Sacramento River encompass the eastern portions of the project area (FEMA 2010). In Sacramento County, the entire project area is within the 100-year floodplain of the Sacramento River

(FEMA 2024b). In Shasta County, most of project area is outside of 100-year floodplain areas; the Sacramento River and several tributaries have 100-year floodplains that are located within the project area (FEMA 2024c). In Sutter County, most of the western portion of the project area is protected from flooding by flood reduction measures. The southeastern portion of the project area is within the 100-year floodplain (FEMA 2015). In Tehama County, the 100-year floodplains of the Sacramento River and Cottonwood Creek are located within the project area (FEMA 2011b). In Yolo County, the northeastern portion of the project area is within the 100-year floodplain of the Sacramento River (FEMA 2012).

California SB 92 requires emergency action plans for all dams, except those classified as “low hazard.” Upstream dam failures could cause flooding in the project area, which is within the dam inundation zone of the Bowman, Boyd, Magnolia, Ross, Nash, Oroville, Paradise, Rollins, Scott’s Flat, and Shasta dams (CDSOD 2024).

3.10.2 Applicable Regulations

3.10.2.1 Federal

3.10.2.1.1 Clean Water Act

The Clean Water Act (CWA) is the principal statute governing water quality on a national level. The CWA sets water quality standards that states use to regulate discharge of pollutants into the nation's waters. The statute employs a variety of regulatory and non-regulatory tools to reduce pollutant discharges into waterways. It mandates permits for wastewater and stormwater discharges, regulates publicly owned works that treat municipal and industrial wastewater, requires states to establish site-specific water quality standards for navigable bodies of water, and regulates other activities that affect water quality. USEPA has delegated responsibility for implementation of portions of the CWA in California, including water quality control planning and programs, to SWRCB and nine RWQCBs.

Important applicable sections of the CWA are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal permit that proposes an activity which may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Act. Certification is provided by the RWQCB.
- Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. This permit program is administered by the RWQCB.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by USACE.

3.10.2.1.2 *National Flood Insurance Program*

The National Flood Insurance Program, administered by FEMA, requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year flood zone. FEMA is responsible for preparing maps delineating these areas.

3.10.2.2 **State**

3.10.2.2.1 *California Fish and Game Code*

Section 5650 of the FGC prohibits discharge of harmful materials to waters of the state. It is unlawful to deposit in, permit to pass into, or place where it can pass into California waters, any petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or residuary product of petroleum; any carbonaceous material or substance; any refuse, liquid or solid, from a refinery, gas house, tannery, distillery, chemical works, mill, or factory of any kind; any sawdust, shavings, slabs, or edgings; any factory refuse, lime, or slag; any *Cocculus indicus*⁶; or any substance or material deleterious to fish, plant, mammal, or bird life. FGC 5655 requires that parties responsible for polluting waters of the state pay for removal costs and environmental damages.

FGC 1602 requires an entity to notify CDFW prior to commencing any activity that may do the following:

- Substantially divert or obstruct the natural flow of any river, stream, or lake.
- Substantially change or use any material from the bed, channel, or bank of any river, stream, or lake.
- Deposit or dispose of debris, waste, or other materials containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

According to CDFW, the notification requirement applies to any river, stream, or lake, including those that are dry for periods of time (ephemeral/episodic) as well as those that flow year-round (perennial) and is interpreted by CDFW to include ephemeral streams, desert washes, and watercourses with a subsurface flow. After notification, if CDFW determines the activity may substantially adversely affect an existing fish and wildlife resource, CDFW has the responsibility for preparation of a Streambed Alteration Agreement, in consultation with the project proponent.

3.10.2.2.2 *Porter-Cologne Water Quality Control Act*

The Porter-Cologne Act (Division 7 of the California Water Code) is the primary state regulation that addresses water quality standards. Under the act, SWRCB has the ultimate authority over water rights and water quality policy. The act also established nine RWQCBs to oversee water quality on a day-to-day basis at the regional level. The state and regional boards regulate all pollutant or nuisance

⁶*Cocculus indicus* is prohibited based on the practice of grinding up the roots of certain *Cocculus* plants (most commonly Yucca plants) and spread them in the water to "stun" fish for collection.

discharges that may affect either surface water or groundwater. Jurisdictional resources in the project area are expected to be under the jurisdiction of the RWQCB. Under oversight by USEPA, SWRCB and RWQCB have the responsibility for establishing regulatory standards and objectives for water quality, developing TMDLs for impaired waterbodies, and issuing NPDES permits. The proposed project may require WDR if waters on site are considered jurisdictional and is expected to require an NPDES permit to regulate construction-related stormwater at project sites.

3.10.2.2.3 Sustainable Groundwater Management Act

Enacted in 2014, the SGMA established a new structure for local and regional-level management of California's groundwater resources. The SGMA's intent was to recognize and preserve the ability for cities and counties to manage groundwater according to their existing authority. SGMA required the formation of GSAs from local and regional authorities in California's high- and medium-priority basins and subbasins. GSAs have 5 years from the date of reprioritization to be managed under GSPs. Relative to GSA formation, SGMA assigns different roles to DWR, the State Water Resources Control Board, local agencies, and counties.

3.10.2.3 Regional and Local

Applicable policies or actions pertaining to hydrology and water quality from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.10.2.3.1 Shasta County General Plan

The following local policy pertaining to hydrology and water quality is included in the Flood Protection Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy 5.2.4 FL-f:** Known flood hazard information shall be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval, or other land development applications subject to environmental assessment.

3.10.2.3.2 Tehama County General Plan

The following local policies and measures pertaining to hydrology and water quality are included in the *Land Use Element of the Tehama County General Plan* (Tehama County 2009):

- **Policy LU-10.1:** The County shall actively promote the implementation of the County's Groundwater Management Plan.
- **Implementation Measure LU-10.1a:** Implement the recommended management and monitoring actions of the GWMP and identify and quantify the water production, water quality, and groundwater recharge activities occurring within the County.
- **Policy OS-1.1:** The County shall protect and conserve water resources and supply systems through sound watershed management.
- **Implementation Measure OS-1.1a:** Maintain local water ordinances to protect the integrity of water supplies in Tehama County.

- **Implementation Measure OS-1.1c:** Ensure that projects adhere to the regulations of the State of California Reclamation Board, California Department of Fish and Game, Regional Water Quality Control Board, and U.S. Government.
- **Implementation Measure OS-1.1e:** Continue to maintain and implement the Adopted AB3030 Groundwater Management Plan to protect and preserve water supplies and water quality in Tehama County.
- **Policy OS-1.2:** The County shall work to ensure continued reasonable alternate water supplies.
- **Implementation Measure OS-1.2a:** Encourage water supply agencies and companies in the County to identify and develop water supply sources, other than groundwater, where feasible.
- **Policy OS-1.3:** Surface water quality and stream flows for water supply, water recharge, recreation, and aquatic ecosystem maintenance shall be protected while respecting adjudicated and appropriated (California recognized water rights) rights of use.
- **Implementation Measure OS-1.3a:** Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.
- **Implementation Measure OS-1.3g:** Establish and require the use of best management practices to protect receiving waters from the adverse effects of construction activities, sediment and urban runoff.
- **Policy OS-1.4:** The County shall encourage development of land for the purposes of improving groundwater recharge.
- **Implementation Measure OS-1.4a:** Consistent with the General Plan development pattern and where deemed a reasonable on- or off-site improvement by the advisory agency, division of lands within all water district or County service area boundaries shall be conditioned based on the following:
 - Provision of right-of-way access to irrigation infrastructure in order to facilitate their maintenance.
 - Open irrigation ditches appropriately piped and sited to permit their continued use.
- **Policy OS-1.6:** The County shall explore and encourage new water storage projects that are of local benefit.
- **Implementation Measure OS-1.6a:** Work with local, regional, and state water suppliers to determine the necessary water storage required for projected growth in the County. Investigate potential federal and state funding opportunities related to water infrastructure. Apply for funding to establish water storage facilities.

3.10.2.3.3 *Glenn County General Plan*

The following local policies and actions pertaining to hydrology and water quality are included in the Conservation and Open Space Element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy COS 6-2:** Require discretionary projects, as well as new flood control and stormwater conveyance projects, to integrate best management practices (BMPs) and natural features to

the greatest extent feasible, while ensuring that these features adequately convey and control stormwater to protect human health, safety, and welfare while promoting water quality objectives.

- **Policy COS 6-4:** Promote water conservation among all water users.
- **Policy COS 6-6:** Monitor groundwater extraction activities and ensure the health of the groundwater basin.
- **Policy COS 6-7:** Support the Colusa and Glenn Groundwater Authority's (CGA) Colusa Subbasin Groundwater Sustainability Plan and groundwater objectives.
- **Policy COS 6-9:** Encourage the development of water conservation programs by water purveyors for both agricultural and urban uses.
- **Policy COS 6-15:** Support water development, treatment, and storage projects that are needed to meet existing and future local and regional demand.
- **Policy COS 6-16:** Participate in and collaborate with Shasta, Colusa and Tehama counties, and other regional groundwater management agencies to support and promote Groundwater Sustainability Plans and implementation strategies for the groundwater basin.
- **Policy COS 6-19:** Promote the use of surface water resources when available to offset groundwater extraction.
- **Policy COS 6-21:** Encourage solar farming and other water saving farming related opportunities in areas where water resources are not viable or available, or if future climate conditions render traditional farming practices and crop types unviable.
- **Action COS-6c:** Continue to implement the policies, actions, and Basin Management Objectives (BMOs) contained in the Colusa Subbasin Groundwater Sustainability Plan.
- **Action COS-6e:** Continue to review well permit applications for compliance with County Code Title 20 Chapter 80 Water Well Drilling Permits & Standards.
- **Action COS-6f:** Continue to require implementation of the County's Grading Ordinance. Review projects to ensure that BMPs are implemented during construction and site grading activities as well as in project design to reduce pollutant runoff into water bodies.
- **Policy CSF 1-4:** Coordinate with the Glenn Groundwater Authority and water providers throughout the County to manage water supplies in a way that ensures adequate supplies for existing residents, agricultural uses, businesses, and for projected growth, in a manner which avoids groundwater overdraft, water quality degradation and other adverse environmental impacts.
- **Policy CSF 1-10:** Support water conservation measures that comply with the State and Federal legislation and that are consistent with measures adopted in all applicable Urban Water Management Plans, Agricultural Water Management Plans and Groundwater Management Plans.
- **Policy CSF 1-12:** All new wells must have an approved permit from the Environmental Health Department prior to the start of any new construction.
- **Action CSF-1d:** Continue to utilize the Glenn County Water Quality Program (implemented through the Department of Environmental Health) for the enforcement of standards and

codes regarding the construction and destruction of water wells, monitoring wells, exploratory soil borings and other special use wells.

- **Action CSF-3d:** Work cooperatively with local, State, and Federal agencies to comply with water quality regulations, reduce pollutants in runoff, and protect and enhance water resources throughout Glenn County.
- **Policy SA 1-5:** Prevent land subsidence and maintain adequate groundwater supplies.
- **Action SA-1e:** Monitor withdrawal of groundwater and gas, maintain land elevation records, and regulate overdraft to prevent subsidence.
- **Policy SA 2-3:** Ensure that construction activities and new development projects will not result in adverse impacts to existing properties and flood control and drainage structures.
- **Policy SA 2-8:** Ensure that new development and infrastructure improvements do not compound the potential for flooding.

3.10.2.3.4 *Butte County General Plan*

The following local policies pertaining to hydrology and water quality are included in the Water Resources Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy W-P1.6:** Agriculture, logging, mining, recreational vehicle use, and other open space uses shall follow best management practices to minimize erosion and protect water resources.
- **Policy W-P3.1:** Groundwater transfers and substitution programs shall be locally regulated to protect the sustainability of the County's economy, communities, and ecosystems.
- **Policy W-P6.2:** The use of permeable surfaces and rainwater catchment/retention systems shall be allowed and encouraged to enhance groundwater recharge.
- **Policy W-P6.3:** Temporary facilities shall be installed as necessary during construction activities to adequately treat stormwater runoff from construction sites.
- **Policy W-P6.5:** Stormwater channels should be managed in a way that produces cobenefits, such as supporting recharge, improving water quality, providing recreation areas, and reducing flood risk.
- **Policy W-P7.1:** Any alteration of natural channels for flood control shall retain and protect riparian vegetation to the extent possible while still accomplishing the goal of providing flood control. Where removing existing riparian vegetation is unavoidable, the alteration shall allow for reestablishment of vegetation without compromising the flood flow capacity.

3.10.2.3.5 *Sutter County General Plan*

The following local policies or actions pertaining to hydrology and water quality are included in the Agricultural Resources Element of the *Sutter County General Plan* (Sutter County 2011):

- **Policy AG 3.3: Water Quantity and Quality.** Support efforts to maintain water resource quality and quantity for the irrigation of productive farmland.

- **Policy AG 3.6: Groundwater Resources.** Support the efforts of the local water agencies to promote groundwater recharge, conjunctive use, conservation of significant recharge areas, and other activities to protect and manage Sutter County's groundwater resources.
- **Policy I 1.10: Individual Water Wells.** New individual wells shall meet County well construction and water quality standards.
- **Policy I 1.12: Water Conservation.** Support water conservation programs that increase water use efficiency, and provide incentives for adoption of water-efficiency measures.
- **Policy ER 6.1: Integrated Water Management Programs.** Integrate water management programs that emphasize multiple benefits and balance the needs of agricultural, rural, and urban users.
- **Policy ER 6.2: Surface Water Resources.** Protect the surface water resources in the County including the Sacramento, Feather and Bear Rivers and their significant tributaries.
- **Policy ER 6.3: Groundwater Sustainability.** Protect the sustainability of groundwater resources.

3.10.2.3.6 Colusa County General Plan

The following local policies and actions pertaining to hydrology and water quality are included in the Conservation Element of the *Colusa County General Plan* (Colusa County 2012):

- **Policy CON 1-26:** Discourage development within 50 feet from the top of banks for all lakes, perennial ponds, rivers, creeks, sloughs, and perennial streams unless County-approved best management practices have been incorporated into the project's design in order to protect water quality and shoreline resources. Appropriate uses within the setback areas may include, but are not necessarily limited to:
 - a. Fire and flood protection areas
 - b. Maintenance of riparian habitat
 - c. Recreational trails
 - d. Vegetated landscaping
 - e. Boat launch facilities
 - f. Levees
 - g. Docks
 - h. Irrigation pumps
- **Action CON 1-F:** Continue to require implementation of the County's Grading Ordinance. Review projects to ensure that BMPs are implemented during construction and site grading activities as well as in project design to reduce pollutant runoff into water bodies.
- **Policy CON 1-29:** Support water development, treatment, and storage projects that are needed to meet existing and future local and regional demand.
- **Policy CON 1-34:** Encourage the use of water conservation measures for agriculture and in existing residences and businesses.

- **Action CON 1-H:** Continue to implement the policies, actions, and Basin Management Objectives (BMOs) contained in the Colusa County Groundwater Management Plan.

3.10.2.3.7 *Yolo County General Plan*

The following local policies and actions pertaining to hydrology and water quality are included in the Public Services and Facilities Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Action PF-A14:** Minimize pollution of stormwater, receiving water bodies and groundwater, and maximize groundwater recharge potential by:
 - Implementing planning and engineering design standards that use low impact development techniques and approaches to maintain and mimic the natural hydrologic regime.
 - Utilizing “infiltration” style low-impact development technologies.
 - Following stormwater Best Management Practices during and after construction.
- **Policy AG-2.1:** Protect areas identified as significantly contributing to groundwater recharge from uses that would reduce their ability to recharge or would threaten the quality of the underlying aquifers.
- **Policy AG-2.2:** Preserve water resources for agriculture, both in quantity and quality, from competition with development, mitigation banks and/or interests from outside of the County.
- **Policy AG-2.3:** Work proactively with regional and watershed based group to protect and preserve Yolo County’s agricultural water supply.
- **Policy AG-2.4:** Encourage the agricultural community to utilize Best Management Practices in the application and use of water resources.
- **Policy AG-2.12:** Encourage farmers to employ agricultural practices that supplement rather than deplete topsoil and conserve or minimize water use.
- **Policy AG-3.21:** Promote best management practices in agricultural operations (including animal operations) to reduce emissions, conserve energy and water, and utilize alternative energy sources.
- **Policy CO-5.1:** Coordinate with water purveyors and water users to manage supplies to avoid long-term overdraft, water quality degradation, land subsidence and other potential problems.
- **Policy CO-5.2:** Support projects that provide reliable and sustainable surface water from a variety of energy efficient sources. Sources should be sufficient to serve existing and planned land uses in prolonged drought periods and protect natural resources and surface water flows.
- **Policy CO-5.3:** Manage the County’s groundwater resources on a sustainable yield basis that can provide water purveyors and individual users with reliable, high quality groundwater to serve existing and planned land uses during prolonged drought periods.

- **Policy CO-5.5:** Integrate balanced water management programs that emphasize multiple benefits and balance competing needs into all aspects of the planning and development process.
- **Policy CO-5.6:** Improve and protect water quality for municipal, agricultural, and environmental uses.
- **Policy CO-5.12:** Support the integrated management of surface and groundwater, stormwater treatment and use, the development of highly treated wastewater, and desalinization where feasible.
- **Policy CO-5.26:** Provide financial and regulatory incentives for the installation of water conservation measures for agriculture.
- **Policy CO-5.27:** Encourage the development of groundwater management plans pursuant to the State Groundwater Management Act (Sections 10750-10756 of the California Water Code) for all regions of the County.
- **Policy CO-5.29:** Vigorously protect all water rights related to lands within Yolo County, including areas of origin, riparian water rights, and other existing water rights.
- **Policy CO-5.33:** Strive to increase artificial recharge of important aquifers with surplus surface water supplies.

3.10.2.3.8 *Sacramento County General Plan*

The following local policies or actions pertaining to hydrology and water quality are included in the Safety and Conservation elements of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017d, 2022b):

- **Policy SA-22a:** Sacramento County will evaluate development projects and all new construction located within a defined Flood Hazard Zone (FHZ) to determine whether the 200-year Urban Level of Flood Protection or 100-year FEMA flood protection applies, and whether the proposed development or new construction is consistent with that standard. Prior to approval of development projects or new construction subject to either standard, the appropriate authority must make specific finding(s) related to the following:
 - Urban Level of Flood Protection standard (200-year) applies to projects in a Flood Hazard Zone that meet certain criteria, developed by the State of California Department of Water Resources, related to urbanization, watershed size and potential flood depth.
 - Federal Emergency Management Agency (FEMA) standard of protection (100- year) applies to projects in a Special Flood Hazard Area that are not subject to the Urban Level of Flood Protection. (Added 2016)
- **Policy CO-94:** Development within the 100-year floodplain and designated floodway of Sacramento streams, sloughs, creeks or rivers shall be:
 - Consistent with policies to protect wetlands and riparian areas; and
 - Limited to land uses that can support seasonal inundation.

- **Policy CO-95:** Development within the 100-year floodplain should occur in concert with the development of the Floodplain Protection Zone.
- **Policy CO-101:** Stabilize the banks of rivers and streams in a manner that increases flood protection and increases riparian habitat functions.
- **Policy CO-105:** Channel modification projects shall be considered for approval by the Board of Supervisors only after conducting a noticed public hearing examining the full range of alternatives, relative costs and benefits, and environmental, economic, and social benefits.
- **Policy CO-105a:** Encourage flood management designs that respect the natural topography and vegetation of waterways while retaining flow and functional integrity.
- **Policy CO-106:** Realigned or modified channels should retain topographic diversity including maintaining meandering characteristics, varied berm width, naturalized side slope, and varied channel bottom elevation.
- **Policy CO-107:** Maintain and protect natural function of channels in developed, newly developing, and rural areas.
- **Policy CO-108:** Channel lowering should occur after consideration of alternatives and only when it is necessary to accommodate the gravity drainage of storm runoff and/or accommodate floodflows under existing bridge structures.
- **Policy CO-109:** Channel modifications should not prevent minimum water flows necessary to protect and enhance fish habitats, native riparian vegetation, water quality, or ground water recharge.
- **Policy CO-110:** Improvements in watercourses will be designed for low maintenance. Appropriate Manning's "n" 13 values will be used in design of the watercourses to reflect future vegetative growth (including mitigation plantings) associated with the low maintenance concept.
- **Policy CO-111:** Channel modifications shall retain wetland and riparian vegetation whenever possible or otherwise recreate the natural channel consistent with the historical ecological integrity of the stream or river.
- **Policy CO-112:** The use of concrete and impervious materials is discouraged where it is inconsistent with the existing adjacent watercourse and overall ecological function of the stream.
- **Policy CO-114:** Protect stream corridors to enhance water quality, provide public amenities, maintain flood control objectives, preserve and enhance habitat, and offer recreational and educational opportunities.
- **Policy CO-115:** Provide setbacks along stream corridors and stream channels to protect riparian habitat functions.
 - A functional setback of at least 100 feet and measured from the outside edge of the stream bank should be retained on each side of a stream corridor that prohibits development or agricultural activity. This buffer is necessary to protect riparian functions by allowing for the filtering of sediment, pesticides, phosphorus and nitrogen, organic matter and other contaminants that are known to degrade water quality. This

buffer also provides for the protection of vegetation along the stream bank which provides bank stability, erosion control and flood attenuation.

- A transitional setback of at least 50 feet in width beyond the functional buffer should be retained along all stream corridors. This buffer is necessary to protect hydrogeomorphic functions that regulate water temperature, regulate microclimate, maintain channel complexity and retain hydrologic flow regimes. This buffer also provides corridors to facilitate the movement of wildlife.
 - An extended setback of at least 50 feet in width beyond the transitional setback should be retained along all stream corridors. This setback will allow for recreational uses such as bike, pedestrian and/or equestrian trails and will allow for the placement of infrastructure such as water and sewer lines.
 - Stormwater discharge ponds or other features used for improving stormwater quality may be located within the extended or transitional setback area. However, in order to protect stream habitat and floodplain value, the width of the setback shall not be based upon the width of the pollutant discharge pond. The ponds shall be landscaped and maintained with vegetation native to the surrounding area. Detention ponds or other features implementing pollutant discharge requirements, other than approved regional stormwater quality practices that are designed and operated to complement the corridor functionally and aesthetically, are prohibited.
 - Setback averaging within individual development projects or as otherwise specified in a County-adopted master plan will be permitted except when riparian woodland will be lost. The minimum width of setbacks cannot fall below 50 feet.
 - Master drainage plans may provide for other standards that meet the intent of this policy.
- **Policy CO-118:** Development adjacent to waterways should protect the water conveyance of the system, while preserving and enhancing the riparian habitat and its function.
 - **Policy CO-121:** No grading, clearing, tree cutting, debris disposal or any other despoiling action shall be allowed in rivers and streams except for normal channel maintenance, restoration activities, and road crossings.
 - **Policy CO-122:** River and stream maintenance should allow natural vegetation in and along the channel to assist in removal of nutrients, pollutants, and sediment and to increase bank stabilization, while minimizing impacts on conveyance.
 - **Policy CO-126:** Prohibit obstruction or underground diversion of natural waterways.

3.10.3 Environmental Impacts and Mitigation Measures

3.10.3.1 Baseline

At the time of publication of the NOP for the proposed project, most of the project area includes agricultural land with water infrastructure and conveyance to supply land with irrigation water. Hydrology has been modified, influenced, and altered by agricultural practices that are supplied by

the Sacramento River and its tributaries, as well as a networks of dams, reservoirs, canals, hydroelectric powerplants, and other facilities. In addition to agricultural practices, water is supplied to industrial, municipal, water quality, and wildlife purposes. While recent droughts, ending in 2023, have caused the driest hydrologic period on record in portions of the project area, causing impacts to hydrology, water deliveries, and agricultural operations, 2023 and 2024 have been more wet and seen recovery of some of these impacts.

3.10.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to hydrology and water quality. The proposed project would have an impact if the following apply:

- **HYD-1:** The project would violate water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality.
- **HYD-2:** The project would substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- **HYD-3:** The project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows.
- **HYD-4:** In flood hazard, tsunami, or seiche zones, the project would risk release of pollutants due to project inundation.
- **HYD-5:** The project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.10.3.3 Methodology for Determining Impacts

Potential impacts on hydrology and water quality were qualitatively evaluated based on existing hydrological conditions and local water quality control plans and sustainable groundwater management plans. This analysis considered the proposed project's impact on hydrology and water quality for all project phases and component, during construction and operation, and whether the overall scope of the proposed project would result in potential impacts to water quality, groundwater supplies, drainage patterns, or flood hazards.

3.10.3.4 Impact Analysis

3.10.3.4.1 *HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?*

Water Reduction Activities

Water reduction activities, including cropland idling, cropland shifting, conservation, and groundwater substitution could result in some impacts to surface and groundwater quality. Cropland idling could result in increased deposition of sediment on waterbodies. Since idled fields would be dry and have less vegetative cover, they may be more susceptible to erosion from strong winds and runoff. Increased sediment transport through wind erosion could lead to increased deposition of transported sediment onto surface waterbodies, which could increase turbidity and affect water quality. Most soils within the project area have medium erodibility factor values. However, most cropland idling would occur in rice fields. Rice cultivation typically includes discing the field after harvest to incorporate the leftover rice straw into the soils. After harvest and discing in late September and October, rice fields are flooded to aid in decomposition of the straw. Once dried, the combination of decomposed straw and clay texture soils typically produces a hard crust-like surface. If left undisturbed, this surface crust would remain intact throughout the summer, when wind erosion would be expected to occur, until winter rains begin. This surface crust would not be conducive to soil loss from wind erosion. During the winter rains, the hard, crust-like surface typically remains intact, and the amount of sediment transported through winter runoff would not be expected to increase. However, because the SRSC could idle different types of crops besides rice, such as alfalfa, tomatoes or corn, which could be located on soil that have medium to high erodibility factor values, the potential for impacts to nearby water and groundwater due to erosion would exist.

Cropland idling, cropland shifting, and conservation activities would not result in changes to water quality constituents due to runoff and leaching, because farmers would apply less water to fields, which would reduce the potential for leaching of salts and other pollutants. Additionally, in the case of cropland idling, they would reduce application of fertilizers and pesticides, leading to decreased concentrations of nitrogen and phosphorous in surface runoff. There is some potential for surface water quality to be temporarily negatively impacted from the reduction in system water, especially irrigation ditches, as reduced water would dilute contaminants less, thereby potentially increasing contaminant concentrations such as nitrogen and phosphorous. However, as mentioned above, there would be generally reduced contaminants in the nearby fields because of cropland idling and a reduction in application of fertilizers and pesticides. Therefore, overall incremental increases in contaminant concentrations would be minimal. Additionally, these impacts would be temporary in nature and contaminant concentrations would go back to normal concentration in non-Agreement Years.

Groundwater substitution would use groundwater for irrigation instead of surface water. The amount surface water substituted for groundwater would be relatively small compared to the amount of surface water used to irrigate agricultural fields. As described in Section 2.4, the contractors are

currently entitled to divert 2,100,000 acre-feet of surface water. Groundwater substitution would include 167,100 and 33,420 acre-feet of water in Phase 1 and 2, respectively, which would constitute approximately 8% and 1.6% of the total diverted water by contractors. Groundwater would mix with surface water in agricultural drainages prior to irrigation return flow reaching the rivers.

Contaminants of concern (COCs) that may be present in the groundwater could enter the surface water as a result of mixing with irrigation return flows. However, any COCs would be greatly diluted when mixed with the existing surface waters applied because a much higher volume of surface water would still be used for irrigation purposes. Additionally, while arsenic and manganese have been found in groundwater wells within the project area, groundwater quality is generally good and sufficient for municipal, agricultural, domestic, and industrial uses.

Drought-Resiliency Projects

Drought-resiliency projects, specifically piping open ditches or canals, canal lining, automated gates installation, on-farm improvements to irrigation systems, weirs or check structures, pipeline recirculation programs, and new groundwater or deep aquifer wells, include elements that can disturb soils during construction, which may potentially be contaminated with contaminants such as pesticides, fertilizers, or arsenic, and percolate into surface and groundwater. Additionally, the proposed project would involve temporary transport and handling of small quantities of hazardous substances (e.g., fuels and lubricants) during construction of the drought-resiliency projects. If these fuels and lubricants were released into the water or ground during application or equipment refueling or maintenance, contamination and harm to the environment could result in a significant hazard to water quality.

Once constructed, most projects would not impact water quality. Some drought-resiliency projects have the potential to improve surface and groundwater quality. Piping open ditches or canal and canal lining will reduce seepage into the groundwater which can reduce contaminants leaching into the groundwater. Pipelines provide a closed and protected system for transporting water from its source to the destination. This closed system minimizes the exposure of water to external contaminants such as pollutants, sediment, and microorganisms. Compared to open channels or uncovered storage facilities, pipelines help prevent contamination, ensuring the delivered water is of higher quality. Additionally, pipelines are less prone to damage from storms, floods, and other natural disasters that could introduce contaminants into the water supply. Similarly, with reduced seepage, canal lining would reduce the likelihood of contaminants leaching from the soil into the water, resulting in cleaner irrigation water for crops.

Impact Determination: There is potential for both positive and negative impacts to surface and groundwater quality as a result of water reduction activities and construction and operation of the drought-resiliency projects. Potentially significant impacts include possible impacts to nearby water and groundwater due to erosion following cropland idling, as well as release of hazardous substances during construction of the drought-resiliency projects.

Mitigation Measures: To reduce potential impacts, the following mitigation measures would be implemented:

- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with GSPs for All Groundwater Pumping Activities Undertaken Under the Agreement

Residual Impact: Implementation of MM-HYD-1 would include erosion and spill control measures, which would reduce the significance of erosion impacts and potential impacts from accidental spills. Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs. Complying with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken. Impacts to surface and groundwater water quality would be reduced to less than significant with mitigation.

3.10.3.4.2 HYD-2: Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Water Reduction Activities

As part of groundwater substitution activities to facilitate water surface reduction, a total of 167,100 acre-feet and 33,420 acre-feet of groundwater is anticipated to be pumped in Phases 1 and 2, respectively. Groundwater in the project area occurs at various levels. While recent droughts, ending in 2023, have caused the driest hydrologic period on record in portions of the project area, causing impacts to monitored groundwater levels, 2023 and 2024 were more wet, included full water supply and reservoir storage recovery, and generally have seen recovery of these impacts. However, groundwater substitution activities could contribute to accelerated depletion of groundwater resources. The potential for adverse drawdown effects would increase as the amount of extracted water increased. Additionally, elements that save water, including conservation activities, cropland idling, and cropland shifting, typically reduce seepage losses, which may return to groundwater supplies and incidentally recharge groundwater. Groundwater substitution activities beyond existing conditions would only occur in Agreement Years and be temporary, which could lead to groundwater recovery and recharge in non-Agreement Years and reduce impacts. However, because groundwater recovery and recharge is highly dependent on hydrology of following year, which could be another Agreement Year, as well as proximity to surface water and pumping in following year (i.e., if the subsequent year also includes groundwater substitution pumping), and aquifer properties, impacts to groundwater levels could occur.

Increased groundwater pumping may lead to land subsidence caused by water level declines. The project area is mapped as containing soils susceptible to expansion or subsidence. Therefore, there could be land subsidence as a result of groundwater substitution activities in the project area.

Drought-Resiliency Projects

Construction of the drought-resiliency projects would not affect groundwater recharge or lead to groundwater subsidence. Operation of the drought-resiliency projects, including new groundwater or deep aquifer wells and conjunctive use programs would have a direct significant impact to groundwater recharge, similar to the impact described above for water reduction activities. Groundwater substitution activities could contribute to accelerated depletion of groundwater resources. The potential for adverse drawdown effects would increase as the amount of extracted water increased. Other drought-resiliency projects, including piping open ditches or canals, canal lining, canal automation through SCADA, automated gates installation, on-farm improvements to irrigation systems, weirs or check structures, and pipeline recirculation programs, would all constitute elements that save surface water, but typically reduce seepage losses and hinder groundwater recharge, which would contribute to diminish groundwater supplies and the potential for significant impacts.

Similarly to the impacts described above, land subsidence could also occur as a result of operating new groundwater wells. Other drought-resiliency projects would have limited impacts on land subsidence.

Impact Determination: Because the proposed project elements (water reduction activities and operation of drought-resiliency projects) could cause both additional decreases to groundwater supplies and reduce seepage that helps recharge groundwater, and increase the potential for land subsidence, the proposed project would cause a potentially significant impact to groundwater supplies and sustainable groundwater management.

Mitigation Measures: The following mitigation measure would be implemented to reduce potential impacts:

- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with GSPs for All Groundwater Pumping Activities Undertaken Under the Agreement

Residual Impact: Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs. Complying with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken. Additionally, implementation of MM-HYD-2 would ensure that no land subsidence occurs as a result of groundwater substitution activities in the project area. Impacts would be reduced to less than significant with mitigation.

3.10.3.4.3 *HYD-3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows?*

Water Reduction Activities

The proposed water reduction activities may alter the course of irrigation ditches and canals in the project area, but not in a manner that would result in 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, or impede or redirect flood flows. In Agreement Years, there would generally be less water in the system and the proposed project would further reduce the amount of water available water for contractors, thereby reducing the possibility of erosion or siltation, flooding, increased runoff, or impairment of flood flows.

Drought-Resiliency Projects

During construction of the drought-resiliency projects, there is potential that exposed soil during construction or during field idling could runoff in storm events; this could cause erosion or additional sources of polluted runoff. Some drought-resiliency projects would include additions of impervious surfaces, such as canal lining. However, lined canals keep soil moisture from migrating into the canal and increasing flood conditions, in addition to preventing erosion collapses that can block canals and spread water across a larger area. They typically can safely hold more water, both on a daily basis and during emergency situation and therefore, would not cause substantial erosion, flooding, additional sources of polluted runoff, or impairment of flood flows. Similarly, enclosing existing canals with piping can reduce flood risk, erosion, and additional sources of polluted runoff and direct flood flows. Once constructed, other drought-resiliency projects would also have either no impact or positive impacts on erosion or siltation, flooding, increased runoff, or impairment of flood flows.

Impact Determination: While water reduction activities and operation of the drought-resiliency projects would reduce the possibility of erosion or siltation, flooding, increased runoff, or impairment of flood flows, the drought-resiliency projects could cause increased erosion during construction. Therefore, impacts could be considered potentially significant.

Mitigation Measures: To reduce potential impacts, the following mitigation measures would be implemented:

- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Residual Impact: Implementation of MM-HYD-1 would include erosion control measures, which would reduce the significance of erosion impacts. Potential erosion impacts would be reduced to less than significant with mitigation.

3.10.3.4.4 HYD-4: Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Although the project area is within a dam failure zone, dam failure is unlikely, and all California dams with flood potential above low hazard are required to maintain emergency action plans. The proposed project would have no effect on existing dam failure inundation hazards and would not result in increased exposure to these hazards. The proposed project would have no effect on the potential for tsunamis, seiches, or mudflows on or off site. While there are areas within the project area that are within FEMA-designated flood hazard areas, the proposed project would not exacerbate risks related to flood hazards.

Impact Determination: Proposed program elements would not affect flood risk. There would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.10.3.4.5 HYD-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As noted in Section 3.10.3.4.1, there is potential for both positive and negative impacts to surface and groundwater quality as a result of water reduction activities and construction and operation of the drought-resiliency projects. Potentially significant impacts include the possibility for impacts to nearby water due to erosion following cropland idling, as well as impacts to surface and groundwater from release of hazardous substances during construction of the drought-resiliency projects. These activities and projects could conflict with the provisions of water quality control plan or sustainable groundwater management plan. All other activities would not result in a potential conflict with the provisions of water quality control plan or sustainable groundwater management plan.

Impact Determination: The proposed water reduction activities, especially cropland idling, as well as the construction of drought-resiliency projects through impacts to nearby water due to erosion could conflict with the provisions of water quality control plan or sustainable groundwater management plan. There could be the potential for significant impacts.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-HYD-2:** Install and Operate Groundwater Wells in Accordance with GSPs for All Groundwater Pumping Activities Undertaken Under the Agreement

Residual Impact: Implementation of MM-HYD-1 would include erosion control measures, which would reduce the significance of erosion impacts and any potential conflict with a water quality control plan. Implementation of MM-HYD-2 would require all new groundwater well installation and all groundwater well operation to occur in accordance with targets and requirements set by applicable GSA-managed GSPs. Complying with GSA requirements would ensure that the appropriate siting, evaluation, and documentation steps are taken. The potential for conflict or obstruction with implementation of a water quality control plan or sustainable groundwater management plan would be reduced to less than significant with mitigation.

3.11 Land Use and Planning

This section describes land use and planning conditions in the project area and analyzes how the proposed project may affect those conditions. It also describes applicable rules and regulations pertaining to land use and planning that could affect the proposed project. For the purposes of this analysis, the study area is defined as the project area as shown in Figure 1.

3.11.1 *Environmental Setting*

The boundaries of the project area shown in Figure 1 follow the service areas for the SRSC along the Sacramento River and include the counties of Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo and Sacramento. Portions of the project area are also located in the City of Redding and other cities (e.g., Anderson, Williams, Woodland, or Davis).

While the predominate land use pattern is agricultural and rural, the project area features an expansive mix of public and private lands that may be characterized as incorporated or unincorporated, open space, commercial, business and industrial, natural and recreational, resource conservation, forest, floodways, urban and rural development, and residential.

Given the nature of the Agreement, the proposed project would mostly occur within lands that are zoned as and used for agriculture and related facilities. It is possible that some elements of the proposed project, such as the construction of new groundwater or deep aquifer wells could be located in urban, suburban, or rural areas.

3.11.2 *Applicable Regulations*

3.11.2.1 State

3.11.2.1.1 *Williamson Act*

The Land Conservation Act of 1965 or the Williamson Act was established in 1965 by the California legislature to slow rapid development and protect agricultural lands. The Williamson Act enables local governments to enter contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The Williamson Act establishes a framework

ensuring continuation of local agricultural practices, continued stability for the agriculture industries, and open space buffers.

3.11.2.1.2 California Farmland Conservancy Program

In 1995, a statewide grant program, the CFCP, was created to support efforts to conserve agricultural land in the state. These grants encourage voluntary long-term stewardship and conservation of agricultural lands and efforts that protect farming and ranching operations facing development pressure. The CFCP prioritizes local land use planning for urban growth and conservation of agricultural land. It also encourages decisions that are consistent with the state's agricultural land conservation policies and improvements to enhance long-term sustainable agricultural uses.

3.11.2.1.3 Farmland Mapping and Monitoring Program

The purpose of the FMMP is to establish criteria for mapping location quality and quantity of agricultural lands. Farmland maps combine soil characteristics and land use information to document current agricultural lands and conversion of agricultural lands over time.

Under the Department of Conservation, Division of Land Resource Protection in the FMMP, agricultural land is categorized by the following:

- **Prime Farmland:** Prime farmland constitutes the highest quality of land for sustained agriculture production. Agricultural land is designated Prime Farmland when land use criteria is met and when the chemical and physical soil characteristics meet the quality criteria established by the NRCS. Land use criteria is established by the FMMP and requires agricultural lands to have been used for irrigated agriculture production at some point within the four years prior to the Important Farmland Map Date, which occurs every two years.
- **Farmland of Statewide Importance:** Farmland of Statewide Importance land meets all the same criteria as Prime Farmland with minor physical or chemical shortcomings such as greater slopes or less ability to hold moisture.
- **Unique Farmland:** Unique Farmland is farmland used to produce the states leading agricultural crops. Soils are typically lesser quality than other designations.
- **Farmland of Local Importance:** Farmland of Local Importance land is in production or is capable of production and is characterized as being economically important by each county's board of supervisors and local advisory committee.

