CACHE SLOUGH MITIGATION BANK PROJECT

USE PERMIT APPLICATION 23-03

DRAFT INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

JANUARY 2025

PREPARED BY
DEPARTMENT OF RESOURCE MANAGEMENT
COUNTY OF SOLANO

Contents

Appendices are available on the county's website Solano County - Environmental Impact Reports and Negative Declarations

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Acronyms and Abbreviations

Acronym	Definition
A-80	Agriculture Minimum 80 acres
ALUC	Solano Airport Land Use Commission
ALUCPs	Airport Land Use Compatibility Plans
ALUCPs	airport land use compatibility plans
AQAP	Air Quality Attainment Plan
Bank	Cache Slough Mitigation Bank
BMPs	best management practices
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
CalGEM	California Geologic Energy Management Division
California Register	California Register of Historical Resources
Caltrans	California Department of Transportation
CAP	Solano County Climate Action Plan
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH4	methane
CISS	cast-in-steel shell
CNPS	California Native Plant Society
CO	carbon monoxide
CO2	carbon dioxide
CO2e	carbon dioxide equivalent
Construction General Order	Construction and Land Disturbance Activities
CVFPB	Central Valley Flood Protection Board
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
Delta	San Joaquin Delta
DOC	dissolved organic carbon
DPM	diesel particulate matter
DSC	Delta Stewardship Council
DWR	California Department of Water Resources
EIR	Environmental Impact Report
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FPD	Fire Protection District
ft	feet
Garaventa Enterprises	Rio Vista Sanitation Service

Acronym	Definition
GHGs	greenhouse gases
GPS	global positioning system
GWP	global warming potential
Handbook	California Airport Land Use Planning Handbook
HFC	hydrofluorocarbons
HMMP	hazardous materials management plan
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
kV	kilovolt
LEMBP	Little Egbert Multi Benefit Project
Leq	equivalent continuous sound level
Little Egbert Tract	WES
LOS	level of service
LRA	Local Responsibility Area
MT	metric tons
N2O	nitrous oxides
NAAQS	national ambient air quality standards
NAVD 88	North American Vertical Datum of 1988
NMFS	National Marine Fisheries Service
NMFS PBO	National Marine Fisheries Service Biological Opinion
NO2	nitrogen dioxide
NOX	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NVYT	Northern Valley Yokut/Ohlone Tribe
OHW	ordinary high-water
PG&E	Pacific Gas and Electric Company
PM	Post Mile
PM	particulate matter
PM10	PM 10 microns or less in diameter
PM2.5	PM 2.5 microns or less in diameter
PRC	Public Resources Code
RDUSD	River Delta Unified School District
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCWA	Solano County Water Agency
SIP	State Implementation Plan
SLC	California State Lands Commission
SO2	sulfur dioxide
SPCCP	spill prevention, containment, and countermeasure plan
SR	State Route
SSJDD	Sacramento San Joaquin Drainage District
SVAB	Sacramento Valley Air Basin
SWPPP	stormwater pollution prevention plan
TAC	toxic air contaminants

Acronym	Definition
Travis AFB	Travis Air Force Base
Travis AFB LUCP	Travis Air Force Base Land Use Compatibility Plan
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFWS PBO	U.S. Fish and Wildlife Service Programmatic Biological and Conference Opinion for the Statewide Programmatic Restoration Effort
USGS	U.S. Geological Survey
vistas	County-designated scenic resources
WES	Westervelt Ecological Services
WHA	wildlife hazards analysis
YDWN	Yocha Dehe Wintun Nation
YSAQMD	Yolo-Solano Air Quality Management District

DEPARTMENT OF RESOURCE MANAGEMENT

PART II OF INITIAL STUDY OF ENVIRONMENTAL IMPACTS

Introduction

The following analysis is provided by the Solano County Department of Resource Management as a review of and supplement to the applicants' completed "Part I of Initial Study". These two documents, Part I and II, comprise the Initial Study prepared in accordance with the State CEQA Guidelines, Section 15063.

Project Title:	Cache Creek Mitigation Bank
Application Number	U-23-03
Assessor Parcel Numbers	177-110-260, 177-150-010 and 177-110-130
Project Sponsor's Name and Address	Westervelt Ecological Services, LLC 3636 American River Drive, Suite 120 Sacramento, CA 95864 Contact: Angela Lagneaux 916.646.3644

General Information

This document discusses the proposed project, the environmental setting for the proposed project, and the impacts on the environment from the proposed project and any measures incorporated which will minimize, avoid and/or provide mitigation measures for the impacts of the proposed project on the environment.

- ❑ Please review this Initial Study. You may order additional copies of this document from the Planning Services Division, Resource Management Department, County of Solano County at 675 Texas Street Suite 5500, Fairfield, CA, 94533.
- ❑ We welcome your comments. If you have any comments regarding the proposed project, please send your written comments to this Department by the deadline listed below.
- ❑ Submit comments via postal mail to

Planning Services Division

Resource Management Department

Attn: Mathew Walsh, Principal Planner

675 Texas Street, Suite 5500

Fairfield, CA 94533

- ❑ Submit comments via email to: mwalsh@solanocounty.com
- ❑ Submit comments by the deadline of: **February 27, 2025**

Next Steps

After comments are received from the public and any reviewing agencies, the Department may recommend that the environmental review is adequate and that a Mitigated/Negative Declaration be adopted or that the environmental review is not adequate and that further environmental review is required.

ENVIRONMENTAL DETERMINATION

Based on this initial study:

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

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the project proponent has agreed to revise the project to avoid any significant effect. **A MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find the proposed project could have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.

☐ I find the proposed project could have a significant effect on the environment, but at least one effect has been (1) adequately analyzed in a previous document pursuant to applicable legal standards, and (2) addressed by mitigation measures based on the previous analysis as described in the attached initial study.
An EIR is required that analyzes only the effects that were not adequately addressed in a previous document.

☐ I find that although the proposed project could have a significant effect on the environment, no further environmental analysis is required because all potentially significant effects have been (1) adequately analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are included in the project, and further analysis is not required.

1/28/25
Date

Mathew Walsh
Mathew Walsh
Principal Planner

INCORPORATION OF MITIGATION MEASURES INTO THE PROPOSED PROJECT

By signature of this document, the project proponent amends the project description to include the mitigation measures as set forth in Section 2.

1/23/2025
Date

Travis Hemmen
Project Sponsor

Chapter 1
Introduction

This Initial Study (IS) examines the potential direct, indirect, and cumulative impacts on the affected environment associated with the Cache Slough Mitigation Bank Project. The proposed project is referred to herein as the "project." The project would develop the Cache Slough Mitigation Bank (Bank), a private commercial mitigation bank, on approximately 330 acres at the southernmost reach of the Yolo Bypass at the confluence of Cache Slough, Sacramento River, and Steamboat Slough in Solano County, California. Figure 1-1 shows the regional location, Figure 1-2 shows the project location, and Figure 1-3 shows a recent aerial photo of the project site. The project also includes onsite and offsite utility infrastructure improvements to facilitate Bank development. Figure 1-4 shows the location of these areas in relation to the project site.

The project is a discretionary action under the California Environmental Quality Act (CEQA); therefore, the project is subject to the requirements of CEQA. The County of Solano is the CEQA lead agency for the preparation of the IS, and Westervelt Ecological Services (WES) is the applicant and project proponent. This IS has been prepared in accordance with CEQA requirements and guidance and serves to publicly disclose the potential impacts of the project with consideration for the proposed mitigation measures.

1.1 Project Purpose and Need

Environmental impacts on wetlands, waters of the United States, and listed species continue in the Sacramento–San Joaquin Delta (Delta) region from private and public water and infrastructure projects, creating a strong need for wetland, floodplain, and aquatic species habitat restoration to offset these impacts. In response to this need, WES proposes restoration of over 300 acres of freshwater tidal wetland and floodplain riparian habitats that would serve a wide variety of mitigation as identified in federal, state, and local permits issued to public and private clients. Mitigation credits generated by the project would offset unavoidable impacts on resources regulated by the federal Clean Water Act (CWA) Sections 404 and 401 and the federal Endangered Species Act (ESA).

1.2 Organization of this Report

This document was prepared to meet CEQA requirements for the analysis of the project. Chapter 1, *Introduction*, provides an introduction and describes the project purpose and the organization of the report. Chapter 2, *Proposed Project*, describes the proposed project. Chapter 3, *Evaluation of Environmental Impacts,* describes the environmental setting and the environmental impacts associated with the project. The following resource areas are included based on Appendix G (Environmental Checklist Form) of the State CEQA Guidelines:

- Aesthetics
- Agricultural and Forestry Resources

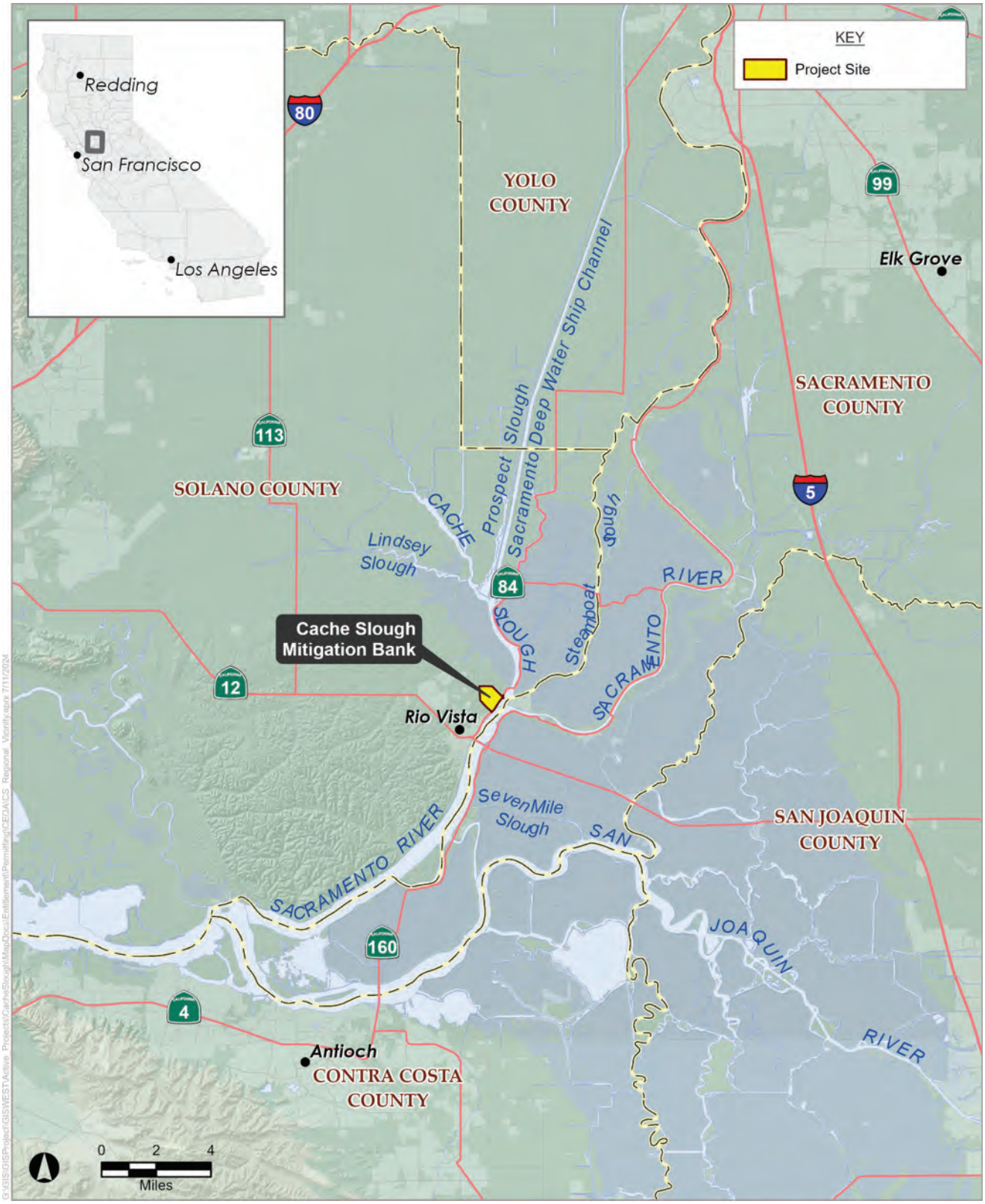

Figure 1-1
Regional Location

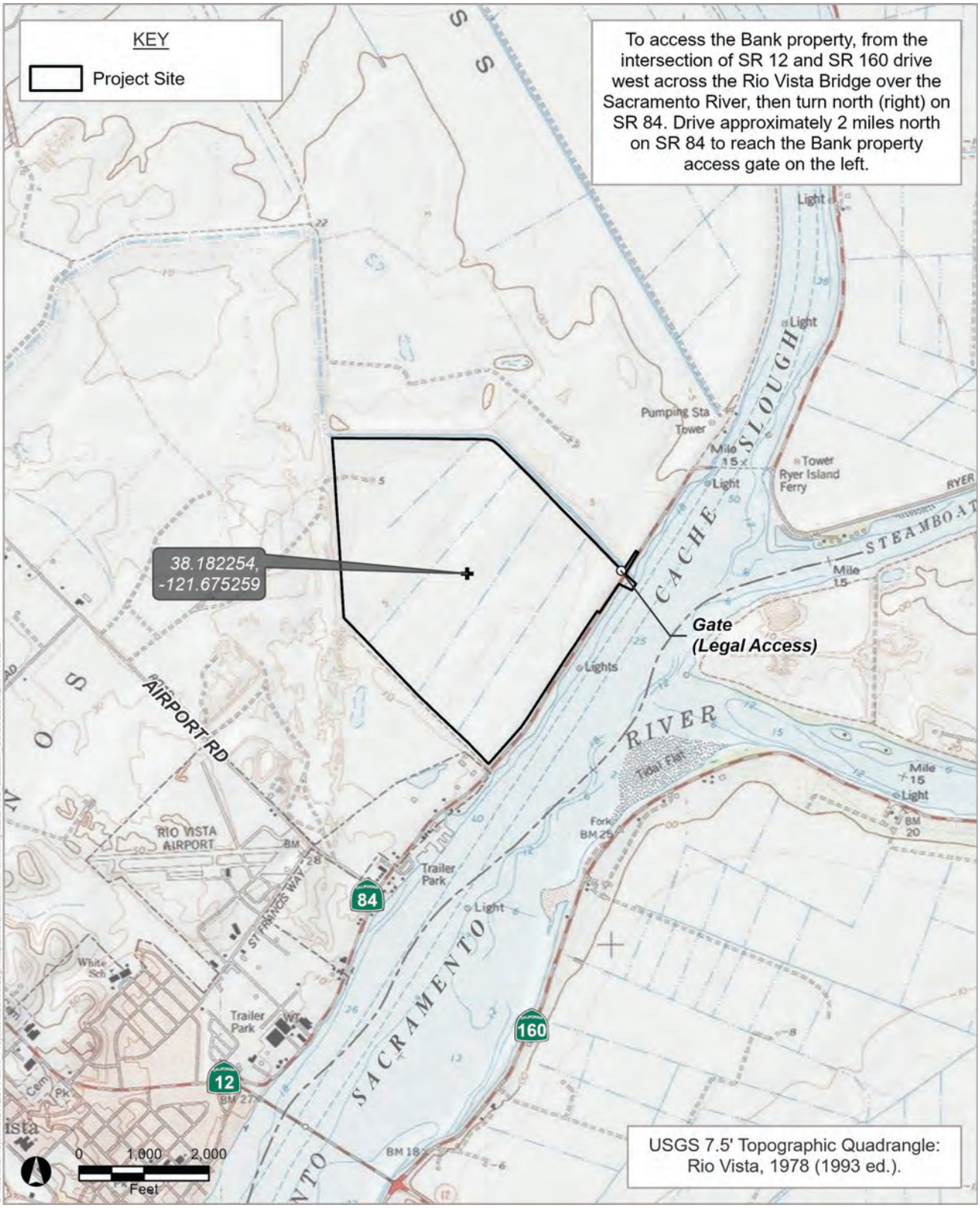

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Figure 1-2
Project Location

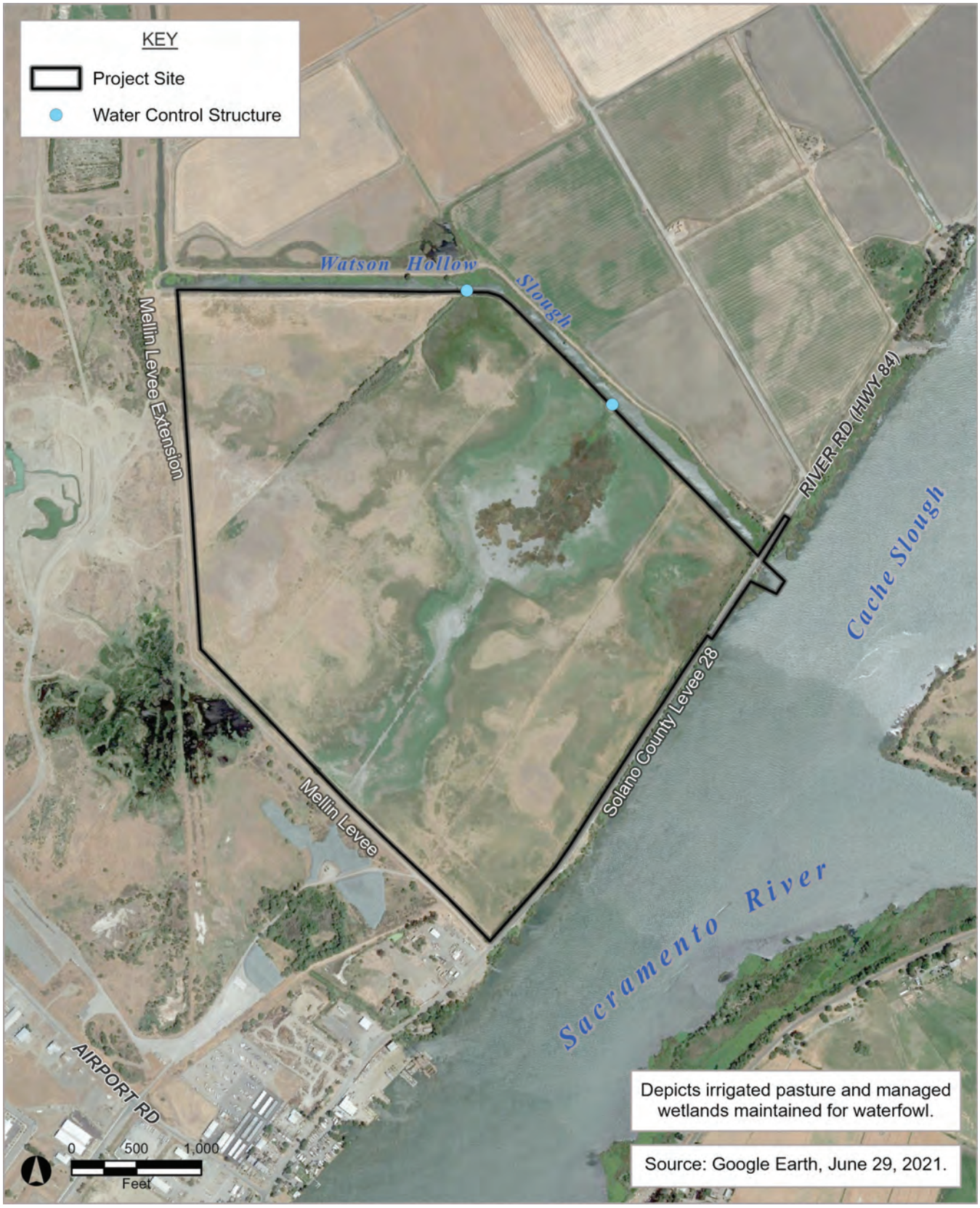

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Figure 1-3
Current Aerial Photo of Project Site

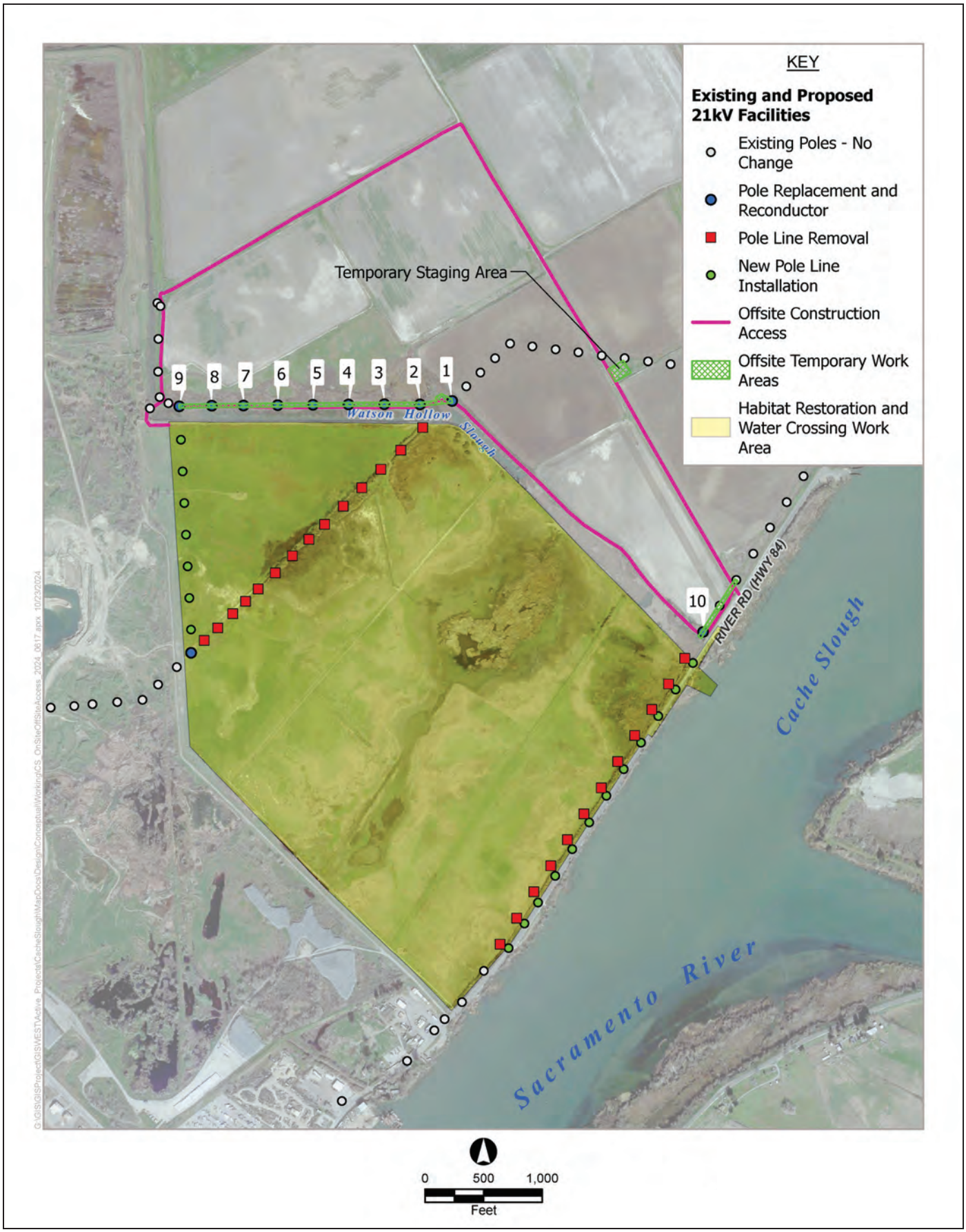

Figure 1-4
Onsite and Offsite Utility Infrastructure Improvements

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

Chapter 4, *References Cited*, and Chapter 5, *List of Preparers*, provide references cited in this IS and the list of preparers, respectively.

Chapter 2
Environmental Setting and Project Description

2.1 Environmental Setting

2.1.1 Project Location

The project site encompasses approximately 330 acres at the southernmost reach of the Yolo Bypass, immediately northeast of the city of Rio Vista (Figures 1-1 and 1-2). The project site is bounded on the north and northeast by Watson Hollow Slough, on the west by the Mellin Levee Extension, on the southwest by the Mellin Levee (a State Plan of Flood Control levee), and on the southeast by Solano County Levee 28, a restricted-height levee along Cache Slough and the Sacramento River (Figure 1-3). State Route (SR) 84 is situated on the top of the restricted-height levee and connects the city of Rio Vista to the Ryer Island Ferry.

In the Public Land Survey System of California, the project site is in the southwest quarter of Section 17, the southeast quarter of Section 18, the northeast quarter of Section 19, and the northwest quarter of Section 20 of Township 4 North, Range 3 East, Mount Diablo Base and Meridian, and is in the central portion of the Rio Vista U.S. Geological Survey (USGS) 7.5-minute quadrangle (Figure 1-2). The center point of the project site is at latitude 38.181949, longitude -121.674685.

2.1.2 Regional Setting

Prior to the Flood Control Act of 1917 and construction of the Sacramento River Flood Control Project, the project site was inundated regularly as part of a larger tidal marsh complex associated with the Yolo Basin. Construction of the restricted-height levee along the west side of Cache Slough and along the Sacramento River separated the southern portion of the Yolo Basin from direct tidal influence and allowed for agricultural production.

2.1.3 General Site Conditions

The project site retains some natural topography, hydrology, and vegetation despite past land leveling. Baseline site conditions are described in the following subsections. Representative photographs of the project site and the offsite utility improvement work areas are provided in Appendix A, *Project Representative Photos*.

The project site is used primarily for cattle grazing and for waterfowl habitat and hunting. It is divided into four former agricultural fields. These fields form somewhat hydrologically isolated areas, at least from shallow surface water. The fields are divided by three elevated agricultural ditches (highline ditches) that parallel each other and are oriented in a northeast/southwest direction. These elevated ditches are composed of mounded dirt (displaced soil) that rise roughly 2 to 2.5 feet above existing grade, which may have supported irrigation pipes in the past but now are earthen lined.

The project site does not contain any buildings. Culverts and associated tide gates are present on Watson Hollow Slough along the northern boundary of the project site to allow water management to support irrigated pasture and waterfowl habitat (Figure 1-3).

Existing Hydrology

The use of the project site for livestock grazing and waterfowl hunting dictates the onsite hydroperiod. Currently, the interior of the project site is separated from the tidal waters of Cache Slough and the Sacramento River by SR 84 and from Watson Hollow Slough by a farm berm.

The highest elevations on the project site are characterized by upland grassland that receives only natural precipitation. The lower elevations and agricultural ditches are periodically or seasonally flooded with irrigation water from Watson Hollow Slough to grow feed for cattle and provide waterfowl habitat. In spring, the site is drained via two water control structures located on Watson Hollow Slough (Figure 1-3). The livestock operator actively floods the low areas of the site through the operation of tide gates to provide a water source for the livestock and forage plants throughout summer and fall. In winter, the project site is used for waterfowl hunting. During the winter season, there is occasional flooding from Watson Hollow Slough (tidally influenced), which flows onto the project site from the northwest corner of the site.

Local hydrologic conditions in the vicinity of Cache Slough and the Sacramento River are influenced by tides, river flows, and watershed runoff. The project site is located at the southern end of the Yolo Bypass and at the confluence of the Sacramento River, Cache Slough, Steamboat Slough, and Watson Hollow Slough. The Yolo Bypass, spanning 59,000 acres, is a large-scale engineered floodplain extending 41 miles from the Fremont Weir to the project site (Jones & Stokes 2001). The complex hydrology of the Yolo Bypass is primarily influenced by inputs from the Sacramento and Feather Rivers through the Fremont Weir to the north. When flows are high, they bypass floodgates, creating a large expense of shallow-water habitat (Sommer et al. 2001). Water leaving the Yolo Bypass empties through the Toe Drain into the Delta. Figure 2-1 illustrates the FEMA floodplain in the project area.

Watson Hollow Slough adjacent to the project site is tidally influenced through a direct connection with Cache Slough/Sacramento River via four 200-foot-long, 60-inch-wide culverts. Under current conditions, the main flooding risk to the site comes from low points along Watson Hollow Slough's farm berm, which begin overtopping in 5-year re-occurrence storm events and greater. Watson Hollow Slough is part of the city of Rio Vista drainage network and also serves as a water supply for agricultural lands northwest of the project site.

Water Sources

The project site is separated from tidal waters (and minor flood waters) of Cache Slough and the Sacramento River by the restricted-height levee along SR 84 and from Watson Hollow Slough by a farm berm. Water inputs onto the site for agricultural and hunting purposes are managed through two culverts fitted with tide gates along Watson Hollow Slough on the north boundary (Figure 1-3). Water leaves the project site through existing ditches that drain to gated culvert outlets at the northeast corner of the site into Watson Hollow Slough and at the southern corner of the site into Cache Slough/Sacramento River. The project site also receives direct precipitation and occasional flood waters when the river overtops the restricted-height levee along SR 84 and from flood waters draining out of the Yolo Bypass.

Water Rights

Riparian water rights are tied to the project site through Watson Hollow Slough, a tributary to Cache Slough and the Sacramento River. Historically, the project site has been irrigated for agricultural uses (farming and grazing) and wildlife enhancement (waterfowl hunting) by using water diverted from Watson Hollow Slough, which is tidally influenced by Cache Slough/Sacramento River. Historical aerial imagery depicts active farming from as early as 1952. Existing diversion points on Watson Hollow Slough would be used to provide irrigation of restoration plantings during the first year, prior to construction of tidal opening. Following tidal connection, the diversion points would no longer be used, and existing water control structures would be removed.

Topography

The topography of the project site represents past land leveling and agricultural activities; the project site is relatively flat, with existing elevations ranging between approximately 3 and 10 feet North American Vertical Datum of 1988 (NAVD 88). Figure 2-2 depicts existing topography on the project site.

Soils

The geology in the project site is composed of Quaternary intertidal deposits and alluvium deposits, unconsolidated and semi-consolidated. According to the U.S. Department of Agriculture Natural Resources Conservation Service, the project site supports two soil map units: Valdez silt loam and Pescadero silty clay loam. Both soil map units are included on the National Hydric Soil List.