3.11.2.2 Regional and Local

In accordance with California Government Code Section 65302(a) and Public Resources Code Section 2762(a), each county has a general plan with a land use element that seek to balance its heritage with conservation and growth for future generations. Applicable policies or actions pertaining to land use and planning from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.11.2.2.1 *Glenn County General Plan*

The following local policies and actions pertaining to land use and planning are included in the Agricultural and Land Use elements of the *Glenn County General Plan* (Glenn County 2023):

- **Policy AG 1-1:** Maintain agriculture as a primary, extensive land use.
- **Policy AG 1-3:** Recognize the importance of agriculture lands to Glenn County's economy and also in terms of agriculture's contribution to the preservation of open space, wildlife habitat, community identity, and environmental services.
- **Policy AG 1-5:** Encourage use of agricultural lands preservation tools such as in-county transfer of development rights, conservation easements, exclusive agricultural zoning and continuation of minimum parcel sizes.
- **Policy LU 3-1:** Ensure that future development and land use decisions protect the integrity of agriculture and do not create a hardship for the county's farmers.

3.11.2.2.2 *Butte County General Plan*

The following policy pertaining to land use and planning is included in the Land Use Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy LU-P1.6:** The County shall conserve important habitat and watershed areas, while protecting the public safety of County residents.

3.11.2.2.3 *Sutter County General Plan*

The following local policies pertaining to land use and planning are included in the Agricultural Resources and Land Use and Planning elements of the *Sutter County General Plan* (Sutter County 2011):

- **Policy AG 1.1:** Preserve and maintain agriculturally designated lands for agricultural use and direct urban/suburban and other nonagricultural related development to the cities, unincorporated rural communities, and other clearly defined and comprehensively planned development areas.
- **Policy LU 2.1 Long-term Conservation:** Promote the long-term conservation of agricultural and open space lands in accordance with the goals and policies of the Agricultural Resources and Environmental Resources elements.
- **Policy LU 9.4 Impacts to Nearby Uses:** Require public facilities such as wells, pumps, tanks, and yards to be located and designed to ensure that noise, light, odors, and appearance do not adversely affect nearby land uses.
- **Policy LU 9.5 Regional Planning Efforts:** Support and participate as appropriate in countywide, regional, and other multi-agency planning efforts related to land use, housing, revenue, economic development, tourism, agriculture, natural resources, air quality, habitat conservation, transportation, transit, infrastructure, water supply, flood control, solid waste disposal, emergency preparedness, and other issues relevant to the County.

3.11.2.2.4 *Tehama County General Plan*

The following local policies pertaining to land use and planning are included in the Land Use Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy LU-10.1:** The County shall actively promote the implementation of the County's Groundwater Management Plan.

3.11.2.2.5 *Colusa County General Plan*

The following local goal pertaining to land use and planning is included in the Agriculture Element of the *Colusa County General Plan* (Colusa County 2012):

- **Goal (Agriculture) AG-2:** Maintain and enhance agriculture as the County's most critical land use, economic sector, and resource.

3.11.2.2.6 *Yolo County General Plan*

The following local policies and goals pertaining to land use and planning are included in the Agriculture and Economic Development and Land Use and Community Character elements of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy AG-1.21:** Within conservation easements, preclude the practice of fallowing fields for the purpose of water export. Fallowing as a part of normal crop rotation is not subject to this policy.
- **Goal LU-2: Agricultural Preservation:** Preserve farm land and expand opportunities for related business and infrastructure to ensure a strong local agricultural economy.

3.11.3 *Environmental Impacts and Mitigation Measures*

3.11.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, there are a variety of land uses within the project area. Most of the areas where the proposed project would occur are currently zoned and used for agriculture and related facilities. Some project activities may occur within more urban, suburban, or rural areas with a variety of zoning designations.

3.11.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to land use and planning. The proposed project would have an impact if the following apply:

- **LAN-1:** The project would physically divide an established community.
- **LAN-2:** The project would cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

3.11.3.3 Methodology for Determining Impacts

The land use and planning analysis considered the proposed project's consistency with regional and local plans, policies, and regulations. Specifically, the proposed project was analyzed with respect to the applicable General Plans for the counties in the project area. Additionally, loss or increased difficulty of access from one portion of an existing community to another from implementation of the proposed project is also discussed to determine if the proposed project would physically divide an established community.

3.11.3.4 Impact Analysis

3.11.3.4.1 LAN-1: *Would the project physically divide an established community?*

Water Reduction Activities

Cropland idling, cropland shifting, and conservation activities would occur on land that has been designated as agricultural land. Groundwater pumping would mostly occur on land that has been designated as agricultural land but could also occur on land that is designated for a variety of other uses. While it is possible that some water reduction activities, including groundwater pumping, may occur near established communities, implementation of these activities would not physically divide an established community because they would not result in the loss or increased difficulty of access from one portion of an existing community to another.

Drought-Resiliency Projects

The proposed drought-resiliency projects would largely occur in areas that are zoned as and used for agricultural activities. As such, the proposed project would mostly occur in areas sited away from residences, hospitals, schools, convalescent facilities, or other features that would constitute established communities. Some drought-resiliency projects, including new groundwater or deep aquifer wells, could be located in cities and potentially near residences, hospitals, or schools. However, these projects would be small and would not physically divide any established communities. For instance, as discussed under Impact AGR-1, the standard requirement for well construction requires the surface base of the well to extend at least 2 feet laterally from the well boring (CDWR 2024b). This would result in a minimal physical footprint for the surface base of the well in addition to a small area converted for access to the well.

Construction of the drought-resiliency projects may require temporary staging areas and temporary stockpile areas, which are physical elements that could temporarily affect existing communities if construction is sited near to residences, hospitals, schools, convalescent facilities, or other features that would constitute established communities. Temporary construction and access impacts of drought-resiliency projects would be relatively small in size and short term; therefore, there would be no physical division of established communities.

Impact Determination: The proposed water reduction activities would not divide any established communities, but construction access for the drought-resiliency projects may temporarily affect

established communities. After construction is complete, impacts would cease. Therefore, impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.11.3.4.2 LAN-2: Would the project 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?

Water Reduction Activities

As discussed under Impacts AGR-1 and AGR-2, crop idling as a result of the proposed project would be temporary in nature as agricultural fields would remain viable after idling ceases. During Agreement Years, up to 86,333 acres of crops would be idled. Crop idling would not conflict with existing zoning, land use plans, policies, or regulations for agricultural use as there would be no permanent conversion of agricultural lands. Cropland shifting, groundwater pumping, and conservation activities would not result in temporary or permanent impacts on agricultural lands.

Drought-Resiliency Projects

As discussed under Impact AGR-1, drought-resiliency projects may result in minimal impacts on agricultural land but would not interfere with existing zoning for agricultural use or a Williamson Act contract or conflict with any land use plan, policy, or regulation. Drought-resiliency projects could result in the minimal (on the order of a few square feet, as described in Section 3.11.3.4.1) impacts on other land uses that may be characterized as incorporated or unincorporated, open space, commercial, business and industrial, natural and recreational, resource conservation, floodways, urban and rural development, and residential, but similarly would not result conflict with any land use plan, policy, or regulation.

Impact Determination: Water reduction activities would not conflict with existing zoning, land use plans, and policies for agricultural use. While drought-resiliency projects could cause permanent conversion of very small portions of farmland, these areas would be negligible in size in comparison to the size of agricultural fields that would remain and, for the most part, would have the purpose of ensuring sustained agriculture, and would not result conflict with any applicable land use plan, policy, or regulation. These impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.12 Mineral Resources

This section describes the regulatory setting and affected environment for mineral resources in the project area and analyzes how the proposed project may affect those resources. It also discusses the proposed project's consistency with applicable state and local regulatory documents and policies.

For the purposes of this analysis, the study area is defined as the project area as presented on Figure 1.

3.12.1 Environmental Setting

The boundaries of the project area shown in Figure 1 follow the service areas for the SRSC along the Sacramento River. Historically, this region had extensive mining operations that capitalized on its rich mineral resources. The Sacramento River was significantly impacted by historical gold mining and modern gravel mining activities, which modified the river and its tributaries and resulted in substantial changes to the region’s hydrology and ecosystem (NOAA Fisheries 2022).

A desktop study was conducted to identify mines that overlap the SRSC service area using Mines Online, an “interactive web map designed with geographic information system (GIS) features that provide mine specific information as well as access to mine documents submitted to the Division of Mine Reclamation (DMR)” per PRC 2774.2.5 (California Department of Conservation 2024). The results indicate that mineral resources exist throughout the project area; however, only four of the eight counties have mines that overlap with the project area, including Shasta, Tehama, Butte, and Sacramento counties. The predominant mineral resources of these mines include sand and gravel, crushed rock, fill dirt, and Portland cement. These mineral resources are commercially extracted for use in construction and infrastructure projects. Table 21 provides an overview of mines in the four counties that overlap the project area.

Table 21
Status of Mines Overlapping the Project Area

County	Proposed	Active	Reclaimed	Idle	Closed ^a	Total Mines
Shasta	--	5	3	2	1	11 ^b
Tehama	--	--	1	--	--	1
Butte	1	--	--	--	--	1
Sacramento	--	--	3	--	--	3

Notes:

a. Closed with no intention to reopen

b. The total mine count for Shasta County includes mines that exist in the City of Redding, of which two are active and one is reclaimed.

Source: California Department of Conservation Division of Mine Reclamation 2024

Other mineral resources that may occur in the project area include clay, peat, topsoil, lignite, natural gas and petroleum, volcanic cinders, limestone, gold, and silver.

3.12.2 *Applicable Regulations*

3.12.2.1 **State**

In 1975, the California Surface Mining and Reclamation Act (SMARA) was enacted to regulate surface mining operations, ensuring that environmental impacts are minimized and mined lands are reclaimed to a useable condition. SMARA requires that the State Geologist classify land into mineral resource zones (MRZs) according to the known or inferred mineral potential of the land. MRZs delineated by the California Department of Mines and Geology (CDMG) identify the presence and significance of mineral deposits within the project area. In general, areas subject to pressures of urbanization are zoned by the CDMG, while those areas outside these areas are not. MRZ categories defined by the CDMG include the following:

- **MRZ-1:** Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- **MRZ-2:** Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- **MRZ-3:** Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- **MRZ-4:** Areas where available information is inadequate for assignment to any other.
- **MRZ-SZ:** Areas containing unique or rare occurrence of rocks, minerals, or fossils that are of outstanding scientific significance.

Capitalizing on the results of first desktop study (for overlapping mines), a second desktop study was conducted to identify MRZs that overlap the project area using the following resources:

- Special Report 245, Mineral Land Classification: Concrete Aggregate in the Greater Sacramento Area Production-Consumption Region (O'Neal and Gius 2018)
- Open File Report 97-02, Mineral Land Classification of Concrete-Grade Aggregate Resources in Glenn County, California (Shumway 1997)
- Open File Report 2000-18, Mineral Land Classification of Concrete-Grade Aggregate Resources in Tehama County, California (Foster 2003)
- Open File Report 97-03, Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite within Shasta County, California (Dupras 1997)

Table 22 provides the results of the study to identify MRZs that overlap the project area. No MRZ-SZ mineral resources were identified as occurring in the project area.

Table 22
MRZs in Project Area by Acre and Category

County	Acreage in MRZ Categories (Rounded)*			
	MRZ-1	MRZ-2	MRZ-3	MRZ-4
Butte	0.06	--	43.3	1.9
Colusa	--	--	10.6	0.4
Glenn	3.7	25.2	7,904.4	28.4
Sacramento	2,032.5	--	102.8	47.5
Shasta	--	1091.3	590.5	94.3
Sutter	8,897.9	--	133.5	630.5
Tehama	--	337.0	379.7	75.8
Yolo	6334.7	--	130.9	499.4

Portions of the project area would occur within the City of Redding. The City of Redding includes areas identified as MRZ-2a, MRZ-2b, and MRZ-3. The MRZ-2a and MRZ-2b classifications indicate that mineral-extraction activities are considered feasible. These areas are in the southern portion of the city in the Clear Creek community (CGS 1997; Redding 2024).

3.12.2.2 Regional and Local

Applicable policies or actions pertaining to mineral resources from regional and local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.12.2.2.1 Glenn County General Plan

The following local policy pertaining to mineral resources is included in the Conservation and Sustainability Element of the *Glenn County General Plan Update* (Glenn County 2023):

- **Policy COS 7-2:** Conserve mineral resources identified by the State to be of regional or statewide significance for mineral resource extraction.

3.12.2.2.2 Butte County General Plan

The following local policies pertaining to mineral resources are included in the Conservation and Open Space Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy COS-P13.2:** Mineral resources identified by the State to be of regional or statewide significance for mineral resource extraction shall be conserved.
- **Policy COS-P13.3:** Permitted uses on lands containing and adjacent to important mineral resources shall be restricted to those compatible with mineral extraction, except in cases where such uses offer public benefits that outweigh those of resource extraction.

3.12.2.2.3 *Colusa County General Plan*

The following local policy pertaining to mineral resources is included in the *Colusa County General Plan* (Colusa County 2012):

- **Policy CON 2-24:** Conserve mineral resources identified by the State to be of regional or statewide significance for mineral resource extraction.

3.12.2.2.4 *Yolo County General Plan*

The following local policies pertaining to mineral resources are included in the Conservation and Open Space Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy CO-3.1:** Encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including recreation, water, wildlife, agriculture, aesthetics, flood control, and other environmental factors.
- **Policy CO 3.2:** Ensure that mineral extraction and reclamation operations are compatible with land uses both on-site and within the surrounding area, and are performed in a manner that does not adversely affect the environment.

3.12.3 *Environmental Impacts and Mitigation Measures*

3.12.3.1 **Baseline**

At the time of publication of the NOP, the areas where the proposed project would occur are mostly used for agriculture with water infrastructure and conveyance to supply irrigation water. Other smaller areas of the project areas are utilized for unincorporated, open space, commercial, business and industrial, natural and recreational, resource conservation, forest, floodways, urban and rural development, and residential uses. Mines and MRZs that occur in the project area are sited away from the existing agricultural uses.

3.12.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to mineral resources. The proposed project would have an impact if the following apply:

- **MIN-1:** The project would result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state.
- **MIN-2:** The project would result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

3.12.3.3 **Methodology for Determining Impacts**

The analysis for mineral resources is based on a desktop of state and local resources depicting the location and quality of known mineral resources within the SRSC service area.

3.12.3.4 Impact Analysis

3.12.3.4.1 MIN-1: *Would the project result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?*

Water Reduction Activities

Water reduction activities would involve no construction. The activities would occur in areas that are zoned as and used for agricultural activities. Therefore, there would be no potential for effect on mineral resources.

Drought-Resiliency Projects

The proposed project would largely occur in areas that are zoned as and used for agricultural activities. While there are active mines and MRZs that overlap the project area, drought-resiliency projects would avoid mines and it is unlikely that drought-resiliency projects would be sited to occur in MRZs. Even if a drought-resiliency project overlapped with a mapped MRZ, the mineral resource would not be lost as a result of the drought-resiliency project because no mineral extraction activities would occur.

Impact Determination: The proposed project would not result in a loss of availability of a known mineral resource. Impacts would be considered less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, implementation of the following mitigation measure would further reduce the potential for impacts:

- **MM-MIN-1:** Avoid Siting Drought-Resiliency Projects in Mineral Resource Zones
 - Site drought-resiliency projects away from areas mapped as MRZ to the extent practicable.

Residual Impact: Implementation of MM-MIN-1 would minimize the potential for the proposed project to overlap with any mapped MRZs. Impacts would remain less than significant.

3.12.3.4.2 MIN-2: *Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

No important mineral recovery sites are delineated on a local general plan, specific plan, or other land use plan in the project area.

Impact Determination: The proposed project would not result in a loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. There would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.13 Noise

This section describes the existing noise and vibration conditions in the project area and analyzes how the proposed project may affect noise and vibration levels. This section also describes applicable rules and regulations pertaining to noise and vibration. For the purposes of the noise and vibration analysis, the study area is defined as the project area and the surrounding area.

3.13.1 Environmental Setting

3.13.1.1 Fundamentals of Noise and Groundborne Vibration

Sound is what we hear and is defined as the energy of a vibrating object transmitted by pressure waves through a medium, such as air or water, to the human ear. Noise is most simply defined as unwanted sound. A given noise may be more or less tolerable depending on the duration exposure, as well as the time of day that the noise occurs. Sound is measured in decibels (dB) and accounts for variations such as frequency and amplitude, using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel [dBA]). The community noise equivalent level (CNEL) measures the cumulative 24-hour noise exposure, considering not only the variation of the A-weighted noise level but also the duration and the time of day of the noise. Various state and local agencies have adopted CNEL as the measure of community noise, including the State Department of Aeronautics and the California Commission on Housing and Community Development.

Groundborne vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. Vibrating objects can radiate their energy through the ground upon contact; if the object is large or close enough to an observer, ground vibrations can be perceived. As such, environmental impact analyses typically study vibration as it relates to building damage and human annoyance. However, since ground vibration generated by human activities typically attenuates rapidly from the source of vibration, human vibration issues are usually confined to short distances, such as 500 feet or less from the source (FHWA 2006). Vibration consists of rapidly fluctuating motions with an average motion of zero. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak amplitude of the vibration velocity. The accepted unit for measuring PPV in the United States is inches per second.

3.13.1.2 Project Area Setting

Existing noise in the project area can be attributed to various stationary and mobile sources, on-road light- and heavy-duty vehicle traffic, and agricultural equipment operations. Other sources that contribute to the existing noise environment include landscaping activities (e.g., leaf blowing and lawn mowing).

Noise-sensitive land uses are generally considered to be uses in which noise exposure could result in health-related risks to individuals or places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other land uses, such as

parks, historic sites, cemeteries, and other recreation areas, are also considered sensitive to increases in exterior noise levels. Schools, places of worship, hotels, libraries, nursing homes, retirement residences, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

3.13.2 Applicable Regulations

3.13.2.1 Federal

OSHA has established acceptable occupational noise exposure levels (29 CFR 1910.95). These regulations state that employees shall not be exposed to occupational noise levels greater than 90 dB without adequate hearing protection. If occupational noise levels exceed 85 dB, the employer must establish a hearing conservation program as described under 29 CFR 1910.95(c–o). For occupational noise exposure levels greater than 90 dB, the daily period of noise exposure must be decreased from 8 hours, as described under 29 CFR 1910.95(b).

The USEPA Office of Noise Abatement and Control was established to coordinate federal noise control activities and issued the Noise Control Act of 1972 (42 USC 4901 et seq.), establishing programs and guidelines to identify and address the effects of noise on public health and welfare and the environment. USEPA determined in 1981 that subjective issues such as noise would be better addressed at lower levels of government, and responsibilities for regulating noise control policies were transferred to state and local governments in 1982.

3.13.2.2 State

The State of California General Plan Guidelines, published by OPR, provide guidance for the acceptability of projects within areas that are exposed to specific noise levels. For areas zoned for industrial, manufacturing, utilities, and agricultural land uses, the normally acceptable level of community noise exposure is less than 75 CNEL with 70 to 80 CNEL considered conditionally acceptable (OPR 2017). The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

For the protection of fragile, historic, and residential structures from groundborne vibration, Caltrans recommends a threshold of 0.2 inch per second PPV for normal residential buildings and 0.08 inch per second PPV for old or historically significant structures (Caltrans 2020).

3.13.2.3 Regional and Local

Counties within the project area have developed community noise control regulations and standards which are consistent with or exceed the guidelines of the State Office of Noise Control and the standards adopted by the Federal Highway Administration (FHWA), Caltrans, and other government and regulatory agencies. State law requires general plans to use the CNEL or the day/night average

sound level (Ldn) to describe the community noise environment (in dBA) and its effects on the population. Individual county general plans establish goals, policies, and criteria for determining land use compatibility with major noise sources within the community.

Applicable policies or actions pertaining to noise from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.13.2.3.1 Shasta County General Plan

The following local policy pertaining to noise is included in the Noise Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy N-e:** Where noise mitigation measures are required to achieve the standards of Tables N-IV and N-VI, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving compliance with the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

3.13.2.3.2 Tehama County General Plan

The following local policy and measures pertaining to noise are included in the Noise Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy N-2.4:** The County shall restrict construction activities to the hours as determined in the Countywide Noise Control Ordinance, if such an Ordinance is adopted.
 - **Implementation Measure N-2.4a:** Restrict construction activities to the hours as determined by the County's Noise Control Ordinance unless an exemption is received from the County to cover special circumstances. Special circumstances may include emergency operations, short-duration construction, etc.
 - **Implementation Measure N-2.4b:** Require all internal combustion engines that are used in conjunction with construction activities be muffled according to the equipment manufacturer's requirements.

3.13.2.3.3 Glenn County General Plan

The following local policy and action pertaining to noise are included in the Noise Element of the *Glenn County General Plan Update* (Glenn County 2023):

- **Policy N 1-7:** Require construction activities to comply with best practices to reduce noise exposure to adjacent sensitive receptors (see Action N-1d).
 - **Action N-1d:** During the environmental review process, determine if proposed construction will constitute a significant impact on nearby sensitive receptors and, if necessary, require mitigation measures in addition to the standard best practice controls. Suggested best practices for control of construction noise include:
 - Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, shall be limited to between the hours

of 7:00 am and 7:00 pm. Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.

- Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.
- The construction contractor shall designate a “noise disturbance coordinator” who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.
- At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences.
- Unnecessary idling of internal combustion engines shall be prohibited for a duration of longer than five minutes.
- Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.
- Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.
- The construction contractor shall designate a “noise disturbance coordinator” who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.

3.13.2.3.4 Butte County General Plan

The following local policy pertaining to noise is included in the Health and Safety Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy HS-P1.9:** The following standard construction noise control measures shall be required at construction sites to minimize construction noise impacts:
 - Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment

- Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.
- Use quiet air compressors and other stationary noise-generating equipment where appropriate technology exists and is feasible.

3.13.2.3.5 *Sutter County General Plan*

The following local policies pertaining to noise are included in the Noise Element of the *Sutter County General Plan* (Sutter County 2011):

- **Policy N 1.6: Construction Noise.** Require discretionary projects to limit noise-generating construction activities within 1,000 feet of noise-sensitive uses (i.e., residential uses, daycares, schools, convalescent homes, and medical care facilities) to daytime hours between 7:00 A.M. and 6:00 P.M. on weekdays, 8:00 A.M. and 5:00 P.M. on Saturdays, and prohibit construction on Sundays and holidays unless permission for the latter has been applied for and granted by the County.
- **Policy N 1.7: Vibration Standards.** Require construction projects and new development anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby noise-sensitive uses based on Federal Transit Administration criteria as shown in Table 11-4 (Groundborne Vibration Impact Criteria for General Assessment).

3.13.2.3.6 *Colusa County General Plan*

The following local action pertaining to noise is included in the Noise Element of the *Colusa County General Plan* (Colusa County 2012):

- **Action N 1-K:** As part of the project review and approval process, require construction projects and new development anticipated to generate a significant amount of ground borne vibration to ensure acceptable interior vibration levels at nearby noise-sensitive uses based on Federal Transit Administration criteria.

3.13.2.3.7 *Yolo County General Plan*

The following local action pertaining to noise is included in the Health and Safety Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Action HS-A61:** Adopt a comprehensive Noise Ordinance that includes [...] Standards for construction equipment and noise-emitting construction activities; Regulations for the noise generated by events, including truck loading and unloading, operation of construction equipment, and amplified music.

3.13.2.3.8 *Sacramento County General Plan*

The following local policy pertaining to noise is included in the Noise Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2022b):

- **Policy NO-8:** Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

3.13.3 *Environmental Impacts and Mitigation Measures*

3.13.3.1 **Baseline**

Baseline noise levels in the project area reflect normal agricultural and transportation activity. The project area is comprised mostly of agricultural land uses, and farm equipment makes up the majority of noise-generating activity.

3.13.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to noise and vibration. The proposed project would have an impact if the following apply:

- **NOI-1:** The project would result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- **NOI-2:** The project would result in generation of excessive groundborne vibration or groundborne noise levels.
- **NOI-3:** 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, the project would expose people residing or working in the project area to excessive noise levels.

3.13.3.3 **Methodology for Determining Impacts**

Potential noise impacts were qualitatively and quantitatively evaluated based on the proximity of proposed project components to sensitive receptors and the existing levels of ambient noise in the areas where project activities would occur. The analysis considered the proposed project's energy use for all project phases and components, during construction and operation, as well as the proposed project's adherence to local noise ordinances.

3.13.3.4 Impact Analysis

3.13.3.4.1 NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Water Reduction Activities

Water reduction activities would not involve construction activities. In the specific case of crop idling, farm equipment usage would cease during Agreement Years for idled crops, resulting in reduced noise impacts as compared to baseline levels. Use of different farming equipment and practices associated with cropland shifting and conservation may result in minor changes in noise but generally would result in similar levels of noise as baseline levels. Groundwater pumping would make operational noise due to the use of a pump, but generally operate around 85 dB or lower and therefore would not generate significant increase in noise levels.

Drought-Resiliency Projects

Noise-generating activities would occur during construction of some drought-resiliency project components. These activities would temporarily increase ambient noise levels intermittently near the site of the construction activity. Construction-related noise levels would fluctuate depending on the level of work and the proximity of a receptor to the implementation area. While most of the activities would be located in parts of the project area which are not in the vicinity of any noise-sensitive human land uses, there may be limited situations in which construction may occur adjacent to sensitive receptors, such as improvements to canal segments adjacent to a residential area. For all project-related construction, local policies and noise ordinances specific to construction activities would be followed to minimize the disturbance to the public.

Drought-resiliency project components would not produce significant noise during operation, as none of the components involve increased use of machinery. There would be no substantial permanent increase in ambient noise levels as a result of the proposed project.

Impact Determination: Noise-generating activities would mostly occur far from sensitive receptors, and these activities would follow local noise ordinances related to construction activity. Impacts would be less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, implementation of the following mitigation measures would further reduce the potential for impacts:

- **MM-NOI-1:** Notification Requirements to Off-site Noise-sensitive Receptors for Drought-Resiliency Projects
 - Written notification of project activities would be provided to all off-site noise-sensitive receptors (e.g., residential land uses) located within 500 feet of drought-resiliency project locations. Notification would include anticipated dates and hours during which

activities are anticipated to occur and contact information of the project representative, including a daytime telephone number.

- **MM-NOI-2:** Power Equipment Use and Maintenance Requirements for Drought-Resiliency Projects
 - All powered heavy equipment and power tools will be used and maintained according to manufacturer specifications. All diesel- and gasoline-powered equipment will be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations.

Residual Impact: Implementation of MM-NOI-1 would ensure that sensitive receptors are informed of drought-resiliency project construction timing. MM-NOI-2 would ensure that equipment is used and maintained according to manufacturer specifications. Implementation of MM-NOI-1 and MM-NOI-2 would further reduce construction noise impacts and impacts would remain less than significant.

3.13.3.4.2 NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Water Reduction Activities

Water reduction activities would not involve construction activities and would therefore not generate excessive construction generated groundborne noise or vibration levels. Crop idling would reduce any low levels of groundborne vibration and noise associated with baseline farm equipment usage not in use during idled periods. Use of different farming equipment associated with cropland shifting and conservation may result in minor changes as compared to baseline levels but generally would result in similar levels of groundborne vibration and noise. Pumps used for groundwater pumping would not generate groundborne vibration and noise.

Drought-Resiliency Projects

Unless heavy construction activities are conducted extremely close (within a few feet) to neighboring structures, vibrations from construction activities rarely reach levels that damage structures. Typical vibration levels associated with construction equipment are provided in Table 23. Heavy equipment (e.g., a large bulldozer) generates vibrations levels of 0.089 inch per second PPV at a distance of 25 feet.

Table 23
Vibration Velocities for Construction Equipment

Equipment	PPV at 25 feet (inches/second)
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Backhoe	0.003
Heavy equipment (e.g., a large bulldozer)	0.089

Note:
Source: FHWA 2006

The construction vibration damage criterion for buildings and structures that are extremely susceptible to vibration damage, including historic buildings, and is 0.12 inch per second PPV. This is the strictest PPV vibration threshold established by the Federal Transit Administration (FTA). For buildings consisting of concrete wall and floor foundations, masonry or concrete walls, or stone masonry retaining walls, continuous vibrations of 0.3 inches per second PPV can be damaging. For buildings consisting of steel or reinforced concrete, such as factories, retaining walls, bridges, steel towers, open channels, underground chambers and tunnels with and without concrete alignment, continuous vibrations of 0.5 inches per second PPV can be damaging.

Construction of certain types of drought-resiliency projects may require heavy equipment consistent with Table 23. If these activities were to occur in close proximity to neighboring buildings that are extremely susceptible to vibration damage, there could be potential for excessive groundborne noise or vibration impacts to these buildings.

Impact Determination: Because construction-related vibration resulting from drought-resiliency projects could exceed FTA thresholds, impacts would be considered potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-NOI-1:** Notification Requirements to Off-site Noise-sensitive Receptors for Drought-Resiliency Projects
- **MM-NOI-2:** Power Equipment Use and Maintenance Requirements for Drought-Resiliency Projects
- **MM-NOI-3:** Heavy Equipment Must Operate at Least 25 Feet from Neighboring Structures for Drought-Resiliency Projects
 - Drought-resiliency projects involving the use of heavy equipment (such as a large bulldozer) will be sited to occur at least 25 feet from neighboring historical buildings and structures that are extremely susceptible to vibration damage.

Residual Impact: Implementation of MM-NOI-1 would ensure that sensitive receptors are informed of drought-resiliency project construction timing. MM-NOI-2 would ensure that equipment is used and maintained according to manufacturer specifications. Implementation of MM-NOI-3 would ensure heavy equipment does not cause impactful vibration impacts on neighboring structures. Impacts would be reduced to less than significant with mitigation.

3.13.3.4.3 NOI-3: 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?

Water Reduction Activities

Water reduction activities would involve no construction activities. In the specific case of crop idling, farm equipment usage would cease during Agreement Years, resulting in reduced noise impacts. Cropland shifting and conservation would not result in any changes in noise impacts. Groundwater pumping would make operational noise due to the use of a pump, but generally operate around 85 dB or lower and therefore would not generate significant increase in noise levels.

Drought-Resiliency Projects

There are 62 private airstrips and 25 public airports in the project area. Any noise associated with the proposed project would be due to construction activities resulting from implementation of the drought-resiliency projects. As discussed under Impact NOI-1, all local noise ordinances related to construction would be followed to minimize noise impacts to the public, including in the vicinity of airstrips and public airports.

Noise-generating activities would occur during construction of some drought-resiliency project components. These activities would temporarily increase ambient noise levels intermittently near the site of the construction activity. Once construction is completed, no noise-generating equipment would remain in the project area. Construction-related noise levels would fluctuate depending on the level of work and the proximity of a receptor to the construction area. While most of the project area is not in the vicinity of any noise-sensitive human land uses, there may be limited situations in which construction may occur adjacent to sensitive receptors, such as improvements to canal segments adjacent to a residential area. For all project-related construction, local policies and noise ordinances specific to construction activities would be followed to minimize the disturbance to the public.

Drought-resiliency project components would not produce significant noise during operation, as none of the components involve increased machinery or activity long-term. There would be no substantial permanent increase in ambient noise levels as a result of the proposed project.

Impact Determination: Even if a drought-resiliency project were located within the vicinity of a private airstrip or an airport land use plan, people residing or working in the project area would not be exposed to excessive noise levels. Impacts would be less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, implementation of the following mitigation measures would further reduce the potential for impacts:

- **MM-NOI-1:** Notification Requirements to Off-site Noise-sensitive Receptors for Drought-Resiliency Projects
- **MM-NOI-2:** Power Equipment Use and Maintenance Requirements for Drought-Resiliency Projects
- **MM-NOI-3:** Heavy Equipment Must Operate at Least 25 Feet from Neighboring Structures for Drought-Resiliency Projects

Residual Impact: Implementation of MM-NOI-1 would ensure that sensitive receptors are informed of drought-resiliency project construction timing. MM-NOI-2 would ensure that equipment is used and maintained according to manufacturer specifications. Implementation of MM-NOI-3 would ensure heavy equipment does not cause impactful vibration impacts on neighboring structures. Impacts would remain less than significant.

3.14 Population and Housing

This section describes existing population and housing conditions in the project area and analyzes how the proposed project may affect those resources. It also discusses the proposed project's consistency with applicable state and local regulatory documents and policies. For the purposes of this analysis, the study area is defined as the project area as presented on Figure 1.

3.14.1 *Environmental Setting*

The Central Valley is one of the fastest growing regions in the state. The proposed project is located in the northern part of the valley, where total population is expected to gain 500,000 people by 2060 (California Department of Finance 2023). The project area occurs in Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento counties and cities within the project area include Redding, Anderson, Williams, Woodland and Davis with residential communities (Figure 1).

Based on a review of the general plans prepared for the project area counties, agriculture and education are the significant employment sectors. While some of these counties hope to diversify their economies and attract new residents via expanded housing, infrastructure, and recreation services, other counties are just as determined to preserve a longstanding agricultural heritage and protect the environment for generations to come.

The following list provides information about each county, in order from most populous to least based on 2020 census data (California Department of Finance 2021), general plans, or other resources:

- Currently, the eighth largest county in the state, Sacramento County is expected to lead population growth in the region, expanding to 1.84 million people by 2060 (California Department of Finance 2024; Sacramento County 2024). As of the 2020 census, it is also the

most populous county in the project area with 1,585,055 residents and an average population density of 1,642 people per square mile. Its residents are likely to work in government services (as it houses the state capital at Sacramento), healthcare, and education (two state universities). As with smaller counties in the project area, it too has a large agricultural sector.

- Yolo County has a population of 216,403 and an average population density of 213 people per square mile. Its residents are largely employed in agriculture, education (University of California, Davis), and biotechnology.
- Butte County has a population of 211,632 and an average population density of 129 people per square mile. Its residents are largely employed in education via the university in its largest city, Chico, or healthcare. The County population and households declined due in most part to the 2018 Camp Fire followed by the 2020 North Complex Fire, which destroyed nearly 14,000 homes and 2,455 structures, respectively (Butte County 2023).
- Sutter County is home to 99,633 people with an average population density of 165 people per square mile across. Much of its population works in agriculture, food processing, and government services.
- Shasta County has a population of 182,155 and an average population density of 48 people per square mile. Its residents largely work in healthcare, retail, and education.
- Tehama County is home to 65,829 people with an average population density of 22 people per square mile. Agriculture, manufacturing, and forestry are the predominate economic drivers of this land-rich county.
- Glenn County has a population of 28,917 people with an average population density of 22 people per square mile. The majority of its population resides in the cities of Orland or Willows and its residents primarily work in either agriculture or private sector jobs.
- Colusa County has the smallest population, with 21,839 residents and an average population density of just 19 people per square mile. Most jobs are in agriculture, food processing, and energy products.

As indicated in the aforementioned list, the population mostly resides in or near the urban areas of the region, with seasonal workers increasing the number for temporary agricultural employment.

3.14.2 Applicable Regulations

The Housing Element is one of nine State-required components of every city and county General Plan in California. Unlike the other elements, the Housing Element must be updated on an 8-year schedule and be approved by the State's Department of Housing and Community Development. The housing element describes how the jurisdiction plans to accommodate forecasted population growth, requisite housing needs, public service demands, and environmental protection. The applicable general plans for the project area typically support higher-density infill development and build out of existing developed areas with a commitment to preserve agricultural land and their economic importance through policies such as "discourage agricultural land conversion demands" (Land Use Element Goal LU-1) (Tehama County 2009). Butte and Tehama counties both require a

300-foot buffer or set back between lands zoned for agriculture and potential new residential developments (while allowing for discretionary approval per existing Williamson Act contracts). According to Policy AG-4 in the Agricultural Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2019), “Prospective buyers of property adjacent to agricultural land shall be notified through the title report that they could be subject to inconvenience or discomfort resulting from accepted farming activities as per provisions of the County’s right-to-farm ordinance.” While there are other policies and actions pertaining to population and housing from the relevant regional and local plans in the project area, including in the general plans for the counties of Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento, there are no policies that specifically relate to the proposed project.

3.14.3 Environmental Impacts and Mitigation Measures

3.14.3.1 Baseline

At the time of publication of the NOP, agricultural activities occur near residences and areas that are mostly zoned and used for agriculture and related facilities. The general plans for counties and cities within the project area outline zoning regulations that dictate where residential, agricultural, commercial, and industrial developments may occur. In addition, they often mandate buffer zones between for agricultural land zones and residential areas to minimize conflicts, such as a few feet to several hundred feet depending on local regulations.

3.14.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to population and housing. The proposed project would have an impact if the following apply:

- **POP-1:** The project would induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
- **POP-2:** The project would displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.

3.14.3.3 Methodology for Determining Impacts

Potential impacts on population and housing were qualitatively evaluated based on the known population and housing trends in the SRSC service area. This information was gathered from a desktop review of the county general plans in the SRSC service area. The analysis considered whether proposed project activities would induce population growth or displace people or housing.

3.14.3.4 Impact Analysis

3.14.3.4.1 POP-1: *Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

The proposed project does not include elements that would induce population growth either directly or indirectly, and no new homes or businesses are proposed as part of the proposed project. Crop idling may temporarily reduce the number of jobs in the project area, particularly temporary seasonal agricultural jobs, but other water reduction activities are not expected to affect jobs. Although construction of drought-resiliency projects may result in small numbers of temporary construction workers, it would not result in long-term population growth in the project area because construction would be short-term in nature and workers would be expected to be drawn from the local population.

Impact Determination: The proposed project would not induce population growth. There would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.14.3.4.2 POP-2: *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

The proposed project does not include elements that would impact existing housing, displace residents, or necessitate the construction of replacement housing elsewhere. As noted above, crop idling may temporarily reduce the number of jobs in the project area, particularly temporary seasonal agricultural work. However, such job shifts would be restricted to Agreement Years, be temporary in nature, and would not affect substantial amount of people.

Impact Determination: The proposed project would not displace any people or housing. There would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.15 Public Services

This section describes existing public services, including: 1) fire protection; 2) police protection; 3) schools; 4) parks; or 5) other public facilities, such as hospitals and libraries in the project area and analyzes how the proposed project may affect those services. It also discusses the proposed project's consistency with applicable state and local regulatory plans and policies. For the purposes of this analysis, the study area is defined as the project area as presented on Figure 1.

3.15.1 Environmental Setting

Fire protection within the project area is provided through a collaborative effort from local fire departments, statewide efforts, federal entities, and private companies. Police protection within the project area operates in a similar manner to fire departments, as branches representing municipal, state, federal, and private entities all collaborate to provide police coverage within the project area. The Valley Division of the California Highway Patrol (CHP) is the most prominent state entity within the project area, as its jurisdictional boundaries encompass a significant portion of this area.

There are 145 distinct school districts within the project area, with a combined student population of approximately 550,000 students as of the 2022 to 2023 school year. 73 districts reside in “rural” areas, 36 districts reside in “town” areas, 24 districts reside in “suburban” areas, and 12 districts reside in “city” areas. The project area has an abundance of public parks, which are managed at the municipal, county, state, and federal levels. There are many hospitals and medical facilities within the project area, including larger facilities such as the UC Davis Medical Center, the Sutter Medical Center, the Woodland Memorial Hospital, the Colusa Medical Center, and the Mercy Medical Center. There are eight major libraries within the project area.

3.15.2 Applicable Regulations

3.15.2.1 State

3.15.2.1.1 Title 24 of the California Code of Regulations

California Building Code (CBC) Title 24, contains the design standards that govern the construction of buildings in California to “safeguard life or limb, health, property, and public welfare by regulation and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures and certain equipment.” The 2022 Edition of the CBC contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. Part 2 of the CBC outlines building design and construction requirements relating to fire, life safety, and structural safety.

3.15.2.1.2 California Fire Code

The California Fire Code includes regulations for emergency planning, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Fire safety requirements include building materials and particular types of construction, and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildlife hazard areas.

3.15.2.2 Regional and Local

There are no applicable policies or actions regarding public services that pertain to the proposed project in regional or local plans, including in the general plans for the counties of Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento.

3.15.3 Environmental Impacts and Mitigation Measures

3.15.3.1 Baseline

At the time of publication of the NOP for the proposed project, the areas where the proposed project would occur are primarily used for agriculture and related facilities, with some rural town, suburban, and city areas. The area contains public services that are managed at private, municipal, county, state, and federal levels.

3.15.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to public services. The proposed project would have an impact if the following apply:

- **PUB-1:** The project would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: 1) fire protection; 2) police protection; 3) schools; 4) parks; or 5) other public facilities.

3.15.3.3 Methodology for Determining Impacts

Potential impacts on public services were qualitatively evaluated based on a desktop review of the known public services in the project area. The analysis considered whether proposed project activities would impact the performance objectives for fire protection, police protection, schools, parks, or other public facilities.

3.15.3.4 Impact Analysis

3.15.3.4.1 PUB-1: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: fire protection, police protection, schools, parks, or other public facilities?

Water Reduction Activities

Water reduction activities would have a minimal impact on public services within the project area. As discussed under Impact HAZ-7, the proposed water reduction activities would occur in Agreement Years, which are defined as years where water is already scarce and the potential for wildland fires is already higher than in non-Agreement Years. CAL FIRE's FHSZs maps include portions of the project area, as discussed in Section 3.20, Wildfire. Portions of the project area are located within zones that present a

"Very High" fire hazard severity risk (CAL FIRE 2024b), mostly within the mountainous parts of the project area. The majority of the project area is located in valley areas that are within locally responsible areas, while small portions are located in state and federal responsible areas (CAL FIRE 2024c).

Even if the potential for wildland fire in Agreement Years would be higher than non-Agreement Years, given that most of the project area is outside a "Very High" or "High" FHSZ, and given that there are multiple methods that are used in suppressing wildfires, including fire retardants and suppressants and containment lines, implementation of water reduction activities would not substantially impair the ability to fight wildland fires nor would substantially impact fire protection service ratios, response times, or other performance objectives. Water reduction activities would not impact other public services, including police protection, schools, parks, hospitals, and libraries.

Drought-Resiliency Projects

Construction of the drought-resiliency projects would not affect service ratios, because no new housing would be constructed, or daily operations of schools, parks, and other public facilities since construction would not occur in or immediately adjacent to those areas. There could be increased potential for accidental on-site fires from the use of flammable construction materials and operation of construction equipment. Increased potential for on-site fires could put increased pressure on fire protection services. Once constructed, equipment and construction materials would no longer be onsite. Therefore, operation of the drought-resiliency projects would have minimal impact on public services within the project area, including fire and police protection, and daily operations of schools, parks, and other public facilities.

Impact Determination: Due to its location outside of an area designated as a Very High or High FHSV, implementation of water reduction activities would not substantially impair the ability to fight wildland fires nor would substantially impact fire protection service ratios, response times, or other performance objectives. Drought-resiliency projects could result in increased fire protection services demand during construction. There could be increased potential for on-site fires from the use of flammable construction materials and operation of construction equipment. This would be considered a potentially significant impact.

Mitigation Measures: The following mitigation measure would be implemented to reduce potential impacts:

- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Residual Impact: Implementation of MM-HYD-1 would ensure the construction contractor carefully stores flammable materials in appropriate containers and immediately and completely clean up spills of flammable materials when they occur. In addition, construction managers and personnel would be trained in spill prevention, hazardous material control, and cleanup of accidental spills. Impacts would be reduced to less than significant with mitigation.

3.16 Recreation

This section describes the existing recreation resources in the project area and surrounding area and analyzes how the proposed project may affect recreation. This section also describes applicable rules and regulations pertaining to recreation resources. For the purposes of the recreation analysis, the study area is defined as the project area as shown in Figure 1.

3.16.1 *Environmental Setting*

There are a variety of public and private recreational resources located throughout the region, such as parks, campsites, trails, wildlife areas, and nature preserves. Within the Sacramento Valley, there are 17 state parks (California State Parks 2009). Of these, only the Woodland Opera House State Historic Park is located within the project area (California State Parks 2024).

Other major recreational resources are related to the major rivers, lakes, and streams that flow throughout the Central Valley. The Sacramento and American rivers provide many recreational opportunities, such as shoreline trails, and aquatic recreation, such as boating, rafting, and fishing. The Sacramento River is located within the project area, while the nearest segment of the American River is located approximately 2 miles from the project area. Shasta Lake is also an important recreational resource that is used for a variety of activities such as boating, swimming, fishing, hiking, and hunting (Recreation.gov 2024). There are no designated Wild and Scenic Rivers in the project area.

The Sacramento River National Wildlife Refuge Complex is in Glenn and Colusa counties and consists of 10,819 acres of wetlands, grasslands, and riparian habitats. The Complex provides many recreational opportunities and has historically been a popular hunting and fishing site for species including deer, waterfowl, and anadromous fish (CDFG 2004; USFWS 2024). Portions of the refuge are located adjacent to the project area.

3.16.2 *Applicable Regulations*

3.16.2.1 **Regional and Local**

Applicable policies or actions pertaining to recreation from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.16.2.1.1 *Shasta County General Plan*

The following local policies pertaining to recreation are included in the Open Space and Recreation Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy OSR-1:** Protection of the open space and recreation resources of Shasta County for the use and enjoyment by County residents both now and in the future.
- **Policy OSR-2:** Provision of public access to open space and recreation resources consistent with the need to protect these resources and the rights of private property owners.

3.16.2.1.2 Tehama County General Plan

The following local policy pertaining to recreation is included in the Economic Development and Open Space elements of the *Tehama County General Plan* (Tehama County 2009):

- **Policy ED-7.1:** The County shall continue to preserve Tehama County's natural resources including: agriculture, timberlands, agriculture, timberlands, water and water quality, wildlife resources, minerals, natural resource lands, recreation lands, scenic highways, and historic and archaeological resources. The protection of natural resources is of the utmost importance and promoting business expansion, retention, and recruitment should compliment and enhance the natural resources while reducing negative impacts.
- **Policy OS-9.1:** The County shall strive for the protection and enhancement of resource lands for the continued benefit of agriculture, timber, grazing, recreation, waterfowl, wildlife habitat, watersheds, and quality of life.
- **Policy OS-9.4:** The County shall actively promote outdoor recreation opportunities such as agri-tourism, nature-tourism, and environmental learning tourism.

3.16.2.1.3 Glenn County General Plan

There following local policies and action pertaining to recreation are included in the Agricultural and Conservation and Sustainability elements of the *Glenn County General Plan* (Glenn County 2023):

- **Policy AG 3-3:** Low-intensity recreational uses may be permitted on agricultural lands as long as they do not interfere with the principal use of land for agricultural purposes. Examples include hunting, fishing, horseback riding, hiking, agritourism, and exhibitions of working farms or ranches.
- **Policy AG 4-1:** Recognize the value of agricultural lands for countywide biodiversity, soil health, waterfowl habitat, recreation, watershed management, fire abatement, and for groundwater recharge.
- **Policy COS 1-1:** Preserve open space for conservation, agricultural, and recreation uses, consistent with the Land Use Element and the Land Use Map.
- **Policy COS 3-1:** Preserve natural riparian habitats throughout the planning area, and specifically along Stony Creek, the Sacramento River, and Butte Creek.
- **Policy COS 3-2:** Recognize that retention of natural areas is important to maintaining adequate populations of wildlife that support recreation and hunting, open space, economic and environmental objectives.
- **Action COS-6g:** Coordinate with the California Department of Fish and Wildlife to identify adversely impacted aquatic habitat within the County and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to rivers, lakes, reservoirs, and streams.
- **Policy SA 2-5:** Encourage and accommodate multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and

scenic values of drainages, creeks, and detention ponds. Where appropriate and feasible, encourage the use of water detention facilities for use as groundwater recharge facilities.

3.16.2.1.4 Yolo County General Plan

The following policies pertaining to recreation are included in the Conservation and Open Space Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy CO-1.8:** Encourage responsible stewardship of private lands. Promote increased opportunities for public access to waterways and natural areas.
- **Policy CO-1.26:** Support improved access for bank fishing.
- **Policy CO-1.28:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.

3.16.3 Environmental Impacts and Mitigation Measures

3.16.3.1 Baseline

At the time of publication of the NOP for the proposed project, the recreational resources described in Section 3.16.1 exist in the project area. These areas do not overlap with agricultural areas operated by the SRSC.

3.16.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to recreation. The proposed project would have an impact if the following apply:

- **REC-1:** The project would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- **REC-2:** The project would include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

3.16.3.3 Methodology for Determining Impacts

Potential impacts on recreation were qualitatively evaluated based on a desktop review of the known recreational resources in the SRSC service area. The analysis considered whether proposed project activities would impact existing recreational resources or include the construction or expansion of recreational facilities.

3.16.3.4 Impact Analysis

3.16.3.4.1 REC-1: Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Water Reduction Activities

Water reduction activities would not induce population growth either directly or indirectly. Conserving water in Shasta Lake during Agreement Years would help to maintain the aesthetic and recreational value of the lake, thereby encouraging recreational users to enjoy the lake during these years. However, there would not be expected to be increases in visitors during Agreement Years as compared to non-Agreement Years.

Drought-Resiliency Projects

The drought-resiliency projects would not induce population growth either directly or indirectly and would not overlap with existing recreational facilities or parks. No changes to existing usage of recreational facilities would occur as a result of the drought-resiliency projects.

Impact Determination: The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities. There would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.16.3.4.2 REC-2: Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

As discussed in under Impact REC-1, the proposed project does not include new recreational facilities nor require the construction or expansion of recreational facilities.

Impact Determination: There would be no impact to recreational facilities.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.17 Transportation

This section describes the existing transportation resources in the project area surrounding the project area and analyzes how the proposed project may affect transportation. This section also describes applicable rules and regulations pertaining to transportation resources. For the purposes of the transportation analysis, the study area is defined as the project area including roadways. Public transportation, bicycle use, and pedestrian access to the site are also discussed in this section.

3.17.1 Environmental Setting

This section discusses the transportation-related context in which the proposed project would be constructed and operate, including the network that serves the area and existing transit service, bicycle, and pedestrian facilities near the project area.

3.17.1.1 Regional and Local Roadway Network

The project area is located along the Sacramento River and is generally accessible to public vehicles via numerous public roads. Interstate 5 (I-5) runs along the western side of the project area from the northern edge at Shasta Lake to the southern edge at Sacramento. Interstate 80 (I-80) runs along the southern edge of the project area. State Route (SR) 45 runs north-south along the center the project area from Knights Landing in Yolo County to Hamilton City in Glenn County. SR 45 runs coincident with two other State Routes inside the project area. SR 162 enters the project area from the west and intersects SR 45 at Glenn continuing south to Butte City, before diverging from SR 45 to the east. In a similar fashion, SR 20 enters the project area from the west, intersecting SR 45 at Colusa, and runs south for 5.5 miles before diverging from SR 45 to the east. The northern end of SR 45 is crossed by SR 32, which runs east-west across the project area from I-5 to the west, crossing SR 99 before leaving the Sacramento Valley. SR 99 runs along the northeastern edge of the Valley, continuing north-south alongside and SR 70 through the project area to the southern edge at Sacramento. The north-most section of the project area, in the area surrounding Redding, is connected to the lower areas by I-5. This area is also served by SR 273, running north-south, and SR 299 running east-west through Redding.

3.17.1.2 Rail Network

California's freight railroad system consists of Class I railroads (BNSF Railway [BNSF] and Union Pacific [UP]), which transport freight to and from the state over state lines and Class III railroads, referred to as shortline railroads, which provide local rail movements. The UP I-5 Corridor runs the length of the project area, from Sacramento in the south across Shasta Lake to the north. The proposed project does not include any rail network or grade crossing changes, additions, or modifications.

3.17.1.3 Bike and Pedestrian Facilities

Bike and pedestrian facilities are limited in the vicinity of project activities, which will be mostly limited to agricultural sites and irrigation canals. There are little to no bike lanes in these areas and many roads are private and do not include sidewalks. There are existing bike and pedestrian facilities in all cities located within the project area, but the project elements will not overlap or otherwise impact these facilities.

3.17.2 *Applicable Regulations*

3.17.2.1 **State**

3.17.2.1.1 *Caltrans*

Traffic analyses in the state of California are guided by policies and standards set at the state level by Caltrans and local jurisdictions. Caltrans policies are applicable to the proposed project and are summarized in Caltrans's *Guide for the Preparation of Traffic Impact Studies*, which provides a summary of goals and policies (Caltrans 2002). Per the Caltrans guidebook, the appropriate level of traffic analysis is determined by the nature of a project, highway conditions, and forecasted traffic. If a project meets the following criteria, this provides a starting point for determining whether a Traffic Impact Study is needed:

- The project would generate over 100 peak-hour trips assigned to a state highway facility.
- The project would generate 50 to 100 peak-hour trips assigned to a state highway facility and affected state highway facilities are experiencing noticeable delay, approaching unstable traffic flow conditions (Level of Service [LOS] C or D).
- The project would generate one to 49 peak-hour trips assigned to a state highway facility, and: 1) affected state highway facilities are experiencing significant delay with unstable or forced traffic flow conditions (LOS E or F); 2) the potential risk for a traffic incident is significantly increased (e.g., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points); or 3) the project would cause changes in local circulation networks that impact a state highway facility (e.g., direct access to state highway facility, a non-standard highway geometric design).

3.17.2.1.2 *Senate Bill 743*

SB 743, signed by Governor Brown in 2013, is intended to better align congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of GHG emissions. SB 743 has set the stage for moving away from LOS, which measures delay to motorists, to VMT as the metric to evaluate transportation network performance and land use and transportation planning decisions through CEQA. Specifically, SB 743 required OPR to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts.

In December 2018, the California Natural Resources Agency certified and adopted the CEQA Guidelines update package, including the CEQA Guidelines Section implementing SB 743. Under the updated CEQA Guidelines, the CEQA analysis must consider the amount and distance of automobile travel attributable to a project. OPR issued a Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR Technical Advisory; OPR 2018), which provides general guidance on VMT analyses in the absence of regional guidance and defines automobiles as on-road passenger vehicles, specifically cars and light trucks. Other relevant considerations may include the effects of the project

on transit and non-motorized travel. SB 743 also amended congestion management law to allow cities and counties to opt out of LOS standards within certain infill areas. Transportation impacts related to air quality, noise, and safety must still be analyzed under CEQA where appropriate (PRC 21099[b][3]). Under PRC 21099, automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment (Citizens for Positive Growth & Preservation v. City of Sacramento).

3.17.2.2 Regional and Local

3.17.2.2.1 Glenn County General Plan

The following local actions pertaining to transportation are included in the Circulation Element of the Glenn County General Plan (Glenn County 2023):

- **Action CIR-3a:** Adopt, maintain, and enforce a truck route map that identifies key good movement corridors and ensures good movement needs are adequately served while reducing impacts to other uses.
- **Action CIR-4a:** Adopt VMT thresholds and screening criteria for environmental impact analysis. Review and update those guidelines on a regular basis using updated data.

3.17.3 Environmental Impacts and Mitigation Measures

3.17.3.1 Baseline

The existing sites that would be affected by the proposed project largely consist of agricultural land and surface water canal infrastructure. These sites are accessible by public and private roadways in the study area. Baseline activities impacting the transportation system are limited to the movement of agricultural equipment and farm products.

3.17.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would result in impacts to transportation resources. The proposed project would have an impact if the following apply:

- **TRA-1:** The project would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- **TRA-2:** The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).
- **TRA-3:** The project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- **TRA-4:** The project would result in inadequate emergency access.

3.17.3.3 Methodology for Determining Impacts

Potential transportation impacts were qualitatively evaluated based on the expected number of trips required during construction and operation of the proposed project and the existing conditions within the project area. The analysis considered the proposed project's transportation needs for all project phases and components, as well as the proposed project's adherence to local transportation ordinances.

3.17.3.4 Impact Analysis

3.17.3.4.1 *TRA-1: Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*

Water Reduction Activities

With the exception of crop idling, operations of proposed project components are not expected to have any impact on transportation corridors given the small number of trips that would be expected. In the case of crop idling, the proposed project would result in a reduction in farm equipment, worker vehicle, and product transport on roadways compared to existing conditions. There would be no impact to transit, bicycle, or pedestrian facilities from implementation of the water reduction activities.

Drought-Resiliency Projects

Except for the initial movement of construction equipment to a drought-resiliency project site at the start of construction and eventual movement from the site at the end of construction, construction elements of the drought-resiliency projects would not be expected to affect roadways, public transportation, bicycle use, and pedestrian access. During construction of the drought-resiliency projects, trucks would be used to transport construction equipment to and haul construction waste from the sites. Construction workers and personnel would access the project area almost exclusively by personal vehicles. Due to the limited scale of construction and low number of construction workers associated with the drought-resiliency projects, truck and vehicle trips associated with construction mobilization and demobilization would be minimal and generally consistent with normal use of road facilities in the project area.

After construction and once operational, drought-resiliency projects may require minimal vehicle and truck trips for routine operational and maintenance activities, such as inspecting and repairing facilities. While much of the proposed project would occur in rural and agricultural areas, some drought-resiliency projects would occur in the cities of Redding, Anderson, Williams, Woodland, and Davis. While there may be transit, bicycle, or pedestrian facilities in the vicinity of proposed project components, the number of operational trips required for general maintenance activities would be minimal and generally consistent with existing conditions.

Impact Determination: Water reduction activities would not conflict with a circulation program, plan, ordinance, or policy and would not result in impacts to the circulation system. Drought-resiliency projects would generate limited construction truck or vehicle trips and operational truck trips, which may result in less-than-significant impacts to the circulation system.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.17.3.4.2 TRA-2: Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3 (b)?

CEQA Guidelines Section 15064.3(b) describes specific considerations for evaluating a project's transportation impacts and notes that VMT is the most appropriate measure of transportation impacts consistent with SB 743. As discussed in Section 3.17.2.1.2, SB 743 creates a process to change the way that transportation impacts are analyzed under CEQA and requires OPR to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts. CEQA Guidelines Section 15064.3 defines VMT as the amount and distance of automobile travel, specifically for cars and light trucks, attributable to a project (OPR Technical Advisory, p. 4. [OPR 2018]).

Consistent with this Technical Advisory, VMT impacts for the proposed project would be less than significant if any one of the identified screening criteria outlined below are met:

1. **Small Projects:** The proposed project generates fewer than 110 vehicle trips per day.
2. **Low-VMT Areas:** The proposed project meets map-based screening criteria by being located in an area that exhibits below threshold VMT, or 15% or more below the regional average.
3. **Major Transit Stop:** The proposed project is located in a Transit Priority Area or within 0.5 mile of a major transit stop⁷ or high-quality transit corridor⁸ and satisfies all of the following:
 - a. Has a Floor Area Ratio of greater than 0.75
 - b. Does not include more parking for use by residents, customers, or employees than other typical nearby uses, or more than required by the City
 - c. Is consistent with the applicable Sustainable Communities Strategy (as determined by the lead agency)
 - d. Does not replace affordable residential units with a smaller number of moderate- or high-income residential units
4. **Affordable Residential Development:** The proposed project must be 100% affordable residential development in an infill location.

⁷ CEQA Guidelines Section 21064.3 defines a "major transit stop" as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during morning and afternoon peak commute times.

⁸ CEQA Guidelines Section 21155(b) defines a "high quality transit corridor" as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

There would be no vehicle trips generated by water reduction activities. Based on similar construction projects in the area, construction activities resulting from the drought-resiliency projects would generate as many as 30 trips per day for equipment mobilization, material delivery, and worker commuting. Once operational, there would be expected to be minor increases in truck or vehicle trips for maintenance of the new facilities (specifically new automated gates), but only minor increases (10 to 20 trips per day) from baseline conditions would be expected. Based on this, the proposed project meets the criteria for Small Projects. Therefore, a VMT analysis is not required.

Impact Determination: Because there would be no vehicle trips generated by water reduction activities and construction and operation of the drought-resiliency projects would require a minimal number of trips per day, the impact is determined to be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.17.3.4.3 TRA-3: Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

There would be no changes to transportation infrastructure, and therefore no impact from geometric design features would result from the proposed project. The proposed project does not involve any components which would increase the amount of farm equipment on public roadways, so incompatible uses would not occur.

Impact Determination: The proposed project would not increase hazards due to geometric design features; therefore, there would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.17.3.4.4 TRA-4: Would the project result in inadequate emergency access?

The proposed project would not increase the need for emergency services or block any emergency access routes.

Impact Determination: There would be no impact related to inadequate emergency access.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.18 Tribal Cultural Resources

This section describes existing Tribal cultural resources within the project area and analyzes how the proposed project may affect those resources. It also describes applicable rules and regulations pertaining to Tribal cultural resources that could affect the proposed project. For the purposes of this

analysis, the study area is defined as the project area as presented on Figure 1. Tribal cultural resources are defined in PRC 21074 as follows:

- 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 CRHR, or in a local register of historical resources as defined in PRC 5020.1(k); or
- A resource determined by the lead agency to be significant pursuant, after considering the significance of the resource to a California Native American Tribe.

3.18.1 Environmental Setting

As noted in Section 3.5.1, prior to the introduction of smallpox and other diseases by non-native settlers, the project area was home to one of the densest populations of hunter gatherers (Erlandson 1997). Despite climate variations that led to very low populations elsewhere, the people within the Sacramento Valley were supported by a diversity of aquatic and terrestrial resources, seasonal variation in resources, and navigation along the water courses. The broader Central Valley and Sierra foothills were home to an estimated 100,000 people in the early 19th century. Groups speaking Maiduan (Konkow and Nisenan dialects), Wintuan (Patwin, Nomlaki, and Wintu dialects), Hokan (Yana dialect) languages were present within and near the project area (Shipley 1978; UC Berkeley 2024). Generally, individuals were organized around familial groups which would congregate in winter to share food surpluses. Smaller families were responsible for oak stands and collecting seasonal resources. A variety of terrestrial, aquatic, and avian species were important food resources (Lightfoot et al. 2009). The high population and deep history of Native American settlement in the project area may correlate to an expected high frequency of traditional Tribal cultural resources.

Pursuant to CEQA's tribal consultation requirements, commonly known as AB 52, and in accordance with criteria set forth in Public Resources Code section 21080.3.1, GCID provided formal notification of its decision to undertake the project to the Colusa Indian Community Council – Cachil Dehe Band of Wintun Indians on May 24, 2024. To date, GCID has not received a response from the Colusa Indian Community Council – Cachil Dehe Band of Wintun Indians.

3.18.2 Applicable Regulations

3.18.2.1 State

3.18.2.1.1 Assembly Bill 52

AB 52, enacted in 2016, establishes a formal role for California Native American Tribes in the CEQA process and promotes the involvement of California Native American Tribes in the decision-making process when it comes to identifying and developing mitigation for impacts to resources of importance to their culture. AB 52 requires consideration of Tribal cultural resources, which are defined as a property, landscape, or object which is of cultural value to a Tribe and is eligible for the

CRHR or a local historic register (or is determined by the lead agency to be a Tribal cultural resource). Under the updated guidelines, Tribes requesting consultation under AB 52 must be notified of a project when it is initiated, and can request consultation within 30 days, after which the lead agency must begin consultation within 30 days of the request.

3.18.2.2 Regional and Local

Many regional policies apply to both cultural resources and Tribal cultural resources. In instances where there is overlap, policies applicable to cultural resources may be reiterated. The regional and local policies in the following subsections are specific to Tribal cultural resources. Policies/actions noted in these subsections are direct quotes.

3.18.2.2.1 *Shasta County General Plan*

The following local policy pertaining to Tribal cultural resources is included in the Heritage Resources Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy 6.10.4 HER-a:** Development projects in areas of known heritage value shall be designed to minimize degradation of these resources. Where conflicts are unavoidable, mitigation measures which reduce such impacts shall be implemented. Possible mitigation measures may include clustering, buffer or nondisturbance zones, and building siting requirements.

3.18.2.2.2 *Tehama County General Plan*

The following local policies and measures pertaining to Tribal cultural resources are included in the Open Space and Conservation Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy OS-10.1:** The County should protect and preserve significant archaeological and cultural resources.
- **Policy OS-10.4:** The County shall encourage and support inter-agency cooperation to protect historic, archaeological, and cultural resources.

3.18.2.2.3 *Glenn County General Plan*

The following local policy and actions pertaining to Tribal cultural resources are included in the Conservation and Sustainability Element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy COS 2-3:** Work with Native American representatives to identify and appropriately address, through avoidance or mitigation, impacts to Native American cultural resources and sacred sites during the development review process consistent with State and Federal requirements.
- **Action COS-2a:** Require a cultural and archaeological survey prior to approval of any project which would require excavation in an area that is sensitive for archaeological or cultural resources. If significant cultural or historical resources, including historic and prehistoric

resources, are identified, appropriate measures shall be implemented, such as documentation and conservation, to reduce adverse impacts to the resource.

- **Action COS-2b:** Require all development, infrastructure, and other ground-disturbing projects to comply with the following conditions in the event of an inadvertent discovery of cultural resources or human remains:
 - a. If construction or grading activities result in the discovery of significant historic or prehistoric archaeological artifacts or unique paleontological resources, all work within 100 feet of the discovery shall cease, the County Planning and Community Development Services Agency shall be notified, the resources shall be examined by a qualified archaeologist, paleontologist, or historian for appropriate protection and preservation measures; and work may only resume when appropriate protections are in place and have been approved by the County Planning and Community Development Services Agency.
 - b. If human remains are discovered during any ground disturbing activity, work shall stop until the County Sheriff and Coroner and County Planning and Community Development Services Agency have been contacted; if the human remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) and the most likely descendants have been consulted; and work may only resume when appropriate measures have been taken and approved by the County Planning and Community Development Services Agency.

3.18.2.2.4 Butte County General Plan

The following local policies pertaining to Tribal cultural resources are included in the Conservation and Open Space Element of the *Butte County General Plan 2040* (Butte County 2023):

- **COS-P17.4** Impacts to the traditional Native American landscape shall be considered during California Environmental Quality Act or National Environmental Protection Act review of development proposals.
- **COS-P17.5** Human remains discovered during implementation of public and private development projects shall be treated with dignity and respect. Such treatment shall fully comply with the federal Native American Graves Protection and Repatriation Act and other appropriate laws.
- **COS-P17.6** If human remains are located during any ground disturbing activity, work shall stop until the County Coroner has been contacted, and, if the human remains are determined to be of Native American origin, the NAHC and most likely descendant have been consulted.
- **COS-P17.7** Consistent with State local and tribal intergovernmental consultation requirements such as SB18 and AB52, the County shall consult with Native American tribes that may be interested in proposed new development projects and land use policy changes.

3.18.2.2.5 *Sutter County General Plan*

The following local policies pertaining to Tribal cultural resources are included in the Environmental Resources Element of the *Sutter County General Plan* (Sutter County 2011):

- **Policy ER 8.2: Preservation.** Ensure the preservation of significant cultural and paleontological resources, including those recognized at the national, state, and local levels.
- **Policy ER 8.5: Consultation.** Consult with the appropriate organizations and individuals early in the development process (e.g., Information Centers of the California Historical Resources Information System, Native American Heritage Commission, and Native American groups and individuals) to minimize potential impacts to cultural resources.

3.18.2.2.6 *Colusa County General Plan*

The following local policies pertaining to Tribal cultural resources are included in the Conservation Element of the *Colusa County General Plan* (Colusa County 2012):

- **Policy CON 3-1:** Require a cultural and archaeological survey prior to approval of any project which would require excavation in an area that is sensitive for cultural or archaeological resources. If significant cultural or archaeological resources, including historic and prehistoric resources, are identified, appropriate measures shall be implemented, such as documentation and conservation, to reduce adverse impacts to the resource.
- **Policy CON 3-2:** Require all development, infrastructure, and other ground-disturbing projects to comply with the following conditions in the event of an inadvertent discovery of cultural resources or human remains:
 - a. If construction or grading activities result in the discovery of significant historic or prehistoric archaeological artifacts or unique paleontological resources, all work within 100 feet of the discovery shall cease, the County Department of Planning and Building shall be notified, the resources shall be examined by a qualified archaeologist, paleontologist, or historian for appropriate protection and preservation measures; and work may only resume when appropriate protections are in place and have been approved by the County Department of Planning and Building.
 - b. If human remains are discovered during any ground disturbing activity, work shall stop until the County Coroner and County Department of Planning and Building have been contacted; if the human remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) and the most likely descendants have been consulted; and work may only resume when appropriate measures have been taken and approved by the County Department of Planning and Building.
- **Policy CON 3-5:** Work with Native American representatives to identify and appropriately address, through avoidance or mitigation, impacts to Native American cultural resources and sacred sites during the development review process.

- **Policy CON 3-7:** Consistent with State local and tribal intergovernmental consultation requirements such as SB18, the County shall consult with Native American tribes that may be interested in proposed new development and land use policy changes.

3.18.2.2.7 *Yolo County General Plan*

The following local policies pertaining to Tribal cultural resources are included in the Conservation and Open Space Element of the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy CO-4.12:** Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.
- **Policy CO-4.13:** Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

3.18.2.2.8 *Sacramento County General Plan*

The following local policies pertaining to Tribal cultural resources are included in the Conservation Element of the *Sacramento County General Plan of 2005-2030* (Sacramento County 2017b):

- **Policy CO-152.** Consultations with Native American tribes shall be handled with confidentiality and respect regarding sensitive cultural resources on traditional tribal lands.
- **Policy CO-153.** Refer projects with identified archeological and cultural resources to the Cultural Resources Committee to determine significance of resource and recommend appropriate means of protection and mitigation. The Committee shall coordinate with the Native American Heritage Commission in developing recommendations
- **Policy CO-155.** Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archeological significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that off site reinterment is the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.
- **Policy CO-159.** Request a Native American Statement as part of the environmental review process on development projects with identified cultural resources.

3.18.3 *Environmental Impacts and Mitigation Measures*

3.18.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, the project area mostly consists of land that has been used for agricultural operation or urban development and has previously been disturbed.

3.18.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would

result in impacts on Tribal cultural resources. The proposed project would have an impact on Tribal cultural resources if the following applies:

- **TRI-1:** The project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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 CRHR, or in a local register of historical resources as defined in PRC 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 PRC 5024.1(c).

3.18.3.3 Methodology for Determining Impacts

The CEQA Guidelines define a substantial adverse change in the significance of a Tribal cultural resource as a significant effect on the environment. A substantial adverse change to Tribal cultural resources is defined to include physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource (its eligibility for the CRHR or local preservation registers) would be materially impaired (CEQA Guidelines Section 15064.5[b][1]).

3.18.3.4 Impact Analysis

3.18.3.4.1 TRI-1: Would the project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k); or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Water Reduction Activities

Water reduction activities would involve no ground disturbance activities. Therefore, they would not affect Tribal cultural resources.

Drought-Resiliency Projects

Drought-resiliency projects would involve ground disturbance varying from construction of access routes to larger-scale project construction footprints. If present, Tribal cultural resources may be

impacted by ground disturbance associated with these projects. Significant changes to Tribal cultural resources could occur from maneuvering construction equipment or from construction activities, such as compression, trampling, rutting, mixing soils, excavating by drills or heavy machinery, and restricting access.

Construction or installation of weirs or check structures and SCADA systems have the lowest potential to encounter Tribal cultural resources; however, due to the need for access routes, potential power/communications connections, and minimal excavation, there remains potential for disturbance. New groundwater or deep aquifer wells, improvements to ditches and canals (including piping and lining), and automated gates installation have moderate potential to encounter Tribal cultural resources. Equipment and vehicle traffic on access routes, material storage within larger staging areas, utility construction, and excavation could disturb Tribal cultural resources. Similarly, improvements to irrigation systems, pipeline recirculation programs, on-farm reservoirs, and conjunctive use programs may include larger excavation areas, utility and irrigation line construction and decommissioning, and other project elements with potential to cause destruction to Tribal cultural resources.

Impact Determination: While water reduction activities do not have the potential to result in significant impacts to Tribal cultural resources, construction of the drought-resiliency projects could potentially result in substantial changes in the significance of a Tribal cultural resource. Impacts would be considered potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-CUL-1:** Conduct CHRIS Review and Desktop Evaluation for Drought-Resiliency Projects
- **MM-CUL-2:** Conduct Pre-Construction Surveys and Establish Buffers for Drought-Resiliency Projects
- **MM-CUL-3:** Develop and Implement Applicable Monitoring and Mitigation for Drought-Resiliency Project Impacts
- **MM-CUL-4:** Develop IDP to be Implemented if Prehistoric or Historical Archaeological Resources Are Encountered during Drought-Resiliency Project Construction

Residual Impact: Implementation of MM-CUL-1 would ensure that CHRIS search information for specific drought-resiliency project locations is reviewed and that qualified archaeologists evaluate the need for pre-construction field surveys. If this process reveals that an individual project area contains known sites, features, places, or cultural landscapes that are listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC 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 PRC 5024.1(c) in the project area, MM-CUL-2 would be implemented. Implementation of MM-CUL-2 would ensure that any Tribal cultural resources at specific drought-resiliency project locations are identified and flagged for avoidance.

Implementation of MM-CUL-3 would ensure that applicable monitoring and mitigation is provided for any Tribal cultural resources that cannot be avoided during construction of drought-resiliency projects. Implementation of MM-CUL-4 would ensure that any inadvertent discoveries—whether at a drought-resiliency project location that was surveyed or not—are handled in accordance with the appropriate protocols. Implementation of MM-CUL-1 through MM-CUL-4 would eliminate the potential for a significant impact to Tribal cultural resources. Impacts would be reduced to less than significant with mitigation.

3.19 Utilities and Service Systems

This section describes existing utilities and service systems in the project area and analyzes how the proposed project may affect them. Utilities and service systems include solid waste management, water supply and treatment, wastewater treatment, energy (electricity and natural gas), and telecommunications. This section also describes applicable regional regulations pertaining to utilities and service systems that could affect the proposed project. For the purposes of this analysis, the study area is defined as the eight counties in which the proposed project is located.

3.19.1 Environmental Setting

Public utilities and service systems within the project area are provided via a combination of county, city, special purpose districts, and private suppliers.

3.19.1.1 Solid Waste

Cities and counties are responsible for maintaining their own solid waste facilities, including transfer stations, disposal sites, and resource recovery facilities that receive, process, compact, and transfer solid waste to larger facilities and landfills. They may own and/or operate them, contract with each other, or contract with a private company to provide or operate these facilities.

There are multiple landfills within or adjacent to the project area and that serve the project area, including the Butte County Landfill and Neal Road Recycling and Waste Facility, the Maxwell Transfer Station, the Stonyford Landfill, the Glenn County Landfill Site, the L&D Landfill, the Kiefer Landfill, Buckeye, Old Shasta, the Yuba-Sutter Transfer Station & MRF, the Tehama County/Red Bluff Landfill, and the Yolo County Central Landfill.

3.19.1.2 Potable Water

The supply of potable water within the project area is provided by both public and private systems, along with individual wells. Water service providers obtain their water from surface water, groundwater, or a combination of these sources. A summary of water systems by county is provided in Table 24.

Table 24
Summary of Water Systems within Project Area Counties

County	Number of Water Systems within County	Total Population Served	Population Served of Largest Single System (System Name)
Butte	58	191,203	104,908 (Chico)
Colusa	10	17,112	5,963 (Colusa)
Glenn	20	20,278	7,932 (Orland)
Sacramento	77	1,530,443	508,172 (Sacramento)
Shasta	71	167,273	87,548 (Redding)
Sutter	17	87,910	73,202 (Yuba City)
Tehama	70	39,607	14,076 (Red Bluff)
Yolo	23	257,761	108,082 (West Sacramento)

3.19.1.3 Wastewater

Municipal and industrial wastewater generated in the study area is handled by sanitary sewer systems, treatment plants, and individual septic systems. Municipal and industrial wastewater is typically transported to a treatment facility, treated, and then the treated effluent is discharged into a receiving waterbody (i.e., river, stream, creek, or slough). Wastewater treatment in rural areas is provided through individual private septic systems. Below is a summary of wastewater management in each of the project's eight counties.

In Colusa County, the City of Williams Public Works Department manages wastewater collection and the City's wastewater treatment plant.

In Sacramento County, the Sacramento Regional County Sanitation District (commonly known as "Regional San") provides wastewater treatment for 1.6 million residents throughout the county and West Sacramento totaling over 386 square miles, a portion of which is located within the project area. In 2023, a \$1.7-billion expansion of the Sacramento Regional Wastewater Treatment Plant located in Elk Grove, California, was completed. Dubbed the "EchoWater Project," the tertiary treatment facility is now the second largest of its kind in the United States, representing one of the most ambitious public works projects in the history of the Sacramento region. On average, the plant, serving some of the project area, treats 135 million gallons of wastewater per day.

In Shasta County, the Public Works Department runs 11 active County Service Areas, which are mostly small water and sewer systems. Additionally, the City of Redding provides services for over 90,000 people; its wastewater infrastructure system includes two wastewater treatment plants and has a capacity to treat an average of 12.8 million gallons of wastewater per day. The City of Anderson system includes a wastewater treatment plant that treats 2 million gallons of wastewater per day.

In Sutter County, two districts are established to provide wastewater services. One district provides services to the Community of Robbins and treats an average of 10 million gallons of wastewater annually. The other district provides wastewater services for the Community of Rio Ramaza. The

wastewater ponds have a treatment capacity of 10,000 gallons per day and currently treats an average of 1,400 gallons per day.

Tehama County has a district that provides wastewater services to Mineral, covering an area of 85 acres and 197 connections. The average volume treated is 37,000 gallons per day, and the system capacity is 70,000 gallons per day.

In Yolo County, both the City of Davis and the City of Woodland have wastewater systems to serve their communities. The City of Davis wastewater system serves about 66,600 people over 10.5 square miles. Their wastewater treatment plant is permitted to release 7.5 million gallons per day and currently has a design capacity of 6 million gallons per day. The City of Woodland wastewater system serves approximately 60,700 people and has approximately 84 miles of sanitary sewer laterals. The system conveys an average of 5 million gallons per day.