Soil investigations conducted on the project site provide information on suitability of soils for riparian and tidal marsh restoration. Test pits and soil texture analysis were used to confirm Natural Resources Conservation Service soil types and to determine the nature of anthropogenic impacts. These results were compared to previous geotechnical soil investigations carried out on the project site. The presence of homogeneous horizons of silts and sands between 4 and 6 feet deep over layers of peat, anerobic clays, and artifacts (i.e., copper wire) indicate that the site was subject to fill, likely originating from dredging activity in the Sacramento River. Fill soil zones correlate with areas of the site dominated by wetland and riparian signatures in the 1937 aerial photo. It is likely that areas mapped as Valdez soils are dredged spoils over native marsh soils. Areas of the project site mapped as Pescadero series in the Solano County Soil Survey correlate strongly with uplands shown on an historic 1937 aerial photograph. Pescadero soils onsite also exhibited characteristics of heavy anthropogenic manipulation, where natural soil horizons could be present in soil pits buried under silts and sands or with subsoil horizons exposed at the surface.

2.1.4 Surrounding Land Uses

WES owns the adjacent 3,126-acre property to the north known as the Little Egbert Tract. This property is proposed by California Department of Water Resources (DWR) as the Little Egbert Multi-Benefit Project, which will provide system-wide flood control benefits and ecosystem restoration. The project will function independent from but compatible with the proposed multi-benefit project.

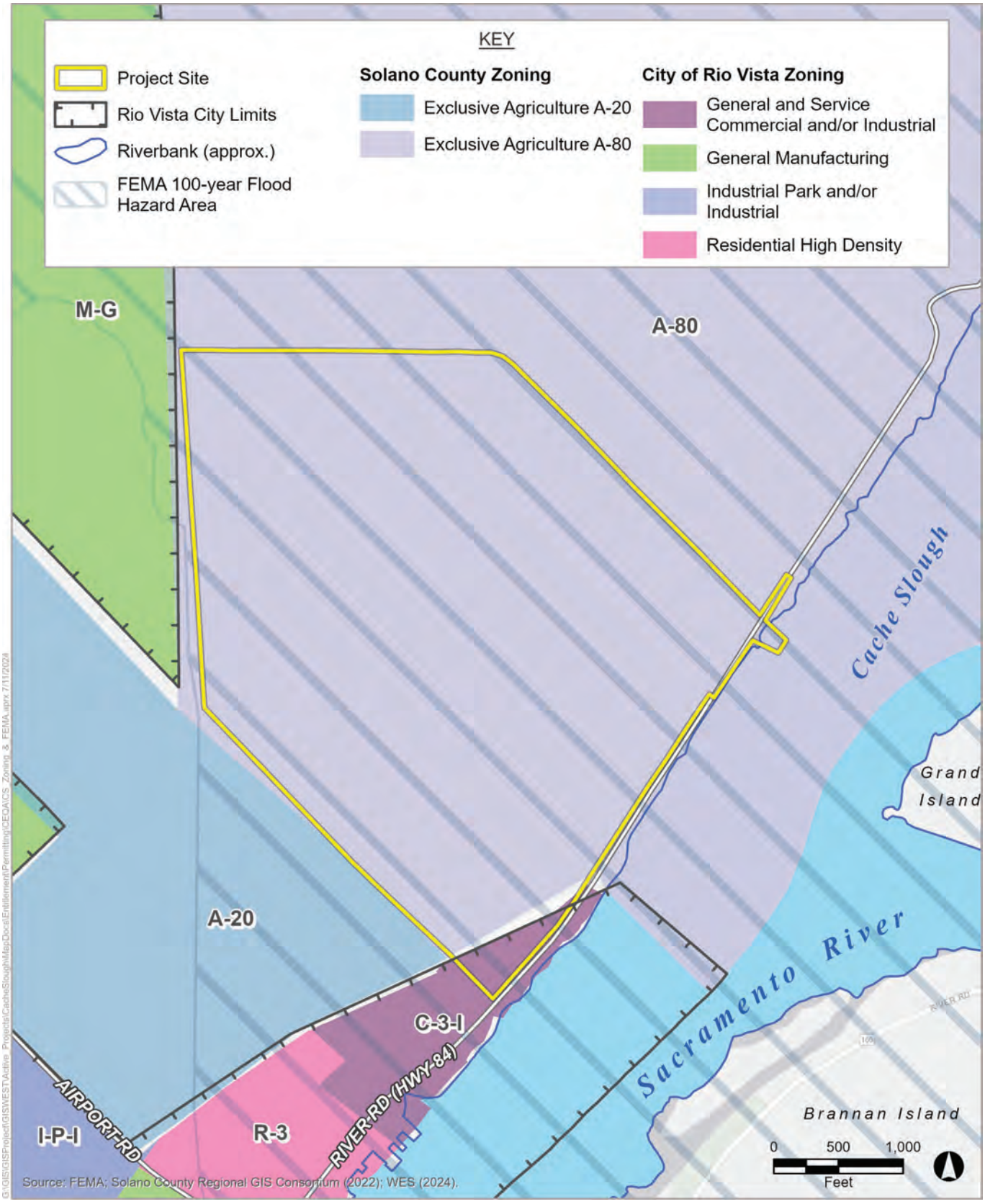

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Figure 2-1
Zoning and FEMA Floodplain Designation

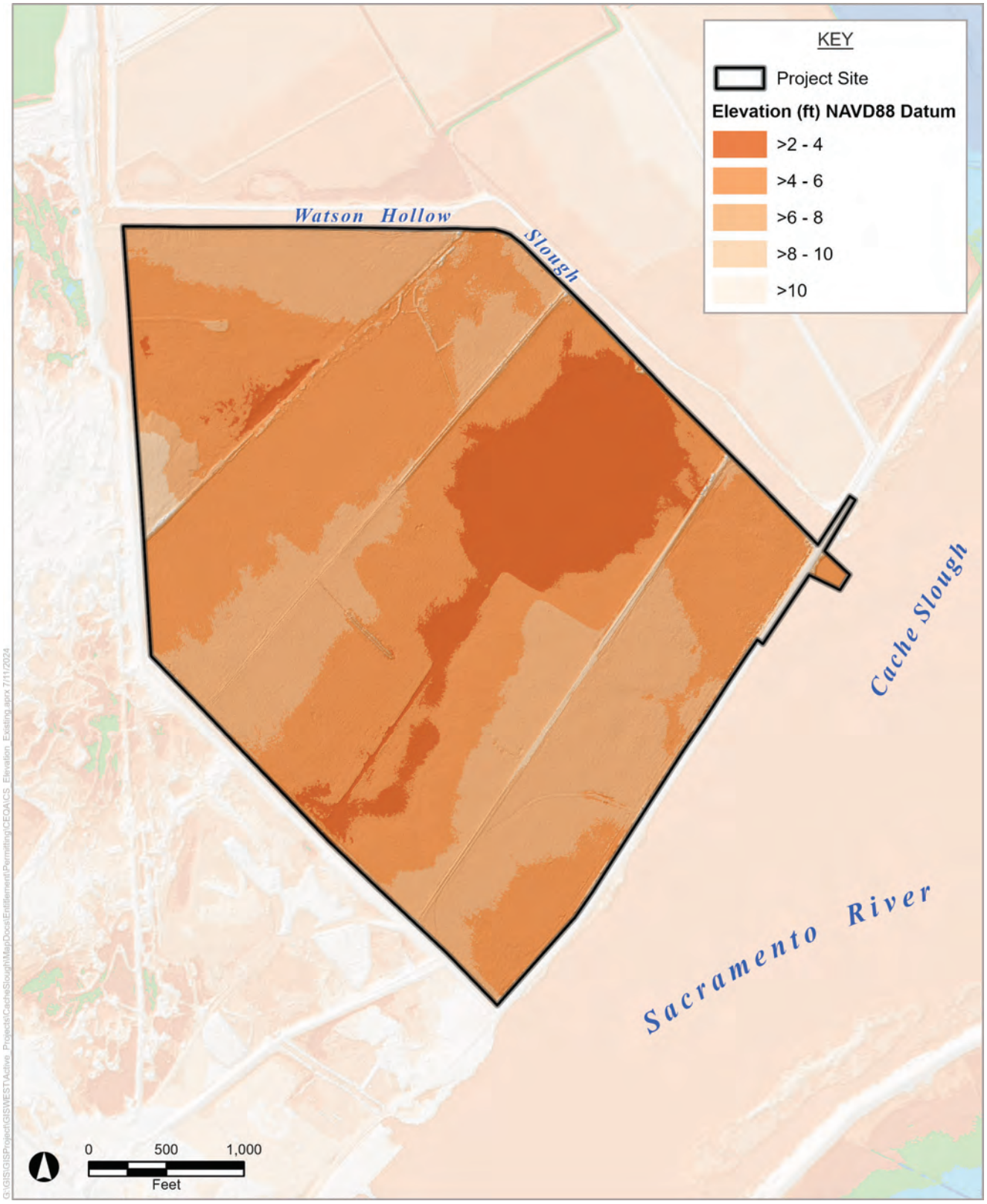

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Figure 2-2
Existing Site Elevations

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Figure 2-3
Proposed Landcover

2.1.5 Williamson Act Contract

At present, the Solano County portion of the project site is enrolled in a Williamson Act contract as an Agricultural Preserve, which allows for open space uses, including marsh preservation. Continuation of the Williamson Act is consistent with the goals of the project.

2.1.6 Flood Control Facilities

The Mellin Levee and Mellin Levee Extension are flood control structures that border the project site to the southwest and west, respectively (Figure 1-3). The Mellin levee is part of a State Plan of Flood Control project and Solano County Water Agency (SCWA) is the local levee-maintaining agency for this levee. The Mellin Levee Extension is not a state or federally regulated levee and as such, there is no designated maintaining agency for this feature. The Mellin Levee Extension was locally constructed and is operated and maintained by the landowner. Both the Mellin Levee and the Mellin Levee extension provide flood protection for the city of Rio Vista.

2.2 Project Description

Use Permit Application U-23-03 is being requested for establishment of a mitigation bank. Westervelt is proposing to convert the site for use as a mitigation bank. The project is proposing to re-establish approximately 300 acres of tidal freshwater wetland and floodplain-associated vegetation communities within the interior of the project site (Figure 2-3).

2.2.1 Background

The Delta was at one time the largest wetland complex on the West Coast until conversion to agricultural and urban development began in the 1830s and quickly accelerated with the passing of the Swampland Act of 1850. Today, the Delta is considered one of the most highly modified estuarine ecosystems in the world. Significant reductions (greater than 60 percent) of freshwater flows into the San Francisco Bay and changes in flow patterns resulting from water management have substantially altered the biological communities of the Delta. Freshwater tidal wetlands in the Delta have been reduced to only three (3) percent of their historical extent (Whipple et al. 2012), eliminating important habitat for many federally and state-protected species. Disruption of flow patterns and loss of freshwater tidal wetlands have most noticeably affected migratory, spawning, and rearing habitat for native fishes that occupy the Delta for all or a portion of their life cycle.

The project site is ideally situated for restoration because it is located within the Cache Slough Complex and in the central portion of the North Delta Habitat Arc, which is the main corridor used by native fish migrating through the Delta and a prime area to promote the conservation of at-risk species.

Historically, the project site supported tidal freshwater marsh and floodplain riparian habitat until it was cut off from tidal influence, drained, and graded in the 1940s and 1950s to support agricultural uses. Returning the project site to its historical habitat of tidal freshwater marsh would support recovery efforts for many protected species and provide critical food support for resident and out-migrating fish.

2.2.2 Design Objectives

The following objectives are necessary to achieve the project goals of restoring tidal freshwater marsh and floodplain riparian habitats:

- Excavate approximately 14,000 linear feet (ft) of multi-dimensional main and fringe tidal channels to support the flow and ebb of tides for full tidal excursions and exchange to provide habitat for fish, and transport nutrients to support the food web in the connected waterways.
- Create topographic complexity by re-contouring the interior Bank habitat to promote diverse habitat assemblages associated with tidal wetlands and floodplains.
- Design and construct a breach in the existing levee/SR 84 at the confluence of Cache Slough, Sacramento River, and Steamboat Slough that allows unobstructed tidal flow into the Bank's interior.
- Promote habitat resiliency through management and maintenance activities.
- Limit trespass and other unauthorized uses of the project site.

2.2.3 Habitat Restoration

The restoration design would re-establish approximately 300 acres of tidal freshwater wetland and floodplain-associated vegetation communities within the interior of the project site (Figure 2-3), which reflect the land cover depicted on historical aerial imagery and topographic maps of the area and habitats mapped by the San Francisco Estuary Institute's 2012 Sacramento-San Joaquin Delta Historical Ecology Investigation (Whipple et al. 2012).

To accomplish this design, a series of open water features, including tidal and subtidal channels, would be excavated throughout the project site. These channels would be sized to accommodate water flows associated with daily tidal fluctuations to prevent scour velocities and avoid tidal muting. The onsite channels would connect directly to Cache Slough/Sacramento River via an opening under SR 84 (e.g., free span bridge). Preliminary grading plans (65 percent design) and bridge layout are provided in Appendix B, *Habitat Restoration Plans* and Appendix C, *Water Crossing Structure Plans*. The direct hydraulic connection to tidal waters would be engineered to best allow full ecological functions and species access to the interior of the site and to minimize erosion. Ecological function and species access considerations addressed through habitat and civil design include:

- Maintaining water velocities sufficient to allow juvenile fish passage during most of the year (<2 feet per second).
- Decreasing the likelihood of invasive aquatic weed species colonizing the site by creating deep subtidal channels and maintaining water movement through tidal action and positive drainage of marsh plain.
- Creating low-tide refugia adjacent to tidal marsh and reducing the likelihood of fish stranding through positive drainage.
- Decreasing, where possible, the occurrence of predator habitat and ambush locations through channel and civil design considerations.
- Mitigating the potential for channel erosion and sedimentation.

Fill material generated from excavating channels would be used to create varying topography throughout the site, which would support zones of wetland, riparian, and upland communities based on elevation and expected ecological benefits to the site and surrounding area. For example, by allowing full tidal exchange to occur throughout the emergent marsh areas, the project would promote nutrient exchange, provide food web support for aquatic species in adjacent waterways, and export organic carbon offsite into the Sacramento River and surrounding Delta waterways. In addition, riparian habitat would be enhanced and restored to create a broad mosaic of floodplains, upland refugia, and shaded riverine aquatic habitat that would support a mix of terrestrial, semi-aquatic, and aquatic species on the site.

Vegetation establishment would be accomplished through a variety of planting methods, including container plantings, cuttings, and seeding. While vegetation in low-lying areas likely would not require irrigation when exposed to the restored tidal prism, container plantings in the riparian floodplain zones could require supplemental water for establishment after installation. Plantings would be sourced from onsite or the surrounding area whenever possible, ensuring that plants are locally adapted to site conditions and likely developing self-sustaining populations through natural recruitment.

Post-restoration conditions would reflect natural reference sites in the north Delta. As part of restored daily tidal exchange, water would flow through a series of tidal channels into tule marshes. As the topography rises above the daily influence of the tides, the site would transition to woody riparian scrub supporting willows and buttonbush (*Cephalanthus occidentalis*), which is similar to the composition of Channel Islands within Cache Slough, Lindsay Slough, and Prospect Slough. At higher elevations in the landscape, the riparian vegetation would shift to woodland or grassland habitat with an overstory that may comprise sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), northern California walnut (*Juglans hindsii*), and cottonwood (*Populus fremontii*). While riparian areas would be situated above the daily tidal zone, these floodplain-associated habitats would engage with tidal waters during high-flow periods (i.e., spring and king tides) and storm events. These higher elevation habitats would accommodate future sea level rise by allowing transitions from floodplain to tidal marsh.

Restoration would expand available juvenile rearing habitat and increase food web support for the following fish species:

- California Central Valley steelhead (*Oncorhynchus mykiss)*
- Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha)*
- Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha)*
- North American green sturgeon (*Acipenser medirostris)*
- Delta smelt (adult and juvenile) (*Hypomesmus transpacificus)*
- Longfin smelt (adult and juvenile) (*Spirinchus thaleichthys*)

Restoration of tidal freshwater wetlands also would restore and protect suitable habitat for giant garter snake (*Thamnophis gigas)*.

2.2.4 Tidal Reconnection – Low Water Crossing

To restore tidal connection to the project site, the project proposes to install a new low water crossing structure (i.e., free span bridge) along Cache Slough/Sacramento River on SR 84 between Post Mile (PM) 2.1 and PM 2.2. The new water crossing structure would consist of a 61-foot-long, 40-foot-wide, and 2.5-foot-thick precast prestressed concrete slab bridge, a 5" thick poured-in-place concrete deck (finish surface), bridge abutments each supported by 13 cast-in-steel shell (CISS) piles, and barriers/wing walls to be poured-in-place. The bridge abutment will be protected by 1/4-ton rock from erosive forces caused by the ebb and flow of tidal activity passing underneath the structure. The water crossing structure will conform to Caltrans and County standards. Plan and profile drawings for the water crossing structure are provided in Appendix C, *Water Crossing Structure Plans*.

The roadway portion would include two 12-foot travel lanes with 8-foot shoulders on both sides that transition to 12-foot travel lanes on both sides of the bridge with shoulders varying between 1 and 8 feet. The water crossing structure would maintain a similar elevation to the existing roadway with a rise of less than 12 inches. The roadway in both directions would be aligned to conform to the new bridge approaches. Guardrails will be constructed at bridge railings per Caltrans standards.

The abutments for the water crossing structure would be constructed outside the top of bank of Cache Slough/Sacramento River and the limits of the ordinary high-water (OHW). The structure would be a free-span, open bottom, and with no support piers. The water crossing structure design was informed by the results of geotechnical investigations and is consistent with Caltrans standards. Construction for the water crossing structure will require installation of sheet piles on the waterside to prevent water intrusion into the work area.

Concurrent with the water crossing structure construction, a subtidal channel will be constructed to create a tidal connection by removing the existing SR 84 pavement and embankment fill (Sheet G-1 in Appendix B-2). The subtidal channel will be constructed at a constant elevation to ensure consistent water flows between the project site and the river. The subtidal channel will be lined with appropriately sized rock to prevent erosion and maintain a stable channel (Sheet EC-1 in Appendix C).

During construction, a portion of the embankment would be left intact to prevent intrusion of water into the work zone. Upon completion of the water crossing structure construction, the remaining embankment fill would be removed to allow tidal waters to engage with the project site.

2.2.5 Construction Characteristics

Construction Personnel and Equipment

Large earth-moving equipment would be delivered to the project site at the commencement of construction and removed when construction is complete. A maximum of 15 employees would construct the project. Fuel would be delivered to dedicated staging areas in the site as needed. Construction activities may occur from sunrise to sunset every day of the week, similar to adjacent agricultural activities.

Construction activities would be conducted using heavy equipment, which may include excavators, scrapers, bulldozers, skip loaders, compactors, front end loaders, belly-dump trucks, and water

trucks (Table 2-1). Construction would take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday. Sundays may be used for equipment clean up and maintenance.

Construction equipment, staging, and employee parking will be restricted to designated staging areas contained within the project site. All onsite contractors would be properly trained and certified for construction activities and best management practices (BMPs) inspection prior to construction. BMPs will include soil conservation, water conservation, spill containment, waste containment, and avoidance and minimization of potential impacts on sensitive environments or species.

Water used for dust control would come from nuisance water encountered and captured during excavations as well as from the adjacent Watson Hollow Slough using riparian water rights tied to the site.

Table 2-1. Construction Equipment

Phase	Equipment Type	Fuel Type	# of equip per day	Operating hours/day	Total Anticipated Equipment Days	Total Anticipated Phase Duration (days)
Site Mobilization	Forklift	Diesel	1	8	5	10
	Skip Loader	Diesel	1	8	5	
SR 84 Shoofly	Crane	Diesel	1	8	1	20
	Forklift	Diesel	1	8	1	
	Excavator	Diesel	1	8	2	
	Dozer	Diesel	1	8	5	
	Compactor	Diesel	1	8	10	
	Grader	Diesel	1	8	8	
	Skip Loader	Diesel	1	8	1	
	Paver	Diesel	1	8	1	
SR 84 Bridge Excavation	Excavator	Diesel	1	8	6	10
	Dozer	Diesel	1	8	3	
SR 84 Bridge Foundation	Crane	Diesel	1	8	9	20
	Forklift	Diesel	1	4	19	
	Air Compressor	Diesel	1	2	10	
SR 84 Bridge Superstructure	Crane	Diesel	1	2	47	60
	Forklift	Diesel	1	4	47	
	Excavator	Diesel	1	8	1	
	Compactor	Diesel	1	8	2	
	Air Compressor	Diesel	1	4	48	
	Backhoe	Diesel	1	8	6	
SR 84 Roadwork	Excavator	Diesel	1	8	4	20
	Compactor	Diesel	1	8	8	
	Grader	Diesel	6	8	6	
	Skip Loader	Diesel	1	8	1	
	Paver	Diesel	1	8	1	

Phase	Equipment Type	Fuel Type	# of equip per day	Operating hours/day	Total Anticipated Equipment Days	Total Anticipated Phase Duration (days)
SR 84 Shoofly Removal	Crane	Diesel	1	8	1	10
	Forklift	Diesel	1	8	1	
	Excavator	Diesel	1	8	9	
	Dozer	Diesel	1	8	7	
Site Demobilization	Forklift	Diesel	1	8	5	10
	Skip loader	Diesel	1	8	5	
Habitat Restoration	Scraper (500 hp)	Red diesel	3	8	126	168
	Dozer (150 hp)	Red diesel	2	8	126	
	Excavator (328 hp)	Red diesel	2	8	126	
	Grader (174 hp)	Red diesel	1	8	42	
	Skip Loader	Red diesel	2	8	84	
	Front End Loader (88 hp)	Red diesel	1	8	42	
	Water pump	Red diesel	1	4	168	

Access and Staging

Access to the project site for construction activities will be from SR 84 within and directly abutting the project site (Figure 1-2). All construction staging areas would be contained within the project site and will be shown on the final grading plans. Staging areas that are not within the restoration footprint would be maintained as designated maintenance pads as part of the project.

Utility Relocation

Two existing 21 kilovolt (kV) electrical distribution lines traverse the project site (see Photo 8 in Appendix A). Restoration of tidal wetlands on the project site would result in greater inundation frequency for the existing utility poles, which would conflict with routine pole maintenance activities. WES is coordinating with Pacific Gas and Electric Company (PG&E) to remove and relocate one or both of the electrical distribution lines, consisting of up to 30 poles (Figure 1-4). Most of the utility relocation work would occur on the project site within the existing restoration footprint and along the SR 84 disturbed road shoulder but outside the existing Caltrans easement. However, some pole replacement and reconductor activities would be performed offsite on adjacent WES-owned property along exiting utility lines. Offsite work areas, equipment access routes, and a potential staging area are depicted on Figure 1-4. Access routes were sited along existing graveled and dirt farm roads and the proposed staging area is on a previously disturbed site that is routinely used for staging farm equipment and materials. Representative photographs of the offsite work areas are provided in Appendix A.

Site Preparation and Construction Sequence

The project site would remain in agricultural use (irrigated grazing) until the construction plans are complete and approved, and all permits or other approvals are obtained. Construction would ensure soil stabilization prior to excavation of the tidal opening. Construction would occur outside the flood season between April 15 and November 1. The sequence of construction activity would be as follows:

- Water management as necessary to remove any standing water within grading areas will occur throughout grading activities.
- Inspection for any sensitive species, such as giant garter snake, nesting birds, or other species of concern, within 14 days of mobilization of construction equipment.
- Mobilization of equipment, establishment of staging areas, erosion controls, exclusion areas, and installation of water control systems as needed.
- Clearing and grubbing, as needed; salvaging and stockpiling any vegetation for reuse in an area where it can be cared for until final planting or placement.
- Excavation of channels and placing and contouring of excavated material on the project site.
- Construction of a new perimeter and habitat berm may occur simultaneously with channel excavation or prior to it.
- Planting, seeding, or transplanting of wetland vegetation.
- Seeding wetland and riparian areas and disturbed bare soil for habitat and erosion control.
- Seeding and planting riparian species in winter to take advantage of rains for establishment.
- Temporary water management to facilitate establishment of plantings, as needed.
- Lastly, reintroduction of full tidal hydrology and construction of a new bridge under SR 84.

Grading Activities

Marsh plain grading would be a major phase of the project and would require site preparation and mobilization. During marsh plain grading, water and vegetation would be managed so that soil is as dry as possible to increase earthmoving efficiency and reduce costs. Layout of channel excavations would occur using a survey-grade global positioning system (GPS) system and laser level to create sub-inch accuracy.

To ensure that constructed channel systems would replicate the functions and values of natural backwater channels and alcoves, the restored floodplain land surfaces would be constructed so that the topography encourages a wide range of ecotones from steeper slopes adjacent to open water to wide gently sloped floodplain terraces with a gradient down to the tidal opening. The backwater channels and floodplain terraces would be constructed with positive slopes to ensure complete drainage of the site during daily tidal excursion to prevent fish entrapment.

Construction would commence in the interior portion of the project site that is currently not subject to tidal flows. Construction of the bridge would occur towards the end of construction after the interior channels and associated floodplain terrace work is complete.

Trees and other woody vegetation within the project site would be removed if substantially below grade of the proposed habitat elevations. To the extent possible, woody vegetation that is near the proposed grade would be left in place to contribute to natural recruitment following construction.

Approximately 250,000 cubic yards of material is planned to be excavated from the project site and would be balanced onsite (no offsite haul or disposal is required). Excavated soils would be distributed across the project site to create varying topography and placed within a habitat berm along the southwest, west, north, and northeast boundaries of the project site to act as a hydraulic buffer from adjacent facilities. The project would achieve balanced cut and fill.

Planting Plan

The revegetation phase of construction would follow marsh plain grading and is intended to support erosion control and to supplement natural recruitment expected to occur through the existing seed bank on and around the project site. Water would be used to flood graded marsh areas and managed to encourage vegetation establishment.

Vegetation establishment would be accomplished through a variety of planting methods, including container plantings, cuttings, and seeding. While vegetation in low-lying areas likely would not require irrigation when exposed to the restored tidal prism, container plantings in the riparian floodplain zones could require supplemental water for establishment after installation. Riparian watering, where needed, would be conducted using a portable water delivery method. Plantings would be sourced onsite or from the surrounding area whenever possible, ensuring that plants are locally adapted to site conditions and likely to develop self-sustaining populations through natural recruitment.

To the extent feasible, container stock and seed would be secured from commercial growers with local ecotypes; however, in the event that local ecotypes are not available, seed from other California riparian ecotypes would be substituted. Cuttings would be collected onsite or from nearby sites on the Sacramento River. The planting palette is being developed in coordination with local Tribes with the goal of incorporating species of importance that could be collected for textile or ceremonial uses.

Staged Construction on Highway 84

Construction of the low water crossing structure would occur in two stages ((Appendix B: Sheets SC-1 and SC-2). During each stage, traffic would be limited to a single lane for two-way traffic, and a temporary signal system would be utilized to control traffic. During Stage 1, the roadway would be restriped, and temporary railings placed to control highway traffic. The contractor would then saw-cut and remove approximately 6 feet of the existing southbound lane to allow for the construction of the southbound side of the new bridge. Shoring, consisting of sheet piling, would be installed along the length of the bridge to support the remaining traffic lane during Stage 1 construction. Sheet pile would be installed using vibratory or impact hammers. The construction of the new bridge foundations would first require excavations approximately 10 feet deep. Each of the foundations will contain thirteen 24-inch cast-in-steel-shell (CISS) piles. The contractor would drill holes approximately 50 feet below the new bridge footings to place the foundation pilings. The pilings would be steel pipe piles placed in drilled holes and then filled with reinforcing steel and concrete. The contractor will then place the reinforcing steel and concrete for the bridge footings, abutments and wingwalls. The channel face of the abutments would be protected by rock slope protection.

Once the abutments are built, a crane would set 4-foot-wide precast concrete slabs in place for the Stage 1 bridge deck. The deck surfacing and bridge overhang would then be constructed of cast in place concrete and a concrete railing would be built in place on the edge of the structure. Once this work is complete, the bridge approach roadway would be constructed, striped and the temporary railings and signals reset to route traffic over the newly built work. Approach roadway work would include embankment construction, aggregate base, asphalt concrete, metal beam guard railing and hydroseeding. For Stage 2 work, the temporary sheet piling would be removed, from the edge of the southbound lane and installed on the water side of the northbound lane to prevent water from entering the work area during excavation to construct the northbound abutment. The remainder of the bridge and approach roadways would be constructed in the same sequence as Stage 1. After completion of the work, the temporary striping, railings, and signals would be removed, the roadway would be restriped for two lane two-way traffic.

During Stages 1 and 2 of construction, the Project would comply with Caltrans guidelines consistent with the Manual on Uniform Traffic Control Devices (FHWA 2009).

Once the bridge structure is complete, the sub-tidal channel will be excavated as described below under *In-Water Work and Dredging*.

In-Water Work and Dredging

Limited in-water work would be required to construct the water crossing structure. Most of the structure work would occur within upland areas on the landside of Cache Slough/Sacramento River prior to final breach. Prior to construction of the water crossing structure, sheet piles will be installed on the waterside of the water crossing structure, outside the high-water line, to prevent intrusion of tidal waters into the construction area.

A subtidal channel will be excavated under the water crossing structure to provide fish access to restored habitat on the project site. On the waterside of the structure, the subtidal channel will extend approximately 220 feet into Cache Slough/Sacramento River and will require dredging of approximately 15,000 cubic yards of sediment to transition the bottom of the subtidal channel to the existing grade of Cache Slough/Sacramento River (Appendix C: Sheet G-1). Following dredging, the subtidal channel would be lined with appropriately sized rock to limit erosion and provide stable fish access (Appendix C: Sheet EC-1). Dredging and installation of rock would be performed using a barge or other similar marine vessel and appropriately timed to avoid breeding season for sensitive fish species.

Construction Schedule

WES will be coordinating closely with agency partners throughout 2024 to support the development of the mitigation document package that will be submitted to agency partners for review and approval. WES is seeking permit approvals by late 2025 with initial construction activities targeted for spring 2026. All construction work within the floodplain will be conducted during the non-flood season and restricted to the period between April 16 and October 31. In-water work, specifically dredging, will be restricted to the non-breeding season for sensitive fish species and will be restricted to the period between July 1 and October 31.