3.19.1.4 Electricity and Natural Gas

Electrical and gas needs of residents within the project area are met by the PG&E. The main exception is within the City of Redding, where the Redding Electric Utility provides electrical service.

3.19.1.5 Telecommunication Facilities

Telecommunications infrastructure predominantly consists of underground fiber-optic trunk lines that connect to local switching equipment. Distribution to the individual service area units is typically facilitated by overhead lines and utility poles. Communication lines are generally aligned parallel to roadways, with crossings occurring to reach specific service locations. In some regions, cable markers indicate the presence of underground cabling along these roadways.

Multiple companies provide telephone (i.e., land lines and cellular), cable, and internet (e.g., fiber-optic cable, DSL, and fixed wireless) services in the project area, including AT&T, Spectrum, Comcast/Xfinity, and Frontier. The provision of new telecommunications services is managed on a case-by-case basis, adhering to the goals and policies outlined in local general plans concerning utility infrastructure, such as telephone and cable services.

Internet service availability has been notably constrained within the project area. However, the California Public Utilities Commission (CPUC) is implementing a program to deploy broadband fiber throughout the state, particularly in rural and underserved areas, which may include the project area (California Interactive Broadband Map 2024; CPUC 2024).

3.19.2 Applicable Regulations

3.19.2.1 State

3.19.2.1.1 California Public Utilities Commission

The CPUC regulates services and utilities and assures California's access to safe and reliable utility infrastructure and services. The CPUC regulates electricity, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies in California.

3.19.2.1.2 California Integrated Waste Management Act

The Integrated Waste Management Act of 1989 (Pub. Res. Code §40050 et seq.), as amended, required each local agency to divert 50% of all solid waste generated within the local agency's jurisdiction by January 1, 2000. This diversion requirement remains relevant as the basis for subsequent requirements summarized below. This law requires local agencies to maximize the use of all feasible source reduction, recycling, and composting options before using incineration of solid waste to produce heat or electricity or land disposal. CalRecycle was also created as a result of the Integrated Waste Management Act.

Under this act, local governments develop and implement integrated waste management programs consisting of several types of plans and policies, including local construction and demolition ordinances. The act also set into place a comprehensive statewide system of permitting, inspections, and maintenance for solid waste facilities, and authorized local jurisdictions to impose fees based on the types and amounts of waste generated.

3.19.2.2 Regional and Local

There are no applicable utilities and service systems policies or actions pertaining to the proposed project in regional or local plans, including in the general plans for the counties of Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento.

3.19.3 Environmental Impacts and Mitigation Measures

3.19.3.1 Baseline

At the time of publication of the NOP, the project area is largely used for agriculture and related facilities. As noted in Section 3.19.1, the area contains public utilities provided via a combination of county, city, special purpose districts, and private suppliers.

3.19.3.2 Thresholds

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine whether the proposed project would

result in impacts on utilities. The proposed project would have an impact on utilities and services if the following apply:

- **UTI-1:** The project would 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.
- **UTI-2:** The project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- **UTI-3:** The project would 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 project demand in addition to the provider's existing commitments.
- **UTI-4:** The project would 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.
- **UTI-5:** The project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

3.19.3.3 Methodology for Determining Impacts

Impacts to utilities were quantitatively and qualitatively evaluated based on the proposed project's projected utility usage, state and local standards, and local infrastructure.

3.19.3.4 Impact Analysis

3.19.3.4.1 *UTI-1: Would the project 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?*

Water Reduction Activities

Water reduction activities would involve no construction activities. Cropland idling, cropland shifting, and conservation activities would reduce energy used for irrigation and reduce energy used for water delivery.

Drought-Resiliency Projects

Construction of the drought-resiliency projects would require water services for activities such as dust control and compaction, but these would be supplied by importing and exporting from local sources and would not require relocation or expansion of new water and wastewater infrastructure.

Construction sites may also require utility services for power to support large equipment and smaller tools as well as construction-support facilities, such as construction trailers and temporary lighting, but power for construction would use existing power lines or portable generators. Additionally, while the State of California Government Code 4216 et seq. mandates that anyone performing excavation work

shall call 811 at least 2 working days prior to commencement of any excavation, potential conflict with existing utility infrastructure could occur if project construction crosses an existing utility line.

Certain drought-resiliency projects would require connection to electricity and telecommunications systems. Operation of new project elements, including canal automation through SCADA, automated gates installation, on-farm improvements to irrigation systems, pipeline recirculation programs, and new groundwater or deep aquifer wells, as well as possibly weirs or check structures if they are automated, would require electric power if not previously supplied, and elements such as SCADA and other automated elements would require telecommunication connections. Water conveyance would be extended such that supply from new groundwater wells would connect to existing conveyance systems. While operation of these drought-resiliency projects would require connections to utilities to function, the specific route for new connections is unknown at this time.

Impact Determination: Because the drought-resiliency projects would require utility connections and the routes cannot be determined at this time, impacts could be potentially significant.

Mitigation Measures: The following mitigation measures would be implemented to reduce potential impacts:

- **MM-AGR-1:** Site Drought-Resiliency Projects Outside of Forest Lands
- **MM-HAZ-3:** Site Drought-Resiliency Projects Away from Active Cleanup Sites
- **MM-MIN-1:** Avoid Siting Drought-Resiliency Projects in Mineral Resource Zones
- **MM-NOI-1:** Notification Requirements to Off-site Noise-sensitive Receptors for Drought-Resiliency Projects
- **MM-NOI-2:** Power Equipment Use and Maintenance Requirements
- **MM-NOI-3:** Heavy Equipment Must Operate at Least 25 Feet from Neighboring Structures for Drought-Resiliency Projects
- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-2:** Conduct Special-Status Plant Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-3:** Conduct Special-Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-4:** Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
- **MM-BIO-6:** Implement GGS Avoidance Measures for Drought-Resiliency Projects
- **MM-BIO-7:** Obtain Incidental Take Authorization for Take of Listed Species from Drought-Resiliency Project Impacts
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects

- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
- **MM-BIO-12:** Conduct Aquatic Resources Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-13:** Obtain Required Permits and Implement Wetland Mitigation for Drought-Resiliency Projects
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-UTI-1:** Notify Utility Companies of Drought-Resiliency Projects
 - Prior to construction of the drought-resiliency projects, utility companies will be contacted to determine whether the potential for utility line crossing or conflict exists. Notice of construction of the drought-resiliency projects will be provided to utility providers to request additional information on the location, if any, of private cables or utilities.
- **MM-UTI-2:** Conduct Utility Surveys and Coordinate with Utility Companies for Drought-Resiliency Projects if Needed
 - During the design phase for each of the drought-resiliency projects and if coordination with utility companies reveals the potential for utility lines to be in the project area, site specific utilities surveys will be completed to locate, understand, and avoid conflicts with existing utilities. In addition, all overhead and buried utility lines will be demarcated and avoided unless modifications are required. Modifications will be coordinated with the utility company.

Residual Impact: MM-UTI-1 and MM-UTI-2 would ensure that utility locations are known, utilities are avoided, or if avoidance is not possible, that the utility company approves of the modifications needed. MM-AGR-1 would ensure that any potential utility expansions to support drought-resiliency projects avoid forest lands. MM-HAZ-3 and MM-MIN-1 would ensure that utility expansions to support drought-resiliency projects avoid active cleanup sites and mineral resource zones. MM-NOI-1 would ensure that sensitive receptors are informed of any potential utility expansion timing for drought-resiliency projects. MM-NOI-2 would ensure that equipment is used and maintained according to manufacturer specifications when constructing utility expansions. Implementation of MM-NOI-3 would ensure that utility expansions to support drought-resiliency projects avoid impacting adjacent structures from vibration or noise impacts. MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-12 would map and flag potential special status wildlife or plant species habitats to avoid or minimize impacts on potential habitat and individuals from utility expansions to support drought-resiliency project construction. MM-BIO-4 and MM-BIO-6 would ensure that impacts to any potentially present nesting birds and GGS are respectively avoided or minimized during utility expansions to support drought-resiliency project construction. MM-BIO-5 would ensure that other types of direct and indirect impacts on potentially present special status species and habitats are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and proper agency reporting, among other measures during utility expansions to support drought-resiliency project construction. If take of

special status wildlife species is likely as part of utility expansions to support drought-resiliency projects, MM-BIO-7 requires coordinating with USFWS and CDFW and obtaining an Incidental Take Permit, which could include providing compensatory mitigation. Issuance of the Incidental Take Permit would be considered to mitigate to a less-than-significant level the individual impacts on special status species. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status wildlife species from utility expansions to support drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. MM-BIO-9 would require that any native trees removed for utility expansions to support drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable. If impacts to wetlands and waters cannot be avoided from utility expansions, then required permits, potentially including permits from the USACE, RWQCB, and CDFW would be obtained and complied with per MM-BIO-13. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved bank. Implementation of MM-HYD-1 would require that utility expansions associated with drought-resiliency projects implement erosion and spill control measures. Impacts would be reduced to less than significant with mitigation.

3.19.3.4.2 UTI-2: Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Water Reduction Activities

The proposed water reduction activities would not negatively impact surface water supplies as the proposed project's purpose is to reduce water use, particularly during dry years and multiple dry years.

Drought-Resiliency Projects

The purpose of constructing the drought-resiliency projects is to develop implementable and supplemental water supplies and to strengthen the resilience of the SRSC's water systems and long-term water delivery capabilities during normal, dry, and multiple dry years. Construction of the drought-resiliency projects may require temporary increase in water needs for activities such as dust control and compaction, but these would be supplied by existing sources and/or importing from local sources and would not require relocation or expansion of new water infrastructure. The long-term project benefits would largely outweigh these short-term temporary impacts.

Impact Determination: Water use would be reduced in the proposed project by design, so there would be no negative impact pertaining to water supply, except minimal temporary impacts during construction of the drought-resiliency projects. Impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.19.3.4.3 UTI-3: Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The proposed project would not result in increased wastewater treatment needs because no new housing, buildings, or other facilities would be constructed that would generate wastewater. Wastewater treatment due to wastewater generated during construction of the drought-resiliency projects may be required, but these would not require relocation or expansion of new wastewater infrastructure.

Impact Determination: The proposed project would not increase wastewater treatment. Therefore, there would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.19.3.4.4 UTI-4: Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

The proposed project would generate little solid waste. Excavated soil will generally be consolidated on-site and placed as fill on site. If found, contaminated soil excavated from the site may be transported off site to a permitted waste facility. Any soils transported off site would be placed in trucks and transferred to a permitted hazardous waste transfer facility capable of handling materials.

Impact Determination: The amount of solid waste generated by the proposed project would be negligible. If ultimately needed, the landfills in the area have adequate capacity to meet the region's need and are authorized to accept waste materials that may be generated during construction of the proposed project. Therefore, there would be no impact related to landfill capacities.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.19.3.4.5 UTI-5: Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The proposed project would be constructed within the parameters of applicable federal, state, and local solid waste regulations. As described, area landfills are authorized to accept the types of waste potentially generated by proposed project construction and operation.

Impact Determination: The proposed project would comply with all statutes and regulations related to solid waste. There would be no impact.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: There would be no impact.

3.20 Wildfire

This section describes wildfire risk in the project area and analyzes how the proposed project may affect this risk. Additionally, this section describes applicable regional plans and regulations pertaining to wildfires and emergency response to wildfires in the study area. For the purposes of this analysis, the study area is defined as the project area as shown in Figure 1.

3.20.1 *Environmental Setting*

As described in Section 3.9.1, wildfires in California are becoming more frequent, larger, and more severe, and this trend is likely to continue with future climate change (ARB 2024). The warming climate has created conditions that raise the risk of fires. While natural wildfires support ecosystem health and are critical to maintaining the structure and function of ecosystems, they still pose a significant threat to life, public health, infrastructure, properties, and natural resources. In undeveloped areas with extensive areas of non-irrigated vegetation, wildfire is a serious hazard.

In California, the responsible agency for fire prevention and suppression determines two types of designations for lands. Lands for which the state has financial responsibility for wildland fire protection are designated as "State Responsibility Areas." In State Responsibility Areas, CAL FIRE is the primary emergency response agency responsible for fire prevention and suppression. Lands for which cities, counties, or districts have financial responsibility for preventing and suppressing fires are designated as "Local Responsibility Areas." First responders in Local Responsibility Areas are typically the local fire districts.

CAL FIRE has mapped areas or zones of significant fire hazards in State Responsibility Areas based on fuels, terrain, weather, and other relevant factors. FHSZs are classified as "Moderate," "High," and "Very High" hazard, and the classification is based on the physical conditions that "create a likelihood and expected fire behavior over a 30- to 50-year period without considering mitigation measures" (CAL FIRE 2024b). Under CAL FIRE regulations, areas within a Very High FHSZ must comply with specific building and vegetation requirements intended to reduce property damage and loss of life within these areas. Most of the Very High and High FHSZs in California are located in the Coast Ranges and the Sierra Nevada foothills with scattered areas of mostly Very High FHSZs in southern part of the state (CAL FIRE 2023).

According to the FHSZ maps maintained by the California Department of Forestry and Fire Protection, portions of the project area are located within zones that present a Very High fire hazard severity risk (CAL FIRE 2024b). The majority of the project area is located in locally responsible areas, while small portions are located in state and federal responsible areas (CAL FIRE 2024c).

Stored water in water supply reservoirs, including water stored in Shasta Lake reservoir, may be used for fighting wildfires with helicopter transport of water. Wildfires are also managed by applying chemical fire retardants and fire suppressants, controlled or prescribed burning, pumping water from streams, and placement of containment lines, which are physical barriers that can help inhibit embers from spreading, such as rivers or areas of bare soils (Brooks 2018).

3.20.2 Applicable Regulations

3.20.2.1 Federal

3.20.2.1.1 Healthy Forests Restoration Act (2003)

The Healthy Forests Restoration Act (US Code Title 16, Chapter 84, Section 6501) aims to reduce wildfire risks to communities, municipal water supplies, and at-risk federal lands. This act provides regulations for the protection of watersheds, forests, and rangelands from catastrophic wildfires.

3.20.2.1.2 National Fire Protection Association Standards

National Fire Protection Association (NFPA) codes, standards, recommended practices, and guides are developed through a consensus standards development process approved by the American National Standards Institute. NFPA standards are recommended (advisory) guidelines in fire protection but are not laws or codes unless adopted or referenced as such by the California Fire Code or local fire agency. Specific standards applicable to wildland fire hazards include, but are not limited to, the following:

- **NFPA 1141:** Fire Protection Infrastructure for Land Development in Wildlands
- **NFPA 1142:** Water Supplies for Suburban and Rural Fire Fighting
- **NFPA 1143:** Wildland Fire Management
- **NFPA 1144:** Reducing Structure Ignition Hazards from Wildland Fire
- **NFPA 1710:** Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations

3.20.2.2 State

3.20.2.2.1 California Department of Forestry and Fire Protection (CAL FIRE)

CAL FIRE is the department responsible for fire protection of over 31 million acres of the State's wildlands. CAL FIRE provides fire assessment and firefighting services for lands within State Responsibility Areas (SRAs), conducts educational and training programs, provides fire planning guidance and mapping, and reviews General Plan Safety Elements to ensure compliance with state fire safety requirements.

3.20.2.2.2 *Fire Hazard Severity Zones and Responsibility Areas*

CAL FIRE designates FHSZs as authorized under California Government Code Sections 51175 et seq. CAL FIRE designates FHSZs within three types of areas depending on what level of government is financially responsible for fire protection:

- **Local Responsible Area (LRA):** Incorporated communities are financially responsible for wildfire protection. There is one severity zone in the LRA, which is the Very High FHSZ.
- **State Responsibility Area (SRA):** CAL FIRE and contracted counties are financially responsible for wildfire protection. There are three hazard zones in SRAs: Moderate, High, and Very High.
- **Federal Responsibility Area (FRA):** Federal agencies, such as the USFS, National Park Service, BLM, United States Department of Defense, United States Fish and Wildlife Service, and Department of the Interior are responsible for wildfire protection.

3.20.2.2.3 *2024 Strategic Fire Plan for California*

The 2024 Strategic Fire Plan for California contains goals, objectives, and policies to prepare for and mitigate the effects of fire on California's natural and built environments (CAL FIRE 2024d). It focuses on fire prevention and suppression activities to protect lives, properties, and ecosystems.

3.20.2.2.4 *2021 California's Wildfire and Forest Resilience Action Plan*

California's Wildfire and Forest Resilience Action Plan (State of California 2021) is a framework for establishing healthy and resilient forests that can withstand and adapt to wildfire, drought, and climate change. This plan accelerates efforts to restore the health and resilience of California's forests, grasslands, and natural places; improves the fire safety of communities; and sustains the economic vitality of rural forested areas.

3.20.2.3 **Regional and Local**

Applicable policies or actions pertaining to wildfire from regional or local plans are described in the following subsections. Policies/actions noted in these subsections are direct quotes.

3.20.2.3.1 *Shasta County General Plan*

The following local policies pertaining to wildfire is included in the Fire Safety and Sheriff Protection Element of the *Shasta County General Plan* (Shasta County 2004):

- **Policy 5.4.4 FS-b:** Known fire hazard information should be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to the requirements of the California Environmental Quality Act (CEQA).

3.20.2.3.2 Tehama County General Plan

The following local policy pertaining to wildfire is included in the Safety Element of the *Tehama County General Plan* (Tehama County 2009):

- **Policy SAF-3.1:** The County shall require accepted fire-resistive construction practices, including but not limited to site design and layout; use of appropriate landscaping and building materials; and the installation of automatic fire sprinklers on new and redevelopment projects to the extent permitted by law.

3.20.2.3.3 Glenn County General Plan

The following local policy and action pertaining to wildfire are included in the Safety Element of the *Glenn County General Plan* (Glenn County 2023):

- **Policy SA 6-12:** Support management and conservation activities to reduce fire hazards, including fire hazard reduction, fuel management, and long-term maintenance strategies, establishment and maintenance of community fire breaks, public and private road maintenance and vegetation clearance that meet or exceed Public Resources Code Section 4291 requirements, home hardening, and coordinate with fire districts/departments, Fire Safe Councils, and property owners to implement management and conservation activities on an on-going basis.
- **Action CSF-5b:** Continue to enforce the California Building Code and the California Fire Code to ensure that all construction implements fire-safe techniques, including fire resistant materials, where required.

3.20.2.3.4 Butte County General Plan

The following local policy pertaining to wildfire is included in the Health and Safety Element of the *Butte County General Plan 2040* (Butte County 2023):

- **Policy HS-P11.1:** Fire hazard risk mitigation shall be considered in all land use and zoning decisions, environmental review, subdivisions review, and the provision of public services.

3.20.2.3.5 Sutter County General Plan

The following local policy pertaining to wildfire is included in the *Sutter County General Plan* (Sutter County 2011):

- **Policy PS 3.2: Defensible Space.** Require new and/or existing development to establish adequate defensible space by providing clearance around structures, and using fire-resistant landscaping and roofing materials.

3.20.2.3.6 *Colusa County General Plan*

The following local policy pertaining to wildfire is included in the *Colusa County General Plan* (Colusa County 2012):

- **Policy CON 1-4:** Encourage conservation, rather than preservation, through the active management of natural resources, including wildlife, water, air, minerals, forests, and land. Conservation and management techniques include replacing trees, crops, and other renewable resources at a pace that ensures they are not consumed more quickly than they can be replaced; use of non-renewable resources in a manner that ensures the resources are not depleted but available to future generations for use; strategic forest thinning and fuel management to prevent wildfires; making resource areas accessible to the public while protecting resources from being diminished to non-recoverable levels; reducing incompatible wildlife/agricultural interface; and increasing public understanding and responsible use of resource conservation areas.

3.20.2.3.7 *Yolo County General Plan*

There following local policy pertaining to wildfire is included in the *County of Yolo 2030 Countywide General Plan* (Yolo County 2009):

- **Policy CO-2.29:** Promote native perennial grass habitat restoration and controlled fire management in grazing lands to reduce invasive species cover and enhance rangeland forage.

3.20.3 *Environmental Impacts and Mitigation Measures*

3.20.3.1 **Baseline**

At the time of publication of the NOP for the proposed project, there are a range of FHSZs in the project area. The project area includes zones designated as a Very High fire hazard severity risk. The majority of the project area is located in locally responsible areas, while small portions are located in state and federal responsible areas (CAL FIRE 2024c).

3.20.3.2 **Thresholds**

For purposes of this DEIR, the following thresholds, which are based on Appendix G of the CEQA Guidelines (Environmental Checklist), were used to determine if the proposed project would result in impacts related to wildfire. The proposed project would have an impact if the following apply:

- **WIL-1:** The project would substantially impair an adopted emergency response plan or emergency evacuation plan.
- **WIL-2:** Due to slope, prevailing winds, and other factors, the project would exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

- **WIL-3:** The project would require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- **WIL-4:** The project would expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

3.20.3.3 Methodology for Determining Impacts

Analysis in this section focuses on Very High FHSZs and how this project might impact the ability to implement emergency response plans and increases risks such as downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes within these Very High FHSZs.

3.20.3.4 Impact Analysis

3.20.3.4.1 *WIL-1: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?*

The proposed project would be located in areas classified as Very High FHSZs. Regional emergency response plans are summarized in Section 3.9.1.4. Each county is responsible for adopting their own emergency response plan or emergency evacuation plan. There would be minimal traffic and no change in safety conditions resulting from implementation of the water reduction activities and the drought-resiliency projects. Therefore, there would be no physical interference with an adopted emergency response plan or emergency evacuation plan due to the proposed project.

Impact Determination: The proposed project would not interfere with implementation of an adopted emergency response plan or emergency evacuation plan; therefore, impacts would be less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.20.3.4.2 *WIL-2: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*

Water-Reduction Activities

As discussed under Impact HAZ-7, the proposed water reduction activities would occur in Agreement Years, which are defined as years where water is already scarce and the potential for wildland fires is already higher than in non-Agreement Years. Most of the FHSZs within the project area are

designated as Very High, with many zones located within the mountainous area of regions of the project area. Areas in the valley regions of the project area are not as prevalent but still have a threat of wildland fires.

Even if the potential for wildland fire in Agreement Years would be higher than non-Agreement Years, given that most of the project area is outside of an area designated as a Very High or High FHSV, and given that there are multiple methods that are used in suppressing wildfires, including fire retardants and suppressants and containment lines, implementation of water reduction activities would not result in a substantial increase in wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Cropland idling would result in bare land with very low potential for vegetation to grow, actually acting as a barrier against propagation of wildland fires. Cropland shifting would not significantly shift existing conditions or create an increased risk for wildland fires. Groundwater pumping would not increase the risk for wildland fires. Conservation activities may result in minimal increases in risk for wildland fires, but as discussed, the ability to fight wildland fires would not decrease due to implementation of these conservation activities.

Drought-Resiliency Projects

Construction of the drought-resiliency projects could involve the use of heavy equipment and entail activities that have the potential to ignite fires, such as the use of flammable and combustible materials. The potential for adverse effects related to wildfires, however, would likely be similar as under existing conditions because projects would generally occur in the same geographic area and present a similar risk than other maintenance or agricultural practices, during both construction and operation. In the future, higher temperatures and drier conditions due to climate change are likely to increase the number and intensity of wildfires. Additionally, as described in Section 3.15.3, as required by OSHA and Fire and Building Code requirements, the construction contractor would be required to carefully store flammable materials in appropriate containers and to immediately and completely clean up spills of flammable materials when they occur. In addition, construction managers and personnel would be trained in emergency response, and fire suppression equipment specific to construction sites would be maintained on site for the duration of the construction period. Drought-resiliency projects would be required to comply with all pertinent fire prevention laws and regulations to avoid fire and exposing people to pollutant concentrations from wildfires.

Impact Determination: Water reduction activities would not exacerbate risks related to wildland fires. While drought-resiliency projects involve construction, the potential for adverse effects related to wildfires would be similar as under existing conditions because projects would generally occur in the same geographic area and present a similar risk to similar baseline activities. The proposed project would not exacerbate wildfire risk and impacts would be considered less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.20.3.4.3 WIL-3: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

As discussed in Section 3.20.3.3.3, state responsibility areas and FHSZs exist within the project area. However, the proposed water reduction activities and drought-resiliency projects would not exacerbate fire risk. Additionally, neither implementation of the water reduction activities nor construction and operation of the drought-resiliency projects would require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

Impact Determination: Neither implementation of the water reduction activities nor the drought-resiliency projects would require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Impacts would be considered less than significant.

Mitigation Measures: No mitigation measures would be required.

Residual Impact: Impacts would be less than significant.

3.20.3.4.4 WIL-4: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Water Reduction Activities

Water reduction activities, including cropland idling and shifting, groundwater pumping, and conservation, would not involve activities that would result in changes in runoff, post-fire slope instability, or drainage. Potential impacts associated with soil erosion could be slightly increased while field lay fallow from crop idling, but these conditions would be temporary and not widespread. Therefore, these activities would not be expected to expose people or structures to significant risks.

Drought-Resiliency Projects

Some proposed project elements would include additions of impervious surfaces, especially those related to canal improvements. Drainage patterns could be impacted with construction of the drought-resiliency projects, including canal lining and piping; however, the effects of these changes would not be widespread and would be consistent with standard construction and agricultural maintenance activities that occur in the project area. Exposed soil during construction of the drought-resiliency projects would not result in runoff that could expose people to significant risks.

Impact Determination: Neither the proposed water reduction activities or construction of the drought-resiliency projects would expose people or structures to significant risks. Therefore, impacts could be considered less than significant.

Mitigation Measures: While impacts would be less than significant and mitigation is not required, implementation of the following mitigation measures would further reduce the potential for impacts:

- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-GEO-2:** Unstable Area Buffer for Drought-Resiliency Projects

Residual Impact: Implementation of MM-HYD-1 would include erosion control measures and implementation of MM-GEO-2 would reduce the amount of exposed soil, both of which would further reduce the potential for changes to drainage patterns or increased runoff. Impacts would remain less than significant.

4 Cumulative Impacts

4.1 Requirements for Cumulative Impact Analysis

CEQA requires that EIRs analyze cumulative impacts. As defined in Section 15355 of the CEQA Guidelines, a cumulative impact consists of an impact that is created as a result of the combination of a project evaluated in an EIR together with other past, present, and reasonably foreseeable future projects causing related impacts in the vicinity of the proposed project. CEQA Guidelines Section 15130 requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable." The following definition of cumulatively considerable is provided in CEQA Guidelines Section 15065(a)(3):

"Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

According to CEQA Guidelines Section 15130(b),

[t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant but must briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. Cumulative impact assessments are not required for impacts that do not result in part from a project evaluated in an EIR. Therefore, the cumulative impact analysis in this section focuses on whether the impacts of the proposed project are cumulatively considerable within the context of impacts caused by other past, present, or future projects. The cumulative impact scenario considers other projects proposed within the area defined for each resource that have the potential to contribute to cumulatively considerable impacts.

According to CEQA Guidelines Section 15130(b),

Factors to consider when determining whether to include a related project should include the nature of each environmental resource being examined, the location of the project and its type. Location may be important, for

example, when water quality impacts are at issue since projects outside the watershed would probably not contribute to a cumulative effect. Project type may be important, for example, when the impact is specialized, such as a particular air pollutant or mode of traffic.

4.1 Projects Considered Under Cumulative Analysis

In preparing the cumulative impact analysis, related projects, plans, and programs that have been or may be constructed or implemented in the geographic scope of the proposed project were reviewed and evaluated. Using guidance provided in CEQA Guidelines Section 15130, past projects that have been implemented and are ongoing in the project area related to water reduction activities (such as cropland idling, shifting, groundwater pumping, and conservation, drought-resiliency projects, water conveyance, etc.) and future projects of similar scope with a potential for impacts in the same geographical area as the proposed project are identified in Table 25. Table 25 also identifies present and probable future projects considered for their related impacts.

Consistent with CEQA Guidelines, the cumulative impact scenario considers other projects proposed within the geographic scope defined for each resource that has the potential to contribute to cumulatively considerable impacts. Impacts were identified using the list methodology. Resource areas were analyzed using a list of closely related projects that have been or would be constructed or implemented in the cumulative geographic scope.

4.1.1 Past History in the Project Area

The project area is defined as the service area for the SRSC, of which its members include various irrigation districts, reclamation districts, mutual water companies, cities and other public entities, partnerships, corporations, tribes, and individuals that operate within the Sacramento Valley. This section describes the past projects that have contributed to the current state of the project area. These past projects have collectively established the general conditions of the project area as they currently exist and thus contribute to the baseline conditions of the project area.

Prior to the mid-1800s the Sacramento Valley generally existed in its natural state. Early systems of canals to manage water were first constructed to provide mining endeavors with large quantities of water during the Gold Rush in the 1840s and 1850s. Miners built hundreds of miles of flumes and ditches to divert water so it could be used to sluice out the gold. As the gold rush ended, many miners turned to farming, using California's brimming aquifers to irrigate their crops. Local water systems were built in the early part of the 20th century to bring water to cities that were developing into metropolitan centers (CDWR 2024c).

Prior to the construction of Shasta Dam, individual property owners, irrigation and reclamation districts, cities and mutual water companies throughout the region exercised water rights from the Sacramento River to irrigate farms and serve municipal uses across the region (SRSC 2024). The CVP was initiated in 1933 as a state-funded project to manage flooding, store water and produce

electricity, but faced Depression-era financing difficulties. The federal government stepped in with financing and the federal CVP, managed by Reclamation, was authorized in 1935 (USBR 2024a). Subsequently, dams and reservoirs were constructed for river regulation, navigational improvement and flood control.

SRSC members currently divert their water supplies in accordance with their “Settlement Contracts” with Reclamation, which were executed in 1964 for a 40-year term and were renewed in 2005 for another 40 years (through 2045). Among other things, the Settlement Contracts identify how much water contractors can divert during the contract season. SRSC members are typically entitled to receive and divert 100% of their contracted water quantities in most water-year types.

Over time other water management tools and supply planning projects have been devised and implemented in the project area by various agencies, cities, and water supply districts. Many of these are approved, currently operating, and ongoing and contribute to the overall baseline conditions of the project area. These are shown in Table 25 as “completed.”

4.1.2 Present and Future Projects

Table 25 also includes present or reasonably foreseeable future projects (planned, proposed, approved, or currently being implemented) identified within the general vicinity of the proposed project that could contribute to cumulative impacts. These projects were selected because they are located in the same geographic area as the proposed project, with at least some physical overlap, and similar in scope (i.e., water reduction activities such as cropland idling, shifting, groundwater pumping, flood control, and/or related to conservation, drought-resiliency, water conveyance, etc.). One development project (South Willows Residential Development) was included due to its proximity to the project area and the Glenn-Colusa Main Canal. These projects are shown in Table 25 as “ongoing,” “planning,” and “in progress.” Projects on the list were analyzed to determine whether they may have the potential to result in related impacts to those of the proposed project (e.g., air quality impacts from the use of construction equipment) when considered in conjunction with the proposed project. The cumulative geographic scope differs by resource; related projects may contribute to a cumulative risk in one resource area but not in another.

Table 25**Related Past, Present, and Future Projects Considered in the Cumulative Impact Analysis**

Project/Program Name	Location	Description	Project Status
Davis-Woodland Water Supply Project	Cities of Davis and Woodland and University of California, Davis	This project was intended to ensure a continuous water supply from June to September when certain limitations apply; uphold state-imposed conditions; and provide additional senior water rights for 10,000 acre-feet from the Conaway Preservation Group (City of Davis 2024).	Completed
Knights Landing Outfall Gates Fish Barrier Project	Sacramento River Watershed and Central Valley	This project was implemented under California EcoRestore and involved installation of a positive fish barrier to prevent adult salmon from straying off the Sacramento River. It also included repairs or restoration of the existing Knights Landing Outfall Gates, construction of a trash barrier system, and utilities upgrades per USACE O&M standards (California EcoRestore 2024).	Completed
Red Bluff Diversion Dam Fish Passage Improvement Project	Tehama County	This project improved fish passage for anadromous fish species and provides reliable water supply to more than 150,000 acres of agricultural land in the Sacramento River Valley via a pumping station and fish passage screen (Tehama-Colusa Canal Authority 2013).	Completed
American Basin Fish Screen and Habitat Improvement Project	Sacramento River watershed in Counties of Sacramento and Sutter	This project was authorized and funded by Reclamation and CDFW. It constructed positive-barrier fish screen diversion facilities; decommissioned and removed the Verona Diversion Dam, lift pumps, five pumping plants, and a private diversion; and modified an existing distribution system/internal canal system to protect its ability to provide water diversions to all of its service area in multiple phases (CDFG 2008b).	Completed
System Reoperation Program	Statewide	This project was a multi-phase effort to improve the state's water supply system and reoperation of its flood protection program (CDWR 2016).	Completed
Cypress Avenue Bridge North	Sacramento Upper, Middle, and Lower River	This project involved the installation of a fish screen on an irrigation diversion intake located on the Sacramento River. The fish screen prevents juvenile fish from being drawn into irrigation systems while maintaining water delivery for agricultural use (Northern California Water Association 2024b).	Completed
Lake California Side Channel Reconnection Project	Tehama County	This project restored a side channel of the Sacramento River to improve fish habitat, particularly juvenile salmon and steelhead. By connecting the side channel, modifying levees, and planting native vegetation, the project sought to enhance river health, promote biodiversity, and increase ecosystem resilience to climate change (Northern California Water Association 2017).	Completed

Project/Program Name	Location	Description	Project Status
Painter's Riffle Anadromous Fish Habitat Enhancement Project	City of Redding and Shasta County	This GCID project restored the Painter's Riffle in 2014, a salmonid spawning side channel at RM 296 on the Sacramento River, which had been buried under about 11,000 cy of gravel during a large storm (Northern California Water Association 2024c).	Completed
Upper Sacramento River Anadromous Fish Habitat Restoration Project	Sacramento River	This project focused on improving habitats for migratory fish, such as salmon and steelhead, along the Sacramento River. It involved actions such as creating side channels, planting native vegetation, and enhancing river flows to support spawning and rearing areas. These efforts aimed to boost fish populations and overall river health by restoring critical habitats and improving river conditions (Sacramento River Forum 2021a).	Completed
Upper Sacramento River Salmon Rearing Habitat Project	Sacramento River	This project, located near the City of Redding, constructed 25 juvenile salmon shelter structures from tree trunks and root wads bolted to limestone boulders in the Sacramento River (Sacramento River Forum 2021b).	Completed
Wallace Weir Fish Rescue Facility Project	Yolo County	Located on the Yolo Bypass near Knights Landing in Yolo County, this project was built at the Wallace Weir, a structure on the Colusa Basin Drain, a few miles northwest of where the drain meets the Sacramento River. It aimed to divert endangered winter-run Chinook salmon from irrigation canals back into the Sacramento River, providing a safer route for their migration. The facility uses a fish rescue and sorting system to capture and relocate the fish, reducing mortality and supporting recovery (RD 108 2024).	Completed
Fremont Weir Adult Fish Passage Modification Project	Fremont Weir Wildlife Area, Tule Canal, and Yolo Bypass in Yolo County	Built in 1924 at the north end of the Yolo Bypass, the Fremont Weir is a critical flood control structure designed to divert floodwaters from the Sacramento River to prevent flooding in nearby areas. This project improved fish migration between the river and bypass by modifying the fish passage facilities at the Fremont Weir. The project constructed a new fish ladder, regraded channels, and installed control structures to enhance passage for species like Chinook salmon and sturgeon, while also minimizing environmental impacts and supporting ecosystem health (USBR 2024c).	Completed
Yolo Bypass Wildlife Area Land Management Plan	Yolo Bypass	This plan manages seasonal high flows that are conveyed from the Sacramento River through the Yolo Bypass and outlines strategies for habitat restoration, species conservation, and water management of habitat and agricultural lands (CDFG 2008a).	Ongoing
Hatchery and Stocking Program	Statewide	This program includes a statewide system of trout, salmon, and steelhead fish hatchery facilities that rear, stock, and release various ages and size classes of these species into state waters for conservation and restoration of native fish species and recreational and commercial fishing; regulatory oversight and issuance of relevant permits; native trout production and conservation; and mitigation for destruction of habitat by dams on the state's major rivers and for fish lost at state-operated pumping facilities in the Delta (USFWS and CDFW 2008).	Ongoing

Project/Program Name	Location	Description	Project Status
Northern Sacramento Valley Integrated Regional Water Management Plan	Northern Sacramento Valley, including Counties of Butte, Colusa, Glenn, Shasta, Sutter, and Tehama	This plan seeks to address water resource management challenges in the northern Sacramento Valley region, including the counties of Butte, Colusa, Glenn, Shasta, Sutter, and Tehama. The plan was developed and adopted in 2014 and provides management objectives that are protective of water resources in the northern Sacramento Valley (Northern Sacramento Valley Integrated Regional Water Management Plan 2014).	Ongoing
Sacramento Valley Integrated Regional Water Management Plan	Sacramento River Valley	This plan is intended to improve coordination across the Sacramento Valley to improve the economic health of the region; regional water supply reliability for local water users, the region, and California; flood protection and floodplain management; water quality; and ecosystem protection (Northern California Water Association 2006)	Ongoing
Lower Cache Creek/Woodland Flood Risk Management Project	Lower Cache Creek, City of Woodland, and Yolo County	This project involves reducing flood risks as part of a broader watershed program and includes redirecting flood flows from Lower Cache Creek into Yolo Bypass, converting agricultural land to nonagricultural uses, modifying a settling basin, and improving bridges and culverts for flow diversion. Key components include constructing seepage cutoff walls along existing levees; levees, berms, and drainage channels; an inlet weir; and closure structures on certain roads and railways (City of Woodland 2021).	Ongoing
Sacramento River Bank Protection Project	Sacramento River	Located along the Sacramento River levees in Butte, Colusa, Glenn, Placer, Sacramento, Solano, Sutter, Tehama, Yolo, and Yuba counties, this long-range construction project aims to protect existing levees and flood management systems from erosion (USACE 2024).	Ongoing
Sacramento River Flood Control System Evaluation Phase III Mid-Valley Sites	Sacramento River	The project will repair levees at 13 sites that have faced flooding or seepage issues in the past, significantly increasing flood protection for Knights Landing and surrounding agricultural areas. This includes levee repair along the Knights Landing Ridge Cut and the west bank of the Sacramento River. In addition, Yolo County is evaluating additional sites through a flood risk reduction program (USACE and CVFPB 2013).	Ongoing
CALFED Ecosystem Restoration Project Conservation Strategy	Sacramento River, San Joaquin River, and Sacramento-San Joaquin Delta	This strategy is focused on improving and expanding aquatic and terrestrial habitats and ecological function in the Delta. The restoration strategy is focused on projects that address fish passage issues, conduct species assessment, rehabilitate ecological processes, improve water quality, or implement habitat restoration (CalFish 2024).	Ongoing
Hamilton City Flood Damage Reduction and	Sacramento River	This project aims to reduce flood risks and restore approximately 1,500 acres of native habitat by constructing a levee for better flood protection. The new setback levee will enhance flood	Ongoing

Project/Program Name	Location	Description	Project Status
Ecosystem Restoration Project		management and levee stabilization, while restoration effects will support the recovery of various protected species and improve the natural function of this stretch of the Sacramento River (USACE 2021).	
Shasta Lake Water Resources Investigation	Shasta Lake, Shasta Dam, and Sacramento River	This investigation is focused on increasing the storage capacity of Shasta Lake by raising the Shasta Dam by up to 18.5 feet. It aims to improve water supply reliability, enhance flood control, and support environmental restoration efforts in the Sacramento River Basin. Additional features include modifications to existing infrastructure (e.g., bridges and roadways), and updates to the dam's spillways to manage the increased water flow. This project could lead to changes in water flow patterns that may affect the timing and quantity of water releases (USBR 2020).	Ongoing
South Willows Residential Development	City of Willows	The project would subdivide a property into 419 single-family residential lots, one multiple-family lot, a neighborhood park site, several "open space" parcels, and a pedestrian-only bridge over the Glenn-Colusa Main Canal. The project requires entitlements and revisions to the tentative map and associated conditions of approval. Construction is anticipated to occur through 2028 (City of Willows 2020).	Ongoing
Coordinated Long-Term Operation of the Central Valley Project and State Water Project	Statewide	This project involves managing California's two largest water systems together to optimize water supply, support agriculture, provide drinking water, and protect the environment. The coordination ensures that water deliveries are made efficiently while balancing multiple needs, such as maintaining water quality in the Delta, supporting endangered species, and managing reservoir levels for flood control. The projects work in tandem to address the state's complex water challenges, especially during periods of drought or changing water demands. A number of environmental consultations and approvals were required for this project, including Biological Opinions from NMFS and USFWS as well as an Incidental Take Permit from CDFW.	Ongoing
Long-Term and Short-Term Water Transfers	Sacramento River	This program involves the reallocation of water among water users that may provide temporary (less than 1 year) and long-term exchanges of water among municipal, agricultural, and ecosystem water users, including wildlife refuges and programs that transfer water throughout Central Valley Water Project service area (USBR and San Luis & Delta Mendota Water Authority 2019).	Ongoing/ Planning
Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project	Yolo County	This project improved fish passage and installed a fish barrier to prevent migrating salmon from entering the Colusa Basin Drain while maintaining outflows.	In progress
Refuge Water Supply Program	Central Valley	In partnership with Reclamation, USFWS, CDFW, and the Grassland Resource Conservation District, this program would ensure that 19 wetland habitat areas/refuges receive specified annual water quantities with appropriate flow rates, timing, and quality and mandates securing and delivering the necessary water supply and upgrading or constructing conveyance facilities (CDFW 2024).	In progress

Project/Program Name	Location	Description	Project Status
Maxwell Intertie Project	Sacramento River and Central Valley	A subset of the Sites Reservoir Project, this effort would construct a pipeline to connect the Tehama-Colusa Canal and GCID main canal via new project features or facilities that provide bi-directional water transfers (USBR 2024b).	In progress
Levee Repair-Levee Evaluation Program	Statewide	This program assesses and strengthens state and federal project levees to enhance flood protection and ensure public safety and involves performing inspections, testing, making necessary repairs, and implementing advanced engineering solutions to improve the resilience and reliability of the state's levees.	In progress
California EcoRestore	Central Valley	This multi-agency program is focused on restoring and protecting habitat lands via complex, multi-benefit restoration projects; to date more than 30,000 acres of Delta habitat, including floodplain, have been restored.	In progress
California Water Action Plan	Statewide	This plan would reduce water use per capita by 2030, capture new water, and maximize current water resources for future drought actions.	Planning
Sites Reservoir Project	Central Valley	Part of the California Water Action Plan, the project would construct a 1.5-million-acre-foot offstream surface storage reservoir west of the town of Maxwell in cooperation with the CVP and SWP. It includes constructing a new pipeline and using the existing Tehama-Colusa Canal and GCID canal diversions and conveyance facilities from the Sacramento River. Funks and Stone Coral creeks would be impounded by the proposed reservoir (California Water Commission 2024).	Planning
Healthy Rivers and Landscapes Program	Sacramento River	This program, also referred to as the Voluntary Agreements, would integrate Sacramento Basin flow and non-flow measures as part of a watershed-wide program to increase or provide new flows, habitat restoration, and adaptively deploy a governance and science program.	Planning

4.2 Analysis of Cumulative Impacts

The proposed project, in conjunction with other past, present, and reasonably foreseeable future related projects, has the potential to result in significant cumulative impacts when its independent impacts and the impacts of related projects combine to create impacts greater than those of the proposed project alone. The proposed project would not contribute to cumulative impacts related to those environmental resource areas on which it would have no impact, including all issues associated with population and housing and recreation as summarized in Section 4.2.1. The cumulative impact evaluation presented in Section 4.2.2 is therefore focused on the following resource areas: aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, energy, geology and soils, GHG emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, public services, transportation, Tribal cultural resources, utilities and service systems, and wildfire.

4.2.1 Cumulative Impacts for Unaffected Environmental Resource Areas

4.2.1.1 Population and Housing

The proposed project does not include elements that would induce population growth either directly or indirectly, and no new homes or businesses are proposed as part of the proposed project. Existing homes in the project area generally occur near agricultural activities and in areas that are mostly zoned and used for agriculture and related facilities. The proposed project does not include elements that would impact existing housing, displace residents, or necessitate the construction of replacement housing elsewhere. The proposed project would have no effect on the availability of housing for existing residential areas, and zoning in the project area generally precludes the potential for future housing developments. Therefore, the proposed project would result in no impacts pertaining to population and housing, which precludes the proposed project from cumulatively contributing to an impact on these resources.

4.2.1.2 Recreation

The proposed project does not include construction or expansion of any recreational facilities and would not result in increased demand or other effects to recreational facilities. The proposed project would result in no impacts related to recreation, which precludes the proposed project from cumulatively contributing to an impact on this resource.

4.2.2 Cumulative Impacts for Affected Environmental Resource Areas

4.2.2.1 Aesthetics

The geographic scope of the cumulative aesthetics analysis consists of the boundaries of the project area, which are depicted in Figure 1, and the immediate vicinity. Past, present, planned, and reasonably foreseeable future development that contribute to cumulative impacts on aesthetics and

visual resources are those that have the potential to result in impacts to scenic vistas, scenic resources, visual quality and view blockage, and nighttime illumination and glare. These include projects that result in the loss of scenic resources or the introduction of contrasting features that could degrade the visual character of the project area. There are numerous county designated roads and highways with scenic value throughout the project area. The project area contains no officially designated State Scenic Highway, but Route 299, Route 5, and Route 44, located in Shasta County and in the project area, are designated as eligible State Scenic Highways. Other prominent geographic features in the project area include the Coast and Sierra Nevada ranges to the west and east, respectively, as well as the Sutter Buttes, Klamath, and Cascade ranges and various hills and peaks. There are also many rivers and creeks running through the project area that qualify as visual resources including but not limited to the Sacramento River, Butte Creek, Clear Creek, and Putah Creek. The project area is mostly identified as rural and agricultural with sparse population currently and in future plans. The project area includes some urban and suburban views in cities such as Redding.

4.2.2.1.1 Cumulative Impact Analysis

As discussed in Section 3.1, the proposed project would have less-than-significant impacts to aesthetics resources. In general, because the proposed project would not be visible from or block views of any identified scenic vista or scenic highway, it would not contribute to such cumulative impacts. Visual changes associated with the proposed project would not degrade the existing visual character or quality of public views of the site and its surrounding areas. The proposed project would be visually similar to existing conditions and would blend with the existing features of the surrounding agricultural and rural landscape, thereby avoiding contribution to such cumulative impacts. The proposed project's water reduction activities would not affect light or glare, thereby resulting in no impact. Drought-resiliency projects would introduce a small amount of or temporary lighting, both of which would be sited in agricultural areas and would not be located near viewers who could be adversely impacted; therefore, the proposed project would have less-than-significant cumulative impacts to daytime or nighttime views of the area.

The projects in Table 25 of relevance to the cumulative impact analysis for aesthetics are those that contain built elements that could alter the overall agricultural and rural nature of the surrounding area. Many the projects listed in Table 25 are water supply, flood control, or habitat management plans, restoration or small repair projects, and programmatic agreements and transfers, all of which would be expected to have less-than-significant impacts on visual resources because they would result in construction of features that would be similar to existing infrastructure. Installation of physical elements such as fish barriers, surface reservoirs, and erosion control features as parts of the projects in Table 25 would be expected to have less-than-significant impacts on visual resources, as those elements would likely be small to medium in scale and would blend with the existing visual character of the area. Any of the projects in Table 25 that are located along, or are visible from, a scenic highway would be reviewed for potential impacts prior to project approval. The aesthetic and

visual resource impacts of individual projects can often be mitigated through site and landscape design, avoidance of significant visual features, and compliance with city and county development standards; therefore, it is not expected that any of the projects would cumulatively affect scenic resources along a scenic highway. Any proposed project would be reviewed for potential impacts to existing visual character or quality of public views of the site and its surroundings prior to approval and would be addressed with mitigation if necessary. Any proposed project would also be reviewed for potential impacts to daytime or nighttime views and would be required to address any potential impacts with mitigation that would protect sensitive visual receptors. Therefore, when combined with the proposed project there would not be a cumulatively considerable impact on light and glare in the project area.

4.2.2.1.2 Conclusion

Based on this analysis, it is concluded that the proposed project and projects listed in Table 25 would not have cumulatively considerable impacts on aesthetics.

4.2.2.2 Agriculture and Forestry Resources

The cumulative setting for agriculture and forestry resources is the eight counties that the proposed project falls within. The project area is almost entirely comprised of agricultural land with approximately 0.1% of the project area being forest land.

4.2.2.2.1 Cumulative Impact Analysis

The proposed project would result in less-than-significant impacts with regard to the permanent conversion of farmland and agricultural uses, existing agricultural zoning, and Williamson Act contracts. Drought-resiliency projects sited within forest land would constitute potentially significant impacts by potentially conflicting with existing forest land zoning and resulting in the loss or conversion of forest land to non-forest use. Implementation of mitigation measure MM-AGR-1 would prohibit siting of drought-resiliency projects in zoned and existing forest lands and would reduce these impacts to less than significant.

Other projects in Table 25 that involve construction could occur within existing and zoned farmland and agricultural lands, and within zoned and existing forest land within the eight counties of the project area. Such siting could result in the loss or conversion of farmland, agriculture land, or forest land to other uses. Environmental review has been or will presumably be conducted for each of the other identified projects, as was done for the proposed project. Impacts of other individual projects would be mitigated by compliance with applicable federal, state, and local development standards regarding land use conversions and would likely be sited away from zoned or existing farmland, agriculture land, and forest land. As such, the proposed project's less-than-significant impacts on agriculture and forestry resources, combined with the impacts of projects in Table 25, would not be cumulatively considerable.

4.2.2.2.2 Conclusion

The proposed project's incremental impacts on agriculture and forestry resources would not be cumulatively considerable when viewed in connection with the effects of the other projects evaluated within the eight counties of the project area.

4.2.2.3 Air Quality

The geographic scope of the cumulative air quality analysis is the SVAB, which is managed by several AQMDs and APCDs, including Butte County AQMD, Colusa County APCD, Feather River AQMD, Glenn County APCD, Placer County APCD, Sacramento Metro AQMD, Shasta County AQMD, Tehama County APCD, and Yolo-Solano AQMD. Several counties within the SVAB have ambient air quality issues, particularly with particulate matter with a diameter less than PM_{2.5} and O₃.

4.2.2.3.1 Cumulative Impact Analysis

The proposed project's activities are programmatic in nature and spread over a large project area and therefore, estimated air emissions were not quantified. The proposed project would result in reduced or less-than-significant contributions to air emissions. Additionally, it must comply with local and regional air quality standards, which require, if necessary, project-specific mitigation measures such as dust suppression and minimizing idling of construction equipment. While mitigation is not required, mitigation measures MM-AIR-1 and MM-AIR-2 would be implemented to reduce dust generation and emissions during construction activities.

CAPs. Construction and operational emissions are the source of impacts related to air quality. Each of the projects listed in Table 25 would occur within the SVAB and may include emissions from construction or operations. Therefore, air quality impacts from all of the projects in Table 25 were considered in terms of their cumulative impacts. Projects listed in Table 25 have been or would be required to perform their own analyses of associated air quality impacts, including development of mitigation measures to address significant impacts, if necessary.

Several of the projects listed in Table 25 include construction activities that may require the use of equipment that would generate air emissions, including construction such as for a development of houses, parkland, and roadways; creation of a surface reservoir; and installation of erosion control features. Emissions from these projects would be generated from short-term, temporary construction equipment and activities. While the details of proposed project construction activities for drought-resiliency projects (including locations) as part of the proposed project and those of other projects are not known at this time, it is possible that several of the project construction schedules could overlap. Emissions from these projects combined with the proposed project would emit O₃, PM₁₀, and PM_{2.5}, along with O₃ precursors such as NO_x, and contribute to nonattainment levels and subsequent adverse air quality impacts.

Health Risk. Similar to the discussion on CAPs, related projects in Table 25 resulting in new or expanded sources of air emissions would combine with emissions from the proposed project and could potentially contribute to existing health risks in the region. Unlike air quality standards that

measure mass emissions within a region, a HRA considers the specific impacts of criteria pollutants and toxic air contaminants on the closest sensitive receptors. While the details of proposed project construction activities for drought-resiliency projects (including timing) under the proposed project and those of other projects are not known at this time, it is possible that several of the project locations could occur in the same general area as the proposed project and would generate new vehicular and equipment emissions that may affect the same sensitive receptors.

The proposed project would result in reduced or less-than-significant contributions to air emissions, as discussed above. As with the proposed project, applicants of future projects within the SVAB must comply with local and regional air quality standards, which require, if necessary, project-specific mitigation measures. These will include dust suppression, minimizing idling of construction equipment, and other measures to reduce air quality emissions.

4.2.2.3.2 Conclusion

Based on this analysis, the proposed project's incremental impacts would not be cumulatively considerable when viewed in connection with the impacts of other projects within the SVAB.

4.2.2.4 Biological Resources

The geographic scope of the cumulative biological resources analysis consists of the project area and areas in close proximity or overlapping that may be affected by the proposed project's construction or operations.

4.2.2.4.1 Cumulative Impact Analysis

Other projects listed in Table 25 include water supply and habitat management plans, restoration or other projects affecting wildlife habitat, and programmatic agreements and transfers which could contribute to significant cumulative impacts on terrestrial and aquatic resources. Individual projects that involve land disturbance, such as grading, paving, landscaping, and construction of infrastructure could also impact biological resources. As discussed in Section 3.4, the proposed project would result in significant and unavoidable impacts on, either directly or through habitat modifications, GGS and northwestern pond turtle and from interfering with their migratory movement corridors (Impacts BIO-1 and BIO-4). Implementation of Mitigation Measures MM-BIO-1 through MM-BIO-13 would be required to reduce impacts; however, these impacts would remain significant and unavoidable. As discussed in Section 3.4, the proposed project would result in significant and unavoidable impacts regarding conflicts with any local policies or ordinances protecting biological resources (Impact BIO-5) and the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan (Impact BIO-6) due to the impacts on GGS and northwestern pond turtle. Implementation of Mitigation Measures MM-BIO-1 through MM-BIO-13 would be required to reduce impacts; however, these impacts would remain significant and unavoidable. The proposed project would have less-than-significant impacts after implementation of mitigation regarding riparian habitat or other sensitive natural communities (Impact BIO-2) and state or federally protected wetlands (Impact BIO-3).

The projects in Table 25 could be under construction at the same time as the proposed project, are in close proximity to or overlap the project area, or are similar in nature to the proposed project and would potentially result in similar and significant biological resources impacts. In general, there is feasible mitigation to ensure that impacts on biological resources, including special status species and habitats and compatibility with local policies and ordinances protecting biological resources and adopted HCPs and NCCPs, are mitigated to reduce the impacts or conflicts. However, the proposed project's impacts on special status species and compatibility with plans to protect biological resources, combined with the potential for similar impacts from other projects, would result in a combined impact that is considered cumulatively considerable. Given that the proposed project would reduce other impacts on biological resources to less than significant through adherence to mitigation measures, and given that other projects evaluated would undergo environmental review, similar to the proposed project, to evaluate and reduce identified impacts, the combined impact in these areas would not be considered cumulatively considerable.

4.2.2.4.2 Conclusion

The proposed project would have a significant and unavoidable cumulative impact, either directly or through habitat modifications, to GGS and northwestern pond turtle and from interfering with their migratory movement corridors (Impacts BIO-1 and BIO-4). The proposed project would have a cumulatively considerable impact regarding compatibility with local policies and ordinances protecting biological resources and adopted HCPs and NCCPs.

4.2.2.5 Cultural Resources

The geographic scope of the cumulative cultural and historic resources analysis consists of the project area and the areas in close proximity or overlapping that may be affected by the proposed project's construction or operations. Projects on land that have the potential to modify or demolish structures that are more than 50 years old have the potential to contribute to cumulative impacts on historic architectural resources. Projects that include excavation that may disturb native fill may disturb, damage, or degrade listed, eligible, or otherwise unique or important archaeological resources or human remains.

4.2.2.5.1 Cumulative Impact Analysis

As discussed in Section 3.5, the project area spans a large geographic area with diverse cultural resources. The project area mostly consists of land that has been used for agricultural operation or urban development and is previously disturbed. Based on cultural resources records available for the project area, there are tens of thousands of resources on record in the project area. Therefore, archaeological and historical resources have the potential to be present in the project area.

The proposed project includes excavation into native soils for construction of drought-resiliency projects. The details of proposed project construction activities and those of other projects are not known at this time, but it is possible that several of the projects could occur in the same general area and simultaneously. While implementation of the water reduction activities would not have the

potential to result in significant impacts to historical resources, individual drought-resiliency projects could have the potential to impact historical resources. The proposed project requires implementation of the following measures to reduce the potential impacts to historical resources to less than significant: MM-CUL-1, MM-CUL-2, MM-CUL-3, and MM-CUL-4.

Water reduction activities would involve no ground disturbance activities. Therefore, they would not affect archaeological resources or human remains. Drought-resiliency projects would involve ground disturbance varying from construction of access routes to larger-scale project construction footprints. If archaeological materials or human remains are present in previously undisturbed native sediments, they could potentially be disturbed during such ground-disturbing actions. The proposed project requires implementation of mitigation measures MM-CUL-1, MM-CUL-2, MM-CUL-3, and MM-CUL-4, which would reduce impacts on archaeological materials and human remains to less than significant.

Although much of the area has been previously disturbed, it is not known whether the projects in Table 25 are on sites that have been previously disturbed. Construction activities (i.e., excavation, grading, etc.) associated with the projects in Table 25 would also include excavation into native soils and could also disturb archaeological resources or human remains. At a minimum, any construction associated with the projects listed in Table 25 that include excavation would also proceed in adherence with similar guidelines and environmental review, provide mitigation as needed, and comply with federal, state, and local regulations designed to address cultural resource impacts potentially arising from construction.

4.2.2.5.2 Conclusion

A project's impacts with respect to cultural resources are generally site-specific and will not affect or be affected by other development in the region. The proposed project's incremental impacts would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.6 Energy

The geographic scope of the cumulative energy analysis includes the service areas that provide electricity to the project area which are: PG&E, Redding Electric Utility, and Sacramento Municipal Utility District.

4.2.2.6.1 Cumulative Impact Analysis

The proposed project would not require any unusual or excessive construction equipment or practices compared to projects of similar type and size. Even though mitigation is not required, mitigation measure MM-AIR-1, minimize construction truck idling, would be implemented to further reduce energy impacts. The proposed project would not waste or unnecessarily consume energy resources or conflict with renewable energy or energy efficiency plans. Most other projects in Table 25, being within or overlapping the project area, would similarly be subject to the energy

reduction policies and goals of the state and local plans of the project area. None of the projects in Table 25 have documented the need for excessive construction equipment or practices compared to projects of similar type and size.

4.2.2.6.2 Conclusion

Based on the above analysis, it is concluded that the proposed project and projects listed in Table 25 would not have cumulatively considerable impacts related to energy consumption or efficiency.

4.2.2.7 Geology and Soils

The geographic scope of the cumulative geology and soils resources analysis includes the project area and the areas in close proximity or overlapping that may be affected by the proposed project's construction or operations. The project area is within an area with a diverse geological history, including the Sierra Nevada, Klamath, Cascade, and Coast mountain ranges. Erosion and deposition of sediment from these ranges contributed to the geological profile of the project area. Underlying the Sacramento Valley and the Sierra Nevada, Klamath, Cascade, and Coast mountain ranges are rocks that are representative of the principal ground-water reservoir within the Sacramento Valley. The areas where the proposed project would occur are currently used mostly for agriculture and related facilities, with some areas located in a more urbanized setting.

4.2.2.7.1 Cumulative Impact Analysis

The proposed project would result in less-than-significant impacts related to seismic liquefaction, landslides, and ground shaking. Potential impacts associated with soil erosion and loss of topsoil due to uncovered soil during cropland idling, construction activities in piping open ditches or canals, and other soil excavation or grading activities would be less than significant. The proposed project would result in less-than-significant impacts related to geologic unit or soils instability. While mitigation is not required related to these topics, to further reduce the potential for impacts, the proposed project would implement mitigation measures MM-HYD-1, MM-GEO-1, MM-GEO-2, and MM-GEO-3. The project area has significant portions that are designated as having expansive soils, with 288 square miles having a very high linear extensibility percentage and 570 square miles having a high linear extensibility percentage. Expansive soils can cause stress on loads placed on the soils. Construction of drought-resiliency projects on expansive soils could create substantial risks to life or property. Therefore, impacts related to siting a project on expansive soils could be potentially significant and would require implementation of mitigation measures MM-GEO-1 and MM-GEO-3 to reduce the potential for impacts to a less-than-significant level.

Because the project area is not likely to contain unique geological or paleontological resources, impacts would be less than significant and are not likely to be cumulatively considerable in combination with other project evaluated. Because wastewater demand would not be impacted by the proposed project, the proposed project would result in no impact related to septic tanks or alternative wastewater disposal systems and would not be cumulatively considerable in combination with other project evaluated.

A project's impacts with respect to geology and soils are generally site-specific and would not affect or be affected by other development in the region. As with the proposed project, erosion could occur during construction grading or other site preparation activities associated with other projects, which could cumulatively contribute to localized soil erosion and the resultant siltation of local creeks. Environmental review has been or will presumably be conducted for each of the other identified projects as was done for the proposed project. Impacts of other individual projects would be mitigated by compliance with city and county development standards similar to how the proposed project includes mitigation to reduce impacts to geology and soils.

4.2.2.7.2 Conclusion

The proposed project's incremental impacts on geology and soils would not be cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

4.2.2.8 Greenhouse Gas Emissions

The geographic scope of the cumulative GHG emissions analysis is California, because the state has established target statewide GHG reductions. As discussed in Section 3.8, the state has established a comprehensive goal to reduce GHG to 80% below the 1990 level by 2050, which includes emission reduction targets from all sectors enacted by a series of regulations and programs. Multiple cities and local municipalities in the project area have adopted Climate Action Plans, including the cities of Redding, Anderson, Williams, Woodland, and Davis.

4.2.2.8.1 Cumulative Impact Analysis

While some of the proposed drought-resiliency project activities would produce additional minor, temporary GHG emissions compared to existing conditions, these emissions would likely be offset by the proposed project's water reduction activities, specifically crop idling, which would reduce GHG emissions. The proposed project would include components specifically aimed at reducing water usage, which itself reduces GHG emissions by reducing the energy needed to deliver water, and reducing activity of carbon-intensive practices, such as rice farming. These components support state GHG reduction plans and targets. Construction and operation of drought-resiliency projects would not be expected to be a significant source of GHG emissions, as all would be short in duration and intensity and none are expected to require an abnormal or significant amount of time or equipment activity to complete. The proposed project would not conflict with any rules, plans, or policies adopted with the purpose of GHG emissions reduction. Impacts would be less than significant. While mitigation is not required, mitigation measure MM-AIR-1 would be implemented to further reduce GHG and criteria pollutant emissions by controlling unnecessary idling.

Each of the projects listed in Table 25 would occur within California and emit GHG emissions from construction and operations. Emissions would come largely from mobile source combustion, and electricity use. Because of the nature of GHGs, impacts from these projects would be additive. The projects listed in Table 25 would be required to perform their own analysis of associated GHG

emissions and consistency with applicable plans, including development of mitigation measures to address these impacts, if required.

In addition, the proposed project, as well as other reasonably foreseeable future projects, would be subject to future requirements imposed by ARB's 2022 Scoping Plan for Achieving Carbon Neutrality (ARB 2022). The 2022 Scoping Plan describes the state targets for carbon neutrality and the reduction of GHG emissions by 85% below 1990 levels no later than 2045, and all of the projects in Table 25 are subject to statewide initiatives. Statewide programs to incentivize electric cars, trucks, and equipment, along with initiatives to promote renewable energy standards will help to decarbonize the electricity grid and reduce emissions.

4.2.2.8.2 Conclusion

Based on this analysis, the proposed project's incremental GHG emissions impacts would not be cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

4.2.2.9 Hazards and Hazardous Materials

The geographic scope of the cumulative hazards and hazardous materials analysis consists of the project area, soil and groundwater in the project area, and roadways or rail that would be affected in the event of an accidental release of hazardous materials during transport.

4.2.2.9.1 Cumulative Impact Analysis

The proposed project's water reduction activities would result in a less-than-significant impact from hazardous materials use. Construction of the drought-resiliency projects may disturb contaminated soils or use construction equipment that could result in inadvertent fuel and lubricants spills, and it would include temporary transport and handling of small quantities of hazardous substances (e.g., fuels and lubricants). Operation of the proposed drought-resiliency projects would not increase transport, use, or disposal of hazardous materials. Handling of all hazardous materials would be conducted in compliance with standard BMPs in accordance with all applicable state and federal laws. Implementation of MM-HAZ-1, MM-HAZ-2, and MM-HYD-1 would address potential impacts from project construction by establishing appropriate soil management and emergency response measures, requiring spills kits, and developing and implementing hazardous material spill prevention and cleanup plans. If construction and operation of drought-resiliency projects were to overlap with active cleanup sites, impacts would be considered potentially significant. MM-HAZ-3 would be implemented to reduce potential impacts by siting drought-resiliency projects away from active cleanup sites, reducing the impact to less than significant. The proposed project would not result in significant safety hazards or excessive noise to people or from hazardous material emissions or handling in the vicinity of a school; would not interfere with implementation of any adopted regional response or hazardous material plans, emergency response plans, or emergency evacuation plans in the project area; and would have a less-than-significant impact on exposing people or structures to wildfire risk.

Several of the projects listed in Table 25 may similarly include the use, transport, and disposal of hazardous materials, and occur on or near listed hazardous material sites. For these projects, potential impacts from hazardous materials on site would likely be localized and handled per applicable regulations, and any transport or disposal of materials would occur per federal, state, and local regulations. Because the likelihood of accidental upset during transport of hazardous materials is relatively low, and short-term, it is unlikely that there would be simultaneous accident events from shipping, and cumulative impacts are not anticipated. The proposed project would have less-than-significant impacts regarding safety hazards and noise, hazardous material emissions or handling in the vicinity of a school, interference with adopted hazardous materials and emergency response plans, and exposure of people or structures wildfire risk; therefore, there would be no cumulatively considerable impact on hazards and hazardous materials from the proposed project in combination with other projects.

4.2.2.9.2 Conclusion

The proposed project's incremental impacts related to hazards and hazardous materials would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.10 Hydrology and Water Quality

The geographic scope of the cumulative hydrology and water quality analysis consists of the study area for the proposed project, defined as the Sacramento Valley below Shasta Lake, and the southernmost extent defined as the City of Sacramento.

4.2.2.10.1 Cumulative Impact Analysis

The proposed project presents the potential for both positive and negative impacts to surface and groundwater quality as a result of water reduction activities and construction and operation of the drought-resiliency projects. Potentially significant impacts include possible impacts due to erosion following cropland idling or during construction of the drought-resiliency projects, as well as release of hazardous substances during construction of the drought-resiliency projects. Implementation of mitigation measure MM-HYD-1, requiring development of an erosion control and spill prevention plan, would reduce erosion impacts such that impacts to surface water and groundwater quality would be less than significant. The proposed project could cause both additional decreases to groundwater supplies and reduce seepage that helps recharge groundwater and increase the potential for land subsidence. To reduce this potentially significant impact to less than significant, mitigation measure MM-HYD-2, requiring installing and operating groundwater wells in accordance with GSPs for all groundwater pumping, would be required. Implementation of mitigation measures MM-HYD-1 and MM-HYD-2 would reduce impacts to surface and groundwater water quality such that the potential for conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan as a result of the proposed project would be reduced to less than significant. The proposed project would have no impact regarding flood risk.

Several of the projects listed in Table 25 may similarly require the use of materials or entail construction that could adversely affect water quality if improperly managed, including increased erosion. These projects also entail alterations to existing drainage systems that could alter surface and groundwater quality in the project area and planning mechanisms that could modify groundwater supplies and recharge. Environmental review has been or will presumably be conducted for each of these projects as was done for the proposed project. Similar to the proposed project, each of these projects would adhere with, as necessary, erosion and spill control requirements and the policies of local planning documents to avoid adverse impacts. Projects in Table 25 affecting groundwater would also be subject to GSA requirements which would evaluate the appropriateness of each project in terms of siting, monitoring, and documentation, as appropriate, prior to approval. As such, the proposed project's incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

4.2.2.10.2 Conclusion

The proposed project's incremental impacts related to hydrology and water quality are not cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.11 Mineral Resources

The geographic scope of the cumulative mineral resources analysis consists of the eight counties of the project area. Mineral resources exist throughout the project area; however, only Shasta, Tehama, Butte, and Sacramento counties have mines that overlap with the project area. All of the counties of the project area have designated MRZs.

4.2.2.11.1 Cumulative Impact Analysis

The proposed project would not result in a loss of availability of a known mineral resource. Impacts would be considered less than significant. While mitigation is not required, mitigation measure MM-MIN-1 would be implemented to ensure that drought-resiliency projects are sited away from MRZs where possible, further reducing potential impacts.

The projects listed in Table 25 would most likely be planned and sited to avoid mines and MRZs and would not include any mineral extraction activities. No important mineral recovery sites are delineated on a local general plan, specific plan, or other land use plan in the project area, which precludes the proposed project and other projects listed in Table 25 from cumulatively combining to impact mineral resource recovery.

4.2.2.11.2 Conclusion

The proposed project's incremental impacts related to mineral resources would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.12 Noise

The geographic scope of the cumulative noise analysis includes the project area, as well as sensitive receptors that may be affected by construction equipment. The cumulative noise analysis relies in part on community noise standards included in the general plans applicable to the project area.

4.2.2.12.1 Cumulative Impact Analysis

Implementation of the proposed project combined with projects identified in Table 25 could result in construction-related noise temporarily exceeding noise thresholds identified in local plans, policies, and ordinances. All construction activities for the proposed project would be short-term. The work sites would be primarily remote and in scarcely populated unincorporated areas and would not result in significant increases in ambient noise levels. While mitigation is not required for impacts compared to ambient noise levels, mitigation measures MM-NOI-1 and MM-NOI-2 would be implemented to further reduce noise impacts during construction. Mitigation measure MM-NOI-1 would ensure that sensitive receptors are informed of construction timing and mitigation measure MM-NOI-2 would ensure that equipment is used and maintained according to manufacturer specifications. Construction-related vibration could exceed FTA thresholds. Implementation of mitigation measure MM-NOI-3 would ensure heavy equipment does not cause impactful vibration impacts on neighboring structures and would reduce vibration impacts to less than significant. Even if a drought-resiliency project were located within the vicinity of a private airstrip or an airport land use plan, people residing or working in the project area would not be exposed to excessive noise levels. Implementation of mitigation measures MM-NOI-1, MM-NOI-2, and MM-NOI-3 would further reduce this impact.

It is unlikely that construction noises and vibration from the projects listed in Table 25 would combine with that from the proposed project given the large geographic area and the intermittent locations of possible, and currently unknown, construction sites of the proposed project. However, overlapping construction areas and schedules could result in short-term cumulative noise and vibration impacts from construction activities. Environmental review has been or is expected to be conducted for each project identified in Table 25, consistent with the proposed project. Projects identified in Table 25 would be evaluated for potential noise impacts and required to implement BMPs as needed to avoid adverse impacts on a project-specific basis. The proposed project would not increase or create significant new sources of operational noise.

4.2.2.12.2 Conclusion

The proposed project's incremental impacts related to noise would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.13 Public Services

The geographic scope of the cumulative public services analysis includes the service areas that provide public services to the project area for fire protection, police protection, schools, parks, and other public facilities, as described in detail in Section 3.15.

4.2.2.13.1 Cumulative Impact Analysis

The proposed project would have a minimal impact on public services in the project area and would not affect service ratios. Drought-resiliency projects could result in increased demand for fire protection services during construction due to increased potential for on-site fires from the use of flammable construction materials and operation of construction equipment. Implementation of mitigation measure MM-HYD-1 would reduce this impact to less than significant by ensuring the construction contractor carefully stores flammable materials in appropriate containers and immediately and completely clean up spills of flammable materials when they occur. In addition, construction managers and personnel would be trained in spill prevention, hazardous material control, and cleanup of accidental spills.

The projects listed in Table 25, similar to the proposed project, could result in increased demand for fire protection services during short-term construction activities. Mitigation measure MM-HYD-1 would reduce the proposed project's contribution to increased demand for fire protection services to less than significant. Also, environmental review has been or is expected to be conducted for each project identified in Table 25, as was done for the proposed project. Projects identified in Table 25 would be evaluated for potential increased demand for public services, including fire protection, and required to implement measures as needed to avoid adverse impacts on a project-specific basis.

4.2.2.13.2 Conclusion

The proposed project's incremental impacts related to public services would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.14 Transportation

The geographic scope for cumulative impacts on transportation includes existing transportation resources in the project area including the regional and local roadway network, rail lines, and pedestrian and bike facilities. As discussed in Section 3.17, aspects of a traffic analysis are by nature a cumulative issue. Traffic can be caused by poor infrastructure design, short-term construction, or mass accumulation of vehicles on a roadway during peak travel hours. Like the analysis in Section 3.17, the cumulative analysis considers regional traffic plans and projections.

4.2.2.14.1 Cumulative Impact Analysis

The proposed project would generate limited increases in vehicle trips during short-term construction of drought-resiliency projects. The primary source of construction trips would be use of heavy equipment to and from the site, as well as construction worker commute trips. Heavy equipment would likely be staged onsite and therefore equipment would generally make one

roundtrip to and from the site. Operations may require minimal vehicle and truck trips for routine operational and maintenance activities, such as inspecting and repairing facilities, but would not represent a significant increase.

Construction of the projects in Table 25 could also generate increased traffic during construction and operations. As with the proposed project, environmental review has been or will presumably be conducted for each project. Traffic impacts of individual projects would be mitigated by compliance with city, county, and regional construction permit requirements, such as a construction traffic management plan. Due to the short-term nature of construction activities and the minor increase in vehicle trips resulting from personnel, impacts to the local circulation network resulting from the proposed project plus cumulative projects would be less than significant.

4.2.2.14.2 Conclusion

The proposed project's incremental impacts related to transportation would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.15 Tribal Cultural Resources

The geographic scope of the cumulative Tribal cultural resources analysis consists of the project area and the areas in close proximity or overlapping that may be affected by the proposed project's construction or operations. Projects that include excavation may disturb native fill and could cause substantial changes to the significance of a Tribal cultural resource, if present.

4.2.2.15.1 Cumulative Impact Analysis

The proposed project includes excavation into native soils for construction of drought-resiliency projects. If present, Tribal cultural resources may be impacted by ground disturbance associated with these projects. The details of proposed project construction activities and those of other projects are not known at this time, but it is possible that several of the projects could occur in the same general area and simultaneously. The proposed project requires implementation of the following measures to reduce the potential impacts to Tribal cultural resources to less than significant: MM-CUL-1, MM-CUL-2, MM-CUL-3, and MM-CUL-4. At a minimum, any construction associated with the projects listed in Table 25 that include excavation would also proceed in adherence with similar guidelines, in addition to compliance with federal, state, and local regulations designed to address Tribal cultural resource preservation and impacts potentially arising from construction.

4.2.2.15.2 Conclusion

A project's impact with respect to substantially causing a change in the significance of a Tribal cultural resource are generally site-specific and will not affect or be affected by other development in the region. The proposed project's incremental Tribal cultural resources impacts would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.16 Utilities and Service Systems

The geographic scope of the cumulative utilities analysis consists of the utilities and service systems that serve the project area and surrounding areas, which include solid waste management, water supply and treatment, wastewater treatment, energy (electricity and natural gas), and telecommunications that serve the eight counties in which the project is located.

4.2.2.16.1 Cumulative Impact Analysis

As discussed in Section 3.19, the drought-resiliency projects would require utility connections or extensions for electricity and telecommunications and water conveyance, the routes of which cannot be determined at this time; therefore, certain impacts could be potentially significant.

Implementation of a number of mitigation measures would either reduce this impact to less than significant or further reduce less than significant impacts, including MM-AGR-1, MM-HAZ-3, MM-MIN-1, MM-NOI-1 through MM-NOI-3, MM-BIO-1 through MM-BIO-9, MM-BIO-12, MM-BIO-13, MM-HYD-1, MM-UTI-1, and MM-UTI-2. The proposed project would have a less-than-significant impact regarding water supply and solid waste management.

The projects listed in Table 25 are not expected to impact the utilities and service systems that serve the project area, with the exception of impacts related to water supply because some of the other projects propose to change the management of flows, alter or reallocate water uses or supply, and construct new facilities. This could result in significant impacts related to water supply. However, because the proposed project would have a less-than-significant impact on water supply and is designed to reduce water use thereby maintaining or increasing water supply, this impact is not cumulatively considerable.

4.2.2.16.2 Conclusion

The proposed project's incremental impacts related to utilities and service systems would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

4.2.2.17 Wildfire

The geographic scope of the cumulative wildfire analysis consists of the service area of CAL FIRE, which is responsible for wildfire prevention and suppression in the state of California and the project area.

4.2.2.17.1 Cumulative Impact Analysis

CAL FIRE has identified portions of the project area as within zones that present a Very High fire hazard severity risk (CAL FIRE 2024b), which is defined as an area at extreme risk for wildfires. Most of the project area is located in locally responsible areas, while small portions are located in state and federal responsible areas (CAL FIRE 2024c).

Water reduction activities would not exacerbate wildfire risk and would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk. Construction of drought-resiliency projects would not exacerbate wildfire risk and also would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk. Projects listed in Table 25 may affect wildfire and wildfire risk because some involve changes to the management of flows and alteration or reallocation of water uses or supply which could affect access to water supplies used for fire suppression. The projects listed in Table 25 could also involve construction of new facilities that could exacerbate wildfire risk or increase the risk of exposing people and structure to significant risks. Depending on the location of the projects listed in Table 25, other projects may increase the risk of wildfire if protection and prevention measures are not implemented. Environmental review has been or is expected to be conducted for each of the projects identified in Table 25, consistent with the proposed project. Projects identified in Table 25 would also be evaluated for the potential to increase wildfire risk. Although fire hazard in the area will remain high, the proposed project would result in less-than-significant impacts on wildfire, and incremental effects are not cumulatively considerable when viewed in connection with the effects of the other projects evaluated.