2.2.6 Environmental Commitments During Construction

WES has identified the following environmental commitments that include standard construction best management practices (BMPs) and modification of project features to reduce potential environmental impacts of the project. These measures are consistent with protection measures contained in the U.S. Fish and Wildlife Service's (USFWS's) *Programmatic Biological and Conference Opinion for the Statewide Programmatic Restoration Effort* (USFWS PBO) (Ref. No. 2022-0005149-S7) (U.S. Fish and Wildlife Service 2022) and the National Marine Fisheries Service's (NMFS's) *Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response and Fish and Wildlife Coordination Act Recommendations for the NOAA Restoration Center's Program to Facilitate Implementation of Restoration Projects in the Central Valley of California* (NMFS PBO) (Ref. No. WCR-2017-8532) (National Marine Fisheries Service 2018). Additional protection measures may be required by state and federal agencies as conditions of project permits.

General Protection Measures

1. **Project Permits and Authorizations**. A copy of all applicable agency permits and authorizations will be maintained by the construction foreman/manager on the project site for the duration of construction activities.
2. **Construction Work Windows**. All construction work will be implemented in accordance with permits and authorizations. At minimum, construction activities within certain areas will be restricted to the following periods:

- May 1 to October 1: Work within the Yolo Bypass floodway and within suitable giant garter snake aquatic and upland habitat (uplands within 200 feet of suitable aquatic habitat) during the non-flood season and the giant garter snake's active period.
- July 1 to November 1: Work within Cache Slough and Sacramento River during the summer low-flow months when sensitive fish species are limited.
- Daytime hours between 11:00 a.m. and 6:00 p.m.: Work that involves vegetation clearing, grubbing, and installation of erosion control measures that occur within habitat containing burrows, cracks, or underground structures (i.e., culverts) and are located within 100 feet of suitable giant garter snake aquatic habitat.

3. **Work during Daylight Hours**. Construction activities will generally be limited to daylight hours, to the extent practicable. If nighttime construction is necessary, including in tidally influenced waters where tides may limit daylight access and work schedules, all project lighting (e.g., staging areas, equipment storage sites, roadway, construction footprint) will be selectively placed and directed onto the roadway or construction site and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. If the work area is near surface waters, the lighting will be shielded so that it does not shine directly into the water.
4. **Qualified Biologist and Agency-Approved Biologist**. Biological monitoring and construction oversight for the project will be provided by biologists at two different experience levels, depending on the species or activity.

a. **Qualified Biologist**: A Qualified Biologist is required to meet certain qualifications, as confirmed by the Project Proponent. Résumé review by the regulatory agencies is not required for the Qualified Biologist. Minimum qualifications for the Qualified Biologist include a bachelor's degree in biological or environmental science, natural resources management, or related discipline; field experience in the habitat types that occur at the project site; familiarity with the species that may occur at the project site; and prior preconstruction survey, construction monitoring, or construction oversight experience.

b. **Agency-Approved Biologist**: For some species (e.g., giant garter snake, northwestern pond turtle), additional qualifications may be required for the monitoring biologists. Résumé(s) for the Agency-Approved Biologist(s) with experience in the identification and ecology of the species for which coverage is requested will be submitted to the applicable wildlife agency for review and approval at least 30 days prior to any activity for which the protection measures indicate that an Agency-Approved Biologist is required.

5. **Environmental Training Program**. Prior to beginning work on the site, all contractors involved in project construction will be provided with resource-specific protection measures to follow during implementation of the project. In addition, a Qualified Biologist (i.e., knowledgeable about species and resources present onsite) will provide the construction crew with environmental awareness training to cover the protected species potentially found in the project vicinity, the protection afforded the species by existing laws and regulations (i.e., ESA, California Endangered Species Act [CESA], California Fish and Game Code, and Migratory Bird Treaty Act) and guidance on those specific protection measures that must be implemented as part of the project, including procedures to follow if a protected species is encountered.

6. **Clearance Surveys and Environmental Monitoring**. A Qualified Biologist will perform site clearance surveys prior to the start of daily earthmoving activities that occur in or immediately adjacent to protected species habitats (e.g., riparian, emergent marsh, open water). The Qualified Biologist will monitor all vegetation clearing and grubbing activities that occur within sensitive species habitats (i.e., within 200 feet of suitable aquatic habitat for giant garter snake and northwestern pond turtle). At minimum, the Qualified Biologist will conduct weekly site inspections to ensure that all applicable protection measures are implemented during construction. The Qualified Biologist will have the authority to stop work if they determine that any permit requirement is not fully implemented or if deemed necessary to protect sensitive species or resources. The Qualified Biologist will prepare and maintain a biological monitoring log of construction site conditions and observations, which will be kept on file.

   An Agency-Approved Biologist will be available on call during activities with potential to affect giant garter snake. No snakes will be handled, moved, or relocated without proper agency authorizations.

7. **Work Area and Environmentally Sensitive Areas**. Prior to initiating construction activities (including staging), brightly colored fencing, flagging, or other practical means will be erected to demarcate the limits of permitted project activities, including the boundaries of designated staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and sensitive resource exclusion zones (i.e., active bird nests, elderberry shrubs, aquatic resources, riparian vegetation). Flagging or fencing will be maintained in good repair for the duration of project activities.

   Where practicable, wildlife exclusion fencing will be installed between active construction and suitable giant garter snake and northwestern pond turtle aquatic habitat that occurs within 200

feet of active construction to minimize the potential for these and other sensitive terrestrial species to enter the construction work area. The wildlife exclusion fencing will remain in place throughout the duration of construction activities and will be inspected and maintained regularly by the Qualified Biologist until completion of the project. Repairs to the wildlife exclusion fencing will be made within 24 hours of discovery. When fencing is not practicable due to topography, soil, conflicts with construction activities, or other factors, monitoring by a Qualified Biologist during construction activities will be used in lieu of wildlife exclusion fencing.

8. **Terrestrial Species Entrapment Prevention.** To prevent the accidental entrapment of terrestrial wildlife species (including giant garter snake and northwestern pond turtle) during construction, all excavated, steep-walled holes or trenches will be covered with appropriate covers (e.g., plywood, thick metal sheets, or similar materials) at the end of each workday. Covers will be placed so that trench edges are fully sealed with rock bags, sand, or other appropriate material. Alternatively, one or more escape ramps (e.g., fill dirt, wood planking) will be installed at an angle no greater than 30 degrees, to allow wildlife to escape. Before holes or trenches are filled, sealed, or collapsed, the holes or trenches will be thoroughly inspected for trapped animals. If pipes are stored onsite or in associated staging areas, they will be capped when not in use or stored above ground level at an appropriate height to minimize species entrapment and will be inspected before being moved. Any animals discovered will be allowed to escape voluntarily or will be relocated, with appropriate agency authorization.
9. **Minimize Vegetation Disturbance**. Disturbance to native vegetation will be limited to the construction area and necessary access routes and staging areas. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank-stabilizing trees and brush with greater than 6-inch-diameter branches or trunks along existing riparian habitats and streambanks.
10. **Revegetation Methods**. All temporarily disturbed areas will be decompacted, if necessary, and seeded/planted with an assemblage of native riparian, wetland, and/or upland plant species suitable for the area. Plants for revegetation will come primarily from active seeding and planting, or from natural recruitment (e.g., in tidal and managed wetlands and working landscapes where disturbed areas typically revegetate more quickly through natural recruitment than through seeding). Nursery stock and seed will be sourced from the ecoregion, when practical. Only native plants will be used for restoration efforts. Certified weed-free native mixes and mulch will be used for any restoration planting or seeding.

    Revegetation activities in and adjacent to waterbodies and other aquatic habitat will commence after construction activities at the site are complete. Areas that will be intertidal and subtidal will be planted with tule at appropriate elevations and densities, but otherwise intertidal areas will not be planted or seeded.

    To prevent colonization or recolonization by nonnative invasive species, any upland areas barren of vegetation as a result of project implementation will be seeded or planted with native trees, shrubs, willow stakes, native grass seed mixes, or herbaceous plant species, following completion of project construction and prior to November 15 of the project year, or later depending on rainfall. All exclusion netting/caging placed around plantings will be removed after 2 years or sooner. Irrigation may also be required to ensure survival of containerized shrubs or trees or other vegetation, depending on rainfall.
11. **Minimize Spread of Invasive Species**. The spread or introduction of nonnative invasive plants (e.g., those rated as invasive by the California Invasive Plant Council [Cal-IPC], or local problem

species) and animal species will be avoided to the extent possible. When practicable, nonnative invasive plants in the project area will be removed and properly disposed of in a manner that will not promote their spread. Invasive plant material will be destroyed using approved protocols and disposed of at an appropriate upland disposal site. Stockpiling of invasive plant materials will be prohibited during the flood season (typically November to April).

To avoid spreading pathogens or nonnative invasive species, construction equipment will be cleaned of any sediment or vegetation at designated offsite wash stations before entering or leaving the project area. Isolated infestations of nonnative invasive species identified in the project area will be treated with weed management methods at an appropriate time to prevent further formation of seed and destroy viable plant parts and seed. Upland areas will use rice straw or weed-free local slash/mulch for erosion control; the remainder of the project area will use certified, weed-free erosion control materials. Invasive species BMPs will follow guidelines in the California Department of Fish and Wildlife's (CDFW's) *California Aquatic Invasive Species Management Plan* (California Department of Fish and Game 2008) and *Aquatic Invasive Species Decontamination Protocols* (California Department of Fish and Wildlife 2022). Onsite construction personnel will be educated on weed identification and the importance of controlling and preventing the spread of invasive weeds.

12. **Staging Areas**. Staging areas will be established for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants. Fluids will be stored in appropriate containers with covers and will be properly recycled or disposed of offsite. Machinery stored onsite will have pans or absorbent mats placed underneath potential leak areas. Staging areas will have a stabilized entrance and exit and will be at least 100 feet from bodies of water, unless site-specific circumstances do not allow such a setback; in such cases, the maximum setback possible will be used. Where feasible, staging will occur on access roads or other previously disturbed upland areas to avoid sensitive habitats and limit disturbance to surrounding habitats. If sensitive species are potentially present within the proposed staging area, the Qualified Biologist will survey the selected site to verify that no sensitive resources would be disturbed by staging activities.
13. **Equipment Maintenance**. All construction equipment will be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment will be thoroughly inspected and evaluated for the potential of fluid leakage. Per the project-specific stormwater pollution prevention plan (SWPPP), all mechanical equipment will be inspected on a daily basis to ensure there is no motor oil, transmission fluid, hydraulic fluid, or coolant leaks. All leaks will be repaired in the equipment staging area or other suitable location prior to resuming construction activity. Equipment stored for a lengthy period of time (more than one week onsite) will have drip and leak pans placed underneath potential leak areas to contain accidental drips.
14. **Speed Limits and Fugitive Dust Reduction**. To reduce dust, construction vehicle speeds will be limited to 20 miles per hour when traveling on unpaved surfaces. Speed limits within 200 feet of suitable giant garter snake and northwestern pond turtle aquatic habitat on unpaved surfaces will be limited to 15 miles per hour. Drivers will stop for all wildlife encountered when driving onsite and wait for the animal to leave on its own or drive around, completely avoiding the animal.

    Per the project-specific SWPPP, stockpiled materials susceptible to wind-blown dispersal will be covered with plastic sheeting or other suitable material to prevent movement of the material.

During construction, water (e.g., trucks, portable pumps with hoses) or other approved methods will be used to control fugitive dust. Dust suppression activities will not result in a discharge to waterbodies.

15. **Wildfire Prevention**. With the exception of vegetation-clearing equipment, no vehicles or construction equipment will be operated in areas of tall, dry vegetation. A fire prevention and suppression plan will be developed and implemented for all maintenance and repair activities that require welding or otherwise have a risk of starting a wildfire.
16. **Trash Removal**. During project activities all trash, especially food-related refuse that may attract potential predators or scavengers, will be properly contained in sealed containers, removed from the work site, and disposed of weekly, at minimum.
17. **Post-Construction Cleanup**. Work pads, temporary falsework, and other construction items and debris will be removed from the 100-year floodplain by the end of the construction window and deposited at an appropriate disposal or storage site. Removal of materials will not result in discharge to waterbodies.

Measures to Protect Water Quality and Limit Hazardous Materials

18. **Erosion Control Materials**. Erosion control measures will be implemented to reduce sedimentation in nearby aquatic habitats when activities are the source of potential erosion. To prevent terrestrial wildlife from becoming entangled, trapped, or injured, plastic or synthetic monofilament erosion-control netting or similar material containing netting will not be used at the project site. Acceptable substitutes include natural fibers such as jute, coconut, twine, or tackified hydroseeding compounds.
19. **Stormwater Pollution Prevention Plan**. The project is required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Order for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Order). A project-specific SWPPP will be prepared and implemented by the construction contractor, as required by the Construction General Order. The SWPPP will include site-appropriate BMPs to control erosion and reduce the potential release of water quality pollutants to receiving waters.
20. **Hazardous Materials Management Plan**. A hazardous materials management plan (HMMP) will be included in the project-specific SWPPP and implemented by the construction contractor. The HMMP will provide detailed information on the types of hazardous materials that could be used or stored onsite; phone numbers of applicable city, county, state, and federal emergency response agencies; primary, secondary, and final cleanup procedures; emergency-response procedures in case of a spill; and other applicable information. The HMMP will include appropriate practices to reduce the likelihood of a spill of toxic chemicals and other hazardous materials during construction.

    Any hazardous materials retained onsite will be stored within the designated staging area(s) with an impermeable membrane between the ground and hazardous material, designed to prevent the discharge of pollutants to groundwater and runoff water.
21. **Spill Prevention, Containment, and Countermeasure Plan**. A spill prevention, containment, and countermeasure plan (SPCCP) will be included in the project-specific SWPPP and implemented by the construction contractor to minimize effects from spills of oil or oil-containing products during project construction. The SPCCP will be developed in accordance

with the regulatory requirements of Title 40 of the Code of Federal Regulations (CFR), Part 112, or the Spill Prevention, Control, and Countermeasure Rule under the Oil Pollution Act of 1990, which includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters of the United States and adjoining shorelines. The SPCCP will address actions used to prevent spills in addition to specifying actions that will be taken should any spills occur, including emergency notification procedures.

22. **Concrete Use**. Poured concrete will be excluded from contact with surface water or groundwater during initial curing, ideally for 30 days after it is poured. During that time, runoff from the concrete will not be allowed to enter surface or groundwater. If this is not feasible due to expected flows and site conditions, commercial sealants that are appropriate for use near water may be applied before the sealant comes into contact with flowing water. If sealant is used, water will be excluded from the site until the sealant is dry and fully cured, according to the manufacturer's specifications. Concrete is considered to be cured when water poured over the surface of concrete consistently has a pH of less than 8.5.
23. **In-Water Materials Use**. Selection and use of gravels, cobbles, boulders, and instream woody materials may be used during restoration activities within created stream beds. Gravels, cobbles, or boulders imported from a commercial source will be clean-washed and of appropriate size. As necessary to protect sensitive species, placement of stream bed materials will be overseen by a Qualified Biologist. Imported materials from outside the project watershed will not be from a source known to contain historical hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings. Materials that may foul or degrade spawning gravels (e.g., sand or soil eroding from sandbag or earthen dams) will be managed to avoid release and exposure in salmonid streams.
24. **In-Water Work Access**. If work requires that construction equipment enter wetlands or below the banks of a water of the United States, equipment with low ground pressure will be used to minimize soil compaction. Low-ground-pressure heavy equipment mats will be used, if needed, to lessen soil compaction. Hydraulic fluids in mechanical equipment working in waters of the United States or any other sensitive species aquatic habitat will not contain organophosphate esters. The amount of time this equipment is stationed, working, or traveling in waters of the United States or other sensitive species aquatic habitat will be minimized. All equipment will be removed from the aquatic feature during nonwork hours or returned to the staging area.
25. **In-Water Placement of Materials, Structures, and Operation of Equipment**. Material used for bank stabilization or in-water restoration will minimize the discharge of sediment or other forms of waste to waters of the United States or other sensitive species aquatic habitat. Construction will occur from the top of the stream bank, on a ground protection mat underlain with filter fabric, or a barge. All materials placed in streams, rivers, or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments, or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms.

2.2.7 Post-Construction Project Components

Post-construction project components would be limited to the following monitoring and land management activities to maintain restored habitat conditions.

Habitat Establishment (Project Outcome) Monitoring

The project site would be monitored on a regular basis during the habitat establishment period to ensure that the site is performing as designed and anticipated. Activities during the habitat establishment period may include corrective measures, if necessary, to address potential problems identified during ongoing monitoring of the site.

Long-Term Operations and Management Monitoring

The project site would continue to be monitored and managed on a regular basis in perpetuity to ensure the project's desired ecological benefits and trajectory are maintained. The need for corrective actions after the site has stabilized is anticipated to be minor. Annual monitoring site visits would be performed by the conservation easement holder, a local non-profit entity (to be determined).

Long-term management activities within restored habitats would include vegetation management to control invasive plant species, promote sensitive wildlife species, and reduce biomass and thatch for fire control. Vegetation management activities would also include periodic grazing within non-wetland areas in accordance with the project's *Grazing Management Plan* (Westervelt Ecological Services 2024).

The County and WES acknowledge that the long-term ownership and maintenance of the bridge structure is still being discussed among several parties. These details are not considered a CEQA issue; however, resolution of these responsibilities will be included as a condition of approval as part of the permit for the project.

It is anticipated that long-term bridge maintenance will require regular inspections and minor maintenance activities. Any future bridge repair work that has the potential to result in changes to the physical environment or impacts to sensitive resources may require subsequent environmental analysis and permits.

Adaptive Management Monitoring

The site would be monitored by various scientists and agencies to determine:

- Is the site functioning as intended?
- Should certain physical attributes be changed to enhance ecosystem function?
- Are there any potential problems developing that may require corrective measures?
- Do monitoring or maintenance and management protocols need to be modified to ensure they are accomplishing their intended purposes?

2.2.8 Additional Data

Table 2-2 identifies additional data related to future management of the project site.

Table 2-2. Additional Data

NRCS Soil Classification:	Valdez silt loam and Pescadero silty clay loam
Agricultural Preserve Status/Contract No.:	Yes; Land Conservation Contract # 1351
Non-renewal Filed (date):	N/A
Airport Land Use Referral Area:	Travis Airbase and Rio Vista Airport
Alquist Priolo Special Study Zone:	N/A
Primary or Secondary Management Area of the Suisun Marsh:	N/A
Primary or Secondary Zone identified in the Delta Protection Act of 1992:	Yes
Other: State Responsibility Area (High Fire Risk)	N/A

2.2.9 Surrounding General Plan, Zoning and Land Uses

Surrounding land uses are primarily agriculture. Field crops, consisting of alfalfa, wheat, and corn, dominate the landscape to the north. Across the Sacramento River to the east and south, Ryer Island, Grand Island, and Brannan Island support large tracts of agriculture that include field crops, hay, orchard, and vineyard. Except for Cache Slough and the Sacramento River, lands immediately abutting the project site are at similar or higher elevations. The adjacent property to the west and southwest supports an active quarry that presently is mined for sand and used to store rock for levee repairs throughout the Delta.

Table 2-3 identifies the surrounding General Plan land uses, zoning and existing land uses.

Table 2-3. Surrounding General Plan, Zoning and Land Uses

Property	General Plan	Zoning	Land Use
North	Agricultural	A-80	Agricultural
South	Agricultural and	A-80	Agricultural
Southwest	Urban Industrial – City of Rio Vista	C-3-I	Industrial/grazing
East	Agricultural	A-80	Agricultural
West	Agriculture	A-20	Sand Mining

2.3 Consistency With Existing General Plan, Zoning, and Other Applicable Land Use Controls

2.3.1 General Plan

Most of the project site is within unincorporated Solano County and is identified in the General Plan as Agriculture. A small portion (approximately 6.4 acres) of the project site lies within the Rio Vista city limits and is identified in the General Plan as a Special Use Area,

2.3.2 Zoning

The portion of the project site located within the Solano County planning area is zoned as Agriculture Minimum 80 acres (A-80) pursuant to Section 28.21.020 of the Solano County Code (zoning regulations), which permits conservation and mitigation banking as an allowable use with a use permit (Section 28.79[A]) (Figure 2-2).

The 6.4-acre portion of the project site that is within the limits of the city of Rio Vista is zoned general and service commercial and/or industrial (C-3-I) (Figure 2-2). No habitat restoration activities will occur within the boundaries of the city of Rio Vista and existing land uses within this area will not change as a result of the project.

2.3.3 Agencies that May Have Jurisdiction Over the Project

Table 2-4 lists the anticipated permits and approvals for construction and operation of the project. Depending on the final design of the project and the affected environmental resources, local, state, and federal agencies involved in the environmental review for this project may include, but are not limited to, the following.

Table 2-4. Anticipated Project Permits, Agreements and Consultations

Agency	Permit/Authorization
Federal Agencies	
U.S. Army Corps of Engineers (USACE)	• National Environmental Policy Act lead agency • Clean Water Act Section 404 Regional General Permit No. 16 • Clean Water Act Section 10 Rivers and Harbors Act • Section 408 Letter of Permission • Bank review and approval
U.S. Fish and Wildlife Service	• Federal Endangered Species Act Section 7 consultation • Fish and Wildlife Coordination Act • Bank review and approval
National Marine Fisheries Service	• Federal Endangered Species Act Section 7 consultation • Essential fish habitat coordination • Bank review and approval
State Historic Preservation Officer	• Section 106 consultation as required for cultural resources
State Agencies	

Agency	Permit/Authorization
California Department of Fish and Wildlife	• Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement
Central Valley Regional Water Quality Control Board	• Clean Water Act Section 401 Water Quality Certification • Clean Water Action Section 402 National Pollutant Discharge Elimination System Statewide Construction General Permit
Central Valley Flood Protection Board (CVFPB)	• Coordination with USACE on Clean Water Act Section 408 Letter of Permission • Encroachment permit
California State Lands Commission (SLC)	• SLC has confirmed that the project is not within Sovereign lands and will not require a state lands lease.
Delta Stewardship Council (DSC)	• Consistency with The Delta Plan
California Department of Transportation (Caltrans)	• Encroachment permit for improvements along State Route 84 (i.e., tidal opening, roadway improvements)
Local Agencies	
Solano County	• California Environmental Quality Act lead agency • Grading permit • Conditional use permit • Airport Land Use Commission land use compatibility determination • Assembly Bill 52 Tribal consultation

2.4 Agency, Public, and Tribal Outreach

In addition to coordination with local, state, and federal agencies to obtain required project permits, WES has conducted early engagement with several public agencies (i.e., city of Rio Vista, Solano County Water Agency, DWR), local Tribes, and adjacent landowners to obtain input on the project design and identify concerns related to future proposed land uses. In addition, consistent with the County's Good Neighbor Policy, WES reached out to surrounding property owners.

2.4.1 City of Rio Vista

Since 2023, WES has attended several meetings with the city of Rio Vista Public Works staff to present the proposed project, obtain feedback on the conceptual design, and identify any concerns or issues that should be considered during project environmental planning.

The city of Rio Vista expressed concern about wildlife conflicts with the nearby Rio Vista Airport. To address these concerns, WES conducted a wildlife hazards analysis (WHA) consistent with Rio Vista Airport Land Use Compatibility Plans (ALUCPs). This analysis and its findings are summarized in Chapter 3 Section *IX. Hazards and Hazardous Materials*. The draft WHA report was provided to the city of Rio Vista for review and comments were received by the city of Rio Vista in November 2024. Comments were addressed and incorporated into the final WHA.

The city of Rio Vista also expressed concerns about the timing of future Mellin Levee improvements adjacent to the project site relative to the project schedule and potential increases in flood risk to the city of Rio Vista associated with restored tidal flows onto the project site. WES explained to the city of Rio Vista that future Mellin Levee improvements are proposed as part of DWR's Little Egbert

Multi Benefit Project (LEMBP), which is currently in the CEQA planning stage. WES further explained that the project is expected to be constructed before any future levee improvements and that the project has been designed to be compatible with the LEMBP to accommodate levee construction activities. Additionally, WES provided the city of Rio Vista with technical studies documenting hydrology and hydraulic analysis performed for the project to demonstrate that implementation of the project will not increase flood risk for the city of Rio Vista. A summary of this analysis and its findings are presented in Chapter 3 Section X. Hydrology and Water Quality.

Lastly, the City of Rio Vista expressed interest in having recreational opportunities incorporated into the project. WES explained that the project is a mitigation bank, which is required by the regulatory agencies to be protected by a conservation easement that prohibits public access in order to preserve the conservation values of the mitigation bank for protected resources. However, the project will provide benefits for fish species in Cache Slough and the Sacramento River, which will indirectly benefit recreational fishing.

The project site is located within and adjacent to the Rio Vista city limits (Figure 2-2). Approximately 6.5 acres of the project site is within city limits and is zoned general and service commercial and/or industrial. During initial discussions with the city of Rio Vista, it was determined that wetland restoration would not be a permitted use under the current zoning designation and any change in zoning would require a general plan amendment. To address this potential conflict, the project was redesigned to exclude the portion of the project site within the Rio Vista city limits from the restoration design. This 6.5-acre area will be isolated from restored habitat and the project will not result in a physical change to existing conditions.

2.4.2 Solano County Water Agency

The Solano County Water Agency (SCWA) is the local maintaining agency for the Mellin Levee, adjacent to and bordering the project site (Figure 1-3). Since 2023, WES has had several meetings and discussions with SCWA to present the project, obtain feedback on the conceptual design, and identify any concerns or issues that should be considered during project environmental planning.

SCWA is mandated to maintain the Mellin Levee and is concerned that the project would inhibit their ability to conduct the required maintenance. WES explained that the project has been designed to accommodate future Mellin Levee improvements by incorporating a buffer between project features and the current and anticipated future toe of the levee.

SCWA requested clarification regarding the inclusion of Mellin Levee improvements into DWR's LEMBP and the timing of those future improvements. To address these questions and concerns, WES coordinated with DWR in April 2024 to present a workshop to SCWA focusing on the Mellin Levee. DWR provided a summary of previous studies performed to analyze flood control needs for the lower Yolo Bypass and current conditions of existing flood control facilities, including the Mellin Levee; provided a status update on the LEMBP and Mellin Levee consideration; and provided an anticipated schedule for release of the environmental document for the LEMBP. During the April 2024 workshop, WES presented an overview of the proposed project to SCWA, described how the project was compatible with the LEMBP and future Mellin Levee improvements, and illustrated the proximity of the existing Mellin Levee footprint and proposed project features.

2.4.3 Solano County Airport Land Use Commission

During preparation of a Wildlife Hazards Analysis (WHA) to address the requirements of local airport land use compatibility plans applicable to the project site, WES presented the project to the Solano Airport Land Use Commission (ALUC) Wildlife Hazards subcommittee during a October 11, 2023 meeting. This meeting was attended by representatives from Solano County, Rio Vista Airport, and Travis Air Forse Base. WES answered questions from the subcommittee regarding the methods of the project's WHA and obtained feedback from the subcommittee regarding concerns around bird aircraft strike hazards. Following the meeting, the ALUC provided a draft memo, *Considerations for Wildlife Hazard Management on Conservation Lands,* that contained guidance and recommended mitigation measures. This information was used to inform the WHA and proposed mitigation measures for the project.

Following preparation of the final WHA report, WES provided the report (dated January 2024) to the ALUC for review and comment. No comments have been received as of November 2024.

2.4.4 Adjacent Landowners

Surrounding landowners include WES (Little Egbert Tract) to the north and northeast and Sacramento San Joaquin Drainage District (SSJDD) to the west, southwest and southeast. SSJDD lands are managed by the Central Valley Flood Protection Board (CVFPB) and held in fee title by DWR. WES is coordinating with DWR and CVFPB to obtain the appropriate permits and authorizations to comply with existing flood easements and avoid conflicts with adjacent land uses.

The WES project team is coordinating closely with the Little Egbert Joint Powers Authority and DWR to ensure that there are no conflicts between the project and the LEMBP.

2.4.5 Tribes

Beginning in May 2023 with assistance from Environmental Science Associates' Archaeologist Robin Hoffman, WES initiated outreach and early engagement with two local Tribes, Yocha Dehe Wintun Nation (YDWN) and Wilton Rancheria. YDWN and Wilton Rancheia have expressed interest in restoration projects in the Delta. This outreach included letters, emails, phone calls, and site visits with representatives from the two Tribes, including a September 20, 2023, reconnaissance-level pedestrian survey of the project area with ESA and representatives from both Tribes. The Tribes were provided with opportunities to review and comment on field methods, resource identification, findings, Project design, and long-term access to the project area. Correspondence between WES and the Tribes regarding project design is ongoing.

Chapter 3

Affected Environment and Environmental Consequences

3.1 Introduction

This section identifies the potential environmental impacts of the project using as a framework the CEQA Environmental Checklist Form as presented in Appendix G of the State CEQA Guidelines. This chapter discusses the potential for adverse impacts on the environment. Where the potential for adverse impacts exists, the report discusses the affected environment, the level of potential impact on the affected environment and methods to avoid, minimize or mitigate potential impacts to the affected environment.

Findings of Significant Impact

Based on the Initial Study, Part I as well as other information reviewed by the Department of Resource Management, the project does not have the potential for significant impacts to any environmental resources.

Findings of Less Than Significant Impact Due to Mitigation Measures Incorporated into the Project

Based on the Initial Study, Part I as well as other information reviewed by the Department of Resource Management, the following environmental resources were considered and the potential for significant impacts were reduced to less than significant due to mitigation measures incorporated into the project. A detailed discussion of the potential adverse effects on environmental resources is provided below:

- ❑ **Biology**
- ❑ **Cultural resources**
- ❑ **Tribal Cultural Resources**
- ❑ **Noise**
- ❑ **Hazards and Hazardous Materials**
- ❑ **Wildfire**
- ❑ **Mandatory Findings of Significance**

Findings of Less Than Significant Impact

Based on the Initial Study, Part I as well as the review of the proposed project by the Department of Resource Management, the following environmental resources were considered and the potential for impact is considered to be less than significant. A detailed discussion of the potential adverse effects on environmental resources is provided below:

- ❑ **Aesthetics**
- ❑ **Air Quality**
- ❑ **Energy**
- ❑ **Transportation and Traffic**

- ❑ **Greenhouse Gas Emissions**
- ❑ **Hydrology and Water Quality**
- ❑ **Geology and Soils**
- ❑ **Mineral Resources**

Findings of No Impact

Based on the Initial Study, Part I as well as the review of the proposed project by the Department of Resource Management, the following environmental resources were considered but no potential for adverse impacts to these resources were identified. A discussion of the no impact finding on environmental resources is provided below:

- ❑ **Land Use and Planning**
- ❑ **Mineral Resources**
- ❑ **Utilities**
- ❑ **Population and Housing**
- ❑ **Public Services**
- ❑ **Agriculture and Forestry Resources**

3.2 Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less than Significant with Mitigation Incorporated" applies when the incorporation of mitigation measures has reduced an effect from a "Potentially Significant Impact" to a "Less-than-Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level. (Mitigation measures from *Earlier Analyses*, as described in #5 below, may be cross-referenced.)
5. Earlier analyses may be used if, pursuant to tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where earlier analyses are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal

standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
   a. the significance criteria or threshold, if any, used to evaluate each question; and
   b. the mitigation measure identified, if any, to reduce the impact to a less-than-significant level.