4.2.2.17.2 Conclusion

The proposed project's incremental impacts related to wildfire would not be cumulatively considerable when viewed in connection with the impacts of the other projects evaluated.

5 Other Required Analyses

5.1 Unavoidable Significant Impacts

As required by CEQA Guidelines Section 15126.2(c), an EIR must describe any significant impacts that cannot be avoided, including those impacts that can be mitigated but not reduced to a less-than-significant level. Sections 3 and 4 of this DEIR describe the potential environmental impacts of the proposed project and recommend mitigation measures to reduce impacts, where feasible. As presented in Section 3, this EIR identifies significant and unavoidable impacts to biological resources (Section 3.4.3) due to the potentially significant and unavoidable impacts on GGS and northwestern pond turtle from crop idling (Impact BIO-1), interference with migratory movement corridors (Impact BIO-4), conflicts with local policies or ordinances protecting biological resources (Impact BIO-5), and conflicts with the provisions of HCPs/NCCPs (Impact BIO-6). While numerous mitigation measures would be implemented to reduce the proposed project's potential environmental impacts on biological resources, these impacts are considered significant and unavoidable.

5.2 Significant Irreversible Environmental Changes

Section 15126.2 (d) of the CEQA Guidelines requires an EIR to discuss the extent to which a proposed project would commit non-renewable resources to uses that future generation would probably be unable to reverse, and irretrievable damage that could result from environmental accidents associated a proposed project.

Construction of the drought-resiliency projects under the proposed project would require the manufacture of new materials requiring the use of energy. The production of these materials would result in consumption of nonrenewable, natural resources including fossil fuels, water, bulk building products, and nonrenewable construction materials. Resources that are committed irreversibly and irretrievably are those that would be used by a project on a long-term or permanent basis. Resources committed to the proposed project include water, bulk building products, fossil fuels, and nonrenewable construction materials. Fossil fuels and energy would be consumed during construction activities. Fossil fuels, in the form of diesel oil and gasoline, would be used to power construction equipment and vehicles. The use of these energy resources would be irretrievable and irreversible. Non-recoverable materials and energy would be used during construction activities; the amounts consumed would be accommodated by existing supplies. Although the increase in materials and energy used would be limited and readily accommodated, these resources would nevertheless be unavailable for other uses.

Potential environmental accidents of concern include those that would have adverse effects on the environment or public health due to the nature or quantity of material released during an accident and the receptors exposed to that release. Construction activities associated with the drought-resiliency projects would involve some risk for environmental accidents. However, these activities

would be monitored by applicable local, state, and federal agencies, and would follow professional industry standards governing the use, storage, transport, and disposal of hazardous materials as identified in in Section 3.9 and all proposed mitigation measures. As a result, the proposed project would not pose a substantial risk of accidental release of hazardous materials. Once constructed, the proposed project would not cause a substantial increase in the consumption or use of nonrenewable resources. No increases in inefficiencies or unnecessary energy consumption are expected to occur as a direct or indirect consequence of the proposed project. Energy impacts associated with the proposed project would not have any measurable effect on per capita energy consumption.

5.3 Growth-Inducing Impacts

The discussion on growth-inducing impacts must address “ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment” (CEQA Guidelines, § 15126.2 (e)). Growth-inducing effects of a proposed project are considered significant if the project directly causes population growth beyond that considered in local and regional land use plans or another relevant population growth projection. Effects would also be significant if a proposed project would provide the means to allow for population growth beyond that considered in local and regional land use plans or another relevant population growth projection.

The proposed project would not result in permanent population growth in the area due to direct employment. It is anticipated that most of the construction workers for construction of drought-resiliency projects would come from the local labor pool available in the county in which they are located, with workers expected to commute to construction sites rather than move to the area. Thus, additional housing to accommodate these workers would not be required. The operations and maintenance work required for these projects would likely be fulfilled by current employees. In addition, the proposed project would not modify land use or zoning designations to permit new residential or commercial development and therefore would not foster growth, remove direct growth constraints, or add a direct stimulus to growth. Therefore, the proposed project would not result in direct or indirect impacts to population growth.

6 Alternatives

The purpose of this section, consistent with CEQA Guidelines Section 15126.6, is to present a range of reasonable alternatives to a proposed project, or to the location of a project, that could feasibly attain most of the basic project objectives but would avoid or substantially lessen any significant impacts of the project and to evaluate the comparative merits of the alternatives. An EIR is not required to consider alternatives that are infeasible. Pursuant to CEQA Guidelines Section 15126.6(f)(1), “among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent).” Although these factors do not present a strict limit on the scope of reasonable alternatives to be considered, they help establish the context against which “the rule of reason” is measured when determining an appropriate range of alternatives sufficient to establish and foster meaningful public participation and informed decision-making. Pursuant to CEQA Guidelines Section 15126.6(e)(2), an EIR must also include an analysis of a No Project Alternative. The No Project Alternative analyzes what would be expected to occur if the proposed project were not approved. The EIR must also identify the Environmentally Superior Alternative; if the No Project Alternative is the Environmentally Superior Alternative, then the EIR must also identify an Environmentally Superior Alternative among the other alternatives.

To develop project alternatives, the project objectives and significant impacts associated with the proposed project were identified. GCID then considered whether those significant impacts could be substantially avoided or reduced through a range of reasonable project alternatives, and then evaluated the comparative merits of the project alternatives.

As stated in Section 2.3, the project objectives are to:

- Approve and facilitate reduced water contract supply to the SRSC during specified drought years to address water shortages at Shasta Lake in accordance with the Agreement and generally meet existing municipal, agricultural, and habitat demands from 2025 to 2045.
- Develop implementable and supplemental drought-resiliency projects to strengthen the resilience of the SRSC’s water systems and long-term water delivery capabilities.

As presented in Section 3, the proposed project would result in significant and unavoidable impacts to Biological Resources, and less-than-significant impacts following mitigation to Agriculture and Forestry Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Tribal Cultural Resources, and Utilities and Service Systems. All other environmental resource topics would either result in less than significant impacts not requiring mitigation or no impacts. The alternatives analysis only addresses resource areas for which the proposed project could cause potentially significant environmental impacts prior to implementation of mitigation. Section 6.5 identifies the Environmentally Superior Alternative.

6.1 Alternatives Considered but Eliminated

As discussed in Section 2.6, several alternatives were considered but eliminated due to the inability to meet project objectives or due to feasibility issues. The following are the alternatives that were considered but eliminated:

- **Decreased Contract Supply Reductions:** This alternative was considered to reduce impacts to biological resources and disruptions to current agricultural activities. However, because decreased contract supply reduction alternatives would not be capable of preserving sufficient water to address water shortages at Shasta Lake consistent with Reclamation's operational requirements and objectives, this alternative would not meet the project objectives or need and was not carried forward for full analysis.
- **No Cropland Idling Alternative:** This alternative was considered to reduce impacts to biological resources and disruptions to current agricultural activities. This alternative would involve accomplishing surface water use reductions through cropland shifting, groundwater substitution, and conservation activities, without idling croplands, which would require new groundwater wells to supply water needs. However, because new wells could not feasibly be constructed and operable by the time that the first Phase 1 Agreement Year could be in effect in 2025, and it is not reasonable to assume that new wells would result in sufficient surface water use reductions to meet the 500,000 acre-feet requirement during a Phase 1 Agreement Year (given local groundwater conditions and SGMA requirements), this alternative would not meet the project purpose and need and was not carried forward for full analysis.
- **Alternative Site Locations:** This alternative was considered to reduce impacts to biological resources, cultural resources, hazards and hazardous materials, and hydrology and water quality as well as reduce disruptions to current agricultural activities. While a smaller portion of the SRSC service area could be the focus of water reduction activities, the Agreement is between Reclamation, the SRSCNC, and the SRSC. Focusing the reductions on select areas would cause disproportionate impacts to certain members of the SRSC and, therefore, would not likely be agreeable to the Agreement signatories, rendering this alternative infeasible.

6.2 Alternatives Carried Forward for Analysis

Through the alternatives analysis process, the proposed project and one alternative, the No Groundwater Substitution Alternative (or Alternative 1), were found to meet most project objectives and were carried forward for impact analysis in this DEIR. Consistent with CEQA requirements, the No Project Alternative is also carried forward for this analysis. This section presents the environmental analysis of the No Project Alternative and Alternative 1 in comparison to the proposed project. Table 26 summarizes assumptions related to water supply under the alternatives carried forward for consideration.

Table 26**Contracted Water Supply Available for the SRSC under the Project Alternatives including Existing Contracts and Proposed Agreement**

	Total Contracted Water Amount	Maximum Contracted Water Amount in Agreement Years
No Project	2,100,000 acre-feet ^a	1,600,000 acre-feet
Proposed Project	2,100,000 acre-feet ^a	Phase 1: 1,100,000 acre-feet ^b Phase 2: 1,500,000 acre-feet ^b
Alternative 1	2,100,000 acre-feet ^a	Phase 1: 1,100,000 acre-feet ^b Phase 2: 1,500,000 acre-feet ^b

Notes:

a. Contracted water amount rounded based on normal fluctuations.

b. Assuming maximum additional reduction under the proposed Agreement occurs in a single year.

6.2.1 Alternative 1: No Project Alternative

The No Project Alternative analyzes what would be expected to occur if the proposed project were not approved. Pursuant to CEQA Guidelines Section 15126.6(e)(2), the No Project Alternative shall “discuss the existing conditions at the time the NOP is published, or if no NOP is published, at the time the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.” Under the No Project Alternative, the Agreement between the SRSC and Reclamation would not be signed, and water would continue to be managed based on current allocations and management plans. Neither of the objectives of the proposed project, to facilitate surface water reductions during specified drought years and to implement drought-resiliency projects to address potential water loss and strengthen the resilience of the SRSC’s water system and long-term water delivery capabilities, would be achieved. As part of the No Project Alternative, SRSC members would continue to receive contracted water per the existing agreements as shown in Table 26.

Contractors would continue to manage water on an individual basis and may elect to implement certain water reduction activities (e.g., canal lining) and/or shift agriculture practices (e.g., crops shifting or idling) based on drought and/or economic conditions similar to the individual practices occurring under baseline conditions. Such activities would not be completed in any coordinated way and are too speculative to define in terms of timing and location.

6.2.2 Alternative 2: No Groundwater Substitution Alternative

This alternative would involve accomplishing surface water use reductions through cropland idling, cropland shifting, and conservation activities, without groundwater substitution. Drought-resiliency projects—including construction of new groundwater wells—may be undertaken with this alternative but, no groundwater pumping would occur to meet Agreement surface water use reductions. This alternative was devised to reduce biological resources impacts, specifically impacts related to

subsurface drawdown of groundwater from increased groundwater substitution, to avoid impacting riparian or wetland habitats reliant on groundwater resources.

As discussed in Section 2.5.1.2, under the proposed project, a contractor may choose to pump more groundwater to replace some of the reductions in contracted surface water supplies during Agreement Years (up to 167,100 acre-feet in Phase 1 and 33,420 acre-feet in Phase 2). Under Alternative 1, contractors would not pump any additional groundwater during Agreement Years and would instead need to reduce surface water use through other activities. While more crop shifting and conservation could reduce some water use, it is assumed most contractors would idle more cropland without access to more groundwater.

6.3 Resources with Significant and Unavoidable Impacts

6.3.1 *Biological Resources*

6.3.1.1 No Project Alternative

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in biological resources impacts compared to baseline conditions. While individual contractors would continue to manage water on an individual basis and may elect to implement certain water saving activities (i.e., canal lining and/or crop shifting or idling) based on drought and/or economic conditions similar to individual practices under baseline conditions, such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant impacts to biological resources; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated.

As compared to the proposed project, impacts to GGS and northwestern pond turtle would likely be less as contractors would continue to receive contracted water at existing levels assuming existing agreements. However, as the Agreement would not be implemented under the No Project Alternative, more water would be diverted from Shasta Lake as compared to under the proposed project and there would be further reductions in water storage in Shasta Lake during certain drought years. Special status wildlife species benefit from additional water volume in Shasta Lake during drought years compared to existing conditions. Salmonids and other fish of primary management concern in the project area rely upon water releases from the Shasta Dam to provide cold water for spawning and incubation over the summer months and river flow levels that facilitate migration. These fish are impacted by critically dry conditions that reduce river flow and increase water temperatures, especially during drought years. The northwestern pond turtle and bald eagle are also dependent on aquatic resources to complete their life cycle and would benefit from the availability of habitat within Shasta Lake associated with increased water levels as a result of the water reduction activities. Adverse impacts associated with lower Shasta Lake levels would continue and beneficial impacts from higher Shasta Lake levels would not be realized under the No Project Alternative.

6.3.1.2 Alternative 1

This alternative would involve accomplishing surface water use reductions through cropland idling, cropland shifting, and conservation activities, without groundwater substitution occurring as a result of the Agreement. To compensate for the lost groundwater, it is assumed that contractors would idle additional cropland. This alternative would not increase subsurface drawdown of groundwater from increased groundwater substitution, and therefore would not impact riparian or wetland habitats reliant on groundwater resources from groundwater substitution.

This alternative would avoid all impacts associated with groundwater pumping but would likely result in increased crop idling impacts as compared to the proposed project and similar impacts related to crop shifting, conservation, and drought-resiliency projects. As discussed in Section 3.4, idled croplands could directly affect nests present in the vegetation. Fallowed rice fields and reduced water in connecting drainage canals and ditches could also reduce GGS foraging habitat, impact GGS genetic diversity, disconnect natural GGS habitats, and stress GGS from the loss of essential cover from predators. Dewatered irrigation ditches could reduce habitat and foraging opportunities for northwestern pond turtle. These effects of Alternative 1 would be similar to those of the proposed project but at occur at higher levels if more cropland is idled. Such effects would result in a higher level of significant impacts than the proposed project.

Additional crop idling would also further reduce water levels in canals and ditches, causing riparian or wetland vegetation to prematurely drop leaves before seasonally appropriate or potentially die and temporarily reducing the amount of riparian or wetland habitat available in the project area. Because riparian and wetland habitat would re-establish after idling ceases, impacts would be considered less than significant.

Biological resource impacts related to drought-resiliency projects would be the same as the proposed project. Riparian vegetation that has formed on large, perennial irrigation canals and ditches could be potentially impacted by drought-resiliency project construction activities that involve work in the canal or ditch or in immediately adjacent riparian areas, constituting a potentially significant impact.

The following mitigation measures would be implemented to reduce Alternative 1's potential impacts on biological resources:

- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-2:** Conduct Special-Status Plant Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-3:** Conduct Special-Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-4:** Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects

- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
- **MM-BIO-6:** Implement GGS Avoidance Measures for Drought-Resiliency Projects
- **MM-BIO-7:** Obtain Incidental Take Authorization for Take of Listed Species from Drought-Resiliency Project Impacts
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects
- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
- **MM-BIO-10:** Timing Requirements for Discing in Fallow Fields During Agreement Years
- **MM-BIO-11:** Maintain Minimum Water Depth in Irrigation and Drainage Canals in Key Areas During Agreement Years
- **MM-BIO-12:** Conduct Aquatic Resources Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-13:** Obtain Required Permits and Implement Wetland Mitigation for Drought-Resiliency Projects
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Implementation of MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-12 would map and flag potential special status wildlife or plant species habitats to avoid or minimize impacts on potential habitat and individuals from drought-resiliency project construction. Implementation of MM-BIO-4 and MM-BIO-6 would ensure that impacts to any potentially present nesting birds and GGS are respectively avoided or minimized during drought-resiliency project construction. Implementation of MM-BIO-5 would ensure that other types of direct and indirect impacts on potentially present special status species and habitats are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and CDFW CNDDDB reporting, among other measures during drought-resiliency project construction. If take of special status wildlife species is likely as a result of a drought-resiliency project even after implementation of the avoidance, minimization, and the mitigation measures above, implementation of MM-BIO-7 requires coordinating with USFWS and/or CDFW and obtaining an Incidental Take Permit, which could include providing compensatory mitigation. Issuance of the Incidental Take Permit would be considered to mitigate to a less-than-significant level the individual impacts on special status species. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status wildlife species from drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. Implementation of MM-BIO-9 would require that any native trees removed for drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable. If impacts to wetlands and waters cannot be avoided, then required permits, potentially including permits from the USACE, RWQCB, and CDFW would be obtained and complied with per MM-BIO-13. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through

onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved bank. Implementation of MM-HYD-1 would require that erosion and spill control measures be implemented during drought-resiliency project construction. With mitigation, construction of drought-resiliency projects would present no conflict with the provisions of HCPs/NCCPs. Implementation of these mitigation measures would reduce drought-resiliency project impacts to less than significant.

Implementation of MM-BIO-10 would require that disking occurring between February 15 and September 15 during an Agreement Year be conducted when vegetation is on average 12 inches or less in height, which would prevent potential impacts on nesting birds. Disking between September 15 and February 15 during an Agreement Year may occur without vegetation height restriction. Impacts would be reduced to less than significant with mitigation. Implementation of MM-BIO-11 would require to the extent practicable that minimum water depths are maintained in drainage canals in key areas during Agreement Years for the benefit of GGS and northwestern pond turtle. While this mitigation measure could reduce impacts to GGS associated with loss of genetic diversity, disconnected natural habitats, and stress from the loss of essential cover from predators, as well as to northwestern pond turtle from reduced habitat and foraging opportunities, because there could be areas where sufficient water cannot be left in irrigation canals and ditches due to inadequate surface water, impacts on GGS and northwestern pond turtle would remain significant and unavoidable with mitigation. As compared to the proposed project, impacts could be higher with less groundwater available to replace some of the water reductions.

6.4 Resources with Less-than-Significant Impacts Following Mitigation

6.4.1 *Agriculture and Forestry Resources*

6.4.1.1 No Project Alternative

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in agriculture or forestry resources impacts compared to baseline conditions. While individual contractors would continue to manage water on an individual basis and may elect to implement certain water saving activities (i.e., canal lining and/or crop shifting or idling) based on drought and/or economic conditions similar to individual practices under baseline conditions, such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant impacts to agricultural and forestry resources; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated.

6.4.1.2 Alternative 1

Alternative 1 would limit water reduction activities to cropland idling, cropland shifting, and conservation activities to meet contract supply reduction goals. For contract holders who have access

to groundwater resources, this alternative would limit their flexibility to select the most economical or practical water reduction strategy for their needs. Under Alternative 1, while cropland idling would likely increase as compared to the proposed project, similar to the proposed project, cropland would be returned to agricultural uses during non-Agreement Years and related water reduction activities would not require permanent conversions of agricultural lands to non-agricultural uses. Therefore, impacts associated with cropland conversion, zoning, and Williamson Act contracts are anticipated to be the same as those identified for the proposed project and less than significant.

As with the proposed project, there would be no potential for impacts to forest lands from water reduction activities because activities would be limited to existing agricultural lands. Construction of drought-resiliency projects would still occur, along with potentially significant impacts to forest lands consistent with the proposed project. The following mitigation measure would be implemented to reduce Alternative 1's potential impacts on forest lands:

- **MM-AGR-1:** Site Drought-Resiliency Projects Outside of Forest Lands

With implementation of MM-AGR-1, forest land impacts would be avoided. Alternative 1's impacts would be reduced to less than significant with mitigation consistent with impacts of the proposed project.

6.4.2 *Cultural Resources*

6.4.2.1 **No Project Alternative**

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in cultural resources impacts compared to baseline conditions. There may, however, be some discretionary water saving activities on the part of individual contractors similar to individual practices under baseline conditions, such as canal lining or piping open canals. Such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant impacts to cultural resources; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated.

6.4.2.2 **Alternative 1**

Under Alternative 1, ground disturbance associated with construction of drought-resiliency projects and water reduction activities would still occur and have the potential to impact cultural resources for the same reasons as the proposed project. In addition, similar to the proposed project, individual drought-resiliency projects could have the potential to impact historical resources through modifications to ditches and canals altered by piping, lining, or gate installation. It is anticipated that some ditches and canals, especially trunk canals of some systems, may be considered significant to the history of the project area and impacts would be considered potentially significant. The following

mitigation measures would be implemented to reduce Alternative 1's potential impacts on cultural resources:

- **MM-CUL-1:** Conduct CHRIS Review and Desktop Evaluation for Drought-Resiliency Projects
- **MM-CUL-2:** Conduct Pre-Construction Surveys and Establish Buffers for Drought-Resiliency Projects
- **MM-CUL-3:** Develop and Implement Applicable Monitoring and Mitigation for Drought-Resiliency Project Impacts
- **MM-CUL-4:** Develop IDP to be Implemented if Prehistoric or Historical Archaeological Resources Are Encountered during Drought-Resiliency Project Construction

Implementation of MM-CUL-1, MM-CUL-2, and MM-CUL-3 would ensure that drought-resiliency project locations are reviewed, evaluated, and surveyed, as determined necessary by a qualified archaeologist and that the appropriate applicable monitoring and mitigation is conducted during construction activities. Implementation of MM-CUL-4 would ensure that any inadvertent discoveries, including potentially discovery of human remains—whether at a drought-resiliency project location that was surveyed or not—are handled in accordance with the appropriate protocols.

Implementation. Alternative 1's impacts would be reduced to less than significant with mitigation consistent with impacts of the proposed project.

6.4.3 Hazards and Hazardous Materials

6.4.3.1 No Project Alternative

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in impacts related to hazards and hazardous materials compared to baseline conditions. There may, however, be some discretionary water saving activities on the part of individual contractors similar to individual practices under baseline conditions, such as canal lining or piping open canals. Such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant impacts to hazards and hazardous materials; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated.

6.4.3.2 Alternative 1

Alternative 1 includes construction of drought resiliency projects, which involve handling of limited hazardous materials, potentially including contaminated soils, and there is potential for construction equipment spills. Impacts would be considered potentially significant consistent with impacts of the proposed project. While Alternative 1 does not include groundwater pumping, groundwater pumping and conservation activities would have no impact on use of hazardous materials. The following mitigation measures would be implemented to reduce Alternative 1's potential hazards and hazardous materials impacts:

- **MM-HAZ-1:** Soil Testing in Accordance with Disposal Site Requirements
- **MM-HAZ-2:** Spill Kits
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Implementation of MM-HAZ-1, MM-HAZ-2, and MM-HYD-1 would address potential impacts from construction by establishing appropriate soil management and emergency response measures, requiring spills kits, and developing and implementing hazardous material spill prevention and cleanup plans. Alternative 1's impacts would be reduced to less than significant with mitigation consistent with impacts of the proposed project.

6.4.4 *Hydrology and Water Quality*

6.4.4.1 **No Project Alternative**

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in impacts related to hydrology and water quality compared to baseline conditions. Water use in the project area is anticipated to continue under existing patterns and conditions. There may, however, be some discretionary water saving activities on the part of individual contractors similar to individual practices under baseline conditions, such as canal lining or piping open canals. Such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant impacts to hydrology and water quality; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated. In addition, because drought-resiliency projects would not be implemented on the timeline or the scale as assumed proposed project, the No Project Alternative would result in a less-resilient water system, which would further lead to more water loss even during non-Agreement Years as compared to the proposed project.

6.4.4.2 **Alternative 1**

Alternative 1 would eliminate the use of groundwater for irrigation as an option for water reduction activities, and contract users would not withdraw an estimated up to 167,100 acre-feet annually in Phase 1 and 33,420 acre-feet annually in Phase 2. Less groundwater would be mixed with surface water, and there would be lower potential for COCs from groundwater to be mixed with surface waters. There would be no changes to existing groundwater pumping in Phase I or Phase 2 of the Agreement; therefore, there would be less depletion of groundwater resources and lower risk of drawdown effects such as subsidence. There would be no risk of potential conflicts with groundwater management plans because there would be no change in groundwater pumping.

However, similar to the proposed project, Alternative 1 could result in potentially significant impacts to nearby surface water and groundwater due to erosion following cropland idling, as well as from the potential release of hazardous substances during construction of the drought-resiliency projects.

The following mitigation measure would be implemented to reduce Alternative 1's potential impacts on hydrology and water quality:

- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects

Implementation of MM-HYD-1 would include erosion and spill control measures, which would reduce the significance of erosion impacts and potential impacts from accidental spills. With implementation of mitigation, impacts to surface and groundwater water quality would be reduced to less than significant. While impacts associated with groundwater withdrawal would be lower compared to the proposed project, other project activities would still have the potential to impact hydrology and water quality. Alternative 1's impacts would be reduced to less than significant with mitigation consistent with impacts of the proposed project.

6.4.5 *Noise*

6.4.5.1 **No Project Alternative**

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in noise impacts compared to baseline conditions. There may, however, be some discretionary activities on the part of individual contractors similar to individual practices under baseline conditions, such as canal lining or piping open canals. Such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant noise impacts; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated.

6.4.5.2 **Alternative 1**

Alternative 1 would eliminate groundwater pumping as a source of project noise. However, Alternative 1 would still create new noise in the short-term during construction of drought-resiliency projects. Noise-generating activities would mostly occur far from sensitive receptors, and these activities would follow local noise ordinances related to construction activity. Impacts would be less than significant, consistent with the proposed project. Noise impacts would be less than significant but potential vibration impacts on neighboring buildings from construction of drought-resiliency projects could be potentially significant, consistent with the proposed project. The following mitigation measures would be implemented to reduce Alternative 1's potential for noise impacts:

- **MM-NOI-1:** Notification Requirements to Off-site Noise-sensitive Receptors for Drought-Resiliency Projects
- **MM-NOI-2:** Power Equipment Use and Maintenance Requirements for Drought-Resiliency Projects
- **MM-NOI-3:** Heavy Equipment Must Operate at Least 25 Feet from Neighboring Structures for Drought-Resiliency Projects

Implementation of MM-NOI-1 would ensure that sensitive receptors are informed of drought-resiliency project construction timing. MM-NOI-2 would ensure that equipment is used and maintained according to manufacturer specifications. Implementation of MM-NOI-3 would ensure heavy equipment does not cause impactful vibration impacts on neighboring structures. Alternative 1's impacts would be reduced to less than significant with mitigation consistent with impacts of the proposed project.

6.4.6 *Tribal Cultural Resources*

6.4.6.1 **No Project Alternative**

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in Tribal cultural resources impacts compared to baseline conditions. There may, however, be some discretionary water saving activities on the part of individual contractors similar to individual practices under baseline conditions, such as canal lining or piping open canals. Such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant impacts to Tribal cultural resources; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated.

6.4.6.2 **Alternative 1**

Under Alternative 1, ground disturbance associated with construction of drought-resiliency projects would occur. If present, Tribal cultural resources may be impacted by ground disturbance associated with these projects, which would be considered a potentially significant impact. The following mitigation measures would be implemented to reduce Alternative 1's potential impacts on Tribal cultural resources:

- **MM-CUL-1:** Conduct CHRIS Review and Desktop Evaluation for Drought-Resiliency Projects
- **MM-CUL-2:** Conduct Pre-Construction Surveys and Establish Buffers for Drought-Resiliency Projects
- **MM-CUL-3:** Develop and Implement Applicable Monitoring and Mitigation for Drought-Resiliency Project Impacts
- **MM-CUL-4:** Develop IDP to be Implemented if Prehistoric or Historical Archaeological Resources Are Encountered during Drought-Resiliency Project Construction

Implementation of MM-CUL-1, MM-CUL-2, and MM-CUL-3 would ensure that drought-resiliency project locations are reviewed, evaluated, and surveyed, as determined necessary by a qualified archaeologist and that the appropriate applicable monitoring and mitigation is conducted during construction activities. Implementation of MM-CUL-4 would ensure that any inadvertent discoveries, including potentially discovery of human remains—whether at a drought-resiliency project location that was surveyed or not—are handled in accordance with the appropriate protocols.

Implementation. Alternative 1's impacts would be reduced to less than significant with mitigation consistent with impacts of the proposed project.

6.4.7 Utilities and Service Systems

6.4.7.1 No Project Alternative

Under the No Project Alternative, current agriculture activities would be expected to continue consistent with existing agreements and would not result in impacts utilities and service systems compared to baseline conditions. There may, however, be some discretionary water saving activities on the part of individual contractors similar to individual practices under baseline conditions that are undertaken to reduce water use or increase drought-resiliency that involve water for dust control or new utility service connections. Such activities would not be completed in any coordinated way and would be speculative in terms of timing and location. Depending on the type, location, and scope of the activity, there may be significant impacts to utilities and service systems; however, the activities are too speculative to make a determination on at this time and are therefore not evaluated.

6.4.7.2 Alternative 1

Under Alternative 1, increased energy for groundwater pumping would not be required and groundwater drawdown would not occur as a result of the Agreement. Compared to the proposed project, impacts to utilities and service systems would be reduced with respect to energy requirements and groundwater supply. Like the proposed project, Alternative 1 would not impact wastewater or solid waste services. Because the drought-resiliency projects would require utility connections and the routes cannot be determined at this time, certain impacts could be potentially significant similar to the proposed project. The following mitigation measures would be implemented to reduce Alternative 1's potential impacts on utilities and service systems:

- **MM-AGR-1:** Site Drought-Resiliency Projects Outside of Forest Lands
- **MM-HAZ-3:** Site Drought-Resiliency Projects Away from Active Cleanup Sites
- **MM-MIN-1:** Avoid Siting Drought-Resiliency Projects in Mineral Resource Zones
- **MM-NOI-1:** Notification Requirements to Off-site Noise-sensitive Receptors for Drought-Resiliency Projects
- **MM-NOI-2:** Power Equipment Use and Maintenance Requirements
- **MM-NOI-3:** Heavy Equipment Must Operate at Least 25 Feet from Neighboring Structures for Drought-Resiliency Projects
- **MM-BIO-1:** Conduct Desktop Special-Status Wildlife Species, Plant Species, and Aquatic Resources Evaluation for Drought-Resiliency Projects
- **MM-BIO-2:** Conduct Special-Status Plant Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-3:** Conduct Special-Status Wildlife Species Surveys and Avoidance for Drought-Resiliency Projects

- **MM-BIO-4:** Conduct Nesting Bird Species Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-5:** Implement General Biological Resources Protection Measures during Drought-Resiliency Project Construction
- **MM-BIO-6:** Implement GGS Avoidance Measures for Drought-Resiliency Projects
- **MM-BIO-7:** Obtain Incidental Take Authorization for Take of Listed Species from Drought-Resiliency Project Impacts
- **MM-BIO-8:** Compensate for Permanent Loss of Special-Status Wildlife Species Habitat from Drought-Resiliency Projects
- **MM-BIO-9:** Tree Replanting Requirements for Drought-Resiliency Projects
- **MM-BIO-12:** Conduct Aquatic Resources Surveys and Avoidance for Drought-Resiliency Projects
- **MM-BIO-13:** Obtain Required Permits and Implement Wetland Mitigation for Drought-Resiliency Projects
- **MM-HYD-1:** Implement Erosion and Spill Control Measures for Drought-Resiliency Projects
- **MM-UTI-1:** Notify Utility Companies of Drought-Resiliency Projects
- **MM-UTI-2:** Conduct Utility Surveys and Coordinate with Utility Companies for Drought-Resiliency Projects if Needed

MM-UTI-1 and MM-UTI-2 would ensure that utility locations are known, utilities are avoided, or if avoidance is not possible, that the utility company approves of the modifications needed.

MM-AGR-1 would ensure that any potential utility expansions to support drought-resiliency projects avoid forest lands. MM-HAZ-3 and MM-MIN-1 would ensure that utility expansions to support drought-resiliency projects avoid active cleanup sites and mineral resource zones. MMNOI1 would ensure that sensitive receptors are informed of any potential utility expansion timing for drought-resiliency projects. MM-NOI-2 would ensure that equipment is used and maintained according to manufacturer specifications when constructing utility expansions. Implementation of MM-NOI-3 would ensure that utility expansions to support drought-resiliency projects avoid impacting adjacent structures from vibration or noise impacts. MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-12 would map and flag potential special status wildlife or plant species habitats to avoid or minimize impacts on potential habitat and individuals from utility expansions to support drought-resiliency project construction. MM-BIO-4 and MM-BIO-6 would ensure that impacts to any potentially present nesting birds and GGS are respectively avoided or minimized during utility expansions to support drought-resiliency project construction. MM-BIO-5 would ensure that other types of direct and indirect impacts on potentially present special status species and habitats are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and proper agency reporting, among other measures during utility expansions to support drought-resiliency project construction. If take of special status wildlife species is likely as part of utility expansions to support drought-resiliency projects, MM-BIO-7 requires coordinating with USFWS and CDFW and obtaining an Incidental Take Permit, which could include providing

compensatory mitigation. Issuance of the Incidental Take Permit would be considered to mitigate to a less-than-significant level the individual impacts on special status species. Implementation of MM-BIO-8 would require that permanent impacts to high-quality foraging or breeding habitat for special status habitat (not individuals) from utility expansions to support drought-resiliency project construction be mitigated through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved conservation bank. MM-BIO-9 would require that any native trees removed for utility expansions to support drought-resiliency project construction be replanted to meet county or Natomas Basin HCP requirements, as applicable. If impacts to wetlands and waters cannot be avoided from utility expansions, then required permits, potentially including permits from the USACE, RWQCB, and CDFW would be obtained and complied with per MM-BIO-13. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio through onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at an approved bank. Implementation of MM-HYD-1 would require that utility expansions associated with drought-resiliency projects implement erosion and spill control measures. Alternative 1's impacts would be reduced to less than significant with mitigation consistent with impacts of the proposed project.

6.5 Comparison of Alternatives

Table 27 presents a summary of the alternatives analysis, including significant and unavoidable impacts and resources with significant impacts that can be mitigated to less-than-significant levels.

Table 27
Comparison of Impacts of Alternatives as Compared to the Proposed Project Impacts

Resource Topic	Proposed Project Impact Determination	No Project Alternative Impacts Compared to the Proposed Project	Alternative 1 Impacts Compared to the Proposed Project
Biological Resources	Significant and unavoidable impact	Reduced impacts on terrestrial species and habitats Increased impacts on aquatic species	Increased impacts
Agriculture and Forestry	Less-than-significant impact with mitigation	Reduced impacts	Similar impacts
Cultural Resources	Less-than-significant impact with mitigation	Reduced impacts	Similar impacts
Hazards and Hazardous Materials	Less-than-significant impact with mitigation	Reduced impacts	Similar impacts
Hydrology and Water Quality	Less-than-significant impact with mitigation	Reduced impacts	Similar impacts
Noise	Less-than-significant impact with mitigation	Reduced impacts	Similar impacts

Resource Topic	Proposed Project Impact Determination	No Project Alternative Impacts Compared to the Proposed Project	Alternative 1 Impacts Compared to the Proposed Project
Tribal and Cultural Resources	Less-than-significant impact with mitigation	Reduced impacts	Similar impacts
Utilities and Service Systems	Less-than-significant impact with mitigation	Reduced impacts	Similar impacts
Meets Project Objectives?	Yes	No	Yes

6.6 Environmentally Superior Alternative

Section 15126.6, subdivision (e)(2) of the CEQA Guidelines requires that an “environmentally superior” alternative be identified. In addition, if the No Project Alternative is identified as the Environmentally Superior Alternative, the EIR must also identify an Environmentally Superior Alternative among the other alternatives. The Environmentally Superior Alternative is the alternative expected to generate the fewest significant impacts. However, the Environmentally Superior Alternative may not be the alternative that best meets the objectives and underlying purpose of the proposed project. Therefore, CEQA does not require that the lead agency select the Environmentally Superior Alternative. (See CEQA Guidelines, §§ 15042–15043.)

As shown in Table 27, the No Project Alternative is the Environmentally Superior Alternative. However, the No Project Alternative does not meet any of the project objectives and would not achieve project goals to protect threatened habitat and species downstream of Shasta Lake.

Alternative 1 is considered potentially more protective to groundwater resources than the proposed project; however, as discussed in Sections 6.5 and 6.6, it would likely result in increased impacts to GGS and northwestern pond turtle due to increased crop idling as compared to the proposed project. Additional crop idling associated with Alternative 1 would also further reduce water levels in canals and ditches, which could cause riparian and wetland vegetation to prematurely drop leaves before seasonally appropriate or potentially die and temporarily reducing the amount of riparian and wetland habitat available in the project area.

Therefore, while the No Project Alternative is the Environmentally Superior Alternative overall, pursuant to CEQA Guidelines Section 15126.6, subdivision (e)(2), the proposed project is the Environmentally Superior Alternative that fulfills the project objectives.

7 List of Preparers

Glenn-Colusa Irrigation District

Jeff Sutton

Sacramento River Settlement Contractors

Thad Bettner

Anchor QEA

Josh Bartlett

Sarah Becker-Valle

Katie Chamberlin

Lena DeSantis

Kara Dewhurst

Isabelle Doerschlag

Adam Hill

Austin Jenkins

Julia King

Brian Kwong

Nicholas LaBracke

Tara Low

David Miller

Lisetta Quick

Michelle Lee Ratliff

Marine Vié

MBK Engineers

Anne Williams

8 References

- ARB (California Air Resources Board), 2010. State of California Air Resources Board, Resolution 10-23. Action Item No. 10-7-1. September 23, 2010. Accessed October 12, 2021. Available at: <https://ww3.arb.ca.gov/board/res/2010/res10-23.pdf>.
- ARB, 2015. Estimating Health Benefits Associated with Reductions in PM and NOx Emissions: Detailed Description.
- ARB, 2021. *2021 Agricultural Equipment Emission Inventory*. August 2021.
- ARB, 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. December 2022. Available at: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>.
- ARB, 2024. *Wildfires & Climate Change*. Available: <https://ww2.arb.ca.gov/wildfires-climate-change>. Accessed: February 28, 2024.
- Aqua Systems 2000, 2024. Company Website, Projects. Accessed August 20, 2024. Available at: <https://as2i.net/projects/>.
- BCAQMD, 2024. CEQA Air Quality Handbook. *Guidelines for Assessing Air Quality and Greenhouse Gas Impacts for Projects Subject to CEQA Review*. March 28, 2024. BCAQMD. Available at: <https://bcaqmd.org/wp-content/uploads/CEQA-Handbook-2024-Update-Final.pdf>
- Beck, C., and G. Jones, 1988. "Western Pluvial Lake Tradition Occupation in Butte Valley, Eastern Nevada." *Early Human Occupation in Far Western North America: The Clovis-Archaic Interface*. Volume 21. Anthropological Papers. Editors, J. A. Willig, C. M. Aikens, and J. L. Fagan. Carson City: Nevada State Museum; pp. 273-301.
- Beier and Loe, 1992. Beier, Paul, and Steve Loe. "In My Experience: A Checklist for Evaluating Impacts to Wildlife Movement Corridors." *Wildlife Society Bulletin* (1973-2006), vol. 20, no. 4, 1992, pp. 434-40. JSTOR, <http://www.jstor.org/stable/3783066>. Accessed 22 Aug. 2024.
- BLM (Bureau of Land Management), 2007. *Potential Fossil Yield Classification*. BLM Instruction Memorandum No. 2008-009.
- BLM, 2008. *Assessment and Mitigation of Potential Impacts to Paleontological Resources*. BLM Instruction Memorandum No. 2009-011.
- Brooks, A., 2018. How parched states like California fight wildfires. *Popular Science*. August 8, 2018. Available: <https://www.popsci.com/california-water-conservation-fire>.

- Burt, C.M. and X. Piao, 2005. *Lessons from Successful SCADA and Automation Projects*. Available at: <https://www.irrigation.org/IA/FileUploads/IA/Resources/TechnicalPapers/2005/LessonsFromSuccessfulSCADAAndAutomationProjects.pdf>.
- Butte County, 2023. *Butte County General Plan 2040*. March 2023. Accessed July 11, 2024. Available at: <https://www.buttecounty.net/367/Butte-County-General-Plan-2040>
- Butte County Department of Agriculture (Butte County Department of Agriculture/Weights & Measures), 2022. *Butte County 2022 Crop & Livestock Report*. Available at: <https://www.buttecounty.net/Archive.aspx?AMID=47>.
- California Department of Conservation, 2022. California Important Farmland Finder ODataset. Accessed August 6, 2024. Available at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/county_info.aspx.
- California Department of Conservation, 2024. "Mines Online" [Web Map]. Division of Mine Reclamation. Available at: <https://gis.conservation.ca.gov/server/rest/services/MOL/MOLMinesNoAB/MapServer/0> Accessed August 7, 2024.
- California Department of Finance, 2021. "2020 Census Redistricting Profile." 2020 Census, State Redistricting Data (Public Law 94-171 Summary File). Prepared by California Department of Finance, Demographic Research Unit. August 2021.
- California Department of Finance, 2023. *Report P-CC: Projected Total Population and Components of Change, 2020-2060 (Baseline 2019 Population Projections; Vintage 2023 Release)*. July 2023. Accessed August 21, 2024. Available at: <https://dof.ca.gov/Forecasting/Demographics/Projections/>
- California Department of Finance, 2024. *California Population and Housing Estimates Dashboard (2020-2024) – January 1, 2021-2024*. May 2024. Accessed August 1, 2024. Available at: <https://cacensus.maps.arcgis.com/home/item.html?id=f3cf9b8baf2946c6969251f8b34f3b5d>
- CDSOD (California Division of Safety of Dams), 2024. California Dam Breach Inundation Maps. Department of Water Resources. Accessed August 2024. Available at: <https://fmds.water.ca.gov/maps/damim/>.
- California EcoRestore, 2024. Knights Landing Outfall Gate Fish Barrier Project. Accessed August 11, 2024. Available at: https://emp.opennrm.org/assets/e106ca2a359a122e74e33ef183a0fb4a/application/pdf/Knights_Landing_Outfall_Gate.pdf.

CEC (California Energy Commission), 2016. Gas Consumption by County. Available at:
<https://ecdms.energy.ca.gov/gasbycounty.aspx>.

CEC, 2024. California Gasoline Data, Facts, and Statistics. Available at:
<https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics>.

CAL FIRE, 2024a. CAL FIRE Timber Harvesting Plans ALL TA83. Published February 28, 2024, and updated August 4, 2024. Accessed on August 13, 2024. Available at: <https://hub-calfire-forestry.hub.arcgis.com/datasets/CALFIRE-Forestry::cal-fire-timber-harvesting-plans-all-ta83/explore?layer=0>

CAL FIRE, 2024b. *Fire Hazard Severity Zone Viewer*. Effective April 1, 2024. Accessed on August 22, 2024. Available at: <https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=988d431a42b242b29d89597ab693d008>

CAL FIRE, 2024c. State Responsibility Areas for Fire Protection. Published June 12, 2017. Updated June 3, 2024. Accessed on August 13, 2024. Available at:
<https://www.arcgis.com/home/item.html?id=5ac1dae3cb2544629a845d9a19e83991%2F1000>

CAL FIRE, 2024d. CAL FIRE Strategic Plan 2024 – Transforming Tomorrow. February 2024. Available at: <https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/about/2024-strategic-plan.pdf?rev=37375a587e4647eb84dd70e716d467ff&hash=86658BD240BE9A86FC751547E68295D4>.

CAL FIRE, 2023. *Fire Hazard Severity Zones (FHSZ)*. Available at:
<https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/>.

CalFish, 2024. "Restoration Projects." Accessed September 13, 2024. Available at:
<https://www.calfish.org/ProgramsData/ConservationandManagement/RestorationProjects.aspx>.

California Interactive Broadband Map, 2024. Available at: <https://www.broadbandmap.ca.gov/>

California Rice, 2024. "Reptiles and Amphibians in Rice." Accessed August 8, 2024.
<https://calrice.org/reptilesandamphibiansinrice/>.

California State Parks, 2009. *Central Valley Vision Implementation Plan*. Accessed July 16, 2024. Available at:

https://www.parks.ca.gov/pages/795/files/DPR_Central_Valley_Vision_Implementation_2009.pdf.

California State Parks, 2019. California's Statewide Historic Preservation Plan, 2019-2023 Update.

Accessed August 6, 2024. Available at:

https://ohp.parks.ca.gov/pages/1069/files/CAStatePlan_2019-2023_FINAL.pdf

California State Parks, 2024. *Park Systems Web Map*. Accessed July 31, 2024. Available at:

<https://csparks.maps.arcgis.com/apps/webappviewer/index.html?id=f96a883ff4154455b23bdc119f4574a9>.

California State University – Chico, 2024. Northeast Information Center. Accessed August 6, 2024.

Available at: <https://www.csuchico.edu/neic/>.

CalState Chico (California State University, Chico), 2024. Northeast Information Center. Accessed

August 6, 2024. Available at: <https://www.csuchico.edu/neic/>

Caltrans (California Department of Transportation), 2002. *Guide for the Preparation of Traffic Impact Studies*. December 2002. Available at:

https://nacto.org/docs/usdg/guide_preparation_traffic_impact_studies_caltrans.pdf.

Caltrans, 2020. *Transportation and Construction-Induced Vibration Guidance Manual*. Accessed

December 14, 2021. Available at: [https://dot.ca.gov/-/media/dot-](https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf)

[media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf](https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf)

Caltrans, 2024. *Scenic Highways*. Accessed July 11, 2024. Available at:

<https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>.

CAT (Climate Action Team), 2010. *Climate Action Team Report to Governor Schwarzenegger and the California Legislature*. December 2010. Available at:

[http://sntbberly.cityofsanteeca.gov/sites/FanitaRanch/Public/Remainder%20of%20the%20Record/\(14\)%20Documents%20Received%20After%20Release%20of%20Draft%20EIR%20for%200Comment/A.%20Reference%20Documents/Tab%2001%20-%202010-12%20Climate%20Action%20Team%20Report.PDF](http://sntbberly.cityofsanteeca.gov/sites/FanitaRanch/Public/Remainder%20of%20the%20Record/(14)%20Documents%20Received%20After%20Release%20of%20Draft%20EIR%20for%200Comment/A.%20Reference%20Documents/Tab%2001%20-%202010-12%20Climate%20Action%20Team%20Report.PDF).

CCCC (California Climate Change Center), 2018. *California's Changing Climate 2018: A Summary of Key Findings from California's Fourth Climate Change Assessment*. Available at:

<https://www.climateassessment.ca.gov/state/overview/>.

CDFA (California Department of Food and Agriculture), 2023. *2023: California Agricultural Statistics Review*.

- CDWR (California Department of Water Resources), 2014. *Geology of the Northern Sacramento Valley, California*. Prepared by the California Department of Water Resources Northern Region Office Groundwater and Geologic Investigations Section. Updated September 22, 2014.
- CDWR, 2016. System Reoperation: A Resource Management Strategy of the California Water Plan. July 29, 2016. Accessed August 11, 2024. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/RMS/2016/06_System_Reoperation_July2016.pdf.
- CDWR, 2021. California's Groundwater Update 2020. Bulletin 118. November 2021. Available at: https://data.cnra.ca.gov/dataset/3f87088d-a2f9-4a46-a979-1120069db2c6/resource/d2b45d3c-52c0-45ba-b92a-fb3c90c1d4be/download/calgw2020_full_report.pdf.
- CDWR, 2023. Current Conditions. Available: <https://water.ca.gov/Current-Conditions>.
- CDWR, 2024a. "Wells." Available at: <https://water.ca.gov/Programs/Groundwater-Management/Wells>.
- CDWR, 2024b. "Part II. Water Well Construction." Last modified 2024. Accessed August 22, 2024. Available at: <https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Standards/Combined-Well-Standards/Water-Construction>.
- CDWR, 2024c. "History." Accessed September 13, 2024. Available at: <https://water.ca.gov/Programs/State-Water-Project/SWP-Facilities/History>.
- CDFG (California Department of Fish and Game), 2004. *Comprehensive Management Plan for the Sacramento River Wildlife Area*. Accessed July 16, 2024. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=84921&inline>.
- CDFG, 2008a. Yolo Bypass Wildlife Area Land Management Plan. California Department of Fish and Game, Rancho Cordova, CA. Accessed September 5, 2024. Available at: <https://wildlife.ca.gov/Lands/Planning/Yolo-Bypass-WA>.
- CDFG, 2008b. American Basin Fish Screen and Habitat Improvement Project CEQA Clearinghouse Website. Accessed August 11, 2024. Available at: <https://ceqanet.opr.ca.gov/2003092006/2>.
- CDFW (California Department of Fish and Wildlife) and USFWS (U.S. Fish and Wildlife Service), 2008. Final CDFW Hatchery EIR/EIS. Accessed August 11, 2024. Available at: <https://wildlife.ca.gov/Fishing/Hatcheries/EIR>.
- CDFW, 2024. Refuge Water Supply Program Details Website. Accessed August 11, 2024. Available at: <https://wildlife.ca.gov/Conservation/Watersheds/Refuge-Water/Details>.

- CEC (California Energy Commission), 2024. Final 2023 Integrated Energy Policy Report. February 2024. Accessed July 2, 2024. Available at: <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2023-integrated-energy-policy-report>.
- CGS (California Geological Survey), 1997. Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite within Shasta County, California, Open-File Report 97-03.
- California Water Commission, 2024. Sites Project Website. Accessed August 11, 2024. Available at: <https://cwc.ca.gov/Water-Storage/WSIP-Project-Review-Portal/All-Projects/Sites-Project#:~:text=The%20Sites%20Project%20Authority%20is,reservoir%20and%20the%20Sacramento%20River>.
- City of Woodland, 2021. Lower Cache Creek Feasibility Study. Accessed August 11, 2024. Available at: <https://www.cityofwoodland.org/1196/Lower-Cache-Creek-Feasibility-Study-LCCF>.
- CNDDDB (California Natural Diversity Database), 2024. California Natural Diversity Database and BIOS online mapping. Accessed August 8, 2024. Available at: www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data.
- CNPS (California Native Plant Society), 2024. Online Inventory of Rare and Endangered Vascular Plants of California. Available at: <https://www.cnps.org/rare-plants/cnps-inventory-of-rare-plants>.
- CNRA (State of California Natural Resources Agency), 2013. *Safeguarding California: Implementation Action Plans Agricultural Sector Plan*.
- City of Davis, 2024. Davis Water Quality Improvement Project Website. Accessed August 11, 2024. Available at: <https://www.cityofdavis.org/city-hall/public-works-utilities-and-operations/water/davis-water-quality-improvement-project>.
- City of Willows, 2020. Initial Study/Subsequent Mitigated Negative Declaration for the South Willows Residential Neighborhood Project. December 1, 2020. Accessed August 11, 2024. Available at: <https://www.cityofwillows.org/assets/resources/South-Willows-Residential-2020-Initial-Study-FINAL-dec-1-2020-BASIN-Amended-Project.pdf>.
- Colusa County, 2012. *Colusa County General Plan*. July 2012. Available at: [http://www.countyofcolusageneralplan.org/sites/default/files/Colusa County General Plan a doptedJuly2012.pdf](http://www.countyofcolusageneralplan.org/sites/default/files/Colusa%20County%20General%20Plan%20adopted%20July%202012.pdf).
- Colusa County Agriculture Department. 2022. *Colusa County Crop & Livestock Report 2022*. 2022. Available at: <https://www.countyofcolusaca.gov/DocumentCenter/View/16704/Crop-Report->

[2022-FINAL?bidId=.](#)

Congressional Research Service, 2024. *Central Valley Project: Issues and Legislation*. Updated April 29, 2024. Available at: <https://sgp.fas.org/crs/misc/R45342.pdf>.

County of Glenn Department of Agriculture, 2022, *Glenn County 2022 Annual Crop & Livestock Report*, 2022. Available at: https://www.countyofglenn.net/sites/default/files/Agriculture/Glenn%20County%202022%20Crop%20Rpt_FINAL.pdf

County of Sacramento Department of Agriculture, Weights & Measures, 2022, *Empowering Communities Through Agriculture Sacramento County 2022 Crop and Livestock Report*. 2022. Available at: <https://agcomm.sacounty.gov/Documents/CropandLivestockReports/2022Report.pdf>

County of Tehama Department of Agriculture, 2022. *Tehama County Crop & Livestock Report, 2022*. Available at: <https://www.tehama.gov/government/departments/agriculture/crop-report-data-collection/>.

CPUC (California Public Utilities Commission), 2010. *Embedded Energy in Water Studies, Study 1: Statewide and Regional Water-Energy Relationship*. August 31. Prepared by GEI Consultants/Navigant Consulting, Inc. San Francisco, CA.

CPUC, 2024. "Broadband Implementation for California." Accessed August 21, 2024. Available at: <https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california>.

Davis, C., 1984. *Where Water Is King*. Willows, California: Glenn-Colusa Irrigation District.

Data Basin, 2024. State Soil Geographic (STATSGO2) data base for California. Accessed August 19, 2024. Available at: <https://databasin.org/datasets/1ff4328039f948529c33e7e71bb9b5fc/>.

DieselNet, 2017. Nonroad Diesel Engine Emission Standards. Last updated December 2017. Accessed August 20, 2024. Available at: <https://www.dieselnet.com/standards/us/nonroad.php>.

DTSC (Department of Toxic Substances Control), 2019. EnviroStor Database. Available at: <https://www.envirostor.dtsc.ca.gov/public/>.

Dupras, D., 1997. *Open File Report 97-03 Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite within Shasta County, California*.

- Elston, R., 1986. "Prehistory of Western North America." Great Basin. *Handbook of North American Indians*. Volume 11. Editor, W. L. D'Azevedo. Washington, D.C.: Smithsonian Institution; pp. 135-148.
- Erlandson, J., 1997. "The Middle Holocene Along the California Coast." *Archaeology of the California Coast During the Middle Holocene*. Volume 4. Perspectives in California Archaeology. Editors, J. Erlandson and M. Glassow. Los Angeles: University of California, Los Angeles Institute of Archaeology; pp. 1-10.
- EROS (Earth Resources Observation and Science Center), 2021. National Landcover Database. Accessed August 6, 2024. Available at: <https://www.usgs.gov/centers/eros/science/national-land-cover-database>.
- Eswaran, H. and P.F. Reich, 2005. World Soil Map. *Encyclopedia of Soils in the Environment*. pp. 352-365. 2005.
- FEMA (Federal Emergency Management Agency), 2009. Flood Insurance Rate Map San Joaquin County, California and Incorporated Areas, Panel 455 of 950. Updated October 19, 2009.
- FHWA (Federal Highway Administration), 2006. *Construction Noise Handbook*. Available at: http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/.
- Foster, B.D, 2003. *Open File Report 2000-18 Mineral Land Classification of Concrete-Grade Aggregate Resources in Tehama County, California*.
- Fulton, A.M., J.P Rose, and B.J. Halstead, 2022. "Rural Turtles: Estimating the Occupancy of Northwestern Pond Turtles and Non-Native Red-Eared Sliders in Agricultural Habitats in California's Sacramento Valley and Sacramento-San Joaquin River Delta." *Northwestern Naturalist* 103(2):97-109. August 1, 2022. Available at: <https://doi.org/10.1898/NWN20-22>.
- GCID (Glenn-Colusa Irrigation District), 2024a. Notice of Preparation of Environmental Impact Report to Support a Water Reduction Program Agreement Between the Sacramento River Settlement Contractors Corporation, Individual Sacramento River Settlement Contractors, and the U.S. Bureau of Reclamation, May 17, 2024. Available at: <https://www.gcid.net/wp-content/uploads/2024/05/Notice-of-Preparation-of-Environmental-Impact-Report-to-Support-a-Water-Reduction-Program-Agreement.pdf>.
- Glenn County, 2023. *Glenn County General Plan*. July 2023. Accessed August 5, 2024. Available at: https://static1.squarespace.com/static/5c8a73469b7d1510bee16785/t/6501ddc090fa5b221162db04/1694621148151/GlennCounty_General+Plan+Adopted+7-18-23.pdf.

- Hoover, M., H. Rensch, E. Rensch, and W. Abeloe, 1990. *Historic Spots in California*. Stanford, California: Stanford University Press.
- IPCC, 2021. *Sixth Assessment Report (AR6)*.
- IFC, 2023. *Natomas Basin Habitat Conservation Plan Area Biological Effectiveness Monitoring Report, 2022 Annual Survey Results*. Final (IFC 104332.) Prepared for the Natomas Basin Conservancy. April 2023.
- James, T.A., R. L. Croissant, and G. Peterson, 2009. *Controlling Soil Erosion From Wind*. Fact Sheet No. 0.518, Crop Series – Soil. Colorado State University Extension. Reviewed August 2009.
- Kennett, D., B. Culleton, J. Kennett, J. Erlandson, and K. Cannariato, 2007. "Middle Holocene Climate Change and Human Population Dispersal in Western North America." *A Global Perspective on Mid-Holocene Transitions*. New York: Academic Press; pp. 351-367.
- King, J. H., K. R. McGuire, K. L. Carpenter, M. Maniery, C. Baker, H. McCarthy, and H. Scotten, 2004. *Class I Cultural Resources Overview and Research Design for the Alturas, Eagle Lake, and Surprise Resource Areas*. Far Western Anthropology Research Group, Inc. Prepared for Bureau of Land Management.
- Lightfoot, K., L. Panich, T. Schneider, and K. Soluri, 2009. "California Indian Uses of Natural Resources." *California Indians and Their Environment*. Volume 96. Berkeley, California: Editors, K. Lightfoot and O. Parrish. California Natural History Guides. Berkeley: University of California Press; pp 183-363.
- Moratto, M., 2004. *California Archaeology*. New York: Academic Press.
- NLCD (National Land Cover Database), 2021. National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, <https://doi.org/10.5066/P9JZ7AO3>.
- NMFS (National Marine Fisheries Service), 2024. Accessed August 1, 2024. Available at: Species Directory - ESA Threatened & Endangered | NOAA Fisheries.
- NOAA Fisheries (National Oceanic and Atmospheric Administration Fisheries), 2015. For Endangered Salmon in California, a Very Measured Sip of Cold Water. September 8, 2015. Available at: <https://www.fisheries.noaa.gov/feature-story/endangered-salmon-california-very-measured-sip-cold-water>.
- NOAA Fisheries, 2022. Sacramento River Basin, California. Updated May 16, 2022. Accessed August 13, 2024. Available at: <https://www.fisheries.noaa.gov/west-coast/about-us/sacramento-river-basin-california>

- Northern California Water Association, 2006. Final Sacramento Valley Integrated Regional Water Management Plan. December 5, 2006. Accessed August 11, 2024. Available at: <https://norcalwater.org/res/docs/IRWMP-section-1.pdf>.
- Northern California Water Association, 2017. Sacramento River Side Channel Cleared to Aid Juvenile Salmon. Accessed August 11, 2024. Available at: <https://www.sacramentoriver.org/forum/publications/news/RBDN-Sacramento%20River%20side%20channel%20cleared%20to%20aid%20juvenile%20salmon.pdf>.
- Northern California Water Association, 2024a. *Shasta Reservoir*. Accessed July 11, 2024. Available at: <https://norcalwater.org/efficient-water-management/efficient-water-management-regional-sustainability/water-maps/shasta-reservoir/>
- Northern California Water Association, 2024b. Sacramento Valley Salmon Recovery Program. Accessed August 11, 2024. Available at: <https://norcalwater.org/wp-content/uploads/SacValleySalmonRecoveryProgram.fullOct2018.pdf>.
- Northern California Water Association, 2024c. GCID Painter's Riffle Anadromous Fish Habitat Enhancement Project Fact Sheet. Accessed August 11, 2024. Available at: <https://norcalwater.org/wp-content/uploads/PaintersRiffleFact-Sheet-FINAL.pdf>.
- Northern Sacramento Valley Integrated Regional Water Management Plan, 2014. Final Integrated Regional Water Management Plan. Accessed August 11, 2024. Available at: nswwaterplan.org.
- Olmsted, F. H. and Davis, G. H., 1961. *Geologic Features and Ground-Water Storage Capacity of the Sacramento Valley California*. U.S. Geological Survey Water-Supply Paper 1497. Available at: <https://pubs.usgs.gov/wsp/1497/report.pdf>.
- O'Neal, M.D. and F.W. Gius, 2018. *Special Report 245 Mineral Land Classification: Concrete Aggregate in the Greater Sacramento Area Production-Consumption Region*.
- OPR (Governor's Office of Planning and Research), 2017. *State of California General Plan Guidelines*. Available at: <http://opr.ca.gov/planning/general-plan/guidelines.html>.
- OPR, 2018a. Discussion Draft CEQA and Climate Change Advisory. December 2018. Accessed January 11, 2022. Available at: [https://opr.ca.gov/docs/20181228-Discussion Draft Climate Change Advisory.pdf](https://opr.ca.gov/docs/20181228-Discussion%20Draft%20Climate%20Change%20Advisory.pdf).
- OPR, 2018b. Technical Advisory on Evaluating Transportation Impacts in CEQA. December 2018. Available at: [http://opr.ca.gov/docs/20190122-743 Technical Advisory.pdf](http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf).

Pathak, M.L Maskey, J.A. Dahlberg, F. Kerns, K.M. Bali, and D. Zaccaria, 2018. "Climate Change Trends and Impacts on California Agriculture: A Detailed Review." *Agronomy* 10-15.

PBS&J, 2010. Draft Sutter County Climate Action Plan. July 2010. Prepared for Sutter County.

Available at:

<https://www.suttercounty.org/home/showpublisheddocument/2876/637555889174770000>

Pierson, E. D., W. E. Rainey and C. Corben. 2006. *Distribution and Status of Western Red Bats 11* (*Lasiurus blossevillei*) *in California*. Report 2006-04. California Department of Fish and Game, 12 Habitat Conservation Planning Branch, Species Conservation and Recovery Program, 13 Sacramento, CA.

Placeworks, 2021. Butte County 2021 Climate Action Plan. December 2021. Prepared for County of Butte. Available online at: <https://www.buttecounty.net/DocumentCenter/View/2255/2021-Butte-County-Climate-Action-Plan-CAP-PDF?bidId=>

Planet Natural Research Center, 2023. *How to Grow and Care for Almond Trees*. Published on July 20, 2023; updated on August 6, 2023. Accessed July 11, 2024. Available at: <https://www.planetnatural.com/almond-tree/>.

RD (Reclamation District)108, 2024. Wallace Weir Fish Rescue Facility Website. Accessed August 11, 2024. <https://www.rd108.org/wallace-weir-fish-rescue-facility>.

Recreation.gov, 2024. *Shasta National Rec. Area*. Accessed July 31, 2024. Available at:

<https://www.recreation.gov/camping/gateways/43>

Redding, 2024. *City of Redding General Plan 2045*. Adopted March 2024. Accessed July 30, 2024.

Available at:

https://www.cityofredding.gov/government/departments/development_services/planning/general_plan.php.

Regaber, 2024. Comprehensive Automation Vs SCADA: Improving efficiency in Irrigation Channels.

Accessible at: <https://regaber.com/en/blog/automatizacion-integral-vs-scada-mejorando-la-eficiencia-en-redes-de-canales-de-riego/>

Rosenthal, J., G. White, and M. Sutton, 2007. "The Central Valley: A View from the Catbird's Seat." *California Prehistory: Colonization, Culture, and Complexity*. Editors, T. Jones and K. Klar. Lanham, Maryland: Altamira Press.

Rubicon, 2024. Case Study, RD108: RD108 uses Network Control to help the environment and lower operating costs. Accessed August 20, 2024. Available at:

<https://rubiconwater.com/project/rd108/>

RWQCB (Regional Water Quality Control Board), 2005. Chapter 4 Conjunctive Management and Groundwater Storage. Volume 2. Available at:
https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/STCDA%20et%20al/scda_43.pdf.

Sacramento County, 2011. *Sacramento County General Plan of 2005-2030*. November 2011. Accessed July 11, 2024. Available at: <https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>

Sacramento County, 2017a. "Open Space Element," *Sacramento County General Plan of 2005-2030*. Amended September 26, 2017. Accessed August 20, 2024. Available at:
<https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/Open%20Space%20Element%20-%20Amended%2009-26-17.pdf>

Sacramento County, 2017b. "Conservation Element," *Sacramento County General Plan of 2005-2030*. Amended September 26, 2017. Accessed August 20, 2024. Available at:
<https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/Conservation%20Element%20-%20Amended%2009-26-17.pdf>

Sacramento County, 2017c. "Energy Element," *Sacramento County General Plan of 2005-2030*. Amended September 26, 2017. Accessed August 20, 2024. Available at:
<https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/Energy%20Element%20-%20Amended%2009-26-17.pdf>

Sacramento County, 2017d. "Safety Element," *Sacramento County General Plan of 2005-2030*. Amended September 26, 2017. Accessed August 20, 2024. Available at:
<https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>

Sacramento County, 2017e. "Hazardous Materials Element," *Sacramento County General Plan of 2005-2030*. Amended September 26, 2017. Accessed August 20, 2024. Available at:
<https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/Hazardous%20Materials%20Element%20-%20Amended%2009-26-17.pdf>

Sacramento County, 2019. "Agricultural Element," *Sacramento County General Plan of 2005-2030*. Amended December 17, 2019. Accessed August 20, 2024. Available at:
<https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Agricultural%20Element%20-%20Amended%2012-17-2019.pdf>

Sacramento County, 2022a. "Air Quality Element," *Sacramento County General Plan of 2005-2030*. Amended October 25, 2022. Accessed August 20, 2024. Available at:
<https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>

[Progress/Documents/General%20Plan%20Amendments/5.%20Air%20Quality%20Element%20-%20Amended%2010-25-2022.pdf](https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/14.%20Noise%20Element%20-%20Amended%2010-25-2022.pdf)

Sacramento County, 2022b. "Noise Element," *Sacramento County General Plan of 2005-2030*.

Amended December 13, 2022. Accessed August 20, 2024. Available at:

<https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/14.%20Noise%20Element%20-%20Amended%2012-13-22.pdf>

Sacramento County, 2024. County of Sacramento Climate Action Plan Draft. July 2024. Available at:

https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Climate%20Action%20Plan/SEIR%20Documents/SactoCo.CAP_wApdcs_071224.pdf

Sacramento River Watershed Program, 2024. Sacramento Valley Subregion. Available at:

<https://sacriver.org/explore-watersheds/sacramento-valley-subregion/#:~:text=Its%20main%20hydrologic%20feature%20is,important%20fish%20and%20wildlife%20species.>

Sacramento River Forum, 2021a. Upper Sacramento River Anadromous Fish Habitat Restoration Program. Accessed August 11, 2024. Available at:

<https://www.sacramentoriver.org/forum/index.php?id=channels.>

Sacramento River Forum, 2021b. Upper Sacramento River Anadromous Fish Habitat Restoration Program. Accessed August 11, 2024. Available at:

<https://www.sacramentoriver.org/forum/index.php?id=cha.>

Schweiger, W., J.E. Diffendorfer, R.D. Holt, R. Pierotti, and M.S. Gaines, 2000. "The Interaction of Habitat Fragmentation, Plant, and Small Mammal Succession in an Old Field." *Ecological Monographs* 70(3):383–400.

SF District, 2024. San Francisco District Rivers. Available at:

[https://www.spn.usace.army.mil/Missions/Recreation/Bay-Model-Visitor-Center/Army-Corps-of-Engineers-Trek/Lakes/.](https://www.spn.usace.army.mil/Missions/Recreation/Bay-Model-Visitor-Center/Army-Corps-of-Engineers-Trek/Lakes/)

Shasta County, 2004. *Shasta County General Plan*. 2004. Accessed August 5, 2024. Available at:

<https://www.shastacounty.gov/planning/page/general-plan.>

Shasta County Department of Agriculture / Weights & Measures, 2022, *Shasta County Crop & Livestock Report*. 2022. Available at:

[https://www.shastacounty.gov/sites/default/files/fileattachments/agriculture / weights amp measures/page/2601/2022 shasta county crop livestock report final reduced.pdf](https://www.shastacounty.gov/sites/default/files/fileattachments/agriculture%20weights%20and%20measures/page/2601/2022_shasta_county_crop_livestock_report_final_reduced.pdf)

- Shasta, 2012. Draft Shasta Regional Climate Action Plan. November 2012. Prepared by AECOM.
Available at:
https://web.archive.org/web/20150907214353/http://www.co.shasta.ca.us/docs/Resource_Management/rcap-draft/Cover.pdf?sfvrsn=0
- Shipley, W. F., 1978. "Native Languages of California." *California*. Volume 8. Handbook of North American Indians. Editor, R. F. Heizer. Washington, D.C.: Smithsonian Institution; pp 80–90.
- Shuford, W.D. and T. Gardali, 2008. "California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California." *Studies of Western Birds 1*. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
- Shumway, 1997. *Open File Report 97-02 Mineral Land Classification of Concrete-Grade Aggregate Resources in Glenn County, California*.
- SJCOES, 2019. *Emergency Operations Plan*. April 23, 2019.
Available at: <https://www.sjgov.org/uploadedFiles/SJC/Departments/OES/Content/Docs/plans/SJC%20Emergency%20Operations%20Plan.pdf>.
- SMAQMD (Sacramento Metropolitan Air Quality Management District), 2020a. CEQA Guide. December 2009, Revised April 2020. Accessed October 12, 2021. Available at:
<https://www.airquality.org/LandUseTransportation/Documents/Ch1IntroAq4-25-2020.pdf>.
- SMAQMD, 2020b. Greenhouse Gas Thresholds for Sacramento County, SMAQMD. June 1, 2020. Accessed August 22, 2024. Available at:
<https://www.airquality.org/LandUseTransportation/Documents/SMAQMDGHGThresholds2020-03-04v2.pdf>
- Soil Survey Staff, 2024. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Accessed July 2, 2024. Available at: <https://websoilsurvey.nrcs.usda.gov/>.
- SRSC (Sacramento River Settlement Contractors), 2024. *Sacramento River Settlement Contractors: Managing Water Resources and Habitat in the Sacramento Valley*. Available at:
<https://www.sacvalleywater.com/>.
- Stern, C.V, Sheikh, P.A, and E. Ward, 2024. Central Valley Project: Issues and Legislation. Updated June 26, 2024. Available at: <https://sgp.fas.org/crs/misc/R45342.pdf>.
- SWRCB (State Water Resources Control Board), 2019. GeoTracker Database. Available at:
<https://geotracker.waterboards.ca.gov/>.

- SWRCB, 2022. 2020-2022 California Integrated Report. May 11, 2022. Available at: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html.
- SWRCB, 2024. GAMA Groundwater Information System. Custom GIS Well Report – Trace Elements for Redding Area-Anderson, Redding Area-Bowman, Redding Area-Enterprise, Redding Area-Millville, Redding Area-South Battle Creek, Sacramento Valley-Antelope, Sacramento Valley-Bend, Sacramento Valley-Butte, Sacramento Valley-Colusa, Sacramento Valley-Corning, Sacramento Valley-Solano, Sacramento Valley-Sutter, Sacramento Valley-Vina, Sacramento Valley-Yolo. Available at: <https://gamagroundwater.waterboards.ca.gov/gama>.
- Sutter County, 2011. *Sutter County General Plan*. March 2011. Accessed August 5, 2024. Available at: <https://www.suttercounty.org/home/showpublisheddocument/2874/637555888741800000>.
- Sutter County Agricultural Commissioner Sealer of Weights & Measures. 2022, *Sutter County Crop and Livestock Report*, 2022. Available at: <https://www.suttercounty.org/government/county-departments/agricultural-department/crop-reports>.
- Tatarka, J. and D.R. Presley, 2009. Principles of Wind Erosion and its Control. Accessed August 10, 2024. Available at: https://www.researchgate.net/publication/253553937_Principles_of_Wind_Erosion_and_its_Control
- Tehama County, 2009. *Tehama County General Plan*. March 2009. Accessed August 5, 2024. Available at: <https://tehamartpa.org/wp-content/uploads/2020/06/2009-2029-Tehama-County-General-Plan-r1.pdf>.
- Tehama-Colusa Canal Authority, 2013. Fish Passage Improvement Project at the Red Bluff Diversion Dam. Accessed August 11, 2024. Available at: https://www.tccanal.com/wp-content/uploads/2022/06/RBDD-Bro-Spring2013_pages.pdf.
- UC Berkeley (University of California, Berkeley), 2024. *California Language Archive*. Accessed August 6, 2024. Available at: <https://cla.berkeley.edu/>
- UC Davis (University of California, Davis), 2003. "Reference: Water Well Design and Construction." Farm Water Quality Planning (FWQP) Reference Sheet 11.3. Division of Agriculture and Natural Resources (ANR) Publication 8086. Available at: <https://groundwater.ucdavis.edu/files/156563.pdf>.
- U.S. Census Bureau, 2024. "California." Last modified 2024. Accessed August 22, 2024. Available at: <https://data.census.gov/profile/California?g=040xx00us06>.

USACE (U.S. Army Corps of Engineers), 2017. Stockton Deep Water Ship Channel Maintenance Dredging and Bank Protection Project, California Biological Assessment. February 9, 2017.

USACE (U.S. Army Corps of Engineers) and CVFPB (Central Valley Flood Protection Board), 2013. Final Environmental Assessment/Initial Study Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3, Yolo County, California. April 2013. Accessed August 11, 2024. Available at: https://www.spk.usace.army.mil/Portals/12/documents/usace_project_public_notices/MidValley_FINALEAIS.pdf.

USACE, 2021. Hamilton City Flood Damage Reduction & Ecosystem Restoration. Accessed August 11, 2024. Available at: <https://www.spk.usace.army.mil/Missions/Civil-Works/Hamilton-City/>.

USACE, 2024. Sacramento River Bank Protection Project Website. Accessed August 15, 2024. Available at: <https://www.spk.usace.army.mil/Missions/Civil-Works/Sacramento-River-Bank-Protection/>.

USBR (U.S. Bureau of Reclamation) and San Luis & Delta Mendota Water Authority, 2019. Final Long-Term Water Transfers EIS/EIR. Accessed August 11, 2024. Available at: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=40932.

USBR, 2020. Shasta Lake Water Resources Investigation EIS. Accessed August 11, 2024. Available: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=1915.

USBR, 2024a. Central Valley Project. Last updated April 8, 2024. Available at: <https://www.usbr.gov/mp/cvp/>.

USBR, 2024b. Long-Term Operation, Central Valley Project, California, Interior Region 10 – California Great Basin. April 2024.

USBR, 2024c. Fremont Weir Adult Fish Passage Modification Project. Accessed August 11, 2024. Available at: <https://www.usbr.gov/mp/bdo/fremont-weir.html>.

USDA (U.S. Department of Agriculture), 2024. USDA 2024 "California Crops Under Climate Change." Last modified 2024. Accessed July 16, 2024. Available at: <https://www.climatehubs.usda.gov/hubs/california/california-crops-under-climate-change>.

USDA Natural Resources Conservation Service, n.d. National Soil Survey Handbook. Title 430-VI. Accessed August 15, 2024. Available at: [https://directives.nrcs.usda.gov/sites/default/files2/1719847021/National Soil Survey Handbook %28entire handbook%29.pdf](https://directives.nrcs.usda.gov/sites/default/files2/1719847021/National%20Soil%20Survey%20Handbook%28entire%20handbook%29.pdf).

- USEIA (U.S. Energy Information Administration), 2024. California State Profile and Energy Usage. Accessed August 21, 2024. Available at: <https://www.eia.gov/state/?sid=CA>.
- USEPA, 2012. Overview of Impaired Waters and Total Maximum Daily Loads Program. Accessed January 24, 2013. Available at: <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/intro.cf>
- USEPA, 2021. Integrated Risk Information System. Last updated October 6, 2021. Accessed August 22, 2024. Available at: <https://www.epa.gov/iris>.
- USFWS (U.S. Fish and Wildlife Service), 2023. List of Birds Protected by the Migratory Bird Treaty Act (2023). Accessed August 22, 2024. Available at: <https://www.fws.gov/media/list-birds-protected-migratory-bird-treaty-act-2023>.
- USFWS, 2024. *Sacramento National Wildlife Refuge*. Accessed July 16, 2024. Available at: <https://www.fws.gov/refuge/sacramento>
- USGCRP (U.S. Global Change Research Program), 2018. Fourth National Climate Assessment: Volume II Impacts, Risks, and Adaptation in the United States. Accessed October 13, 2021. Available at: https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf.
- USGS (U.S. Geological Survey), 2024. California's Central Valley. Available at: <https://ca.water.usgs.gov/projects/central-valley/about-central-valley.html>.
- USGS, 2015. UCERF3: A New Earthquake Forecast for California's Complex Fault System. Fact Sheet 2015-3009. March 2015. Available at: <https://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf>.
- USGS, 2007. *Water-Quality Assessment of the Sacramento River Basin, California: Water-Quality, Sediment and Tissue Chemistry, and Biological Data, 1995-1998 (Open-File Report 2000-391)*. Accessed August 1, 2024. Available at: https://ca.water.usgs.gov/user_projects/sac_nawqa/Publications/ofr_2000-391/soils.html.
- Wagner, D.L., C.W. Jennings, T.L. Bedrossian, and B.L. Bortungo, 1981. Geologic Map of the Sacramento Quadrangle, Scale 1:250,000. Sacramento, California: Department of Conservation, Division of Mines and Geology.
- Water Education Foundation, 2024a. Water Supply in California. Available at: <https://www.watereducation.org/aquapedia/water-supply-california>.
- Water Education Foundation, 2024b. Shasta Dam. Available at: <https://www.watereducation.org/aquapedia/shasta-dam#:~:text=Shasta%20Dam%20forms%20California%27s%20largest,among%20the%20worl>

[d%27s%20largest%20dams. https://www.watereducation.org/aquapedia/water-supply-california](https://www.watereducation.org/aquapedia/water-supply-california)

White, G., J. Kraft, K. Hillman, 2009. Archaeological Overview, Inventory Report, and Research Design, Proposed Sites Reservoir APE, Colusa and Glenn Counties, California. California State University, Chico Archaeological Research Program. Prepared for California Department of Water Resources.

Yolo County, 2009. *County of Yolo 2030 Countywide General Plan*. Accessed August 6, 2024. Available at: <https://www.yolocounty.gov/government/general-government-departments/county-administrator/general-plan/adopted-general-plan>.