I. Aesthetics

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

Environmental Setting

Agricultural landscapes, the Delta and marshlands, and oak- and grass-covered hills are the primary aesthetic resources in Solano County. Prominent scenic resources in Solano County include marshlands and Delta waters to the south, the Coast Range extending in a north-south direction north and west of Fairfield, meandering hills between Cordelia and Benicia, and expanses of agricultural lands primarily in the eastern half of the county (Solano County 2008:4.11-1).

Solano County has no designated federal or state scenic highways. The closest state scenic highway to Solano County is SR 160 in Sacramento County. SR 160 is directly east of the project site on the east side of the Sacramento River. The General Plan designates SR 12 and SR 113 in the project vicinity as scenic roadways in Solano County. Neither are visible from the project site at ground level.

Existing light and glare originate primarily from existing urban centers (e.g., Fairfield, Vallejo, Vacaville, Benicia) in the western half of the county. The eastern half of Solano County does not exhibit prominent sources of nighttime lighting, except for the communities of Dixon and Rio Vista, because of the dominant agricultural nature of the area (Solano County 2008:4.11-2).

The project site has views of the Little Egbert Tract to the north, which includes Cache Slough, Steamboat Slough, the Sacramento River, and agricultural lands to the east, the community of Rio Vista and undeveloped lands to the south, and the community of Rio Vista, the Rio Vista Municipal Airport, and undeveloped lands to the west.

Impacts

a. c. Have a substantial adverse effect on a scenic vista or substantially degrade the existing visual character or quality of public views of the site and its surroundings?

A scenic vista can be defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. Aesthetic components of a scenic vista generally include scenic quality, sensitivity level, and view access. The project site does not contain any unique visual features or scenic resources, such as landmark trees, rock outcroppings, or historic structures and it is not highly visible from public vantage points. Development in the project vicinity includes local roads, agricultural land, and the community of Rio Vista.

The project site is in a non-urbanized area, surrounded by agricultural uses, undeveloped lands, various waterways, and the community of Rio Vista to the west. There are no County-designated scenic resources (vistas) within the project area (Solano County 2008). The visual character of the project site is primarily defined by levees and SR 84 around the perimeter, PG&E power poles and lines, agricultural ditches, small berms, and associated grasses and other vegetation.

Restoration

During restoration activities, the visual character of the site would change with the introduction of construction equipment, materials, workers, and clearing of vegetation and earthmoving. This temporary condition would be visible to motorists approaching the project site along SR 84. However, construction activities would be confined to the project site and construction would not degrade the visual characteristics of the agricultural uses surrounding the site. Additionally, the

change of visual character at the project site during construction would be temporary in nature and post construction would not substantially change from pre-project conditions.

The restoration component of the project would require removal of some vegetation and trees within the project site; however, the project includes vegetation plantings to support wetland and riparian restoration. All upland areas temporarily affected during restoration would be revegetated with native and naturalized species. The project would recontour the existing habitat to create diverse tidal channels to increase tidal influence and provide habitat for native fish; recontour pastures to create topographic complexity to support diverse plant and habitat assemblages; conduct riparian shrub and tree plantings on habitat berms and internal high ground (intertidal elevation) to promote the rapid development of shaded riverine habitat; and construct habitat berms and upland buffers to provide transitional habitat and accommodate future sea level rise. All restoration activities would be designed to a maximum height of 9.5 feet, which is lower than surrounding levees outside the project site and would therefore not obstruct scenic vistas. Once completed, the visual character or quality of the site would be enhanced due to the recontouring of the existing pastures that would create diverse plant and habitat assemblages, and planting of riparian vegetation. The restoration component of the project does not include any tall structures or incompatible uses. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista and the impact would be less than significant.

Low Water Crossing

The low water crossing component of the project would only affect views in the area during construction and during operation would simply look like a small low-level bridge under SR 84. During construction, equipment including but not limited to, generators, tractor trailer, tractor with auger, haul trucks, and construction personnel vehicles (passenger trucks and cars), would be at the project site. This would be a temporary visual impact limited to the immediate area. Once the low water crossing is completed, the visual character or quality of the site would be similar to existing conditions. The low water crossing component of the project does not include any tall structures or incompatible uses. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista and the impact would be less than significant.

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

There are no designated state scenic highways in Solano County. SR 160, a designated state scenic highway in Sacramento County, is directly east of the project site on the east side of the Sacramento River. The proposed project would have no effects on SR 160; therefore, no impact would occur.

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

Neither the restoration component nor the low water crossing component of the project include the installation of any lighting or any structures that would produce substantial glare. Therefore, the proposed project would not create a new source of light or glare that would adversely affect day or nighttime views. No impact would occur.

II. Agricultural and Forestry Resources

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:				
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b.	Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?				X
c.	Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				X
d.	Result in the loss of forest land or conversion of forest land to non-forest use?				X
e.	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?				X

Environmental Setting

Agriculture has historically been an important industry in Solano County and a central part of the county's identity. Agricultural lands account for more land than any other land use in the county. Agriculture also contributes to the regional economic health and prosperity, defines much of the county's visual character, supports wildlife habitats and migration corridors, provides open space and recreational amenities for residents and visitors, and separates urban land uses defining the county's cities (Solano County 2008:4.8-1).

Solano County includes land that is classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland by the California Department of Conservation (Solano County 2008:4.8-1). The project site is designated as Grazing Land according to the California Department of Conservation's Important Farmland Finder website (California Department of Conservation 2018). Lands to the north and east include areas of Prime Farmland. The project site has a General Plan Land Use designation of Agriculture and is zoned Exclusive Agriculture (A-80) (Solano County 2023), which permits conservation and mitigation banking as an allowable use with a use permit (Section 28.79[A]). The project has applied for a use permit with Solano County.

The project site is under Williamson Act Contract (Nonprime Agricultural Land) (California Department of Conservation 2022), which allows for open space uses, including marsh preservation. There is no forest land in the project area. The project site has been used for cattle grazing intermittently for the last 30 years but the primary use has been private waterfowl hunting. Long-term vegetation management of the site would include grazing opportunities.

Impacts

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

The project site is designated as Grazing Land according to the California Department of Conservation's Important Farmland Finder website (California Department of Conservation 2018). The project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use. The project site has supported cattle grazing for more than 30 years. The proposed project will continue grazing practices as part of long-term vegetation management of the restored habitat within non-wetland areas. **No impact** would occur.

b. Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?
The project site is under Williamson Act Contract (Nonprime Agricultural Land) (California Department of Conservation 2022); however, the proposed uses would not conflict with allowed uses under the Williamson Act Contract, which allows open space uses, including marsh preservation. Habitat restoration uses are deemed compatible in the County's Williamson Act uniform regulations.

The project will also not conflict with the existing Exclusive Agriculture (A-80) zoning because mitigation banking is an allowable use with a use permit (Section 28.79[A]). **No impact** would occur.

c. Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section

4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No forest or timberland is present in the project area. **No impact** would occur.

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

No forest land is present in the project area. **No impact** would occur.

e. 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?

As noted in responses to items a) and d) above, the project would not change the existing environment such that Farmland or forest land would be converted to non-agriculture and non-forest land. Lands to the north of the project site are designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The project site is physically and hydrologically separated from adjacent Farmland by elevated berms along Watson Hollow Slough; therefore, project activities will not result in changes to the existing environment and will not result in the conversion of adjacent Farmland to non-agricultural use. **No impact** would occur.

III. Air Quality

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:					
a.	Conflict with or obstruct implementation of the applicable air quality plan?			X	
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard?			X	
c.	Expose sensitive receptors to substantial pollutant concentrations?			X	
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

Environmental Setting

The project site is in Solano County in the Sacramento Valley Air Basin (SVAB). Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, and particulate matter (PM) are commonly used as indicators of ambient air quality conditions. These pollutants are known as *criteria pollutants* and are regulated by the U.S. Environmental Protection Agency (USEPA)

and California Air Resources Board (CARB) through national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively. The NAAQS and CAAQS are set with an adequate margin of safety for public health and the environment (Clean Air Act Section 109). Other pollutants of concern in the project area are nitrogen oxides (NO_X) and reactive organic gases (ROG), which are precursors to ozone, and toxic air contaminants (TAC), which can cause cancer and other human health effects.

Criteria pollutant concentrations in Solano County and the SVAB are measured at several monitoring stations. The nearest station to the proposed project is the Fairfield-Chadbourne Road Station, which is approximately 20.5 miles west of the project site. This site only monitors ozone concentrations. Monitoring data shows that the station experienced several violations of the 8-hour ozone CAAQS and NAAQS during the 2020 and 2021 reporting period; however, in 2022, no violations were reported and only one violation occurred during the 2020 reporting period for the hourly CAAQS (California Air Resources Board 2023a). The closest monitoring station to the project site that measures PM is the Stockton-University Park station, located 26 miles away. Monitoring data shows several violations of PM 10 microns or less in diameter (PM10) and PM 2.5 microns or less in diameter (PM2.5) for the CAAQS and the NAAQS during the 2021 and 2022 reporting period (California Air Resources Board 2023a).

Data collected from monitoring stations throughout the region, including the Fairfield-Chadbourne Road Station, are used to designate Solano County as nonattainment, maintenance, or attainment for the NAAQS and CAAQS. Based on the most recent local monitoring data, the SVAB portion of Solano County has been designated as nonattainment-transitional with regard to the state's 8-hour ozone standard and nonattainment for the state's PM10 standards (California Air Resources Board 2023b). Furthermore, Solano County falls under the classification of nonattainment for the federal 8-hour ozone and PM2.5 standards (U.S. Environmental Protection Agency 2023).

The Yolo-Solano Air Quality Management District (YSAQMD) is responsible for ensuring that the NAAQS and CAAQS are met within Yolo County and eastern Solano County. YSAQMD manages air quality through a comprehensive program that includes long-term planning, regulations, incentives for technical innovation, education, and community outreach. For example, YSAQMD supported development of the *Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment & Reasonable Further Progress Plan* (2023 Ozone Plan), which outlines strategies to achieve the federal 8-hour ozone standard of 70 parts per billion throughout the entire Sacramento Valley region, inclusive of the project area. YSAQMD, alongside other air districts in the Sacramento Valley region, have also prepared the *PM2.5 Implementation/Maintenance Plan and Resignation Request for Sacramento PM2.5 Nonattainment Area* (PM2.5 Plan). YSAQMD adopts rules and regulations applicable to individual projects and emissions-generating sources in its jurisdiction. Specific rules applicable to the project may include, but are not limited to, Regulation II, Rule 2.5 (Nuisance), Regulation II, Rule 2.8 (Particulate Matter Concentration), Regulation II, Rule 2.28 (Cutback and Emulsified Asphalts), and Rule Regulation II, Rule 2.32 (Stationary Internal Combustion Engines).

YSAQMD's (2007) *Handbook for Assessing and Mitigating Air Quality Impacts* (CEQA Handbook) provides guidance for evaluating project-level air quality impacts, including thresholds to assist lead agencies in evaluating the significance of project-generated criteria pollutant and precursor emissions. YSAQMD's ozone precursor thresholds are based on the emissions levels identified under Rule 3.20—Ozone Transport Mitigation, which implements the California Ozone Transport Mitigation Regulation codified under California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 1.5, Article 6, section 70600(b)(1)(C). The Transport Mitigation Regulation was adopted

to ensure that air quality is not significantly degraded by new sources of emissions, inclusive of pollutant transport to downwind air districts. Based on the ozone attainment status of YSAQMD and its location within the broader Sacramento area, Rule 3.20 requires a 10 tons per year "no net increase" program for NO_X and ROG generated by stationary sources. YSAQMD has concluded that the stationary source restriction established by Rule 3.20 is equally applicable to land use projects. YSAQMD's regional ozone thresholds for attaining the CAAQS and NAAQS were therefore set as the total emissions thresholds associated with Rule 3.20 and the California Ozone Transport Mitigation Regulation (Yolo-Solano Air Quality Management District 2007:B-1).

YSAQMD's PM10 threshold is based on the emissions levels identified under the New Source Review program, which is a permitting program established by Congress as part of the Clean Air Act Amendments of 1990 to ensure that air quality is not significantly degraded by new sources of emissions. YSAQMD's New Source Review program requires best available control technologies to be applied where new or modified PM10 emissions exceed 80 pounds per day. Therefore, a project's PM10 emissions that trigger the YSAQMD's best available control technologies threshold for PM10 would result in substantial air emissions and have a potentially significant impact on air quality (Yolo-Solano Air Quality Management District 2007:B-1).

Table 3-1 summarizes YSAQMD's recommended mass emission thresholds. The thresholds consider whether a project's emissions would result in a cumulatively considerable adverse contribution to existing air quality conditions. If a project's emissions would be less than these levels, the project would not be expected to result in a cumulatively considerable contribution to the significant project-level and cumulative impact.

Table 3-1. Yolo-Solano Air Quality Management District's Criteria Pollutant and Precursor Thresholds

	Ozone Precursor Emissions		
Source	ROG	NOX	PM10
Construction (short-term)	10 tons per year	10 tons per year	80 pounds per day
Operational (long-term)	Same as construction	Same as construction	Same as construction

Source: Yolo-Solano Air Quality Management District 2007:6

NO_X = nitrogen oxides

PM10 = particulate matter 10 microns or less in diameter

ROG = reactive organic gases

YSAQMD's (2007:B-2) CEQA Handbook also states that "localized high levels of CO, or CO hotspots, is the District's concern," and that "hotspots are usually associated with roadways that are congested and have heavy traffic volume." YSAQMD considers a project to result in a significant CO impact if it would create a CO hotspot that would violate the CAAQS of 9 parts per million (8-hour average) or 20 parts per million (1-hour average) (Yolo-Solano Air Quality Management District 2007:B-2). YSAQMD has adopted the following screening criteria to determine whether a project could cause a CO hotspot.

- Peak-hour level of service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F), or
- Project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.

YSAQMD (2007:7) has also adopted a threshold to evaluate receptor exposure to TAC. The "substantial" TAC threshold defined by the YSAQMD is the probability of contracting cancer for the maximum exposed individual exceeding 10 in a million. This risk threshold is used by YSAQMD to evaluate potential risks for both existing and new sources.

Impacts

Operations and maintenance activities would be similar to pre-project conditions, with two inspections per year and bridge repair work every 10 years. Accordingly, there would be negligible change in operational emissions relative to existing conditions. In addition, engine exhaust emissions are expected to diminish over time as zero-emission vehicles become more prevalent, due in part to state regulations and mandates. This analysis focuses on construction-generated emissions because there would be no long-term operational air quality impact.

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

YSAQMD's (2007) CEQA Handbook states that "General Plans of cities and counties must show consistency with [YSAQMD's] Air Quality Attainment Plan (AQAP) and State Implementation Plan (SIP) strategies in order to claim a less than significant impact on air quality." Projects that propose development that is consistent with the growth anticipated by the City's and County's general plans would therefore be consistent with YSAQMD's Air Quality Attainment Plans (i.e., the 2023 Ozone Plan and PM2.5 Plan). The restoration and low water crossing portions of the proposed project are analyzed individually below.

Restoration

The purpose of the restoration portion of this project includes re-establishing approximately 300 acres of tidal freshwater wetland and floodplain-associated vegetation communities within the interior of the project site. The proposed restoration portion of this project, therefore, would not directly induce long-term growth or development that would conflict with general plan growth forecasts, and the proposed project would comply with all applicable YSAQMD rules. In addition, as shown in Table 3-1, construction of the proposed restoration portion of this project would not exceed any analysis threshold. Accordingly, potential impacts on the air quality plan would be less than significant.

Low Water Crossing

The purpose of the low water crossing portion of this project is to create a bridge over SR 84 that would include two 12-foot travel lanes. The proposed low water crossing portion of this project, therefore, would not directly induce long-term growth or development that would conflict with general plan growth forecasts, and the proposed project would comply with all applicable YSAQMD rules. In addition, as shown in Table 3-1, construction of the proposed low water crossing portion of this project would not exceed any analysis thresholds. Accordingly, potential impacts on the air quality plan would be less than significant.

Conclusion

The purpose of the proposed project is to create a mitigation bank to establish the use of mitigation credits. As stated above, the restoration and low water crossing portion of the proposed project would not directly induce long-term growth or development that would conflict with general plan

growth forecasts, and the total proposed project would comply with all applicable YSAQMD rules. Further, as shown in Table 3-1, construction of the total project would not exceed any analysis thresholds. Accordingly, potential impacts on the air quality plan would be less than significant.

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard?

Project construction has the potential to affect ambient air quality through use of heavy-duty equipment, worker vehicle trips, truck hauling trips, earthmoving, and demolition of existing roadways. Criteria pollutant and precursor emissions generated by these sources were quantified using information provided by the applicant and the California Emissions Estimator Model (CalEEMod) (version 2022.1) (Lagneaux pers. comm.).

Table 3-2 summarizes emissions that would be generated by construction of the proposed project, including both the restoration and low water crossing portions. Emissions would be generated over multiple phases in 2026, with several phases occurring concurrently. Phases could also occur in separate years (i.e., restoration in 2026 and low water crossing in 2027). Table 3-2 identifies the maximum daily PM10 emissions that would occur during peak construction in 2026 for each portion of the project, as well as total emissions assuming construction activity for restoration and low water crossing could occur on the same day. These emissions are compared to YSAQMD's daily PM10 threshold. The table also shows the tons of ROG and NO_X that would be generated by construction in 2026, which are compared to YSAQMD's annual ozone precursor thresholds. Please refer to Appendix D, *Emissions Model Outputs* for all modeling assumptions and outputs.

Table 3-2. Estimated Criteria Pollutant Emissions from Proposed Project Construction

	Ozone Precursors (tons per year)		PM10 (maximum pounds per day)a
Year	ROG	NOX	
2026 (Low Water Crossing)	0.17	1.19	10.5
2026 (Habitat Restoration)	0.03	0.25	16.8
Total Project Emissions	0.20	1.4	27.3
YSAQMD threshold	10	10	80
Exceed threshold?	No	No	No

[a] Represents the highest emissions during concurrent construction activity.

NO_X = nitrogen oxides
YSAQMD = Yolo-Solano Air Quality Management District
PM10 = particulate matter 10 microns or less in diameter
ROG = reactive organic gases

Restoration

As shown in Table 3-2, construction of the proposed restoration portion of this project would not generate ROG, NO_X, or PM10 emissions in excess of the numeric analysis thresholds. In addition, construction contractors would implement fugitive dust BMPs including watering exposed surfaces, active demolition sites, unpaved construction roads, and limiting vehicle speeds on unpaved roads. Accordingly, construction-related emissions related to the restoration portion of the proposed project would have a **less-than-significant impact**.

Low Water Crossing

As shown in Table 3-2, construction of the proposed low water crossing portion of this project would not generate ROG, NO_X, or PM10 emissions in excess of the numeric analysis thresholds. In addition, as stated in *Restoration*, construction contractors would implement fugitive dust BMPs. Accordingly, construction-related emissions related to the low water crossing portion of the proposed project would have a **less-than-significant impact**.

Conclusion

As shown in Table 3-2, construction of the proposed project, including the restoration and low water crossing portions, would not generate ROG, NO_X, or PM10 emissions in excess of the numeric analysis thresholds. In addition, as stated in *Restoration*, construction contractors would implement fugitive dust BMPs. Accordingly, total construction-related emissions for the proposed project would have a **less-than-significant** impact.

c. ***Expose sensitive receptors to substantial pollutant concentrations?***

Sensitive receptors are facilities that house or attract children, the elderly, and people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. The project site is located in rural Solano County, primarily surrounded by open space, industrial sources, or the Sacramento River; there are no sensitive receptors within 1,000 feet of the project site.

The primary pollutants of concern with respect to health risks to sensitive receptors are criteria pollutants (regional and local) and TAC. Ozone precursors (ROG and NO_X) and PM are considered regional pollutants because they affect air quality on a regional scale. Localized pollutants are deposited and potentially affect populations near the emissions source. Because these pollutants dissipate with distance, emissions from individual projects can result in direct and material health impacts on adjacent sensitive receptors (if any). The localized criteria pollutants of concern that would be generated by the proposed project are PM (fugitive dust) and CO. The TAC of concern is diesel particulate matter (DPM).[1] The following subsections discuss whether regional criteria pollutants, localized fugitive dust, localized CO, and DPM pose a significant impact for the restoration, low water crossing, and total proposed project.

Restoration

Regional Criteria Pollutants

The emission thresholds adopted by YSAQMD consider existing air quality concentrations and attainment or nonattainment designations under the NAAQS and CAAQS. Projects that generate emissions below the analysis thresholds would not adversely affect air quality or exceed the health-protective NAAQS or CAAQS. As shown in Table 3-2, construction of the proposed restoration portion of the project would not generate ozone precursors or criteria pollutant emissions above the analysis thresholds. As such, the proposed restoration portion of the project would not be expected to contribute to a significant level of air pollution that would degrade long-term regional air quality. Potential impacts would be **less than significant**.

[1] According to the California Department of Conservation (2000:1-7), naturally occurring asbestos is not found in the localized area of analysis.

Localized Fugitive Dust

The primary sources of localized fugitive dust would be earthmoving and vehicle travel over unpaved surfaces at the construction site. These emissions would be controlled through fugitive dust BMPs. As shown in Table 3-2, construction of the proposed restoration portion of this project would not generate fugitive dust (PM) emissions above the analysis thresholds. Moreover, as previously indicated, there are no sensitive receptors within 1,000 feet of the project site. Thus, construction dust emissions would be reduced at the nearest receptor location and would not substantially affect sensitive receptors. Potential impacts would be **less than significant**.

Localized Carbon Monoxide

Engine exhaust from offsite traffic may elevate CO concentrations at local intersections, resulting in hotspots. Receptors exposed to CO hotspots may have a greater likelihood of developing health effects such as fatigue, headaches, confusion, dizziness, and chest pain. Assuming concurrent activities, construction of the proposed restoration portion of this project would require a maximum of 52 one-way employee, vendor, and haul trips in a single day. These few vehicle trips would not substantially worsen intersection congestion such that CO hotspots would occur. Accordingly, the proposed restoration portion of the project would not expose sensitive receptors to substantial CO concentrations. Potential impacts would be **less than significant**.

Diesel Particulate Matter

While construction of the proposed restoration portion of the project would involve the use of diesel equipment, diesel combustion would be limited to equipment and vehicle use during the 6.5-month construction period. This duration is substantially lower than the 30-year exposure period typically associated with chronic cancer health risks (Office of Environmental Health Hazard Assessment 2015). Moreover, as previously noted, there are no sensitive receptors within 1,000 feet of the project site. The concentration of DPM decreases dramatically as a function of distance from the source (California Air Resources Board 2005:9). Consequently, DPM concentrations, and thus health risks, would be reduced at the nearest receptor location. Accordingly, the proposed restoration portion of this project would not expose sensitive receptors to substantial DPM concentrations. Potential impacts would be **less than significant**.

Low Water Crossing

Regional Criteria Pollutants

The emission thresholds adopted by YSAQMD consider existing air quality concentrations and attainment or nonattainment designations under the NAAQS and CAAQS. Projects that generate emissions below the analysis thresholds would not adversely affect air quality or exceed the health protective NAAQS or CAAQS. As shown in Table 3-2, construction of the proposed low water crossing portion of the project would not generate ozone precursors or criteria pollutant emissions above the analysis thresholds. As such, the proposed low water crossing portion of this project would not be expected to contribute to a significant level of air pollution that would degrade long-term regional air quality. Potential impacts would be **less than significant**.

Localized Fugitive Dust

The primary sources of localized fugitive dust would be earthmoving and vehicle travel over unpaved surfaces at the construction site. These emissions would be controlled through fugitive dust BMPs. As shown in Table 3-2, construction of the proposed low water crossing portion of this project would not generate fugitive dust (PM) emissions above the analysis thresholds. Moreover, as previously indicated, there are no sensitive receptors within 1,000 feet of the project site. Thus, construction dust emissions would be reduced at the nearest receptor location and would not substantially affect sensitive receptors. Potential impacts would be **less than significant**.

Localized Carbon Monoxide

Engine exhaust from offsite traffic may elevate CO concentrations at local intersections, resulting in hotspots. Receptors exposed to CO hotspots may have a greater likelihood of developing health effects such as fatigue, headaches, confusion, dizziness, and chest pain. Assuming concurrent activities, construction of the proposed low water crossing portion of this project would require a maximum of 78 one-way employee, vendor, and haul trips in a single day. These few vehicle trips would not substantially worsen intersection congestion such that CO hotspots would occur. Accordingly, the proposed low water crossing portion of this project would not expose sensitive receptors to substantial CO concentrations. Potential impacts would be **less than significant**.

Diesel Particulate Matter

While construction of the proposed low water crossing portion of this project would involve the use of diesel equipment, diesel combustion would be limited to equipment and vehicle use during the 6-month construction period. This duration is substantially lower than the 30-year exposure period typically associated with chronic cancer health risks (Office of Environmental Health Hazard Assessment 2015). Moreover, as previously noted, there are no sensitive receptors within 1,000 feet of the project site. The concentration of DPM decreases dramatically as a function of distance from the source (California Air Resources Board 2005:9). Consequently, DPM concentrations, and thus health risks, would be reduced at the nearest receptor location. The proposed low water crossing portion of this project would not expose sensitive receptors to substantial DPM concentrations. Potential impacts would be **less than significant**.

Conclusion

As shown in Table 3-2, construction of the total proposed project would not generate ozone precursors or criteria pollutant emissions above the analysis thresholds. Moreover, there are no sensitive receptors within 1,000 feet of the project site. As such, the proposed project would not be expected to contribute to a significant level of air pollution that would degrade long-term regional air quality, nor would it expose sensitive receptors to significant localized fugitive dust. Additionally, assuming concurrent activities, construction of the proposed project would require a maximum of 130 one-way employee, vendor, and haul trips in a single day. These few vehicle trips would not substantially worsen intersection congestion such that CO hotspots would occur. Accordingly, the proposed project would not expose sensitive receptors to substantial CO concentrations, and the potential impact would be less than significant. Finally, while construction of the proposed project would involve the use of diesel equipment, diesel combustion would be limited to equipment and vehicle use during the 6.5-month construction period. This duration is substantially lower than the 30-year exposure period typically associated with chronic cancer health risks (Office of Environmental Health Hazard Assessment 2015). Accordingly, the proposed project would not

expose sensitive receptors to substantial DPM concentrations. Potential impacts would be **less than significant**.

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

Restoration

The proposed restoration portion of this project would not result in any major sources of odor and would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, wastewater treatment facility). In addition, odors associated with diesel exhaust from onsite construction equipment would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Furthermore, as required by CARB regulation, no in-use off-road diesel vehicles may idle for more than 5 consecutive minutes. Accordingly, construction of the proposed restoration portion of this project would not result in nuisance odors that would violate YSAQMD Regulation II Rule 2.5. This impact would be **less than significant**.

Low Water Crossing

The proposed low water crossing portion of this project would not result in any major sources of odor and would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, wastewater treatment facility). In addition, odors associated with diesel exhaust from onsite construction equipment would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Furthermore, as required by CARB regulation, no in-use off-road diesel vehicles may idle for more than 5 consecutive minutes. Accordingly, construction of the proposed low water crossing portion of the project would not result in nuisance odors that would violate YSAQMD Regulation II Rule 2.5. This impact would be **less than significant**.

Conclusion

The proposed project would not result in any major sources of odor and would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, wastewater treatment facility). In addition, odors associated with diesel exhaust from onsite construction equipment would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Furthermore, as required by CARB regulation, no in-use off-road diesel vehicles may idle for more than 5 consecutive minutes. Accordingly, construction of the proposed project would not result in nuisance odors that would violate YSAQMD Regulation II Rule 2.5. This impact would be **less than significant**.

IV. Biological Resources

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
b.	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?			X	
c.	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?			X	
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f.	Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?			X	

Environmental Setting

Methodology

The biological resources analyses provided herein were obtained from the following data sources and reports:

- The CDFW CNDDB list of plant and wildlife species documented on the Rio Vista USGS 7.5-minute topographic quadrangle and seven quadrangles within 5 miles of the project site (Liberty Island, Courtland, Birds Landing, Isleton, Antioch North, Jersey Island, and Bouldin Island) (California Department of Fish and Wildlife 2024) (Appendix E, *Agency Species List*).
- The California Native Plant Society (CNPS) online database of plant species documented on the Rio Vista USGS 7.5-minute topographic quadrangle and seven quadrangles within 5 miles of the project site (Liberty Island, Courtland, Birds Landing, Isleton, Antioch North, Jersey Island, and Bouldin Island) (California Native Plant Society 2024) (Appendix E).
- A USFWS list of threatened or endangered species that may occur in the project location or be affected by the project (U.S. Fish and Wildlife Service 2024) (Appendix E).
- A NMFS list of threatened or endangered species that may occur in the project location or be affected by the project (National Marine Fisheries Service 2016) (Appendix E).
- Reconnaissance-Level Biological Resources Assessment at the Cache Slough Mitigation Bank, Solano County, California (Helm Biological Consulting 2023) (Appendix F, *Reconnaissance-Level Biological Resources Assessment*).
- Occurrences and Habitat Suitability for Swainson's Hawk at the Cache Slough Mitigation Bank (Estep Environmental Consulting 2023) (Appendix G, *Occurrences and Habitat Suitability for Swainson's Hawk*).
- Revised Final Cache Slough Mitigation Bank Fish Assessment (Environmental Science Associates 2024) (Appendix H, *Revised Final Cache Slough Mitigation Bank Fish Assessment*).