Yolo County, 2018. "3. Land Use and Community Character Element." *County of Yolo 2030 Countywide General Plan*. October 2018. Accessed August 6, 2024. Available at: <https://www.yolocounty.gov/home/showpublisheddocument/77725/638296928542830000>

Yolo County, 2024. Draft Yolo County Climate Action and Adaptation Plan. Available at: <https://www.yolocounty.gov/home/showdocument?id=80569&t=638533466386067329>

Yolo County Department of Agriculture, 2022, *2022 Crop & Livestock Report*. 2022. Available at: <https://www.yolocounty.gov/home/showpublisheddocument/77894/638423912682100000>

Appendix A

Comments Received on the Notice of Preparation



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670-4599
(916) 358-2900
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



June 12, 2024

Greg Krzys
Assistant General Manager
Glenn-Colusa Irrigation District
P.O. Box 150
Willows, CA 95988
gkrzys@gcid.net

Subject: Water Reduction Program Agreement
Notice of Preparation of Environmental Impact Report
SCH No. 2024050834¹

Dear Greg Krzys:

The California Department of Fish and Wildlife (CDFW) received and reviewed the Notice of Preparation of an Environmental Impact Report (EIR) from Glenn-Colusa Irrigation District (GCID) for the Water Reduction Program Agreement (Project) in Butte, Colusa, Glenn, Nevada, Placer, Plumas, Shasta, Sutter, Tehama, Trinity, and Yuba Counties, pursuant to the California Environmental Quality Act (CEQA) statute and guidelines.²

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish, wildlife, plants and their habitats. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may need to exercise its own regulatory authority under the Fish and Game Code (Fish & G. Code).

CDFW ROLE

CDFW is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802.). Similarly, for purposes of CEQA, CDFW provides, as available, biological expertise during public agency environmental

¹ <https://ceqanet.opr.ca.gov/2024050834>

² CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

Water Reduction Program Agreement

June 12, 2024

Page 2 of 14

review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW may also act as a Responsible Agency under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

PROJECT DESCRIPTION SUMMARY

The Project site spans Butte, Colusa, Glenn, Nevada, Placer, Plumas, Shasta, Sutter, Tehama, Trinity, and Yuba Counties, and involves water from Shasta Lake and the Sacramento River. The Project consists of an agreement between Sacramento River Settlement Contractors (SRSC) Corporation, individual SRSCs, and the U.S. Bureau of Reclamation (Reclamation) to implement a drought mitigation, voluntary water conservation, and water purchase program.

The agreement would involve SRSC and individual SRSCs foregoing a larger percentage of their contract supply in specified drought years in two phases: Phase 1, 2025 to 2035, and Phase 2, 2036 to 2045. Reduced contract supply would be accomplished through various actions by SRSC including groundwater substitution, cropland idling and shifting, conservation, and through implementing drought-resiliency projects. By reducing the amount of water that is released from Shasta Lake and diverted by the SRSC, the project would consequently allow for more water to be available to Reclamation to manage its operation of the Central Valley Project. In addition, SRSC will engage in drought-resiliency projects to address potential agricultural loss due to reduced contract supply.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations presented below to assist GCID in adequately identifying and/or mitigating the Project's significant, or potentially significant, impacts on biological resources. The comments and recommendations are also offered to enable CDFW to adequately review and comment on the proposed Project with respect to impacts on biological resources. CDFW recommends that the forthcoming EIR address the following:

Project Description

The Project description should include the whole action as defined in the CEQA Guidelines § 15378 and should include appropriate detailed exhibits disclosing the Project area including temporary impacted areas such as equipment stage area, spoils

Water Reduction Program Agreement

June 12, 2024

Page 3 of 14

areas, adjacent infrastructure development, staging areas and access and haul roads if applicable.

As required by § 15126.6 of the CEQA Guidelines, the EIR should include an appropriate range of reasonable and feasible alternatives that would attain most of the basic Project objectives and avoid or minimize significant impacts to resources under CDFW's jurisdiction.

Assessment of Biological Resources

Section 15125(c) of the CEQA Guidelines states that knowledge of the regional setting of a project is critical to the assessment of environmental impacts and that special emphasis should be placed on environmental resources that are rare or unique to the region. To enable CDFW staff to adequately review and comment on the Project, the EIR should include a complete assessment of the flora and fauna within and adjacent to the Project footprint, with emphasis on identifying rare, threatened, endangered, and other sensitive species and their associated habitats. CDFW recommends the EIR specifically include:

1. An assessment of all habitat types located within the Project footprint, and a map that identifies the location of each habitat type. CDFW recommends that floristic, alliance- and/or association-based mapping and assessment be completed following, *The Manual of California Vegetation*, second edition (Sawyer 2009). Adjoining habitat areas should also be included in this assessment where site activities could lead to direct or indirect impacts offsite. Habitat mapping at the alliance level will help establish baseline vegetation conditions.
2. A general biological inventory of the fish, amphibian, reptile, bird, and mammal species that are present or have the potential to be present within each habitat type onsite and within adjacent areas that could be affected by the Project. CDFW recommends that the California Natural Diversity Database (CNDDDB), as well as previous studies performed in the area, be consulted to assess the potential presence of sensitive species and habitats. A nine United States Geologic Survey 7.5-minute quadrangle search is recommended to determine what may occur in the region, larger if the Project area extends past one quad (see *Data Use Guidelines* on the Department webpage www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data). Please review the webpage for information on how to access the database to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code, in the vicinity of the Project. CDFW recommends that CNDDDB Field Survey Forms be completed and submitted to CNDDDB to document survey results. Online forms can be obtained and submitted at: <https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>.

Please note that CDFW's CNDDDB is not exhaustive in terms of the data it houses, nor is it an absence database. CDFW recommends that it be used as a starting point in gathering information about the *potential presence* of species

Water Reduction Program Agreement

June 12, 2024

Page 4 of 14

within the general area of the Project site. Other sources for identification of species and habitats near or adjacent to the Project area should include, but may not be limited to, State and federal resource agency lists, California Wildlife Habitat Relationship System, California Native Plant Society Inventory, agency contacts, environmental documents for other projects in the vicinity, academics, and professional or scientific organizations.

3. A complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern and California Fully Protected Species (Fish & G. Code § § 3511, 4700, 5050, and 5515). Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. The EIR should include the results of focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable. Species-specific surveys should be conducted in order to ascertain the presence of species with the potential to be directly, indirectly, on or within a reasonable distance of the Project activities. CDFW recommends GCID rely on survey and monitoring protocols and guidelines available at: www.wildlife.ca.gov/Conservation/Survey-Protocols. Alternative survey protocols may be warranted; justification should be provided to substantiate why an alternative protocol is necessary. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Some aspects of the Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought or deluge.
4. A thorough, recent (within the last two years), floristic-based assessment of special-status plants and natural communities, following CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (see www.wildlife.ca.gov/Conservation/Plants).
5. Maps and descriptions of groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISW) within the Project footprint. The EIR should leverage the most up to date mapping and information contained in the relevant groundwater subbasin groundwater sustainability plans (GSPs).
6. A characterization of current subbasin conditions, including descriptions of overdraft, sustainable yield, annual groundwater use, local groundwater trends, and the rate and timing of depletions of surface waters to groundwater or groundwater baseflow into surface waters.
7. Information on the regional setting that is critical to an assessment of environmental impacts, with special emphasis on resources that are rare or

Water Reduction Program Agreement

June 12, 2024

Page 5 of 14

unique to the region (CEQA Guidelines § 15125[c]).

Analysis of Direct, Indirect, and Cumulative Impacts to Biological Resources

The EIR should provide a thorough discussion of the Project's potential direct, indirect, and cumulative impacts on biological resources. To ensure that Project impacts on biological resources are fully analyzed, the following information should be included in the EIR:

1. The EIR should define the threshold of significance for each impact and describe the criteria used to determine whether the impacts are significant (CEQA Guidelines, § 15064, subd. (f)). The EIR must demonstrate that the significant environmental impacts of the Project were adequately investigated and discussed, and it must permit the significant effects of the Project to be considered in the full environmental context.
2. A discussion of potential impacts from lighting, noise, human activity, and wildlife-human interactions created by Project activities especially those adjacent to natural areas, exotic and/or invasive species occurrences, and drainages. The EIR should address Project-related changes to drainage patterns and water quality within, upstream, and downstream of the Project site, including: volume, velocity, and frequency of existing and post-Project surface flows; polluted runoff; soil erosion and/or sedimentation in streams and water bodies; and post-Project fate of runoff from the Project site.
3. A discussion of potential indirect Project impacts on biological resources, including resources in areas adjacent to the Project footprint, such as nearby public lands (e.g., National Forests, State Parks, etc.), open space, adjacent natural habitats, riparian ecosystems, wildlife corridors, and any designated and/or proposed reserve or mitigation lands (e.g., preserved lands associated with a Conservation or Recovery Plan, or other conserved lands).
4. A discussion of potential direct and indirect impacts to GDEs. Water reduction activities and drought resiliency projects described in the NOP have the potential to affect groundwater hydrology due to increased groundwater extraction and reduced groundwater recharge. Correlating effects could be temporary and/or long-term declines in groundwater levels, reduction of groundwater storage, depletions of interconnected surface water, land subsidence, and degraded water quality. These effects have the potential to adversely impact GDEs.
5. A discussion of how streamflow depletion will be taken into account with the implementation of the Project, specifically related to activities such as groundwater substitution and the addition of new groundwater or deep aquifer wells. The rate and volume of surface water depleted by groundwater pumping is dependent on a variety of factors including: the confinement or connectivity of the aquifer being pumped to the surface water body in question, the storage coefficient and transmissivity of the aquifer, streambed leakage, the distance of the wells from the water body, and the duration of well pumping.

Water Reduction Program Agreement

June 12, 2024

Page 6 of 14

The EIR should determine how an appropriate, site-specific streamflow depletion factor (SDF) will be determined for groundwater substitution transfers within each SRSC area. Underestimating the SDF value could result in significant impacts to streamflow and aquatic ecosystems.

6. A discussion of flow fluctuations, ramping rates, and instream water temperatures associated with potential changed patterns of releases from Shasta Lake. The EIR should discuss potential direct and cumulative adverse impacts from changes to the quantity, timing, and duration of reservoir releases and diversions from the Sacramento River and their potential impacts to sensitive species within the watershed and downstream watercourses. The discussion should also address how the Project may affect Shasta Lake operations and downstream water temperatures. To ensure potential impacts to sensitive aquatic species are mitigated, the discussion should characterize potential changes to Shasta Lake releases by Reclamation and water diversions by GCID and other SRSC, and include possible volumes, rates, and timing of releases and diversions.
7. A cumulative effects analysis developed as described under CEQA Guidelines section 15130. The EIR should discuss the Project's cumulative impacts to natural resources and determine if that contribution would result in a significant impact. The EIR should include a list of present, past, and probable future projects producing related impacts to biological resources or shall include a summary of the projections contained in an adopted local, regional, or statewide plan, that consider conditions contributing to a cumulative effect. The cumulative analysis shall include impact analysis of vegetation and habitat reductions within the area and their potential cumulative effects. Please include all potential direct and indirect Project-related impacts to riparian areas, wetlands, wildlife corridors or wildlife movement areas, aquatic habitats, sensitive species and/or special-status species, open space, and adjacent natural habitats in the cumulative effects analysis.

Mitigation Measures for Project Impacts to Biological Resources

The EIR should include appropriate and adequate avoidance, minimization, and/or mitigation measures for all direct, indirect, and cumulative impacts that are expected to occur as a result of the construction and long-term operation and maintenance of the Project. CDFW also recommends the environmental documentation provide scientifically supported discussion regarding adequate avoidance, minimization, and/or mitigation measures to address the Project's significant impacts upon fish and wildlife and their habitat. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (Guidelines § § 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. When proposing measures to avoid, minimize, or mitigate impacts, CDFW recommends consideration of the following:

Water Reduction Program Agreement

June 12, 2024

Page 7 of 14

1. *Fully Protected Species*: Several Fully Protected Species (Fish & G. Code § 3511) have the potential to occur within or adjacent to the Project area, including, but not limited to: golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*). Project activities described in the EIR should be designed to completely avoid any fully protected species that have the potential to be present within or adjacent to the Project area. If fully protected species cannot be completely avoided, the Project should obtain incidental take coverage for all species that have the potential to be present within or adjacent to the Project Area³. CDFW also recommends the EIR fully analyze potential adverse impacts to fully protected species due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW recommends that GCID include in the analysis how appropriate avoidance, minimization and mitigation measures will reduce indirect impacts to fully protected species.
2. *Species of Special Concern*: Several Species of Special Concern (SSC) have the potential to occur within or adjacent to the Project area, including, but not limited to: Central Valley fall- and late-fall run Chinook salmon (*Oncorhynchus tshawytscha*), hardhead (*Mylopharodon conocephalus*), Sacramento hitch (*Lavinia exilicauda exilicauda*), western spadefoot (*Spea hammondi*), pallid bat (*Antrozous pallidus*), and white sturgeon (*Acipenser transmontanus*). Project activities described in the EIR should be designed to avoid any SSC that have the potential to be present within or adjacent to the Project area. CDFW also recommends that the EIR fully analyze potential adverse impacts to SSC due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW suggests GCID include in the analysis how appropriate avoidance, minimization and mitigation measures will reduce impacts to SSC.
3. *Sensitive Plant Communities*: CDFW considers sensitive plant communities to be imperiled habitats having both local and regional significance. Plant communities, alliances, and associations with a statewide ranking of S-1, S-2, S-3, and S-4 should be considered sensitive and declining at the local and regional level. These ranks can be obtained by querying the CNDDDB and are included in *The Manual of California Vegetation* (Sawyer 2009). The EIR should include measures to fully avoid and otherwise protect sensitive plant communities from Project-related direct and indirect impacts.
4. *Mitigation*: CDFW considers adverse Project-related impacts to sensitive species and habitats to be significant to both local and regional ecosystems, and the EIR should include mitigation measures for adverse Project-related impacts to these resources. Mitigation measures should emphasize avoidance and reduction of Project impacts. For unavoidable impacts, onsite habitat restoration, enhancement, or permanent protection should be evaluated and discussed in

³ CDFW may only issue incidental take permits for specified projects if certain conditions are satisfied per SB 147.

Water Reduction Program Agreement

June 12, 2024

Page 8 of 14

detail. If onsite mitigation is not feasible or would not be biologically viable and therefore not adequately mitigate the loss of biological functions and values, offsite mitigation through habitat creation and/or acquisition and preservation in perpetuity should be addressed. Areas proposed as mitigation lands should be protected in perpetuity with a conservation easement, financial assurance and dedicated to a qualified entity for long-term management and monitoring. Under Government Code, section 65967, the Lead Agency must exercise due diligence in reviewing the qualifications of a governmental entity, special district, or nonprofit organization to effectively manage and steward land, water, or natural resources on mitigation lands it approves.

The EIR should include measures to perpetually protect the targeted habitat values within mitigation areas from direct and indirect adverse impacts in order to meet mitigation objectives to offset Project-induced qualitative and quantitative losses of biological values. Specific issues that should be addressed include restrictions on access, proposed land dedications, long-term monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc.

5. *Habitat Revegetation/Restoration Plans*: Plans for restoration and revegetation should be prepared by persons with expertise in the regional ecosystems and native plant restoration techniques. Plans should identify the assumptions used to develop the proposed restoration strategy. Each plan should include, at a minimum: (a) the location of restoration sites and assessment of appropriate reference sites; (b) the plant species to be used, sources of local propagules, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) a local seed and cuttings and planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity. Monitoring of restoration areas should extend across a sufficient time frame to ensure that the new habitat is established, self-sustaining, and capable of surviving drought.

CDFW recommends that local onsite propagules from the Project area and nearby vicinity be collected and used for restoration purposes. Onsite seed collection should be appropriately timed to ensure the viability of the seeds when planted. Onsite vegetation mapping at the alliance and/or association level should be used to develop appropriate restoration goals and local plant palettes. Reference areas should be identified to help guide restoration efforts. Specific restoration plans should be developed for various Project components as appropriate. Restoration objectives should include protecting special habitat elements or re-creating them in areas affected by the Project. Examples may include retention of woody material, logs, snags, rocks, and brush piles. Fish and Game Code sections 1002, 1002.5 and 1003 authorize CDFW to issue permits for the take or possession of plants and wildlife for scientific, educational, and

Water Reduction Program Agreement

June 12, 2024

Page 9 of 14

propagation purposes. Please see our website for more information on Scientific Collecting Permits at www.wildlife.ca.gov/Licensing/Scientific-Collecting#53949678-regulations-.

6. *Nesting Birds*: Please note that it is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Migratory non-game native bird species are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et seq.*). CDFW implemented the MBTA by adopting the Fish and Game Code section 3513. Fish and Game Code sections 3503, 3503.5 and 3800 provide additional protection to nongame birds, birds of prey, their nests and eggs. Sections 3503, 3503.5, and 3513 of the Fish and Game Code afford protective measures as follows: section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Fish and Game Code or any regulation made pursuant thereto; section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the Fish and Game Code or any regulation adopted pursuant thereto; and section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Potential habitat for nesting birds and birds of prey is present within the Project area. The Project should disclose all potential activities that may incur a direct or indirect take to nongame nesting birds within the Project footprint and its vicinity. Appropriate avoidance, minimization, and/or mitigation measures to avoid take must be included in the EIR.

CDFW recommends the EIR include specific avoidance and minimization measures to ensure that impacts to nesting birds or their nests do not occur. Project-specific avoidance and minimization measures may include, but not be limited to: Project phasing and timing, monitoring of Project-related noise (where applicable), sound walls, and buffers, where appropriate. The EIR should also include specific avoidance and minimization measures that will be implemented should a nest be located within the Project site. In addition to larger, protocol level survey efforts (e.g., Swainson's hawk surveys) and scientific assessments, CDFW recommends a final preconstruction survey be required no more than three (3) days prior to vegetation clearing or ground disturbance activities, as instances of nesting could be missed if surveys are conducted earlier.

7. *Bats*: Several bat species are known to utilize habitat throughout the Project area. Accordingly, CDFW recommends the DEIR include measures where future development avoids potential impacts to bats.

Bats are considered non-game mammals and are afforded protection by state law from take and/or harassment (Fish & G. Code, § 4150; Cal. Code of Regs., §

Water Reduction Program Agreement

June 12, 2024

Page 10 of 14

251.1). Construction and activities, including ground disturbance, vegetation removal, and any activities leading to increased noise levels may have direct and/or indirect impacts on bats and roosts. CDFW recommends a biological resources survey provide a thorough discussion and adequate disclosure of potential impacts to bats and roosts from planned future development and/or encroachment upon habitat. If applicable, avoidance and minimization measures should be included to reduce impacts to less than significant.

8. *Moving Out of Harm's Way*: The Project is anticipated to result in the clearing of natural habitats that support native species. To avoid direct mortality, GCID should state in the EIR a requirement for a qualified biologist with the proper handling permits, will be retained to be onsite prior to and during all ground- and habitat-disturbing activities. Furthermore, the EIR should describe that the qualified biologist with the proper permits may move out of harm's way special-status species or other wildlife of low or limited mobility that would otherwise be injured or killed from Project-related activities, as needed. The EIR should also describe qualified biologist qualifications and authorities to stop work to prevent direct mortality of special-status species. CDFW recommends fish and wildlife species be allowed to move out of harm's way on their own volition, if possible, and to assist their relocation as a last resort. It should be noted that the temporary relocation of onsite wildlife does not constitute effective mitigation for habitat loss.
9. *Translocation of Species*: CDFW generally does not support the use of relocation, salvage, and/or transplantation as the sole mitigation for impacts to rare, threatened, or endangered species as these efforts are generally experimental in nature and largely unsuccessful. Therefore, the EIR should describe additional mitigation measures utilizing habitat restoration, conservation, and/or preservation, in addition to avoidance and minimization measures, if it is determined that there may be impacts to rare, threatened, or endangered species.

The EIR should incorporate mitigation performance standards that would ensure that impacts are reduced to a less-than-significant level. Mitigation measures proposed in the EIR should be made a condition of approval of the Project. Please note that obtaining a permit from CDFW by itself with no other mitigation proposal may constitute mitigation deferral. CEQA Guidelines section 15126.4, subdivision (a)(1)(B) states that formulation of mitigation measures should not be deferred until some future time. To avoid deferring mitigation in this way, the EIR should describe avoidance, minimization and mitigation measures that would be implemented should the impact occur.

California Endangered Species Act

CDFW is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to CESA. CDFW recommends that a CESA Incidental Take Permit (ITP) be obtained if the Project has the potential to result in "take" (Fish & G. Code § 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch,

Water Reduction Program Agreement

June 12, 2024

Page 11 of 14

capture, or kill”) of State-listed CESA species, either through construction or over the life of the Project.

State-listed species with the potential to occur in the area include, but are not limited to: winter- and spring-run Chinook salmon (*Oncorhynchus tshawytscha*), Shasta salamander (*Hydromantes shastae*), Crotch’s bumble bee (*Bombus crotchii*; candidate endangered).

The EIR should disclose the potential of the Project to take State-listed species and how the impacts will be avoided, minimized, and mitigated. Please note that mitigation measures that are adequate to reduce impacts to a less-than significant level to meet CEQA requirements may not be enough for the issuance of an ITP. To facilitate the issuance of an ITP, if applicable, CDFW recommends the EIR include measures to minimize and fully mitigate the impacts to any State-listed species the Project has potential to take. CDFW encourages early consultation with staff to determine appropriate measures to facilitate future permitting processes and to engage with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service to coordinate specific measures if both State and federally listed species may be present within the Project vicinity.

Native Plant Protection Act

The Native Plant Protection Act (Fish & G. Code §1900 *et seq.*) prohibits the take or possession of State-listed rare and endangered plants, including any part or product thereof, unless authorized by CDFW or in certain limited circumstances. Take of State-listed rare and/or endangered plants due to Project activities may only be permitted through an ITP or other authorization issued by CDFW pursuant to California Code of Regulations, Title 14, section 786.9 subdivision (b).

Sustainable Groundwater Management Act

The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems, species, and public trust resources depend on groundwater and ISW.

SGMA and its implementing regulations afford ecosystems and species specific statutory and regulatory consideration. In the context of SGMA statutes and regulations, and Public Trust Doctrine considerations, groundwater planning should carefully consider and protect environmental beneficial uses and users of groundwater, including fish and wildlife and their habitats, GDEs, and ISW.

The Public Trust Doctrine imposes a distinct obligation to consider how groundwater management affects public trust resources, including navigable surface waters and fisheries. Groundwater hydrologically connected to surface waters is also subject to the Public Trust Doctrine to the extent that groundwater extractions or diversions affect or may affect public trust uses. (*Environmental Law Foundation v. State Water Resources Control Board* (2018), 26 Cal. App. 5th 844; *National Audubon Society v. Superior Court* (1983), 33 Cal. 3d 419.) The lead agency has “an affirmative duty to take the public trust

Water Reduction Program Agreement

June 12, 2024

Page 12 of 14

into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.” (*National Audubon Society, supra*, 33 Cal. 3d at 446.)

Accordingly, Projects should be evaluated for their potential to impact groundwater supplies, including identification of appropriate protections for ISWs and their tributaries, and ISWs that support fisheries, including the level of groundwater contribution to those waters.

Lake and Streambed Alteration Program

The EIR should identify all perennial, intermittent, and ephemeral rivers, streams, lakes, other hydrologically connected aquatic features, and any associated biological resources/habitats present within the entire Project footprint (including utilities, access and staging areas). The environmental document should analyze all potential temporary, permanent, direct, indirect and/or cumulative impacts to the above-mentioned features and associated biological resources/habitats that may occur because of the Project. If it is determined the Project will result in significant impacts to these resources the EIR shall propose appropriate avoidance, minimization and/or mitigation measures to reduce impacts to a less-than-significant level.

Section 1602 of the Fish and Game Code requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following:

1. Substantially divert or obstruct the natural flow of any river, stream or lake;
2. Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
3. Deposit debris, waste or other materials where it may pass into any river, stream or lake.

Please note that "any river, stream or lake" includes those that are episodic (i.e., those that are dry for periods of time) as well as those that are perennial (i.e., those that flow year-round). This includes ephemeral streams and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

If upon review of an entity's notification, CDFW determines that the Project activities may substantially adversely affect an existing fish or wildlife resource, a Lake and Streambed Alteration (LSA) Agreement will be issued which will include reasonable measures necessary to protect the resource. CDFW's issuance of an LSA Agreement is a "project" subject to CEQA (see Pub. Resources Code 21065). To facilitate issuance of an LSA Agreement, if one is necessary, the EIR should fully identify the potential impacts to the lake, stream, or riparian resources, and provide adequate avoidance, mitigation, and monitoring and reporting commitments. Early consultation with CDFW is recommended, since modification of the Project may avoid or reduce impacts to fish and wildlife resources. Notifications for projects involving (1) sand, gravel or rock extraction, (2) timber harvesting operations, or (3) routine maintenance operations must be submitted using paper notification forms. All other LSA Notification types must be submitted online through CDFW's Environmental Permit Information Management

Water Reduction Program Agreement

June 12, 2024

Page 13 of 14

System (EPIMS). For more information about EPIMS, please visit <https://wildlife.ca.gov/Conservation/Environmental-Review/EPIMS>. More information about LSA Notifications, paper forms and fees may be found at <https://www.wildlife.ca.gov/Conservation/Environmental-Review/LSA>.

Please note that other agencies may use specific methods and definitions to determine impacts to areas subject to their authorities. These methods and definitions often do not include all needed information for CDFW to determine the extent of fish and wildlife resources affected by activities subject to Notification under Fish and Game Code section 1602. Therefore, CDFW does not recommend relying solely on methods developed specifically for delineating areas subject to other agencies' jurisdiction (such as United States Army Corps of Engineers) when mapping lakes, streams, wetlands, floodplains, riparian areas, etc. in preparation for submitting a Notification of an LSA.

CDFW relies on the lead agency environmental document analysis when acting as a responsible agency issuing an LSA Agreement. CDFW recommends lead agencies coordinate with us as early as possible, since potential modification of the proposed Project may avoid or reduce impacts to fish and wildlife resources and expedite the Project approval process.

The following information will be required for the processing of an LSA Notification and CDFW recommends incorporating this information into any forthcoming CEQA document(s) to avoid subsequent documentation and Project delays:

1. Mapping and quantification of lakes, streams, and associated fish and wildlife habitat (e.g., riparian habitat, freshwater wetlands, etc.) that will be temporarily and/or permanently impacted by the Project, including impacts from access and staging areas. Please include an estimate of impact to each habitat type.
2. Discussion of specific avoidance, minimization, and mitigation measures to reduce Project impacts to fish and wildlife resources to a less-than-significant level. Please refer to section 15370 of the CEQA Guidelines.

Based on review of Project materials, aerial photography and observation of the site from public roadways, the Project site supports Shasta Lake, the Sacramento River, and its associated riparian habitat. CDFW recommends the EIR fully identify the Project's potential impacts to the stream and/or its associated vegetation and wetlands.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to CNDDDB. The CNDDDB field survey form can be found at the following link: <https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>. The completed form can be submitted online or mailed electronically to CNDDDB at the following email address: CNDDDB@wildlife.ca.gov.

Water Reduction Program Agreement

June 12, 2024

Page 14 of 14

FILING FEES

The Project, as proposed, would have an effect on fish and wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by GCID and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code § 711.4; Pub. Resources Code, § 21089.)


CONCLUSION

Pursuant to Public Resources Code sections 21092 and 21092.2, CDFW requests written notification of proposed actions and pending decisions regarding the Project. Written notifications shall be directed to: California Department of Fish and Wildlife North Central Region, 1701 Nimbus Road, Rancho Cordova, CA 95670 or emailed to R2CEQA@wildlife.ca.gov.

CDFW appreciates the opportunity to comment on the Notice of Preparation of the EIR for the Water Reduction Program Agreement and recommends that GCID address CDFW's comments and concerns in the forthcoming EIR. CDFW personnel are available for consultation regarding biological resources and strategies to minimize impacts.

If you have any questions regarding the comments provided in this letter, please contact Alyssa Obester, Senior Environmental Scientist (Specialist) at alyssa.obester@wildlife.ca.gov.

Sincerely,

DocuSigned by:

746D5F13C3B348A...

Jennifer Garcia
Environmental Program Manager

ec: Briana Seapy, Senior Environmental Scientist (Supervisory)
Bridget Gibbons, Environmental Scientist
Alyssa Obester, Senior Environmental Scientist (Specialist)
Department of Fish and Wildlife

Office of Planning and Research, State Clearinghouse, Sacramento

REFERENCES

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A Manual of California Vegetation, 2nd ed. California Native Plant Society Press, Sacramento, California.
<http://vegetation.cnps.org/>



NATIVE AMERICAN HERITAGE COMMISSION

May 22, 2024

Greg Krzys
Glenn-Colusa Irrigation District
P.O. Box 150
Willows CA 95988

CHAIRPERSON
Reginald Pagaling
Chumash

VICE-CHAIRPERSON
Buffy McQuillen
Yokayo Pomo, Yuki,
Nomlaki

SECRETARY
Sara Dutschke
Miwok

PARLIAMENTARIAN
Wayne Nelson
Luiseño

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Laurena Bolden
Serrano

COMMISSIONER
Reid Milanovich
Cahuilla

COMMISSIONER
Bennae Calac
Pauma-Yuima Band of
Luiseño Indians

EXECUTIVE SECRETARY
**Raymond C.
Hitchcock**
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

Re: 2024050834, Water Reduction Program Agreement Project, Glenn County

Dear Mr. Krzys:

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 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

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.

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) 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.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

cc: State Clearinghouse

Appendix B

Potentially Present Special Status Species Lists

Table B-1
Special Status Species Potentially Present in the Project Area

Species	Federal	State	Habitat Association	Potential to Occur
Invertebrates				
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	--	Riparian scrub in association with blue elderberry (<i>Sambucus nigra</i> ssp. <i>caerulea</i>)	Individual elderberry shrubs are known in the region. No elderberry shrubs are known in the study area. Potential habitat is not present on site.
Birds				
Tricolored blackbird (<i>Agelaius tricolor</i>)	--	CE; SSC	Freshwater marsh; marsh and swamp; swamp; wetland	Low potential to occur. Inundated channels could provide habitat for foraging. Nesting habitat is absent.
Burrowing owl (<i>Athene cunicularia</i>)	--	SSC	Prairie; scrub; valley and foothill grassland	Low potential to occur. Habitat consists of ruderal vegetation and nonnative grasslands in the project area.
White-tailed kite (<i>Elanus leucurus</i>)	--	FP	Open grasslands; savanna; open woodlands; marshes; desert grassland; partially cleared lands; cultivated fields	Low potential for nesting to occur in trees surrounding the project site. Foraging may occur across the ruderal and grassland habitat.
Swainson's hawk (<i>Buteo swainsoni</i>)	--	T	Great basin grassland; riparian forest; riparian woodland; valley and foothill grassland	Low potential to occur in trees surrounding the project site. Foraging may occur across the ruderal and grassland habitat.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	--	T	Ocean shore, lake margins, and rivers for both nesting and wintering; most nest within 1 mile of water. Nests in large, old growth, or dominant live trees with open branches.	Nesting in riparian habitat adjacent to the Sacramento River; potential habitat adjacent to the project area.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	--	SSC	Semi-open country with lookout posts, wires, trees, and scrub; breeds in semi-open terrain, from large clearings in wooded regions to open grassland or desert with a few scattered trees or large shrubs; includes riparian woodland	Low potential to occur. Grassland and ruderal vegetation could be used for foraging. Various shrubs east of project area could be potentially used for nesting.
Yellow-headed blackbird (<i>Xanthocephalus xanthocephalus</i>)	--	SSC	Marsh and swamp; wetland	Potential to occur. Habitat present where emergent vegetation occurs in conveyance channels.

Species	Federal	State	Habitat Association	Potential to Occur
Barn swallow (<i>Hirundo rustica</i>)	MBTA	MBTA	Feeds over meadows, fields, and farmyards and over ditches, creeks, and canals. Nests on the underside of bridges or sides of buildings.	Potential to occur throughout project area.
Belted kingfisher (<i>Megaceryle alcyon</i>)	MBTA	MBTA	Feeds along streams, creeks, drainage channel, and canals.	Potential to occur throughout project area.
Bushtit (<i>Psaltiriparus minimus</i>)	MBTA	MBTA	Moves through low branches of open woodlands and edges of riparian areas	Potential to occur throughout project area.
House finch (<i>Haemorhous mexicanus</i>)	MBTA	MBTA	Farms, rural areas, edges of fallow fields where weedy vegetation occurs	Potential to occur throughout project area.
Cliff swallow (<i>Petrochelidon pyrrhonota</i>)	MBTA	MBTA	Feeds over meadows, fields, and farmyards and over ditches, creeks, and canals	Potential to occur throughout project area.
American robin (<i>Turdus migratorius</i>)	MBTA	MBTA	Feeds over lakes, rivers, ditches, creeks, and canals. Nests on the underside of bridges or sides of buildings.	Potential to occur throughout project area.
Common raven (<i>Corvus corax</i>)	MBTA	MBTA	Edges of towns, forests, scrub, and various habitats.	Potential to occur throughout project area.
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	MBTA	MBTA	Pastures, hayfields, and ruderal areas adjacent to farmlands	Potential to occur throughout project area.
Lawrence's goldfinch (<i>Spinus lawrencei</i>)	MBTA	MBTA	Weedy areas adjacent to creeks, drainages, and canals.	Potential to occur throughout project area.
Fish				
Green sturgeon (<i>Acipenser medirostris</i>)	T	--	Mainstem Sacramento River, historically beyond the Keswick Dam	Potential to occur in Sacramento River.
Reptiles				
Giant garter snake (<i>Thamnophis gigas</i>)	T	T	Marsh and swamp; riparian scrub; wetland	Low potential to occur. Drainages in the project area with year-round water and emergent vegetation are potential habitat.
Western pond turtle (<i>Emys marmorata</i>)	--	SSC	Aquatic; flowing waters; standing waters; wetland	Low potential to occur. Habitat consists of drainage ditches crossing project area.

Notes:

Species were narrowed to those with potential habitat within the project area, and those species dependent on habitat outside project area were not evaluated in this table.

Sources:

California Department of Fish and Wildlife, 2024a. California Natural Diversity Data Base County Search: Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento Counties.

California Department of Fish and Wildlife, 2024b. California Natural Diversity Database and BIOS online mapping. Accessed August 2024. Available at: www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data.

--: not applicable

C: candidate

E: endangered

FP: California Department of Fish and Wildlife fully protected

MBTA: protected by the Migratory Bird Treaty Act

SSC: state species of special concern

T: threatened

Table B-2**California Native Plant Society List Plant Species with the Potential to Occur in the Study Area**

Common Name	Scientific Name	California Rare Plant Rank	Habitat	Potential to Occur
Alkali milk-vetch	<i>Astragalus tener</i> <i>var. tener</i>	1B.2	Alkali playa, valley and foothill grassland, vernal pools, alkali flats, and flooded lands	No potential to occur. Habitat not present.
Heartscale	<i>Atriplex cordulata</i> <i>var. cordulata</i>	1B.2	Chenopod scrub, valley and foothill grassland, meadows and seeps, and alkaline flats	No potential to occur. Habitat not present.
Watershield	<i>Brasenia schreberi</i>	2B.3	Freshwater marshes and swamps	No potential to occur. Habitat not present.
Bristly sedge	<i>Carex comosa</i>	2B.1	Marshes and swamps, coastal prairie, valley and foothill grassland, lake margins, wet places, and below sea level on delta islands	No potential to occur. Habitat not present.
Palmate-bracted salty bird's-beak	<i>Chloropyron palmatum</i>	1B.1 (Federal Endangered; State Endangered)	Chenopod scrub, valley grassland, and foothill grassland, usually on pescadero silty clay-alkaline with salt grass and alkali heath	No potential to occur. Habitat not present.
Recurved larkspur	<i>Delphinium recurvatum</i>	1B.2	Chenopod scrub, valley grassland, foothill grassland, cismontane woodland, and on alkaline soil, often in valley saltbush or valley chenopod scrub	No potential to occur. Habitat not present.
Jepson's coyote thistle	<i>Eryngium jepsonii</i>	1B.2	Riparian scrub and seasonally inundated flood plain on clay	No potential to occur. Habitat not present.
San Joaquin spearscale	<i>Extriplex joaquinana</i>	1B.2	Chenopod scrub, valley grassland, foothill grassland, alkali meadows, playas, seasonally wet alkaline areas, or alkali sink with salt grass and Frankenia	No potential to occur. Habitat not present.
Woolly rose-mallow	<i>Hibiscus lasiocarpus</i> <i>var. occidentalis</i>	1B.2	Freshwater marshes and swamps, riverbanks with active channel, and low peat islands	No potential to occur. Habitat not present.

Common Name	Scientific Name	California Rare Plant Rank	Habitat	Potential to Occur
Delta tule pea	<i>Lathyrus jepsonii</i> <i>var. jepsonii</i>	1B.2	Marshes and swamps, especially freshwater and brackish marshes, often with cattails, California rose, and rushes; found on marsh or slough edges	No potential to occur. Habitat not present.
Mason's lilaeopsis	<i>Lilaeopsis masonii</i>	1B.1	Marshes and swamps, riparian scrub, tidal zones, in muddy or silty soil formed through river deposition, and in brackish or freshwater	No potential to occur. Habitat not present.
Delta mudwort	<i>Limosella australis</i>	2B.1	Marshes and swamps and riparian scrub, usually on mud banks of the delta in marshy or scrubby riparian associations	No potential to occur. Habitat not present.
Sanford's arrowhead	<i>Sagittaria sanfordii</i>	1B.2	Marshes and swamps, standing or slow-moving freshwater ponds, marshes, and ditches	No potential to occur. Habitat not present.
Side-flowering skullcap	<i>Scutellaria lateriflora</i>	2B.2	Meadows, freshwater marshes, and riparian wetland	No potential to occur. Habitat not present.
Suisun marsh aster	<i>Symphyotrichum lentum</i>	1B.2	Marshes and swamps, brackish and freshwater, and seen along sloughs with rushes, blackberry, cattails, etc.	No potential to occur. Habitat not present.
Wright's trichocoronis	<i>Trichocoronis wrightii</i> var. <i>wrightii</i>	2B.1	Marshes and swamps, riparian forest, meadows and seeps, vernal pools, mud flats of vernal lakes, drying riverbeds, and alkali meadows	No potential to occur. Habitat not present.
Saline clover	<i>Trifolium hydrophilum</i>	1B.2	Marshes and swamps, valley and foothill grasslands, vernal pools, mesic, and alkaline sites	No potential to occur. Habitat not present.
Caper-fruited tropidocarpum	<i>Tropidocarpum capparideum</i>	1B.1	Valley and foothill grasslands and alkaline clay	No potential to occur. Habitat not present.

Notes:

Sources:

California Department of Fish and Wildlife, 2024a. California Natural Diversity Data Base County Search: Shasta, Tehama, Glenn, Butte, Sutter, Colusa, Yolo, and Sacramento Counties.

California Department of Fish and Wildlife, 2024b. California Natural Diversity Database and BIOS online mapping. Accessed August 2024. Available at: www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data.

Rare Plant Rank 1B.1: rare, threatened, or endangered in California and elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

Rare Plant Rank 1B.2: rare, threatened, or endangered in California and elsewhere; fairly threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

Rare Plant Rank 2B.1: rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

Rare Plant Rank 2B.2: rare, threatened, or endangered in California, but more common elsewhere; moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

Rare Plant Rank 2B.3: rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)