The listed information sources were used to develop lists of sensitive species that occur in the general region of the project site. Species from the lists were evaluated for their likelihood to occur at the project site by taking into consideration whether they are known to occur within a 5-mile radius of the project site (using CNDDB data) and whether suitable habitat for the species is present at the project site. Biological surveys of the project site were conducted between February 2020 and June 2023 to determine whether regionally occurring special-status species have the potential to occur within the project site. In addition, biological surveys of the offsite utility relocation area were conducted in June 2024.

Study Area

For the purposes of analyzing potential direct and indirect impacts on biological resources, the study area limits encompass the approximately 330.0-acre project site (including the restoration footprint and the highway improvements/low water crossing footprint) and adjacent aquatic resources up to existing levees on the southwest, west, north, and northeast, and portions of Cache Slough and the Sacramento River on the southeast (Figure 3-1). To assess potential offsite utility improvement impacts, the study area also includes temporary work areas, access routes, and a staging area adjacent to the project site (Figure 1-4).

Land Cover

The study area includes terrestrial and aquatic land cover types (Figure 3-1). Terrestrial land cover types include developed, ruderal, grassland, clay flat, and ditch. Aquatic land cover types include open water, emergent marsh, managed emergent marsh, riparian, seasonal wetland, and seep.

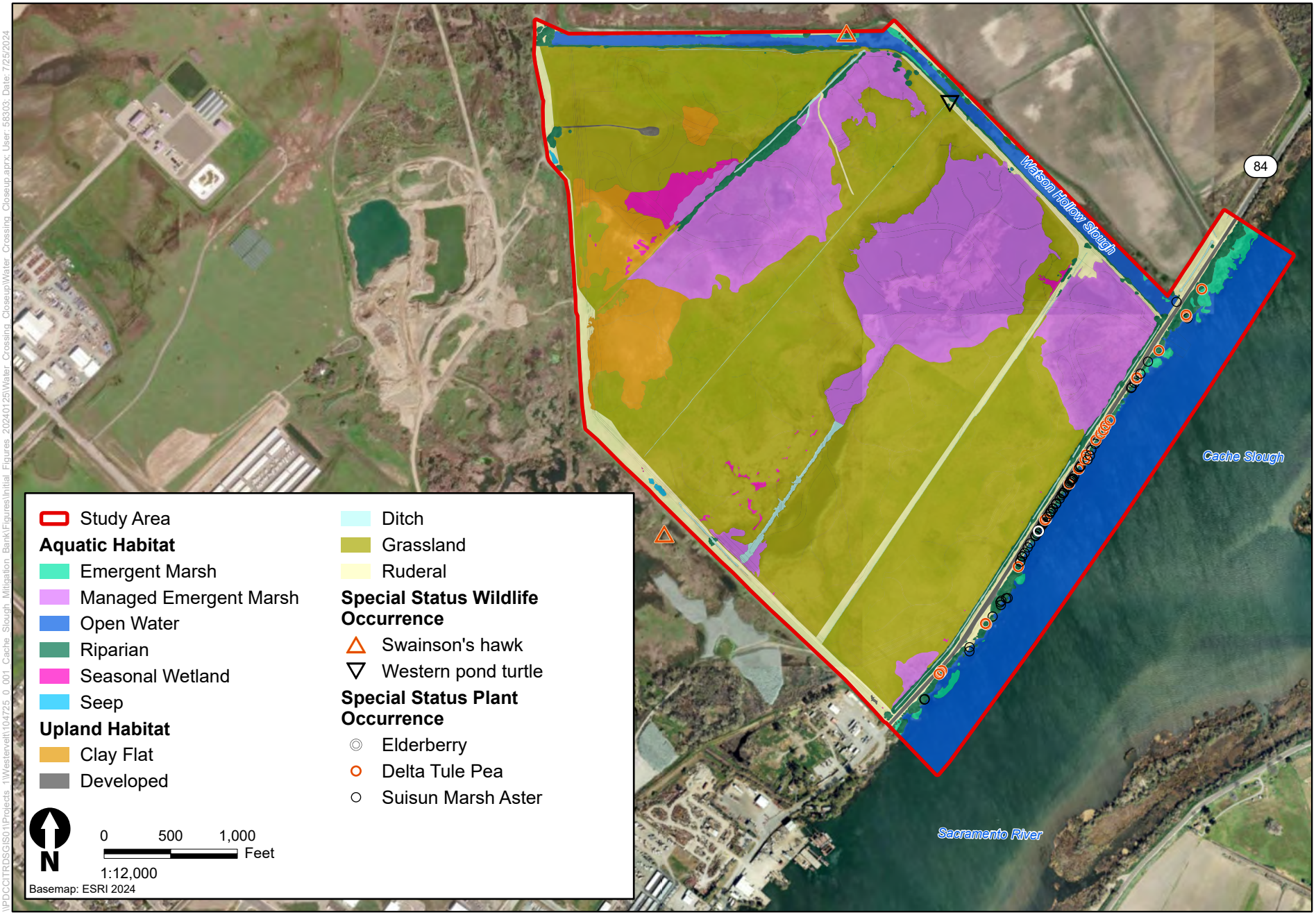


Figure 3-1
Existing Biological Conditions

Terrestrial and aquatic land cover types are summarized below and discussed in greater detail in the biological resources assessment (Helm Biological Consulting 2023) (Appendix F).

Terrestrial Land Cover Types

Developed

Developed areas in the study area include structures, roads (dirt, gravel, and paved), electrical power and telephone poles and lines, culverts and canal gates, and an abandoned natural gas well. Developed areas lack or include minimal weedy vegetation.

Ruderal

Ruderal areas in the study area include levees, edges of elevated berms of irrigation ditches, and edges of roads. Ruderal is also the dominant cover type within the offsite temporary staging area. The ruderal areas are sparsely vegetated with weedy species adapted to human disturbances. Dominant species include yellow star-thistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), short-podded mustard (*Hirschfeldia incana*), pigweed amaranth (*Amaranthus albus*), wild radish (*Raphanus sativus*), prickly wild lettuce (*Lactuca serriola*), dove weed (*Croton setiger*), Bermuda grass (*Cynodon dactylon*), and Johnsongrass (*Sorghum halepense*). Other less dominant species include stinkwort (*Dittrichia graveolens*) and milk thistle (*Silybum marianum*).

Grassland

Grassland is the dominant cover type in the study area. Dominant vegetation includes predominately Bermuda grass intermixed with birds' foot trefoil (*Lotus corniculatus*), burr clover (*Medicago polymorpha*), sand spikerush (*Eleocharis montevidensi*), and annual sunflower (*Helianthus annuus*).

Clay Flat

Four clay flat habitats are onsite (Figure 3-1). Three of the clay flats were created by historical land leveling for agricultural purposes. The fourth clay flat has more alkaline soils and is roughly 1–2 feet higher in elevation than the others. Except for some vehicular ruts and evidence of disking on historical aerial photographs, this alkaline clay flat seems to be a relict natural feature. Clay flats support hydrophytic vegetation including stalked popcornflower (*Plagiobothrys stipitatus* var. *micranthus*), Fremont's goldfields (*Lasthenia fremontii*), Oregon wooly marbles (*Psilocarphus oregonus*), common spikeweed (*Centramadia pungens*), burr clover (*Medicago polymorpha*), long leaf plantain (*Plantago elongata*), net peppergrass (*Lepidium acutidens*), and coyote thistle (*Eryngium vaseyi*).

Ditch

Ditches in the study area are u-shaped, human-excavated diches for conveyance of irrigation water or collection of tail water for agricultural purposes. Vegetation within and along the ditches are dependent on the hydrologic regime and maintenance routine and contain no vegetation, upland ruderal species, or densely growing hydrophytic species. Where present, upland ruderal vegetation includes those described under the ruderal land cover. Hydrophytic species include tule, cattail, watergrass (*Echinochloa crusgalli*), rabbitsfoot grass (*Polypogon monspeliensis*), yellow bristlegrass (*Setaria pumila*), perennial pepperweed (*Lepidium latifolium*), and Dallis grass (*Paspalum dilatatum*).

Aquatic Land Cover Types

Open Water

Open water in the study area includes Watson Hollow Slough, Cache Slough, and the Sacramento River. Open water includes areas that contain minimal to no vegetation with a consistent deep-water depth greater than 3.5 feet. The open water habitat of Cache Slough and the Sacramento River lacks vegetation. During low tides, large areas near the shoreline of SR 84 include Brazilian waterweed (*Egeria densa*). Common water hyacinth (*Eichornia crassipes*) occurs on the surface of the open water associated with Watson Hollow Slough.

Emergent Marsh

Emergent marsh in the deeper (2–3.5 feet) water along Watson Hollow Slough and Cache Slough/Sacramento River in the study area generally supports pure stands of tules (*Schoenoplectus acutus* var. *occidentalis*), California bull rush (*Schoenoplectus californicus*), or cattails (*Typha* sp.), or a mixture of tules and cattails.

Managed Emergent Marsh

In the interior of the study area, emergent marsh habitat is present along historic agricultural ditches used to irrigate the site. This habitat is managed for waterfowl by seasonally flooding the site through two existing tide gates on Watson Hollow Slough and generally supports water depths of less than 2 feet. Managed emergent marsh habitat is comprised of mosaic patches of tules and cattails, with shallower areas dominant by herbaceous hydrophytes including Pacific rush (*Juncus effusus* var. *pacificus*), tapertip flatsedge (*Cyperus acuminatus*), Baltic rush (*Juncus balticus*), common spikerush (*Eleocharis macrostachya*), marsh purslane (*Ludwigia palustris*), and common smartweed (*Persicaria hydropiper*). Other species present include Bermuda grass, curly dock (*Rumex crispus*), smaller duckweed (*Lemna minor*), hyssop loosestrife (*Lythrum hyssopifolia*), mosquito fern (*Azolla filiculoides*), water starwort (*Callitriche* sp.) and cursed buttercup (*Ranunculus sceleratus*). Often cocklebur (*Xanthium strumarium*), Dallis grass, and perennial pepperweed occur at the fringes of managed emergent marsh habitat.

Seasonal Wetland

Seasonal wetlands in the study area include wetlands created by cattle and alkali wetlands. Seasonal wetlands created by cattle are sparsely vegetated by hydrophytic grasses including Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum*), rabbitsfoot grass, ryegrass (*Festuca perennis*), and waxy manna grass (*Glyceria declinata*). Dominant vegetation associated with the alkali wetlands includes alkali heath (*Frankenia salina*), net peppergrass, brass buttons (*Cotula coronopifolia*), and spikeweed.

Seep

One seep occurs in the study area along Mellin Levee as a result of water leaking through the levee. Dominant vegetation includes common spikerush, Baltic rush, and Santa Barbara sedge (*Carex barbarae*).

Riparian

Riparian habitats in the study area are routinely disturbed by herbicide application along SR 84, levee stabilization (riprap), mechanical vegetation removal, cattle grazing, and human disturbances (e.g., unauthorized vehicular traffic, firewood harvesting, fire pits, trash, and fishing trails along SR 84). As such, most of the riparian habitat is missing one or more of the distinct vegetative layers listed above. The majority of riparian habitat onsite occurs along the waterside of SR 84, Watson Hollow Slough, and a remnant irrigation ditch. Dominant vegetation includes sandbar willow (*Salix exigua*), with a sparse overstory of arroyo willow (*Salix lasiolepis*) and the occasional Fremont's cottonwood (*Populus fremonti*), and an understory vine layer of Himalayan blackberry (*Rubus armeniacus*). Dominant vegetation along SR 84 includes box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), western sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), valley oak (*Quercus lobata*), black walnut (*Juglans hindsii*), English walnut (*Juglans regia*), black locust (*Robinia pseudoacacia*), interior live oak (*Quercus wislizenii* var. *wislizenii*), California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), and rattlebox (*Sesbania punicea*).

Wildlife Observed

Numerous crustaceans, amphibians, reptiles, fish, birds, and mammals have been observed in the study area during various biological surveys conducted between 2020 and 2023. A complete list of wildlife observed in the study area is provided under a separate cover (Helm Biological Consulting 2023; Appendix F).

Managed emergent marsh in the study area has been managed for more than 30 years as waterfowl habitat and supports the largest biomass of wildlife compared to other habitats in the study area. Waterfowl such as greater white-fronted geese (*Anser albifrons*), Canada geese (*Branta canadensis*), mallards (*Anas platyrhynchos*), gadwall (*Marceca strepera*), American widgeon (*Marceca americana*), northern shovelers (*Spatula clypeata*), green-winged teal (*Anas crecca*), cinnamon teal (*Spatula cyanoptera*), and the occasional blue-winged teal (*Spatula discors*), forage on aquatic invertebrates and seeds during winter months. A variety of wading birds (e.g., great blue heron [*Ardea herodias*], great egret [*Ardea alba*], snowy egret [*Egretta thula*], cattle egret [*Bubulcus ibis*], green heron [*Butorides virescens*]) and shorebirds (e.g., dunlin [*Calidris alpina*], greater yellow legs [*Tringa melanoleuca*]) are some of the bird species that were observed in the study area or are known to forage locally in this habitat type. A variety of other bird species forage at the edge of this habitat, including various blackbirds (i.e., Brewer's blackbird [*Euphagus cyanocephalus*] and red-winged blackbird [*Agelaius phoeniceus*]).

Sensitive Natural Communities and Potential Waters of the United States/Waters of the State

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. CEQA may identify the elimination of such communities as a significant impact.

Sensitive natural communities include: (a) areas of special concern to federal, state, or local resource agencies; (b) areas regulated under Section 404 of the CWA; and (c) areas protected under state and local regulations and policies.

Riparian habitat and aquatic resources mapped in t study area are considered sensitive natural communities. However, for the purpose of this assessment, riparian habitat is analyzed as a sensitive natural community and the aquatic resources are analyzed as potential waters of the United States and/or waters of the state.

The following aquatic resources occur in the study area: open water (Sacramento River/Cache Slough and Watson Hollow Slough), ditch, emergent marsh, managed emergent marsh, seasonal wetland, and seep. An Aquatic Resources Delineation Report was prepared for the project and was submitted to U.S. Army Corps of Engineers (USACE) on July 24, 2024. USACE issued a preliminary jurisdictional determination for the project on October 25, 2024.

Wildlife Movement Corridors

Movements of wildlife generally fall into three basic categories: (a) movements along corridors or habitat linkages associated with home range activities such as foraging, territory defense, and breeding; (b) dispersal movements—typically one-way movements (e.g., juvenile animals leaving areas where they were born and raised or individuals colonizing new areas); and (c) temporal migration movements—these movements are essentially dispersal actions that involve a return to the place of origin (e.g., deer moving from winter grounds to summer ranges and fawning areas). The Cache Slough/Sacramento River within the study area provide a significant wildlife movement corridor for a number of sensitive aquatic species that occupy the north Delta and out-migrate to the Pacific Ocean, including Central Valley spring-run and Sacramento River winter-run Chinook salmon, Central Valley steelhead trout, North American green sturgeon, delta smelt, longfin smelt, and giant garter snake. The open water provides rearing, migration, and spawning opportunities for fish (Environmental Science Associates 2023).

Overall, habitat restoration within the study area will not change land use in a manner that will eliminate or reduce existing wildlife corridors since the project will not create any barriers to wildlife movement.

Habitat on the interior portion of the study area was isolated from Cache Slough/Sacramento River in the 1950s with construction of levees to support the Sacramento Deep Water Ship Channel. The project would restore this connection, allowing movement of aquatic species, particularly fish, into the site.

While riparian habitat and ditches occur in the study area on the landside of the levee, they provide marginal wildlife corridors because they are narrow, generally sparsely vegetated, and lack the overstory of mature trees (Helm Biological Consulting 2023). Habitat restoration will result in a net increase of riparian habitat onsite and will maintain and expand stopover habitat for migratory birds.

Special-Status Species

Special-status species are legally protected under ESA and CESA or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are classified under the following categories:

- Species listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.12 [listed plants], 17.11 [listed animals] and various notices in the *Federal Register* [FR] [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under ESA (61 FR 40, February 28, 1996).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations 670.5).
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.).
- Animal species of special concern to CDFW.
- Animals fully protected under Fish and Game Code (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists (State CEQA Guidelines Section 15380).
- Plants considered by CNPS and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Rank 1A, 1B, and 2 in California Native Plant Society 2024).

A list of regionally occurring special-status species was compiled based on data from the CNDDB (California Department of Fish and Wildlife 2024), USFWS (2024), CNPS (2024), and NMFS (2016) (Appendix E). Tables 3-3 and 3-4 include the regionally occurring special-status species, their general habitat requirements, and an assessment of their potential to occur within and adjacent to the study area (Helm Biological Consulting 2023; Environmental Science Associates 2023) (Appendices E and G). Potential to occur determinations were based on the following definitions:

- None—Species distribution is restricted by substantive habitat requirements that do not occur within the study area.
- Not Probable—Species distribution is restricted by substantive habitat requirements that are negligible within the study area.
- Low—The species has a low probability of occurrence within the study area.
- Moderate—The species has a moderate probability of occurrence within the study area.
- High—The species has a high probability of occurrence within the study area or has historically been documented within or in the vicinity of the study area.
- Present—Species or species sign were observed onsite.
- Critical habitat—The site is located within a USFWS-designated or NMFS critical habitat unit.

Several regionally occurring special-status species with determinations of none or not probable are not discussed further, with one exception. The valley elderberry longhorn beetle is not probable to occur but is discussed further due to the presence of its sole host plant, the elderberry shrub. Special-status species with potential to occur with determinations of low, moderate, high, and present are included in Tables 3-3 and 3-4. For each special-status species with the potential to

occur in the study area, impacts due to the project were assessed and mitigation measures are proposed when deemed necessary.

Table 3-3. Regionally Occurring Special-Status Plant Species in or in the Vicinity of the Study Area

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Blooming Period[b]	Potential for Occurrence	Potential for Project Impacts
San Joaquin spearscale *Extriplex joaquinana*	–/–/1B.2	Chenopod scrub, meadows and seeps, playas, and valley and foothill grassland.	April–October	**Low.** While the grassland in the study area provides marginal habitat, this species was not observed in or in the vicinity of the study area during numerous surveys conducted during the evident and identifiable period.	**Low**. Although not previously observed, this species could be affected by the proposed project if present in the construction footprint. AMMs include preconstruction surveys and relocation of individual plants if identified.
Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	–/–/1B.2	Freshwater marshes and swamps.	June–September	**Low.** Although suitable habitat occurs in the open water associated with Cache Slough/ Sacramento River and Watson Hollow Slough and in the emergent marsh and managed emergent marsh in the study area, this species was not observed during numerous surveys conducted during the evident and identifiable period,	**Low**. Although not previously observed, this species could be affected by the proposed project if present in the construction footprints. AMMs include preconstruction surveys and relocation of individual plants if identified.
Delta tule pea *Lathyrus jepsonii* var. *Jepsonii*	–/–/1B.2	Brackish and freshwater marshes and swamps.	May–July (August–September)	**Present.** This species was abundantly observed within and adjacent to the study area along Cache Slough/Sacramento River during 2021 and 2022 surveys. While suitable habitat also occurs in Watson Hollow Slough, emergent marsh, and managed emergent marsh in the study area, the species was not observed within these habitats during numerous surveys conducted during its evident and identifiable period.	**Moderate**. This species occurs adjacent to the proposed water crossing structure and could be affected by the proposed project if present in the construction footprints. AMMs include preconstruction surveys and relocation of individual plants if identified.

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Blooming Period[b]	Potential for Occurrence	Potential for Project Impacts
Mason's lilaeopsis *Lilaeopsis masonii*	–/SR/1B.1	Brackish and freshwater marshes and swamps, riparian scrub.	April–November	**Low.** Although suitable habitat occurs in open water associated with Cache Slough/Sacramento River in the study area, this species was not observed during numerous surveys conducted during the evident and identifiable period. The Watson Hollow Slough, emergent marsh and managed emergent marsh do not provide suitable habitat because they do not contain mud flats exposed by highly fluctuating tidal waters.	**Low**. Although not previously observed, this species could be affected by the proposed project if present in the construction footprint. AMMs include preconstruction surveys and relocation of individual plants if identified.
Delta mudwort *Limosella australis*	–/–/2B.1	Brackish and freshwater marshes and swamps, riparian scrub.	May–August	**Low**. Although suitable habitat occurs in the open water associated with Cache Slough/ Sacramento River and Watson Hollow Slough and in the emergent marsh and managed emergent marsh in the study area, this species was not observed during numerous surveys conducted during its evident and identifiable period.	**Low**. Although not previously observed, this species could be affected by the proposed project if present in the construction footprints. AMMs include preconstruction surveys and relocation of individual plants if identified.
Bearded popcornflower *Plagiobothrys hystriculus*	–/–/1B.1	Valley and foothill grassland (mesic) and vernal pools (margins)	April–May	**Low.** Although suitable habitat occurs in the grassland and seasonal wetlands in the study area, this species was not observed during numerous surveys conducted during its evident and identifiable period.	**Low.** Although not previously observed, this species could be affected by the proposed project if present in the construction footprints. AMMs include preconstruction surveys and relocation of individual plants if identified.

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Blooming Period[b]	Potential for Occurrence	Potential for Project Impacts
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Shallow freshwater marshes and swamps.	May–October (November)	**Present**. This species was observed during 2021 and 2022 surveys in the study area within riparian habitat along Cache Slough/Sacramento River.	**Moderate**. This species occurs near the proposed water crossing structure and could be affected by the proposed project if present in the construction footprints. AMMs include preconstruction surveys and relocation of individual plants if identified.
Suisun Marsh aster *Symphyotrichum lentum*	–/–/1B.2	Brackish and freshwater marshes and swamps.	(April) May–November	**Present.** This species was abundantly observed during 2021 and 2022 surveys in the study area in open water along Cache Slough/Sacramento River, and at the eastern end of Watson Hollow Slough. While this species has the potential to occur in emergent marsh and managed emergent marsh in the study area, this species was not observed during numerous surveys conducted during its evident and identifiable period.	**Moderate**. This species occurs adjacent to the proposed water crossing structure and could be impacted by the proposed project if present within the construction footprints. AMMs include preconstruction surveys and relocation of individual plants if identified.

[a] Status codes:

Federal

FE = Federally listed as Endangered under ESA

FT = Federally listed as Threatened under ESA

State

SE = State listed as Endangered under CESA

ST = State listed as Threatened under CESA

California Rare Plant Rank[2]

[2] In March 2010, CDFW changed the name of "CNPS List" or "CNPS Ranks" to "California Rare Plant Rank". This was done to reduce confusion over the fact that CNPS and CDFW jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, non-governmental organizations, and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

1A = presumed extinct.
1B = rare, threatened, or endangered in California and elsewhere.
2B = rare, threatened, or endangered in California only.
3 = plants about which more information is needed to determine their status.
4 = plants of limited distribution.
.1 = seriously endangered in California.
.2 = fairly endangered in California.
.3 = not very endangered in California.

[b] Blooming occasionally occurs in months in parentheses.

Sources: Helm Biological Consulting 2023; U.S. Fish and Wildlife Service 2024; California Department of Fish and Wildlife 2024; California Native Plant Society 2024.

Table 3-4. Regionally Occurring Special-Status Wildlife Species in the Vicinity of the Study Area

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
Birds				
Tricolored blackbird *Agelaius tricolor* (Foraging and nesting)	–/ST/SSC	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields; nesting habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony; requires large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots, where insect prey is abundant.	**Low Nesting Potential.** Although suitable nesting habitat occurs in the riparian and managed emergent marsh, in areas large enough to support 50 pairs, this species was not observed nesting during numerous surveys conducted during the species' nesting season. **Present for Foraging.** This species was observed foraging in the grassland in the study area and in the property to the northwest of the study area.	**Low**. In the unlikely event that this species nests, it could be affected by the proposed project and the proposed water crossing. While foraging could be disrupted during construction activities, impacts are not anticipated due to available foraging habitat present in the vicinity of the study area. Measures include preconstruction and clearance surveys and avoidance buffers if a nest is detected.
Burrowing owl *Athene cunicularia* (Nesting)	–/–/SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	**Low.** No California ground squirrels or their burrows were observed in the grassland or disturbed areas in the study area during various biological surveys. No burrowing owl or suitable rodent burrows were observed in the study area during numerous surveys conducted between 2019 and 2023.	**Low**. Although not previously observed in the study area, this species could be affected by the proposed project and the proposed water crossing if present during migration in the construction footprints. Measures include preconstruction and clearance surveys and avoidance buffers if a nest is detected.
Swainson's hawk *Buteo swainsoni* (Foraging and nesting)	–/ST/–	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields.	**High Nesting Potential.** This species has the potential to nest within the riparian habitat associated with Watson Hollow Slough and Cache Slough/Sacramento River.	**Low.** This species could be affected by the proposed project if found nesting in and in the vicinity of the construction footprints. While foraging could be disrupted during construction activities, impacts are

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
			Present for Foraging. This species was observed foraging in the grassland in the study area. The grassland within the study area provides foraging habitat when not flooded.	not anticipated due to available foraging habitat present in the vicinity of the study area. Measures include preconstruction and clearance surveys and avoidance buffers if a nest is detected.
Northern harrier *Circus hudsonius* (Nesting)	–/–/SSC	Found most commonly in meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands. Nest in tall grass or grasslike vegetation.	**Moderate Nesting Potential.** The grassland provides suitable nesting habitat when ungrazed and the emergent wetlands and managed emergent wetlands provide nesting habitat in the study area. **Present for Foraging**. This species was observed foraging in the grassland.	**Low.** This species could be affected by the proposed water crossing and the proposed project if found nesting in and in the vicinity of the construction footprints. Measures include preconstruction and clearance surveys and avoidance buffers if a nest is detected.
White-tailed kite *Elanus leucurus* (Nesting)	–/FP/–	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	**Moderate Nesting Potential.** Although no active white-tailed kite nests were observed, the trees in the study area provide suitable nesting habitat for this species. **Present for Foraging**. This species was observed foraging in the grassland.	**Low.** This species could be affected by the proposed water crossing and the proposed project if found nesting in and in the vicinity of the construction footprints. Measures include preconstruction and clearance surveys and avoidance buffers if a nest is detected.
Loggerhead shrike *Lanius ludovicianus* (Foraging and Nesting)	–/–/SSC	Prefers open habitats for foraging with scattered shrubs, trees, posts, fences, utility lines, or other perches. Nests are always built in trees or shrubs 3 feet or more off the ground.	**Low for Nesting and Foraging.** Marginal nesting habitat and foraging habitat occurs onsite.	**Low.** This species could be affected by the proposed water crossing and the proposed project if found nesting in and in the vicinity of the construction footprints. Measures include preconstruction and clearance surveys and avoidance buffers if a

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
				nest is detected.
Song sparrow ("Modesto" population) *Melospiza melodia* pop. 1 (Foraging and Nesting)	–/–/SSC	Affinity for emergent freshwater marshes dominated by tules, cattails, and riparian willow thickets. Will nest in riparian forests of valley oaks with an understory of blackberry, along vegetated irrigation canals and levees.	**Moderate for Nesting and Foraging.** Although the riparian, open water, emergent marsh, and freshwater emergent marsh provide suitable nesting habitat, this species has not been observed in the study area. Several unidentified passerine nests have been observed onsite.	**Low.** This species could be affected by the proposed project if found nesting in and in the vicinity of the construction footprints. Measures include preconstruction and clearance surveys and avoidance buffers if a nest is detected.
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/–/–	Streamside habitats below 3,000 feet through the Central Valley of California. Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	**Low**. Although one elderberry (*Sambucus* ssp.) shrub with stems measuring at least 1 inch in diameter at ground level occurs along Cache Slough/Sacramento River, no exit holes were observed. No other elderberry shrubs with stems measuring at least 1 inch in diameter at ground level occur in the study area.	**Low.** Habitat for valley elderberry longhorn beetle would not be affected because the elderberry shrub in the study area occurs at least 165 feet from construction on the river side of SR 84. General and valley elderberry longhorn beetle-specific measures will be implemented to avoid damaging any existing or new elderberries with stems 1 inch or greater at ground level.
Reptiles				
Giant garter snake *Thamnophis gigas*	FT/ST/–	Found primarily in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields, and occasionally in slow-moving creeks. Prefers locations with vegetation close to water for basking.	**High.** Suitable aquatic habitat occurs in the emergent marsh, managed emergent marsh, open water associated with Watson Hollow Slough and Cache Slough/ Sacramento River, and the adjacent grassland and riparian provide upland cover/refugia. This species was not observed during numerous surveys in the	**Low.** While this species could be affected by the proposed project if present in the project footprint during construction activities, pre-activity surveys will be conducted, and avoidance measures implemented to avoid and minimize potential construction impacts.

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
			study area. Although this species was not detected during surveys, focused surveys for this species were not conducted.	
Western pond turtle *Emys marmorata*	FPT/–/SSC	Woodlands, grasslands, and open forests; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation.	**Present.** This species was observed at numerous locations in the open water associated with Watson Hollow Slough and Cache Slough/Sacramento River during 2021 and 2022 surveys and within adjacent uplands during a May 2024 site visit. The emergent marsh, managed emergent marsh, riparian, and grassland provide habitat for this species.	**Low.** While this species could be affected by the proposed project if present in the project footprint during construction activities, pre-activity surveys will be conducted and avoidance measures implemented if the species is detected.
Fish				
Delta smelt *Hypomesmus transpacificus*	FT/SE/-	Found primarily in the Sacramento–San Joaquin Estuary near sea level but has been found as far upstream as Knights Landing (Vincik and Julienne 2012) on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay. Occurs in estuary habitat in the Delta where freshwater and brackish water mix in the salinity range of 2 to 7 parts per thousand (Moyle 2002).	**Present.** This species has been captured in the IEP Fall midwater trawl (Contreras et al. 2018) and in the 20mm survey (California Department of Fish and Wildlife 2021) in Cache Slough Complex and the Sacramento Deep Water Ship Channel immediately upstream from the study area.	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on Delta smelt. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on Delta smelt by providing additional habitat. Construction activities for the water crossing structure may disturb Delta smelt if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb Delta smelt if they are in close proximity to

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
				this activity, although no injury or mortality would occur.
Longfin smelt *Spirinchus thaleichthys*	FC/ST/–	In California, mostly in the Sacramento–San Joaquin Delta, but also in Humboldt Bay, Eel River estuary, and Klamath River estuary. Also found in South San Francisco Bay and sloughs in Coyote Creek, Alviso Slough, and nearby salt ponds (Rosenfield and Baxter 2007). Salt or brackish estuary waters with freshwater inputs for spawning.	**Present.** Found in the Smelt Larva Survey in the Deep Water Ship Channel, Cache Slough confluence, and Yolo Bypass area (California Department of Fish and Wildlife 2021).	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on longfin smelt. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on longfin smelt by providing additional habitat. Construction activities for the water crossing structure may disturb longfin smelt if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb longfin smelt if they are in close proximity to this activity, although no injury or mortality would occur.
Sacramento River winter-run Chinook salmon *Oncorhynchus tshawytscha*	SE/SE/–	Mainstem Sacramento River below Keswick Dam (Moyle 2002). Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C; habitat types are riffles, runs, and pools (Moyle 2002).	**Present.** Captured during the CDFW Spring Kodiak trawl surveys in the Sacramento River and Deep Water Ship Channel, just upstream from the study area (California Department of Fish and Wildlife 2021).	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on winter-run Chinook salmon. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on winter-run Chinook salmon by providing additional habitat. Construction activities for the water crossing structure may disturb winter-run

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
				Chinook salmon if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb winter-run Chinook salmon if they are in close proximity to this activity, although no injury or mortality would occur.
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	FT/ST/–	Upper Sacramento River, Feather River, and Yuba River, and several perennial tributaries of the Sacramento River (Battle, Butte, Clear, Deer, and Mill Creeks). Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C; habitat types are riffles, runs, and pools (Moyle 2002).	**Present.** Captured during the CDFW Spring Kodiak trawl surveys in the Sacramento River and Deep Water Ship Channel, just upstream from the study area (California Department of Fish and Wildlife 2021).	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on spring-run Chinook salmon. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on spring-run Chinook salmon by providing additional habitat. Construction activities for the water crossing structure may disturb spring-run Chinook salmon if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb spring-run Chinook salmon if they are in close proximity to this activity, although no injury or mortality would occur.
Central Valley fall/late fall-run Chinook	SC/–/SSC	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below	**Present.** Captured during the CDFW Spring Kodiak trawl	**Low.** Construction activities associated with Restoration will be

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
salmon *Oncorhynchus tshawytscha*		impassable barriers. Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C; habitat types are riffles, runs, and pools (Moyle 2002).	surveys in the Sacramento River and Deep Water Ship Channel, just upstream from the study area (California Department of Fish and Wildlife 2021).	isolated from Cache Slough and the Sacramento River so will have no impact on fall/late fall-run Chinook salmon. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on fall/late fall-run Chinook salmon by providing additional habitat. Construction activities for the water crossing structure may disturb fall/late fall-run Chinook salmon if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb fall/late fall-run Chinook salmon if they are in close proximity to this activity, although no injury or mortality would occur.
Central Valley steelhead *Oncorhynchus mykiss*	FT/–/–	Sacramento and San Joaquin rivers and their tributaries. Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18°C (Moyle 2002). Habitat types are riffles, runs, and pools.	**Present.** Captured during the CDFW Spring Kodiak trawl surveys in Cache Slough, Deep water Ship Channel, and Yolo Bypass, just upstream from the study area (California Department of Fish and Wildlife 2021).	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on Central Valley steelhead. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on Central Valley steelhead by providing additional habitat. Construction activities for the water crossing structure may disturb Central Valley steelhead if they are present in the work area during dredging to create a subtidal channel

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
				connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb Central Valley steelhead if they are in close proximity to this activity, although no injury or mortality would occur.
Green sturgeon (southern DPS) *Acipenser medirostris*	FT/–/SSC	Occurs in Sacramento, San Joaquin, Stanislaus, Klamath, and Trinity Rivers (Moyle 2002; Jackson and Van Eenennaam 2013). The species spawns in large river systems with well-oxygenated water, with temperatures from 8.0 to 14°C (Moyle 2002).	**Present.** Green sturgeon use the Sacramento River in the project area as a migratory corridor to upstream spawning habitat in the upper Sacramento River. They are present year-round in the Toe Drain (Interagency Ecological Program 2022) and seasonally present in the Yolo Bypass.	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on green sturgeon. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on green sturgeon by providing additional habitat. Construction activities for the water crossing structure may disturb green sturgeon if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb green sturgeon if they are in close proximity to this activity, although no injury or mortality would occur.
Sacramento splittail *Pogonichthys macrolepidotus*	–/–/SSC	Occur in the Sacramento River, Suisun Bay, Suisun Marsh, Napa River, Petaluma River, and the Delta (Moyle et al. 2015). Estuarine species with a large range of salinity and temperature tolerances, preferring shallow water (<4 meters deep) and low water velocities. Need flooded	**Present.** Sacramento splittail use the Sacramento River and Yolo Bypass in the project area for rearing and spawning and would be present year-round.	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on Sacramento splittail. Following restoration and construction of the water crossing structure, the Project will have a

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
		vegetation for spawning and rearing (Moyle et al. 2015).		beneficial impact on Sacramento splittail by providing additional habitat. Construction activities for the water crossing structure may disturb Sacramento splittail if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb Sacramento splittail if they are in close proximity to this activity, although no injury or mortality would occur.
Hardhead *Mylopharodon conocephalus*	–/–/SSC	Occurs in tributary streams in the San Joaquin River drainage; large tributary streams in the Sacramento River and the mainstem; and in low to mid-elevation streams of the Central Valley (Moyle 2002). Prefers clear, deep pools and runs with slow velocities.	**High.** Hardhead use the Sacramento River and Yolo Bypass in the project area.	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on hardhead. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on hardhead by providing additional habitat. Construction activities for the water crossing structure may disturb hardhead if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb hardhead if they are in close proximity to this activity, although no injury or mortality would occur.
White sturgeon	–/–/SSC	Occurs in larger rivers in the Sacramento–San Joaquin River,	**Present.** Present in the Yolo	**Low.** Construction activities

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
Acipenser transmontanus		spawns in upper Sacramento River, San Joaquin River, and possibly Feather River. Spawns from late February to early June at temperatures from 8.0 to 19.0°C (Moyle et al. 2015; Jackson et al. 2016).	Bypass from December to May (Interagency Ecological Program 2022) when flows are high in the spring and winter during flooding events.	associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on white sturgeon. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on white sturgeon by providing additional habitat. Construction activities for the water crossing structure may disturb white sturgeon if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb white sturgeon if they are in close proximity to this activity, although no injury or mortality would occur.
Pacific lamprey *Entosphenus tridentatus*	SC/–/SSC	Sacramento and San Joaquin Rivers and their tributaries below impassable barriers; tributaries of the San Francisco Estuary; and coastal streams throughout California. Lamprey occur in clear, cold, water with clean gravel for spawning. Presence of cover such as boulders, riparian vegetation, and logs is also important for spawning. Additional habitat requirements include areas with low velocities and fine sediments for rearing that are not excessively scoured under high flows (Moyle et al. 2015).	**High.** Pacific lamprey use the Sacramento River as migratory habitat to and from spawning tributaries.	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on Pacific lamprey. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on Pacific lamprey by providing additional habitat. Construction activities for the water crossing structure may disturb Pacific lamprey if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb Pacific

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
				lamprey if they are in close proximity to this activity, although no injury or mortality would occur.
River lamprey *Lampetra ayresi*	–/–/SSC	Occurs in lower Sacramento and lower San Joaquin Rivers, and tributaries to lower Russian River and Eel River (Moyle et al. 2015). Lamprey occur in clear, cold, water with clean gravel for spawning. Also need sandy to silty backwaters for ammocoetes to rear (Moyle et al. 2015).	**High.** River lamprey use the Sacramento River as migratory habitat to and from spawning tributaries.	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on river lamprey. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on river lamprey by providing additional habitat. Construction activities for the water crossing structure may disturb river lamprey if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb river lamprey if they are in close proximity to this activity, although no injury or mortality would occur.
Sacramento hitch *Lavinia exilicauda exilicauda*	–/–/SSC	Scattered populations are found in the Sacramento River drainage, the San Joaquin River drainage downstream of the Merced River, a few larger tributaries to the San Francisco Estuary, and the Delta (Moyle et al. 2015). Occurs in warm, low elevation waters including clear streams, turbid sloughs, lakes, and reservoirs; found in pools or runs among aquatic vegetation; may occur in riffles; can survive temperatures as high as 38°C and salinities up to 9	**High.** Sacramento hitch would be present in the Sacramento River in the project area.	**Low.** Construction activities associated with Restoration will be isolated from Cache Slough and the Sacramento River so will have no impact on Sacramento hitch. Following restoration and construction of the water crossing structure, the Project will have a beneficial impact on Sacramento hitch by providing additional habitat. Construction activities for the water crossing structure may disturb

Common Name Scientific Name	Status[a] (Federal/ State/Other)	Habitat Requirements	Potential for Occurrence	Potential for Project Impacts
		parts per thousand (Moyle 2002).		Sacramento hitch if they are present in the work area during dredging to create a subtidal channel connection. Installation of sheet piles with vibratory driving just outside of the water line could also disturb Sacramento hitch if they are in close proximity to this activity, although no injury or mortality would occur.

[a] Status codes:

Federal

FE = Federally listed as Endangered under federal Endangered Species Act (ESA)

FT = Federally listed as Threatened under ESA

FPT = Federal proposed for listing under ESA

FC = Federal candidate for listing under ESA

SC = Federally listed as a Species of Concern

State

SE = State listed as Endangered under California Endangered Species Act (CESA)

ST = State listed as Threatened under CESA

Other

SSC = California Species of Special Concern

CFP = California Fully Protected Species

DPS = distinct population segment; ESU = evolutionary significant unit

Sources: Helm Biological Consulting 2023; Environmental Science Associates 2023; updated USFWS (2023), CNDDB (CDFW 2023), and NMFS (2023) lists.

Special-Status Plants

Based upon the results of the database searches described above, eight special-status plant species were considered in this analysis (Table 3-3). The following three plants were observed in the study area along the banks of the open water associated with Cache Slough/Sacramento River: Delta tule pea, Suisun Marsh aster, and Sanford's arrowhead. The following five special-status plants have a low potential to occur in the study area given the lack of observations during their evident periods: San Joaquin spearscale, woolly rose-mallow, Mason's lilaeopsis, Delta mudwort, and bearded popcornflower.

Special-Status Wildlife

Based on a review of existing information, 10 special-status wildlife species (one invertebrate, two reptiles, and seven birds) were considered for this analysis (Table 3-4). The one invertebrate, the valley elderberry longhorn beetle, is not probable to occur, but is discussed further due to the presence of its sole host plant, an elderberry shrub, within the study area. Of the two reptiles, giant garter snake has a high potential to occur, and northwestern pond turtle is known to occur in the study area. Of the seven birds, tricolored blackbird has a low potential to nest and has been observed foraging in the study area; burrowing owl and loggerhead shrike have a low potential to nest and forage in the study area; Swainson's hawk has a high potential to nest and has been observed foraging in the study area and nesting adjacent to the study area; northern harrier and white-tailed kite have a moderate potential to nest and have been observed foraging in the study area; and song sparrow has a moderate potential to nest and forage in the study area.

Special-Status Fish

Based on existing information, 13 special-status fish species were considered for analysis because they are known to occupy and migrate through the Cache Slough Complex and Sacramento River drainage system, adjacent to the study area (Table 3-4). While a portion of the study area includes Cache Slough on the east side of SR 84, most of the project site is isolated from Cache Slough and the Sacramento River and does not support fish habitat. Most of the project site, where restoration is proposed, is isolated from Cache Slough and the Sacramento River by the existing embankment along SR 84. The project site will not be connected to Cache Slough/Sacramento River until restoration and water crossing construction is completed. Of the 13 special-status fish species evaluated, four have a high potential to occur (hardhead, Pacific lamprey, river lamprey, and Sacramento hitch) and nine are known to be present in the waterways adjacent to the study area (delta smelt, longfin smelt, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley fall/late fall-run Chinook salmon, Central Valley steelhead, green sturgeon, Sacramento splittail, and white sturgeon).

Nonnative Invasive Species

Currently, the study area has several established invasive plant species populations that are included on the Cal-IPC inventory list. The Cal-IPC inventory includes nonnative invasive plant species that are considered an ecological threat to the habitat function of public and private lands that support native ecosystems.

Several invasive nonnative species ranked as "High" or "Alert" that occur on the study area include bull thistle, Himalayan blackberry, perennial pepperweed, water hyacinth, water primrose, and

yellow star thistle. Plant species ranked as "Moderate" or "Limited" include Bermuda grass, Italian thistle (*Carduus pycnocephalus*), milk thistle, purple starthistle (*Centaurea calcitrapa*), short-podded mustard, stinkwort, and wild fennel (*Foeniculum vulgare*).

Proposed restoration activities, including contour grading to create tidal channels, floodplains, and riparian habitats, would remove most of the existing upland invasive plant species. Engaging a full tidal prism exchange and design of channel depths may hinder the accumulation of nuisance invasive floating vegetation. However, invasive exotic plants are ubiquitous in Delta waterways and continue to be an ongoing management issue throughout the watershed. These species limit space for native plants, grow rapidly in warm water temperatures, and provide habitat for invasive nonnative piscivorous fish species, such as bass (California Department of Parks and Recreation 2022).

The California State Parks' Division of Boating and Waterways recognizes that there are no known natural controls for these species in the Delta; therefore, due to their ability to proliferate, it is unlikely that eradication will occur from the Delta waterways (California Department of Parks and Recreation 2022). For more than 20 years, the Division of Boating and Waterways has implemented an Aquatic Invasive Plant Control Program that includes methods to control and manage invasive floating and submersed aquatic vegetation primarily through ongoing and targeted herbicide treatments and mechanical removal (targeting floating vegetation).

Nonnative invasive wildlife species that occur on the study area or in its vicinity include American bullfrog (*Lithobates catesbeianus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), smallmouth bass (*Micropterus dolomieu*), and other Centrarchidae fish species.

Impacts

The impact analysis for biological resources was conducted by evaluating the potential changes to existing biological communities that could result from the anticipated project construction. The following activities could cause direct and indirect impacts of varying degrees on biological resources present in the study area.

- Vegetation removal.
- Grading, excavation, and fill placement during construction.
- Dredging within Cache Slough/Sacramento River during construction of a subtidal channel to connect the restored site to the river.
- Impact pile driving outside the wetted channel to construct bridge (water crossing) abutments and vibratory pile driving to install sheet piles adjacent to the water line.
- Runoff of diesel fuel, gasoline, oil, raw concrete, or other toxic materials used for project construction and maintenance into sensitive biological resource areas (e.g., riparian habitat, aquatic resources).

The following assumptions were used in assessing project impacts on biological resources.

- All construction, staging (including vehicle parking), storage, and access areas associated with restoration and the water crossing structure will be restricted to the restoration area and the existing disturbed road shoulder.

- Onsite utility improvements would occur concurrently with restoration and will not result in additional habitat impacts outside of the restoration and water crossing work areas.
- In-water work is limited to dredging of the subtidal channel connection within Cache Slough/Sacramento River and placement of rock to armor the channel and banks. This work would be performed using a barge or other similar marine vessel.
- Offsite access and staging areas identified for utility improvements will be restricted to existing graveled and dirt farm roads and previously disturbed areas used for staging farm equipment and materials, outside of sensitive habitats.
- Impacts on land cover types and associated wildlife habitat were determined by overlaying the restoration footprint and water crossing structure footprint onto aerial photographs of mapped land cover types within the study area.
- Offsite utility pole replacement and reconductor activities will not result in permanent impacts to sensitive biological communities because these activities would be temporary and occur within disturbed, ruderal, or non-native grassland habitats.
- Offsite pole replacement activities would result in the permanent loss of approximately 17 square feet of grassland habitat associated with replacement of up to 10 existing utility poles.

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

Table 3-5 summarizes the existing and proposed biological conditions on the project site by habitat types and acreages. The existing and proposed biological conditions are illustrated in Figures 3-1 and 3-2.

Table 3-5. Existing and Proposed Biological Conditions of the Project Site by Habitat Type

Habitat Types	Existing Conditions (Acres)	Proposed Conditions(Acres)
Clay Flat	17.701	0.216
Developed/Disturbed1	1.100	6.687
Ditch	3.240	0.804
Grassland	204.629	13.366
Managed Emergent Marsh	85.743	1.208
Emergent Marsh	0.030	236.022
Open Water	0.620	25.042
Riparian	5.568	46.327
Ruderal	9.270	2.079
Seasonal Wetland	3.870	0.020
Seep	0.003	0.003
Total	331.774	331.774

[1] Develop/Disturbed habitat under future conditions would include the surface top of the perimeter berm and maintenance pads that will be graveled to provide access for long-term management and monitoring.

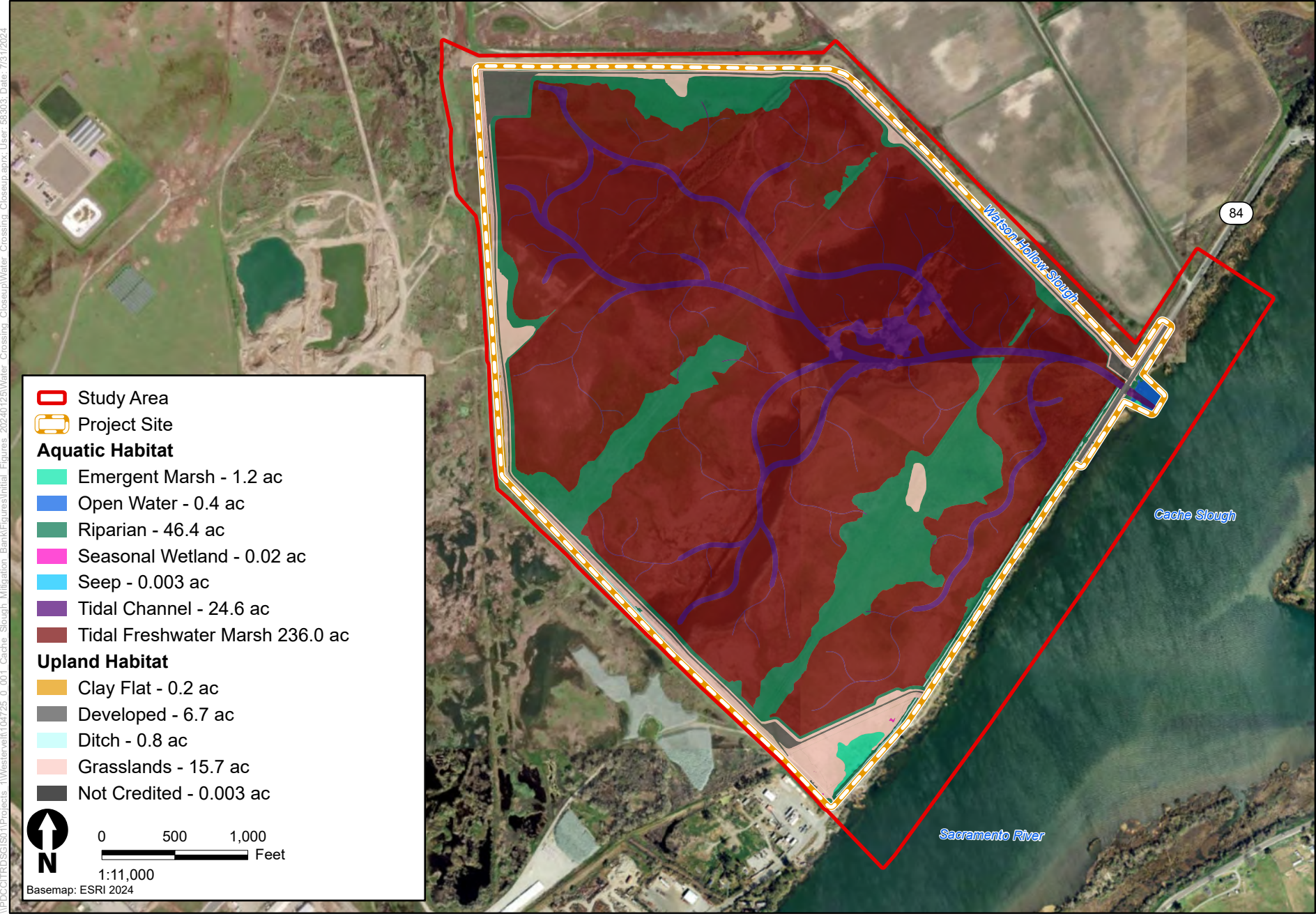


Figure 3-2
Proposed Biological Conditions

The restoration and low water crossing portions of the proposed project are analyzed separately below for special-status plants, special-status wildlife, and special-status fish.

Restoration

Special-Status Plants

Construction Effects

No impacts in the proposed restoration area or within associated offsite utility improvement work areas are anticipated because no special-status plants were observed in these areas. However, special-status plants are known to occupy habitats adjacent to the restoration area and could become established in the future, prior to commencement of construction. If special-status plants become established, they could be destroyed during grading and excavation activities. In addition, driving vehicular construction equipment over areas of suitable habitat for potentially occurring special-status plants could harm or destroy these species, if present. These impacts are considered potentially significant.

Project environmental commitments (listed in Chapter 2) include general protection measures and construction BMPs to minimize potential effects on habitats that could support special-status plants. These include measures to delineate the work area and sensitive habitats, minimize vegetation disturbance, re-vegetate temporarily disturbed areas with native species, and minimize spread of invasive species. In addition to the environmental commitments, the project will implement Mitigation Measures BIO-1, BIO-2, and BIO-3, which require surveys to identify the locations of special-status plants, avoidance and minimization measures to limit disturbance, and revegetation methods to restore affected populations. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on special-status plants would be reduced to **less than significant with mitigation**.

Mitigation Measure BIO-1: Preconstruction Surveys for Special-Status Plant Species.

A qualified botanist will conduct preconstruction surveys for special-status plant species in suitable habitat subject to ground-disturbing activities. The surveys will coincide with the identification period of special-status species with potential to occur onsite and will be conducted no more than one year prior to the start of construction.

Mitigation Measure BIO-2: Avoid and Minimize Impacts on Special-Status Plants.

To the extent possible, the location of access roads, staging areas, and restoration activities will be adjusted to avoid impacts on any documented special-status plant populations that are discovered during the preconstruction surveys or during construction.

Prior to ground-disturbing activities, the extent of special-status plant observations identified during preconstruction surveys will be demarcated using flagging or fencing, as site appropriate.

Where special-status plants cannot be avoided during construction, impacts will be minimized by reducing the work area to the smallest area necessary to complete the work. Where temporary disturbance is necessary, project activities and necessary ground disturbance will be conducted in a manner that is consistent with the successful reestablishment of the species to the extent possible.

Mitigation Measure BIO-3: Restore Habitat for Special-Status Plants Disturbed during Construction.

If impacts on special-status plants are unavoidable, revegetation material will be salvaged prior to disturbance and used during revegetation following restoration activities. Seed, propagules, and/or rhizomes of impacted special-status plant species shall be collected, as appropriate, under the direction of the qualified botanist from at least 50 percent of plants impacted. Harvested plant seeds or other material shall be stored in a manner suited to the species. Following restoration activities, the collected seeds and propagules shall be planted into suitable habitat within the conserved project footprint.

Operational Effects

The proposed restoration would be beneficial for several special-status plants known to occur and with potential to occur on the project site through enhancement and re-establishment of riparian and marsh habitats. Specifically, the creation of marsh habitat would provide additional opportunities for Delta tule pea and Suisun Marsh aster to spread given the proximity of existing populations along the banks of the open water associated with the Cache Slough/Sacramento River.

Special-Status Wildlife Species

Valley Elderberry Longhorn Beetle

Construction Effects

No suitable habitat for valley elderberry longhorn beetle occurs within the habitat restoration or utility improvement footprint. One elderberry shrub (host plant for valley elderberry longhorn beetle) is present along the south side of SR 84, more than 165 feet from the project footprint (Figure 3-1). Therefore, no impacts on suitable habitat are expected to occur from habitat restoration and utility improvements. If an elderberry shrub with stem(s) measuring at least 1 inch in diameter is encountered within 165 feet from any ground disturbance associated with project activities, then environmental protection measures would be implemented according to the environmental commitments (listed in Chapter 2), which include demarcating sensitive habitats (including elderberry shrubs) for avoidance using fencing or flagging, minimizing vegetation disturbance, and revegetating disturbed areas with native vegetation. The project will have **no impact**.

Operational Effects

The proposed restoration could be beneficial for valley elderberry longhorn beetle should elderberry shrubs establish within restored riparian habitat in the restoration area. The project will have **no impact.**

Giant Garter Snake

Construction Effects

Giant garter snakes could be directly or indirectly affected during construction activities associated with habitat restoration and utility improvements, if the species is present in areas where ground disturbance is occurring. The potential trampling or crushing of giant garter snakes is most likely to occur from the use of construction equipment and vehicles. The species could be trampled or

crushed if they come in contact with equipment or active construction areas during vegetation clearing, earth moving, and other construction activities. Following initial site disturbance, ongoing and active construction activity is expected to discourage the use of the project site by terrestrial wildlife, including giant garter snakes. Potential construction-related effects on giant garter snake are considered a potentially significant impact.

The only in-water work associated with restoration would occur during dredging and placement of rock to construct the subtidal channel within Cache Slough/Sacramento River that will connect Cache Slough/Sacramento River to the project site. It is expected that any snakes that are in the water column near the construction site will quickly retreat to undisturbed areas outside the construction footprint to avoid disturbance and will not be injured or killed during in-water work within Cache Slough/Sacramento River.

Project environmental commitments (listed in Chapter 2) include general protection measures and construction BMPs to minimize potential effects on habitats that could support giant garter snakes. These measures are consistent with the protection measures contained in USFWS's PBO. Specifically, the environmental commitments limit ground disturbing activities within suitable habitat to the snake's active season, where feasible, to avoid entrapment during dormancy and during daylight hours when snakes are actively moving around. The environmental commitments also include measures to: retain qualified and agency-approved biologists; implement an environmental training program to educate workers; perform clearance surveys prior to daily earthmoving activities associated with vegetation clearing and grubbing in suitable habitat or within 200 feet of suitable aquatic habitat; install wildlife exclusion fencing between active construction and suitable habitat, as feasible, to minimize the potential for giant garter snakes and other wildlife from entering active construction areas; and protect terrestrial wildlife from being entrapped by properly covering of all excavated, steep-walled holes or trenches. In addition to the environmental commitments, the project will implement Mitigation Measures BIO-4, BIO-5, and BIO-6 (consistent with the USWFS PBO), which require dewatering of active construction areas to avoid attracting giant garter snakes, surveys to identify whether giant garter snakes are present in the construction area, and avoidance measures to prevent harm. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on giant garter snake would be reduced to **less than significant with mitigation**.

Mitigation Measure BIO-4: Dewatering Habitat for Giant Garter Snake.

Where appropriate to protect giant garter snake, suitable aquatic habitat suitable will be dewatered prior to ground disturbance and will remain dewatered and absent of aquatic prey for 48 hours prior to the initiation of construction activities. This approach may be most appropriate where habitats to be dewatered are relatively small compared to adjacent habitats or where the work areas will be isolated from nearby aquatic habitat. If complete dewatering is not possible due to groundwater intrusion, the water feature will be thoroughly inspected by a Qualified Biologist prior to the commencement of construction to ensure that no snakes are present.

Engineering controls will be instituted as appropriate to prevent snakes from being entrained by the suction of large pumps used in dewatering. Such controls may include installation of a wire cage to create an area of separation between the water body and the intake. A Qualified Biologist will be present during the initial dewatering activities and will periodically inspect the

aquatic habitat being dewatered to confirm that it remains dry and incapable of supporting aquatic giant garter snake prey.

Mitigation Measure BIO-5: Preconstruction Giant Garter Snake and Northwestern Pond Turtle Survey.

A Qualified Biologist will conduct preconstruction surveys for giant garter snake and northwestern pond turtle within 72 hours prior to any initial ground disturbance in all suitable habitat in or adjacent to the project site within accessible habitat to identify locations where the species may be present, evaluate current activity status in the project area, and protect the species and its habitat from avoidable construction-related disturbance. The intent of the survey is to assess current species' habitat and use locations in the project area immediately prior to construction. The preconstruction survey is not intended to be a presence/absence or protocol-level survey. Preconstruction surveys may be phased across a project site to correspond to areas with active construction. Only areas where disturbance is imminent need to be surveyed. The project area will be reinspected by a Qualified Biologist whenever a lapse in construction activity of 5 days or more has occurred.

Mitigation Measure BIO-6: Giant Garter Snake and Northwestern Pond Turtle Avoidance.

If a giant garter snake or northwestern pond turtle is encountered in the project area, all activities that have the potential to result in the harm, injury, or death of the individual will cease within 50 feet of the snake or turtle. An Agency-Approved Biologist will be notified immediately and will assess the situation to select the course of action that will minimize adverse effects on the individual and avoid take.

If a giant garter snake or northwestern pond turtle is encountered in the project area and is not moving or is in a burrow or other refugia then the animal will be left undisturbed, and the occupied area will be marked for avoidance by construction equipment. The snake or turtle will be monitored by an Agency-Approved Biologist to ensure avoidance until the animal moves out of the construction area on its own.

Operational Effects

The proposed restoration would be beneficial for giant garter snake since the project will result in a net increase of aquatic habitat (emergent marsh) and creation of additional upland overwintering habitat (floodplain riparian and grassland) above the two-year flood elevation. Long-term maintenance and monitoring activities will require annual site visits and the occasional use of equipment for vegetation management. The type and frequency of vehicle and equipment use on the site would be similar to existing land management activities and is not expected to result in an increase in ground disturbance relative to baseline conditions; therefore, no additional impacts on giant garter snake from long-term management activities are anticipated.

Northwestern Pond Turtle

Construction Effects

Northwestern pond turtle could be directly or indirectly affected during construction activities associated with habitat restoration and utility improvements, if the species is present in areas where ground disturbance is occurring. The potential trampling or crushing of northwestern pond turtle is

most likely to occur from the use of construction equipment and vehicles. The species could be trampled or crushed if they come in contact with equipment or active construction areas during vegetation clearing, earth moving, and other construction activities. Following initial site disturbance, ongoing and active construction activity is expected to discourage the use of the project area by terrestrial wildlife, including northwestern pond turtle. Potential construction-related effects on northwestern pond turtle are considered a potentially significant impact.

The only in-water work associated with restoration would occur during dredging and placement of rock to construct the subtidal channel within Cache Slough/Sacramento River that will connect Cache Slough/Sacramento River to the project site. It is expected that any turtles that are in the water column near the construction site will quickly retreat to undisturbed areas outside the construction footprint to avoid disturbance and will not be injured or killed during in-water work within Cache Slough/Sacramento River.

Project environmental commitments (listed in Chapter 2) include general protection measures and Construction BMPs to minimize potential effects on habitats that could support northwestern pond turtles. The environmental commitments include measures to: retain qualified and agency-approved biologists; implement an environmental training program to educate workers on sensitive resource avoidance; conduct clearance surveys prior to daily earthmoving activities associated with vegetation clearing and grubbing in suitable habitat or within 200 feet of suitable aquatic habitat; install wildlife exclusion fencing between active construction and suitable habitat, as feasible, to minimize the potential for northwestern pond turtles and other wildlife from entering active construction areas; and protect terrestrial wildlife from being entrapped by properly covering of all excavated, steep-walled holes or trenches. In addition to the environmental commitments, the project will implement Mitigation Measures BIO-5 and BIO-6, which require surveys to identify whether northwestern pond turtle are present in the construction area and avoidance measures to prevent harm. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on northwestern pond turtle would be reduced to **less than significant with mitigation**.

Operational Effects

The proposed project would be beneficial for northwestern pond turtle since the project will result in a net increase of aquatic habitat (emergent marsh) and creation of additional upland overwintering habitat (floodplain riparian and grassland) above the two-year flood elevation. Long-term maintenance and monitoring activities will require annual site visits and the occasional use of equipment for vegetation management. The type and frequency of vehicle and equipment use on the site would be similar to existing land management activities and is not expected to result in an increase in ground disturbance relative to baseline conditions; therefore, no additional impacts on western pond turtle from long-term management activities are anticipated.

Special-Status Birds

Construction Effects

Direct impacts on commonly occurring and special-status nesting birds including, but not limited to, tricolored blackbird, burrowing owl, Swainson's hawk, northern harrier, white-tailed kite, loggerhead shrike, and song sparrow could occur during project construction if the species is nesting in or near the proposed project area or associated offsite utility improvement areas. Direct

impacts could include injury to or mortality of individuals through destruction of active nests during tree removal or vegetation trimming or through nest failure from noise and other disturbance in the vicinity of a nest during project construction. These impacts are considered potentially significant.

Project environmental commitments (listed in Chapter 2) include general protection measures and construction BMPs to minimize potential effects on habitats that could support nesting birds. These measures include an environmental training program to educate workers on sensitive biological resources, demarcating sensitive habitats for avoidance (including active bird nests), and performing clearance surveys prior to daily earthmoving activities. In addition to the environmental commitments, the project will implement Mitigation Measures BIO-7 and BIO-8, which include preconstruction surveys to identify the location of active nests and establishment of appropriate buffers to avoid and minimize direct and indirect disturbance of nesting birds. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on special-status nesting birds would be reduced to **less than significant with mitigation**.

Mitigation Measure BIO-7: Preconstruction Nesting Bird Surveys.

A Qualified Biologist will conduct nesting bird surveys prior to the start of construction activities, including grubbing, that occur between March 1 and August 31. A minimum of two separate surveys will be conducted to look for active nests of migratory birds, including raptors within and adjacent to the construction area. Surveys will include a search of all trees, shrubs, and ground vegetation within the project footprint. In addition, a 0.25-mile area from the project would be surveyed for nesting raptors to identify raptor species that could be affected by construction disturbances, particularly special-status raptors (i.e., Swainson's hawk). In areas where access is not permitted, the biologist will use binoculars and spotting scopes to inspect any potential nest trees, particularly large trees and snags. One survey will occur within 48 hours prior to the start of construction. Additional surveys may be required as the location of active construction moves to different areas of the project site. If no active nests are detected during these surveys, no additional protection measures are required.

Mitigation Measure BIO-8: No-Disturbance Buffers for Active Bird Nests**.**

If an active nest is found in the preconstruction nesting bird survey area, a no-disturbance buffer would be established to avoid disturbance or destruction of the nest site until the end of the breeding season (August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by species). The extent of these buffers would be determined by the qualified wildlife biologist in coordination with any applicable agencies (as determined by species) and would depend on the level of noise or construction disturbance taking place, line of sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species; however, a minimum of 50 feet for songbirds and 300 feet for raptors is typical.

Operational Effects

Overall, operational effects with the project are presumed to be beneficial for nesting birds. Restoration at the project site will result in a transition from a landscape dominated by managed seasonal marsh, seasonal wetlands, and annual grassland to a landscape dominated by perennial marsh and riparian. Grassland will be retained along the perimeter habitat berms and on refugia

islands for giant garter snake. This habitat transition and associated change in water regime is expected to favor passerines and icterids over migratory waterfowl, currently supported at the site. While the restoration project would result in the loss of grassland, which provides foraging habitat for Swainson's hawk, tricolored blackbird, and other bird species when not flooded, the conversion from grassland to tidal marsh and riparian would provide additional nesting opportunities for these species and other birds. Further, suitable foraging habitat is abundant on neighboring land and throughout the Delta region, whereas nesting habitat is limited (Estep 2023). The creation of riparian and tidal freshwater wetland on the project site will provide additional nesting habitat for migratory birds in a regional geographic area with limited nesting opportunities. Therefore, this impact is considered beneficial.

Special-Status Fish Species

Construction Effects

Direct Physical Injury and Disturbance

Work related to construction of the tidal channels in the project area would not result in the injury, mortality, or disturbance of special-status fish species because the project site is not currently connected to a waterbody that supports fish. All channel excavation and grading within the interior of the project site would be completed first, and then opened to Cache Slough and the Sacramento River after the low water crossing is completed. There would be **no impact** on special-status fish associated with the proposed construction techniques for habitat restoration.

Sediment Disturbance

During construction of the interior tidal channels and grading, sediment would be disturbed but would be in upland habitat and not connect to any of the surrounding waterbodies. Therefore, sediment would not reach surface water and there would be **no impact** on special-status fish species.

Water Quality Disturbance

There would be no water quality effects during construction of the restoration area because there would be no connection to the surrounding waterbodies. Therefore, contaminants would not reach surface water and there would be **no impact** on special-status fish species.

Habitat Disturbance

The proposed project would not result in negative effects on special-status fish species habitat because the project would be constructed to be beneficial to special-status fish species. Construction associated with restoration activities would be conducted on the landside of existing levees in an area that is hydrologically isolated from the adjacent river and special-status fish populations. There would be **no impact.**

Operational Effects

The constructed wetland channels and tidal opening will allow for tidal exchange between the Sacramento River and Cache Slough. Possible effects on special-status fish species post restoration include a change in water velocity, increased predation in the newly constructed channels, and an increase in nonnative aquatic vegetation which is not habitat for native fish species and supports

nonnative predatory fish. Water velocity at the tidal opening would allow native fish to access the wetland channels but would have occasional pulses that would be strong enough to minimize invasive aquatic plants from becoming established. The subtidal changes have been designed to avoid steep gradients that could create ambush habitat for predatory fish.

Overall, operational effects with the project are presumed to be beneficial for special-status fish species, providing habitat and increased food resources for rearing juvenile fish, such as delta smelt, longfin smelt, Chinook salmon, steelhead, and green sturgeon. Tidal wetlands improve the foraging success of delta smelt (Hammock et al. 2019). Two mechanisms have been hypothesized. The classic "outwelling" hypothesis posits that wetlands export phytoplankton, detritus, and zooplankton to bays and channels, increasing prey availability (Odum and de la Cruz 1967; Dame et al. 1986). Tidal wetlands can also provide rich foraging habitat in or along the edges of habitats (Herbold et al. 2014). A recent study of delta smelt stomach fullness suggested that delta smelt may forage directly on the periphery of tidal wetlands (Hammock et al. 2019). Longfin smelt frequently occur in shallow, tidal marshes, especially in low-flow years (Merz et al. 2013; Grimaldo et al. 2020). Larval longfin smelt utilize brackish marshes as rearing areas. Estuarine wetlands are important nursery habitat for juvenile Chinook salmon (reviewed by Sherman et al. 2017, Chapter 9 Tidal Wetland Chinook Salmon Conceptual Model). Marshes and riparian wetlands are characterized by high insect production, refuge from predation, and shade. Estuarine wetlands also contribute to salmon habitat complexity along the migration corridor by connecting floodplain and riverine habitats to freshwater tidal wetlands and brackish marshes. Juvenile Chinook salmon are known to forage in shallow areas with protective cover such as intertidal and subtidal mudflats, marshes, channels, and sloughs. There is some indication that during outmigration they may forage and take refuge in the sloughs within low intertidal and tidal marsh (Raabe et al. 2010). Although juvenile steelhead are usually larger than juvenile Chinook salmon in the Delta, beneficial habitat features and foraging use are likely similar to those described previously for Chinook salmon (Weitkamp et al. 2022). Ecological functions provided by the project for green sturgeon may include juvenile rearing and foraging habitat, mainly via food resource exports from the site through a new channel connected directly to the adjoining Cache Slough.

Low Water Crossing

Table 3-6 summarizes the proposed highway improvements/low water crossing impacts by habitat types and acreages. The acreages presented below are a subset of the acreages presented in Table 3-5 for the entire project site and are not additive. The low water crossing design and associated roadway improvements are overlaid onto the existing biological conditions is illustrated on Figure 3-3.

Table 3-6. Proposed Biological Conditions of the Highway Improvements/Low Water Crossing Footprint by Habitat Types and Acreages.

Habitat Types	Proposed Highway Improvements/Low Water Crossing Impacts (Acre)*
Developed	0.532
Ditch	0.018
Managed Marsh	0.595
Emergent Marsh	0.002
Open Water	0.177

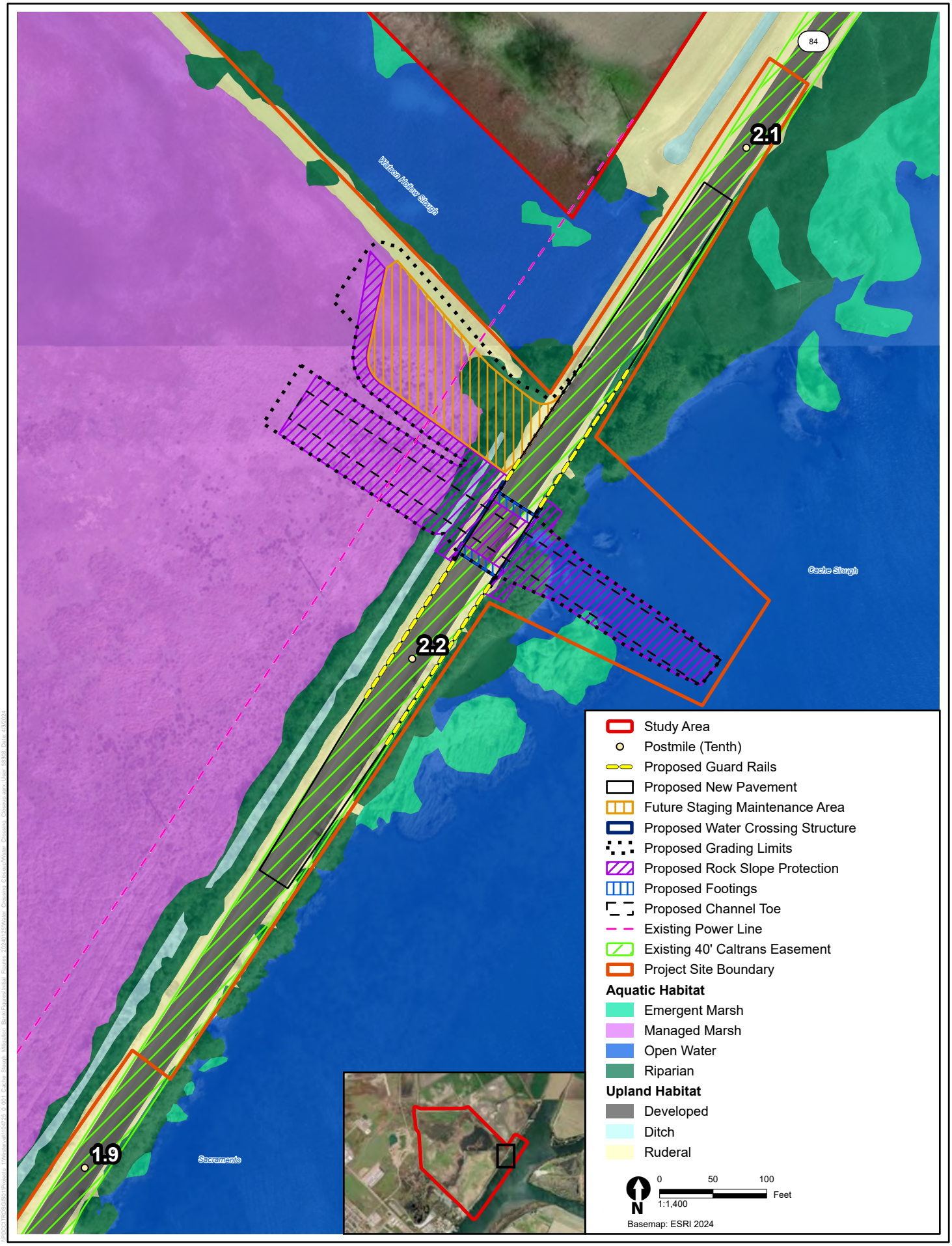


Figure 3-3
Highway Improvements/Low Water Crossing Impact Area

Riparian	0.241
Ruderal	0.189
Total	1.752

* Acreage includes habitat impacts associated with construction of the maintenance pad next to crossing and the subtidal channel to connect the site to the Sacramento River.

Special-Status Plant Species

Construction Effects

No special-status plants are expected to be directly affected by the proposed highway improvements/low water crossing because none were observed within the project footprint during botanical surveys. However, plant populations that are known to occur in the vicinity of the low water crossing and highway improvements could become established in the project footprint in the future. In addition, driving vehicular construction equipment over areas of suitable habitat for potentially occurring special-status plants could harm or destroy these species, if present. These impacts are considered potentially significant.

Project environmental commitments (listed in Chapter 2) include general protection measures and construction BMPs to minimize potential effects on habitats that could support special-status plants. These include measures to delineate the work area and sensitive habitats, minimize vegetation disturbance, re-vegetate temporarily disturbed areas with native species, and minimize spread of Invasive species. In addition to the environmental commitments, the project will implement Mitigation Measures BIO-1, BIO-2, and BIO-3, which require surveys to identify locations of special-status plants, avoidance and minimization measures to limit disturbance, and revegetation methods to restore affected populations. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on special-status plants would be reduced to **less than significant with mitigation**.

Special-Status Wildlife Species

Valley Elderberry Longhorn Beetle

Construction Effects

No suitable habitat for valley elderberry longhorn beetle occurs within the highway improvements and low water crossing footprint. One elderberry shrub (host plant for valley elderberry longhorn beetle) is present along the south side of SR 84 more than 165 feet from the project footprint (Figure 3-1). Therefore, no impacts on suitable habitat are expected to occur from the highway improvements/low water crossing work. If an elderberry shrub with stem(s) measuring at least 1 inch in diameter is encountered within 165 feet from any ground disturbance associated with road improvements or construction of the water crossing structure, then environmental protection measures would be implemented according to the environmental commitments (listed in Chapter 2), which include demarcating sensitive habitats (including elderberry shrubs) for avoidance using fencing or flagging, minimizing vegetation disturbance, and revegetating disturbed areas with native vegetation. There would be **no impact**.

Giant Garter Snake

Construction Effects

Giant garter snakes could be directly or indirectly affected during construction activities associated with the low water crossing, if the species is present in areas where ground disturbance is occurring. The potential trampling or crushing of giant garter snakes is most likely to occur from the use of construction equipment and vehicles. The species could be trampled or crushed if they come in contact with equipment or active construction areas during vegetation clearing, earth moving, and other construction activities. Following initial site disturbance, ongoing and active construction activity is expected to discourage the use of the project area by terrestrial wildlife, including giant garter snakes. Potential construction-related effects on giant garter snake are considered a potentially significant impact.

Project environmental commitments (listed in Chapter 2) include general protection measures and construction BMPs to minimize potential effects on habitats that could support giant garter snakes. These measures are consistent with the protection measures contained in USFWS's PBO. Specifically, the environmental commitments limit ground disturbing activities within suitable habitat to the snake's active season, where feasible, to avoid entrapment during dormancy and during daylight hours, when snakes are actively moving around. The environmental commitments also include measures to: retain qualified and agency-approved biologists; implement an environmental training program to educate workers; perform clearance surveys prior to daily earthmoving activities associated with vegetation clearing and grubbing in suitable habitat or within 200 feet of suitable aquatic habitat; install wildlife exclusion fencing between active construction and suitable habitat, as feasible, to minimize the potential for giant garter snakes and other wildlife from entering active construction areas; and protect terrestrial wildlife from being entrapped by properly covering of all excavated, steep-walled holes or trenches. In addition to the environmental commitments, the project will implement Mitigation Measures BIO-4, BIO-5, and BIO-6 (consistent with the USWFS PBO), which require dewatering of active construction areas to avoid attracting giant garter snakes, surveys to identify whether giant garter snakes are present in the construction area, and avoidance measures to prevent harm. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on giant garter snake would be reduced to **less than significant with mitigation**.

Northwestern Pond Turtle

Construction Effects

Northwestern pond turtles could be directly or indirectly affected during construction activities associated with the low water crossing, if the species is present in areas where ground disturbance is occurring. The potential trampling or crushing of northwestern pond turtles is most likely to occur from the use of construction equipment and vehicles. The species could be trampled or crushed if they come in contact with equipment or active construction areas during vegetation clearing, earth moving, and other construction activities. Following initial site disturbance, ongoing and active construction activity is expected to discourage the use of the project area by terrestrial wildlife, including northwestern pond turtle.

Project environmental commitments (listed in Chapter 2) include general protection measures and Construction BMPs to minimize potential effects on habitats that could support northwestern pond turtles. The environmental commitments include measures to: retain qualified and agency-

approved biologists; implement an environmental training program to educate workers on sensitive resource avoidance; conduct clearance surveys prior to daily earthmoving activities associated with vegetation clearing and grubbing in suitable habitat or within 200 feet of suitable aquatic habitat; and install wildlife exclusion fencing between active construction and suitable habitat, as feasible, to minimize the potential for northwestern pond turtles and other wildlife from entering active construction areas; and protect terrestrial wildlife from being entrapped by properly covering of all excavated, steep-walled holes or trenches. In addition to the environmental commitments, the Project will implement Mitigation Measures BIO-5 and BIO-6, which require surveys to identify whether northwestern pond turtle are present in the construction area and avoidance measures to prevent harm. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on northwestern pond turtle would be reduced to **less than significant with mitigation**.

Special-Status Birds

Construction Effects

Construction activities associated with the highway improvements/low water crossing could affect commonly occurring and special-status nesting birds including, but not limited to, Swainson's hawk, white-tailed kite, loggerhead shrike, and song sparrow. Direct impacts could include injury to or mortality of individuals through destruction of active nests during vegetation removal or through nest failure from noise and other disturbance in the vicinity of a nest during project construction. These impacts are considered potentially significant.

Project environmental commitments (listed in Chapter 2) include general protection measures and construction BMPs to minimize potential effects on habitats that could support nesting birds. These measures include an environmental training program to educate workers on sensitive biological resources, demarcating sensitive habitats for avoidance (including active bird nests), and performing clearance surveys prior to daily earthmoving activities. In addition to the environmental commitments, the project will implement Mitigation Measures BIO-7 and BIO-8, which include preconstruction surveys to identify the location of active nests and establishment of appropriate buffers to avoid and minimize direct and indirect disturbance of nesting birds. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on special-status nesting birds would be reduced to **less than significant with mitigation**.

Special-Status Fish Species

Construction Effects

Direct Physical Injury and Disturbance

Construction of the low water crossing could result in injury or disturbance to special-status fish species due to impact pile driving. Pile driving would occur during installation of sheet piles used to isolate the work area from tidal waters. The sheet piles would be installed within the ordinary high water mark approximately 20 feet from the edge of existing pavement but outside of the daily tidal prism. These activities are not anticipated to involve in-water work and therefore would not be expected to disturb or injure fish. Vibratory pile driving would be used to install temporary sheet piles to support phased construction of the water crossing structure. Vibratory pile driving is an alternative to impact driving that minimizes single-strike peak sound pressure and reduces adverse effects on fish (California Department of Transportation 2020). Any groundwater seepage present in

the construction area on the land-side of the sheet piles would be pumped out to uplands. No fish are expected to occur in the isolated area.

If in-water pile driving or dewatering is required to construct the low-water crossing, these activities could directly or indirectly affect special-status fish. This impact is considered potentially significant. In addition to the project's environmental commitment restricting in-water construction activities from June 1 to November 1 when most special-status fish species would not be present in the project area, the project will implement Mitigation Measures BIO-9, BIO-10, BIO-11, BIO-12, and BIO-13, as applicable and consistent with the NMFS PBO. These measures include methods for dewatering and pile driving to avoid and minimize harm to special-status fish. With implementation of the environmental commitments and mitigation measures, potentially significant impacts on special-status fish would be reduced to **less than significant with mitigation**.

Mitigation Measure BIO-9: Dewatering for Aquatic Species.

If dewatering is required to perform project activities within a waterway supporting fish, a dewatering plan will be prepared and implemented and will include a description of the proposed dewatering structures and appropriate BMPs for the installation, operation, maintenance, and removal of those structures. The period of dewatering will extend only for the minimum amount of time needed to perform the restoration activity and to allow sensitive species time to leave on their own before final clearance surveys and construction can begin. Dewatering will occur via gravity-driven systems, where feasible and except as specified below.

Dewatering will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. If sensitive fish species may be present in the area to be dewatered, a fish capture and relocation plan will be developed and implemented for review and approval by the appropriate wildlife agencies (i.e., NMFS, USFWS, and CDFW).

When gravity-fed dewatering is not feasible and pumping is necessary to dewater the work site, a temporary siltation basin and/or silt bags may be required to prevent sediment from reentering the wetted channel. Silt fences or mechanisms to avoid sediment input to the flowing channel will be installed adjacent to flowing water. Water pumped or removed from dewatered areas will be conducted in a manner that does not contribute turbidity to nearby receiving waters. Pumps will be refueled in an area well away from the stream channel. Fuel-absorbent mats will be placed under the pumps while refueling. Equipment working in the stream channel or within 25 feet of a wetted channel will have a double (i.e., primary, and secondary) containment system for diesel and oil fluids.

All dewatering work will comply with the California Department of Fish and Game Fish Screening Criteria (California Department of Fish and Game 2002) or NMFS Fish Screening Criteria for Anadromous Salmonids (National Marine Fisheries Service 2022). Pump intakes will be covered with mesh, in accordance with the requirements of current fish screening criteria, to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. The pump intake will be checked periodically for impingement of fish or other aquatic species. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion.

Mitigation Measure BIO-10: In-Water Pile Driving Plan for Sound Exposure**.**

If in-water pile driving is determined to be necessary and authorized by the applicable wildlife agencies (i.e., USFWS, NMFS, CDFW), pile driving activities will be designed to minimize acoustic impacts on fish and other aquatic wildlife species. A pile driving plan will be developed and submitted to the appropriate wildlife agencies (i.e., USFWS, NMFS, CDFW) for review prior to the start of in-water project activities that would require pile driving. The pile driving plan will include measures that will be implemented to minimize underwater sound pressure to levels below fish thresholds for peak pressure and accumulated sound exposure levels. Threshold levels will follow guidance provided in the Fisheries Hydroacoustic Working Group's *Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities* (Fisheries Hydroacoustic Working Group 2008).

The pile driving plan will describe the method that is least impactful to aquatic organisms, and will identify the number, type, and size of piles; estimated sound levels caused by the driving; number of piles driven each day; qualifications requirements for monitors; any other relevant details on the nature of the pile-driving activity; and the actions that will be taken to ensure that a project stays within the required sound exposure thresholds.

Mitigation Measure BIO-11: In-Water Pile Driving Methods**.**

If in-water pile driving is determined to be necessary and authorized by the applicable wildlife agencies (i.e., USFWS, NMFS, CDFW), pile driving will occur during approved work windows for sensitive fish species (June 1 to November 1), with reduced currents, and only during daylight hours. Pile driving will be conducted with vibratory or low/nonimpact methods (i.e., hydraulic) that result in sound pressures below threshold levels. Applied energy and frequency will be gradually increased until necessary full force and frequency are achieved. If it is determined that impact hammers are required and/or underwater sound monitoring demonstrates that thresholds are being exceeded, the contractor will implement sound dampening or attenuation devices to minimize sound levels; these may include:

- A cushioning block used between the hammer and pile.
- A confined or unconfined air bubble curtain.
- If site conditions allow, pile driving in the dry area (dewatered) behind the cofferdam.

Pile driving will follow the criteria outlined in the most recent version of the Caltrans *Technical Guidance for Assessment of Hydroacoustic Effects of Pile Driving on Fish* (California Department of Transportation 2020).

Mitigation Measure BIO-12: Sediment Containment During In-Water Pile Driving.

If in-water pile driving is determined to be necessary and authorized by the applicable wildlife agencies (i.e., USFWS, NMFS, CDFW), a continuous length of silt curtain, fully surrounding the pile-driving area will be used to protect aquatic resources and provide sediment containment while construction activities are occurring if working in a wetted channel. The silt curtain will prevent the release of a turbidity plume and trap sediment that may become suspended as a result of the pile driving. The bottom of the silt curtains must be weighted (e.g., with ballast weights or rods affixed to the base of the fabric) to resist the natural buoyancy of the silt curtain fabric and lessen its tendency to move in response to currents. Floating silt curtains will be

anchored and deployed from the surface of the water to just above the substrate. The silt curtain will be monitored for damage, dislocation, or gaps and will be immediately repaired where it is no longer continuous or where it has loosened. The silt curtain must restrict the surface visible turbidity plume to the area of pile construction and must control and contain the migration of resuspended sediments at the water surface and at depth.

Mitigation Measure BIO-13: Pile-Driving Monitoring.

If necessary, a Qualified Biologist will be onsite during pile-driving activities to minimize effects on sensitive fish species. If any stranding, injury, or mortality to a state- or federally listed fish related to pile driving is observed, the appropriate wildlife agency(ies) (i.e., USFWS, NMFS, CDFW) will be notified in writing (e.g., via email) within 24 hours and in-water pile driving will cease until the appropriate agencies with jurisdiction over affected species provide guidance on how to proceed.

Sediment Disturbance

Sediment disturbance may occur during construction of the low water crossing structure and construction of the subtidal channel to connect the project site to Cache Slough/Sacramento River. Direct effects on special-status fish species from elevated levels of suspended sediments would be avoided because in-water construction activities are restricted to June 1 through November 1 when most special-status fish species would not be present in the project area. Once the tidal opening is constructed and water is allowed to flow through the project area, it could result in sediment transport and delivery to the Sacramento River and Cache Slough. Sediment input to the Sacramento River and Cache Slough could temporarily increase water column turbidity and sedimentation rates above ambient levels and potentially alter fish physiology, behavior, and habitat conditions in aquatic habitats on the project site. This would be temporary until the channels become equalized to the water flowing in and out of the new channels. Elevated levels of suspended sediments, if they were to occur, have the potential to result in habitat effects on special-status fish species. The severity of these effects depends on the sediment concentration, proximity of the sediment-producing action to the waterbody and important habitat elements, and the duration of and spatial extent to which suspended sediments are elevated. Deposition of excessive fine sediment on the stream bottom could eliminate habitat for aquatic insects and reduce density, biomass, number, and diversity of aquatic insects and vegetation.

The low water crossing structure has been designed to minimize flow velocities (generally below 2 fps) and minimize erosive forces with the placement of appropriately sized rock along the bed and bank of the subtidal channel to reduce scour and erosion. To minimize sedimentation during construction, the project's environmental commitments (listed in Chapter 2) include implementation of the project's SWPPP and use of erosion control materials to reduce sediment runoff. Therefore, potentially significant impacts associated with sedimentation disturbance would be **less than significant,** and no mitigation is required.

Water Quality Disturbance

Water quality effects may occur during the construction of the low water crossing. Concrete would be used to build the bridge and heavy equipment would be used to construct the roadway and new bridge. Heavy equipment could leak fluids during excavation of the tidal opening, which could enter the nearby waterway.

Currently, the project area is used for livestock grazing and waterfowl hunting, and agriculture surrounds the project area; therefore, soils could be contaminated with nutrients, pesticides, herbicides, and other chemicals used in agriculture, as well as other contaminants. Eroded soils have been known to transport pollutants such as nutrients; metals; oils, fuels, and grease; and pesticides, herbicides, and other agricultural chemicals. Eroded soils could result in the potential release and dispersal of these contaminants if contaminated sediments are disturbed during construction and subsequently transported and delivered to aquatic habitats. The potential exposure of special-status fish species to contaminated sediments would be avoided because in-water construction activities are restricted to June 1 through November 1, when special-status fish species would not be expected to be present in the project area.

The proposed project would be subject to a construction-related stormwater permit and dewatering requirements of the federal CWA and NPDES program. The project proponent would obtain required permits through the Central Valley Regional Water Quality Control Board (CVRWQCB) before any ground-disturbing construction activity occurs. As noted in the environmental commitments (listed in Chapter 2) under measures to protect water quality and limit hazardous materials, the project proponent will develop and implement a SWPPP before and throughout the construction period to protect fish and aquatic habitat from exposure to elevated levels of contaminants and sediment by preventing water runoff, spills, and sediment from entering waterways in immediate proximity to construction activities by using physical barriers (e.g., cofferdam) or by locating construction and staging activities not in proximity of waterways to the extent practicable. If sediment enters the waterway, surface water sampling will be implemented according to permit conditions. The monitoring will follow all technical certification conditions listed in the CWA Section 401 water quality certification for the project. The spill prevention control and countermeasures and response measures described in the SWPPP would prevent and minimize the introduction of oil during construction activities into surface waters through specific equipment, workforce, procedural, and training requirements for the prevention of, preparedness for, and response to, oil discharges (U.S. Environmental Protection Agency 2010).

The project's environmental commitments (listed in Chapter 2) will be implemented to maintain water quality and limit construction runoff into aquatic habitat areas through the use of hay bales, filter fences, vegetative buffer strips, or other accepted practices. These measures would ensure that stormwater runoff would be controlled with physical and procedural means to reduce or avoid degradation of water quality in watercourses downstream of the construction sites that could have both short- and long-term effects on fish populations and aquatic habitat. These environmental commitments would ensure that in-water and ground-disturbing construction activities do not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality that would adversely affect fish populations and habitat, including special-status fish species and their habitat. As such, impacts on water quality would be **less than significant,** and no mitigation is required.

Habitat Disturbance

The low water crossing will provide fish with access to the restored habitat. The channel will be opened, and water will flow into the newly created channels that will provide additional fish habitat.

Operational Effects

Operation of the new low water crossing will provide access to the restoration area and additional fish habitat, which is beneficial for fish. See discussion of Operational Effects under *Restoration* for more details.

Oil and grease from vehicle traffic across the new water crossing structure could wash into the constructed channel during and following precipitation events. However, the project is not increasing travel lanes or resulting in increased traffic across the roadway, so there would be no change in existing conditions.

b. 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?

Restoration

The proposed project is designed to be a restoration project and planting trees and other riparian vegetation are part of the project description. Although there would be some temporary disturbance and permanent conversion of riparian habitat to emergent marsh during the construction phase of the proposed project, ultimately the proposed project would result in a substantial net increase of riparian habitat relative to existing conditions (Table 3-5). As such, impacts on riparian habitat and sensitive natural communities would be **less than significant**, and no mitigation is required.

Low Water Crossing

While the proposed highway improvements/low water crossing would permanently affect 0.241 acre of riparian habitat (Table 3-6), the net increase of riparian habitat (approximately 40.759 acres; Table 3-5) proposed for restoration would offset the loss associated with the low water crossing. As such, impacts on riparian habitat and sensitive natural communities would be **less than significant**, and no mitigation is required.

c. 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?

Restoration

Wetlands are regulated by both the federal and state government, pursuant to CWA Section 404 (federal) and Section 401 (state). USACE is generally the lead agency for the federal permit process, and the Regional Water Quality Control Board (RWQCB) is generally the lead agency for the State permit process. CWA protects all "navigable waters", which are defined as traditional navigable waters that are or were used for commerce or may be used for interstate commerce; tributaries of covered waters; and wetlands adjacent to covered waters, including tributaries. Isolated wetlands are wetlands that are not hydrologically connected to other "navigable" surface waters (or their tributaries) and are not considered to be subject to CWA.

In addition to CWA, the state also has jurisdiction over impacts on surface waters through the Porter-Cologne Water Quality Control Act, which does not require that waters be "navigable". For this reason, federal non-jurisdictional waters—isolated wetlands—can be regulated by the State of California pursuant to the Porter-Cologne Water Quality Control Act.

Construction in waters of the State and waters of the U.S. cannot take place until the appropriate permit(s) have been obtained from USACE, USFWS, the RWQCB, and any other agencies with authority over surface waters. All permits would be obtained prior to work within onsite waters of the state or waters of the U.S.

The proposed project would affect up to 88.415 acres of existing aquatic habitat that could be considered state or federally jurisdictional (84.535 acres of managed emergent marsh, 0.030 acre of emergent marsh, and 3.850 acres of seasonal wetland). Conversion of the existing habitat to the restored habitats would result in a total of 301.05 acres of aquatic habitat (tidal freshwater wetland and floodplain riparian) that would be restored and could be considered state or federally jurisdictional. Therefore, restoration activities would result in a net gain of 212.635 acres of potential state and federally jurisdictional aquatic resources. As such, project impacts on potentially jurisdictional aquatic resources would be **less than significant**, and no mitigation is required.

Low Water Crossing

While the proposed highway improvements/low water crossing would affect 0.772 acre of potentially occurring jurisdictional features, the net increase in aquatic resources from project restoration would offset the loss associated with the low water crossing. As such, project impacts on potentially jurisdictional aquatic resources would be **less than significant**, and no mitigation is required.

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

Restoration

Special-Status Wildlife Species

The proposed project would not create additional permanent barriers that would interfere with the movement of native or migratory wildlife through the project site. The proposed project would restore tidal wetland and riparian habitats that would result in increased movement opportunities for terrestrial and aquatic wildlife species.

Construction activities associated with restoration, including the staging of equipment and materials or installation of fencing, could temporarily disrupt daily movement patterns or create temporary barriers to migration and dispersal for terrestrial species. However, these impacts would be short-term (one construction season) and would not have a substantial effect on the regional movements of terrestrial and aquatic wildlife species through the Yolo Bypass. As such, potential impacts on the movement of native and migratory wildlife would be **less than significant**, and no mitigation is required.

Special-Status Fish Species

The proposed project would not interfere with the movement of native or migratory fish species. The project and the new tidal channels would increase the area of habitat availability for special-status fish species. Availability in spawning areas for native fish, delta smelt, and longfin smelt and rearing habitat for other juvenile fish such as Chinook salmon, steelhead, and green sturgeon would increase. There would be **no impact**.

Low Water Crossing

Special-Status Fish Species

The proposed project would not interfere with the movement of native or migratory fish species. After construction of the low water crossing, the newly restored habitat in the project area would be connected to Cache Slough and the Sacramento River. This would increase the area of habitat availability for special-status fish species. Availability in spawning areas for native fish, delta smelt, and longfin smelt and rearing habitat for other juvenile fish such as Chinook salmon, steelhead, and green sturgeon would increase. There would be **no impact**.

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

Restoration

The Solano County General Plan (2008) contains the following applicable policies to protect and conserve biological resources (*Chapter 4 Resources*) at the project site:

- *RS.P-1*: Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections. Actions to enhance or restore habitat areas should not cause adverse impacts to airports, including Travis Air Force Base.
- *RS.P-2*: Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna.
- *RS.P-4*: Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources.
- *RS.P-5*: Protect and enhance wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. Preserve contiguous habitat areas to increase habitat value and to lower land management costs.

The proposed project would be consistent with these policies since the goal of proposed restoration is to create, enhance, and protect natural habitats, plant and animal communities, and species status species on the project site and to manage the long-term ecological health of the habitat in perpetuity. The project will not result in an increase in wildlife hazards that could impact local airports and flight safety, including Travis Air Force Base. An evaluation of potential impacts on airports is provided in *Chapter IX Hazards and Hazardous Materials*.

Therefore, the project will not conflict with any local policies or ordinances protecting biological resources. Impacts would be **less than significant**, and no mitigation is required.

Low Water Crossing

Construction of the highway improvements/low water crossing would be constructed to support tidal connection to the restoration area. As described above for *Restoration*, the proposed project would be consistent with the Solano County General Plan (2008) policies protecting biological resources. Therefore, the project will not conflict with any local policies or ordinances protecting biological resources. Impacts would be **less than significant, and no mitigation is required**.

f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

Restoration

The proposed project would not conflict with the provisions of an adopted habitat conservation plan including the Draft Solano Multispecies Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. Impacts would be **less than significant**, and no mitigation is required**.**

Low Water Crossing

Construction of the highway improvements/low water crossing would not conflict with the provisions of an adopted habitat conservation plan including the Draft Solano Multispecies Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. Impacts would be **less than significant**, and no mitigation is required.

V. Cultural Resources

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

Environmental Setting

This section examines the potential impacts of the project on cultural resources. The area of study for cultural resources includes the project site and the offsite utility improvements area, collectively referred to as the project area.

For purposes of this analysis, the term cultural resource is defined as follows:

> *Pre-contact and historic-era sites, structures, districts, and landscapes, or other evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or other reason. These resources include the following types of CEQA-defined resources: historical resources, archaeological resources, and human remains.*

The term pre-contact is used as a chronological adjective to refer to the period prior to Euroamerican arrival in the project area.

This section relies on the information and findings presented in the project's cultural resources technical report *Cache Slough Mitigation Bank Project, Solano County, California: Archaeological and Architectural Resources Inventory Report* (Hoffman et al. 2023) and the *Addendum Archaeological and Architectural Resources Inventory Report for the Cache Slough Mitigation Bank Project, Solano County, California* (Hoffman 2024) (Appendix I-1 [Confidential; Not for Public Distribution]). These reports included an overview of the environmental, ethnographic, and historic background of the project area, with an emphasis on aspects related to human occupation.

Background Research

In October 2022, Environmental Science Associates staff conducted cultural resources records searches for the project area and vicinity of the CHRIS. The study area for the records search consisted of the project area with a 0.25-mile buffer. The CHRIS has record of 16 previously recorded cultural resources mapped within 0.25 mile of the project area, three of which are mapped in the project area: P-34-005225 (tribal cultural landscape), P-48-000950 (submerged object, possible shipwreck), and P-48-001027 (water conveyance system). Also, as part of a cultural resources study for the Little Egbert Tract Geotechnical Explorations Project, Hoffman et al. (2021) located four newly recorded cultural resources in the project area and 0.25-mile buffer. All of these newly recorded resources are architectural resources, whose site records were not on file at the CHRIS at the time of the records search conducted for the project. Two of these four newly recorded resources (P-48-002018 [levee] and P-48-002019 [levee]) are in the project area.

Of the four recently recorded resources, Hoffman et al. (2021, 2023) recommended resources P-48-001027, P-48-002018, and P-48-002019 not eligible for the California Register of Historical Resources (California Register).

In summary, three of the previously recorded cultural resources located in the project area (P-48-001027, P-48-002018, P-48-002019) have been recommended not eligible for the California Register, and one (P-48-000950) has not been evaluated for California Register eligibility. P-34-005225 is a tribal cultural landscape; therefore, it is discussed in the *Tribal Cultural Resources* section of this IS/MND.

Ethnographic Literature Research

With respect to the project area, a review of ethnographic literature for the project revealed that the Plains Miwok village *Anizumne*, which was documented as just northeast of Rio Vista, was either in or in close proximity to the project area (Bennyhoff 1977:Map 3). Bennyhoff (1977:78) explains that *Anizumne* "may have been at Rio Vista or on the knoll one-half mile north of Rio Vista, beside the small marsh on the west bank of the Sacramento River"; this may refer to the southern portion of the project area or its immediate environs. Bennyhoff (1977:79–80) explains that the *Anizumne* tribelet was moderately sized, missionized early on, possibly the majority as early as 1812, and subsequently mostly resided near Mission San Jose with some eventually returning to their ancestral area.

Native American Correspondence

In October 2022, Environmental Science Associates contacted the California NAHC in request of a search of the NAHC's SLF and a list of Native American representatives who may have interest in the project. From May 2023 to present, Environmental Science Associates assisted WES with outreach

and communications with the following California Native American Tribes: Wilton Rancheria and Yocha Dehe Wintun Nation (YDWN). This outreach included letters, emails, phone calls, and site visits with representatives from the two Tribes, including a reconnaissance-level pedestrian survey of the project area with Environmental Science Associates and representatives from both Tribes. The communications also included providing the two Tribes with opportunities to review and comment on field methods, resource identification, findings, project design, and long-term access to the project area.

On March 5, 2024, the County contacted the NAHC in request of a list of Native American representatives who may have interest in the project. The NAHC replied to the request on March 8, 2024, in which they provided a list of 23 Native American individuals, representing 11 Tribes.

In support of required Native American consultation for the Project pursuant to California Public Resources Code (PRC) Section 21080.3, the County sent letters on April 25, 2024, via certified mail, to the Native American representatives for the following Tribes: [Cachil Dehe Band of Wintun Indians of the Colusa Indian Community, Chicken Ranch Rancheria of Me-Wuk Indians, Confederated Villages of Lisjan Nation, Cortina Rancheria - Kletsel Dehe Band of Wintun Indians, Guidiville Rancheria of California, Muwekma Ohlone Indian Tribe of the SF Bay Area, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Northern Valley Yokut/Ohlone Tribe, United Auburn Indian Community of the Auburn Rancheria, Wilton Rancheria, and Yocha Dehe Wintun Nation]. These letters provided information on the Project and requested that the recipients notify the County if they would like to consult pursuant to PRC Section 21080.3. The County received a request for consultation on the Project, pursuant to PRC Section 21080.3, from one these Tribes, in an email from the Northern Valley Yokut/Ohlone Tribe (NVYT) on May 4, 2024. The County and the NVYT conducted a video conference call on July 10, 2024, to discuss the Project, cultural resources study conducted for the Project, and any concerns the Tribe may have regarding potential Project impacts on cultural resources and tribal cultural resources. The NVYT stated that they did not have any concerns regarding Project impacts on cultural resources and tribal cultural resources, and, at the end of the meeting, agreed to conclude consultation on the Project pursuant to PRC Section 21080.3. The county sent an email on July 22, 2024 to the NVYT summarizing the results of the July 10, 2024 video conference call and confirming the conclusion of consultation. The correspondence with Native American representatives conducted to date is included in Appendix I-2.

Archaeological Site Sensitivity

Holocene basin and stream channel deposits underlie all of the project area (Wagner et al. 1981), and native soils in the project area consist primarily of silt loams with some silty clay loams present (U.S. Department of Agriculture 2022). These silt loams date to the Latest Holocene (2000 to 150 years before present [BP]) and the silty clay loams date to the Late Holocene (4000 to 2000 BP) (Meyer and Rosenthal 2008). The potential for presence of buried indigenous archaeological deposits is typically high in soils of Holocene age, while areas with older surficial geology and soils have a low potential for buried deposits (archaeological remains would be found on the surface in these locations) (see Meyer and Rosenthal 2007:15). However, there are several factors that suggest a low likelihood of encountering buried indigenous archaeological deposits in the project area:

- The Delta began to form about 6000 BP. Following this formation, occupation of the landscape in the project area and vicinity would have been restricted to relict, and partially drowned, sand dunes and natural levees that had formed during the Pleistocene and stood high enough to clear the rising waters (West et al. 2007:24–25). There are no similar deposits in the project area.

- Indigenous occupation did not likely occur in the project area for the past 6,000 years. Rather, indigenous use of the area was likely restricted to hunting elk and waterfowl, fishing, and collecting tule and other vegetal resources for processing elsewhere. Archaeological evidence of this in the project area is likely to be represented by isolated artifacts, which in and of themselves are typically not eligible for the California Register.
- Prior to historic-era and modern levee construction, the project area consisted of tidal wetlands associated with the Yolo Basin, which would not have been suitable for permanent occupation.

Given the above evidence and the negative results of the SLF search and the cultural resources pedestrian survey, despite the project area consisting of a Holocene alluvial landscape, the project area appears to have a low potential for presence of buried and surficial intact indigenous archaeological resources. This holds true even with respect to the historic-era levees present in the project area, since they were constructed from sediment dredged from the adjacent channels, settings whose potential presence for indigenous archaeological resources is also low due to the same factors.

Historic-era and modern improvement activities, particularly agricultural activities, reclamation activities, and levee construction, have disturbed virtually the entire project area. These activities have reduced the potential for intact shallow buried indigenous deposits and surficial indigenous archaeological deposits, though the depth and accuracy of records associated with these ground-disturbing activities varies throughout the project area. Also, indigenous surficial deposits that may have been present prior to historic-era and modern use of the project area could have been covered, and thus capped, by the historic-era and modern ground-disturbing activities in the project area. However, these same activities may also have damaged or destroyed any such indigenous surficial deposits. The potential significance of any indigenous archaeological resources in the project area, if present, is hard to gauge because such deposits may be intact or disturbed from historic-era and modern activities. Regardless, the potential significance of any intact indigenous archaeological resources in the project area is moderate because such resources could provide data important to our understanding of the area's prehistory (California Register Criterion 4). Based on the above analysis, the project area has a low sensitivity (low potential presence, moderate potential significance) for both buried and surficial indigenous archaeological resources.

Historic-era development activities and associated use that occurred in the project area may have resulted in the creation of surficial historic-era archaeological deposits, such as water control features, foundations, tanks, and refuse, though such deposits would likely have been identified during the pedestrian survey and/or during the historical research conducted for the project. As the documented historic-era development in the project area was solely associated with water conveyance, flood protection, and crop production, it is unlikely that any unknown buried historic-era archaeological deposits are in the project area.

Therefore, the potential presence for both surficial and buried historic-era archaeological deposits in the project area is very low. Background research of historic topographic maps and aerial photographs did not clearly identify any features, once exposed or above ground, that could now be buried historic-era archaeological deposits. Additionally, the potential significance of any such historic-era deposits is low, given that none are depicted on historic maps, and they likely would be common features or artifact types related to agricultural, water conveyance, or levee activities. Based on the above analysis, the project area has a low sensitivity for both buried and surficial historic-era archaeological resources (very low potential presence with low potential significance).

Field Survey

In September 2019, Peak & Associates conducted a cultural resources pedestrian survey of all accessible portions of the project area. Intensive pedestrian survey methods were used, consisting of walking parallel transects spaced at no more than 30 meters apart and inspecting the surface for cultural material (archaeological or architectural) or evidence thereof. In March 2021, Environmental Science Associates conducted a follow-up reconnaissance-level pedestrian survey of the project area. The survey consisted of visiting the locations of all the previously identified cultural resources (either on file at the CHRIS or as identified by Peak & Associates during their 2019 survey) in the project area and assessing their current conditions. In September 2023, Environmental Science Associates, Wilton Rancheria, and YDWN representatives conducted a reconnaissance-level cultural resources and tribal resources pedestrian survey of the project area. The survey consisted of walking the perimeter of the project area and areas of interest in the project area, as expressed by the Tribal representatives, and inspecting the surface for cultural material (archaeological) or evidence thereof and assessing biological species and overall setting for possible Tribal concerns.

During the 2019 survey, P-48-001027 was observed and additional components to it were identified. Also, during the survey, two previously unrecorded architectural resources (P-48-002018 and P-48-002019), both levees, were identified in the project area. No previously unidentified cultural resources were identified during Environmental Science Associates' (2021) survey. Due to the submerged nature of its mapped location, Environmental Science Associates was unable to determine whether P-48-000950 is present in the project area and, if so, if it is a cultural resource. No archaeological resources were identified during the field survey conducted by Environmental Science Associates, Wilton Rancheria, and YDWN in September 2023. Neither Tribe expressed specific concerns regarding the project and potential impacts on cultural resources.

Summary of Cultural Resources Identified

Through background research, Native American correspondence, and field surveys conducted for the project, four cultural resources were identified in the project area: P-48-000950 (submerged object, possible shipwreck), P-48-001027 (water conveyance system), P-48-002018 (levee), and P-48-002019 (levee).

Three of the cultural resources identified in the project area (P-48-001027, P-48-002018, and P-48-002019) have been recommended not eligible for the California Register, and one (P-48-000950) has not been evaluated for California Register eligibility and is herein treated as California Register eligible. Therefore, only one of the cultural resources identified in the project area qualifies as a potential historical resource, as defined by CEQA. The four cultural resources identified in the project area are discussed below.

P-48-000950

This resource is unknown material submerged within the Sacramento River, in the eastern portion of the project area, that was identified through sidescan sonar and magnetometer by Panamerican Consultants, Inc. in 2009 (Panamerican Consultants, Inc. 2009). The "anomaly" measures approximately 28 feet long and may represent a watercraft, in which case, if it were 50 years of age or older, it would be an archaeological resource. However, no underwater archaeological survey has been conducted at this location, so its nature, including potential age, is unclear. The resource has

not been evaluated for California Register eligibility. Because no underwater archaeological survey has been conducted at the mapped location of the resource, its nature, including potential age, is unclear. As such, the resource is herein treated as California Register eligible for the purposes of the project; therefore, it qualifies as an historical resource under CEQA.

P-48-001027

This resource is an historic-era architectural resource consisting of an earthen water conveyance system recorded in 2012 (Treffers 2012) on the eastern edge of the project area. Specifically, the resource comprises three segments of a larger irrigation system originally constructed between 1936 and 1953 that diverts water from a main canal running between Lindsey Slough to the Sacramento River. Treffers (2012) evaluated the resource as not eligible for the California Register, as did Hoffman et al. (2021, 2023). Therefore, it does not qualify as an historical resource for CEQA purposes.

P-48-002018 (Solano County Levee 38)

This resource is an historic-era architectural resource consisting of an earthen levee first recorded in 2021 (Hoffman et al. 2021) on the northern and eastern edges of the project area. The levee, designated by the National Levee Database as Solano County Levee 38, runs along the north side of Watson Hollow Slough, between P-48-002017 (Solano County Levee 44) and the Sacramento River. The levee is 0.87 mile long, runs east/west for approximately 0.45 mile and then northwest/southeast for approximately 0.4 mile before terminating 0.13 mile before the intersection of Watson Hollow Slough at the Sacramento River. The levee measures between 5 and 10 feet tall, with a 10-foot-wide crown and a 50-foot-wide base. The levee was constructed sometime between 1937 and 1955, likely coinciding with the realignment of Watson Hollow Slough, and most likely dates to the establishment of Reclamation District 2084 in 1946. Hoffman et al. (2021, 2023) evaluated the resource as not eligible for the California Register. As such, the resource does not qualify as an historical resource for CEQA purposes.

P-48-002019 (Solano County Levee 28)

This resource is an historic-era architectural resource consisting of an earthen levee first recorded in 2021 (Hoffman et al. 2021) on the southern edge of the project area. The levee runs along the west side of Cache Slough and the Sacramento River, is 6.09 miles long, and measures approximately 15 feet high, with a 25-foot-wide crown topped with an asphalt road with gravel shoulders in most sections, and a 100-foot-wide base. The levee was constructed prior to 1937, likely originally dating to the 1912 large levee improvements to the Egbert Tract following the 1902 flood. Hoffman et al. (2021, 2023) recommended the resource not eligible for the California Register. As such, the resource does not qualify as an historical resource for CEQA purposes.

Impacts

a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. An historical resource is defined as any building, structure, site, or object listed in or determined to be eligible for listing in the California Register or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social,

political, or cultural annals of California. The following discussion focuses on architectural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed under impact question b.

Through background research and field surveys conducted for the project, three architectural resources (P-48-001027, P-48-002018, and P-48-002019) were identified in the project area. These resources consist of an earthen water conveyance system (P-48-001027), and two levees (P-48-002018 and P-48-002019). All three of these resources have been evaluated as not eligible for the California Register. As such, there are no architectural resources in the project area that qualify as historical resources, as defined in CEQA Guidelines Section 15064.5; therefore, the project is not anticipated to affect any historical resources. The project will have **no impact** on historical resources.

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

This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in PRC Section 21083.2(g). A significant impact would occur if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Through background research and field surveys conducted for the project, one archaeological resource (P-48-000950) was identified in the project area. The resource is unknown material submerged within the Sacramento River, in the eastern portion of the project area, that was identified through remote sensing, and may or may not represent a watercraft, and of unknown age. Because no underwater archaeological survey has been conducted at the mapped location of the resource, its nature, including potential age, is unclear. As such, the resource is herein treated as California Register eligible for the purposes of the project; therefore, it qualifies as an historical resource under CEQA.

Water levels and velocity in the vicinity of P-48-000950, which is within the Sacramento River itself, would remain within the typical range of hydrologic variability experienced in the system. Also, no construction-related activities are proposed by the project at or in the vicinity of P-48-000950. As a result, the project is not anticipated to result in any impacts on P-48-000950, and the project would not affect any archaeological resources that qualify as historical resources, according to CEQA Guidelines Section 15064.5, or unique archaeological resources, as defined in PRC Section 21083.2(g).

Although no previously identified California Register–eligible archaeological resources would be affected by the project, ground-disturbing activities associated with project construction have the potential for encountering buried archaeological resources. If any previously unrecorded archaeological resources are identified during construction and were found to qualify as a historical resource, as defined in CEQA Guidelines Section 15064.5, or a unique archaeological resource, as defined in PRC Section 21083.2(g), any impacts on the resource from the project could be potentially significant. Any such potentially significant impacts would be reduced to a **less-than-significant** level with Mitigation Measures CUL-1 and CUL-2.

Mitigation Measure CUL-1: Cultural Resources Awareness Training.

Before any ground-disturbing and/or construction activities, a qualified archaeologist, defined as an archaeologist meeting or under the supervision of one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, will conduct a training program for all construction and field personnel involved in ground disturbance. The program will be developed and administered in coordination with California Native American Tribes culturally and geographically associated with the project area. Onsite personnel will attend a mandatory pre-project training that will outline the general archaeological sensitivity of the area and the procedures to follow in the event an archaeological resource and/or human remains are inadvertently discovered, as well as the significance of the project area and vicinity to California Native American Tribes.

Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources.

If archaeological resources are encountered during project implementation, all construction activities within 100 feet will halt, and a qualified archaeologist, defined as an archaeologist meeting or under the supervision of one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, will inspect the find within 24 hours of discovery and notify the County of their initial assessment. Indigenous archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If the County (as the CEQA lead agency) determines, based on recommendations from a qualified archaeologist and a California Native American Tribe representative (if the resource is indigenous), that the resource may qualify as a historical resource, as defined in CEQA Guidelines Section 15064.5, a unique archaeological resource, as defined in PRC Section 21083.2(g), or a tribal cultural resource, as defined in PRC Section 21080.3, the resource will be avoided, if feasible. Consistent with CEQA Guidelines Section 15126.4(b)(3), this may be accomplished through: planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; and/or deeding the site into a permanent conservation easement.

If avoidance is not feasible, the County will consult with California Native American Tribes that are culturally and geographically associated with the project area (if the resource is indigenous), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. This will include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

If, during project implementation, the County determines that portions of the project area may be sensitive for archaeological resources or tribal cultural resources, the County may authorize construction monitoring of these locations by an archaeologist and representative from a

California Native American Tribe that is culturally and geographically associated with the project area. Any monitoring by a Tribal Monitor will be done under agreements between the County and culturally affiliated California Native American Tribes.

c. Disturb any human remains, including those interred outside of dedicated cemeteries?

California Health and Safety Code Section 7050.5 protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (reiterated in CEQA Guidelines Section 15064.5[e]) identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery. PRC Section 5097.99 prohibits obtaining or possessing any Native American artifacts or human remains that are taken from a Native American grave or cairn (stone burial mound).

No human remains have been identified in the project area through archival research, field surveys, or Native American consultation. Also, the land use designations for the project area do not include cemetery uses, and no known human remains exist in the project area. Therefore, the project is not anticipated to disturb any human remains. However, because the project would involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. In the event that human remains were discovered during project construction activities, impacts on the human remains from the project would be significant if those remains were disturbed or damaged. Such potentially significant impacts would be reduced to **less-than-significant** by Mitigation Measures CUL-1 and CUL-3.

Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains.

In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find will cease until the Solano County Coroner has been contacted to determine that no investigation of the cause of death is required. The NAHC will be contacted within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the lead agency for the appropriate means of treating the human remains and any grave goods. Per PRC Section 5097.98, the County will ensure that the immediate vicinity of the location of the human remains is not damaged or disturbed by further development activity until the County has discussed and conferred with the most likely descendant regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

VI. Energy

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?				X

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

Environmental Setting

Energy demand is typically associated with daily operations and fuel consumption associated with project construction. The Energy Resources and Conservation section of the Resources Element of the Solano County 2008 General Plan includes goals, policies and implementation programs relating to energy production, usage, and conservation in Solano County. The County has taken steps toward energy conservation in the construction of green County buildings and additional steps including reducing energy consumption in all new and existing residential, commercial, and industrial development. Conservation is best achieved by reducing electricity use through energy-efficient appliances, solar orientation of buildings, and reduction in private automobile use through land use and transportation policies that encourage fewer and shorter vehicle trips. Energy conservation has numerous benefits beyond environmental stewardship, including financial savings for individual businesses and families (Solano County 2008:RS-54).

The project would consume energy during construction in the form of gasoline and diesel used to operate equipment, generators, tractor trailer, tractor with auger, haul trucks, and construction personnel vehicles (passenger trucks and cars). The project would efficiently use energy during construction, which conforms with the Solano County General Plan's conservation goals.

Impacts

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

Construction and operation of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Construction activities would result in short-term energy consumption from the use of petroleum fuels by off-road construction equipment, and from on-road vehicles used by construction workers to travel to and from the site during construction and to deliver construction materials. The project is not a capacity-increasing project and would not increase use of energy resources. The project would not conflict with state and local plans for renewable energy and energy efficiency. **No impact** would occur.

VII. Geology, Soils, and Paleontological Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a.	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	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.				X
	Strong seismic ground shaking?			X	
	Seismic-related ground failure, including liquefaction?			X	
	Landslides?				X
b.	Result in substantial soil erosion or the loss of topsoil?			X	
c.	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?				X
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				X
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?				X
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

Environmental Setting

Flat broad valleys, marshes, sloughs, bays, islands, and low-lying hills associated with the Sacramento River Alluvial Fan dominate the south and east parts of Solano County, which includes the project area. Geologic structural subunits within the project area include Quaternary surficial deposits. The Holocene alluvium and Montezuma formation are the specific geologic complexes underlying the project area. The Late Holocene alluvial deposits overlie older Pleistocene alluvium and/or the upper Tertiary bedrock formations. This alluvium consists of sand, silt, and gravel deposited in fan, valley fill, terrace, or basin environments. This unit is typically in smooth, flat valley bottoms, in medium-sized drainages, and other areas where terrain allows a thin veneer of this

alluvium to deposit, generally in shallowly sloping or flat environments. The Montezuma Formation makes up the majority of the Montezuma Hills between Collinsville and the city of Rio Vista. The Montezuma Formation is a delta-deposited conglomerate consisting of poorly consolidated reddish-orange mudstone, sands, silts, and gravels (Solano County 2008:4.7-1–4.7-2).

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The Great Valley Thrust Fault is the closest known fault to the project site. This fault runs in a north-south direction through the project site. However, this fault is not known to be active (Solano County 2008:4.7-10–4.7-11).

Seismic shaking (or ground shaking) is a general term referring to all aspects of motion of the Earth's surface resulting from an earthquake and is normally the major cause of damage in seismic events. Solano County is an area of relatively high seismicity and is subject to earthquake shaking in the future. Earthquake-triggered landslides are a potential major problem that can be induced by only moderate ground shaking. Ground failure in the form of liquefaction, lurching, and settlement could also result from shaking. Flood damage from earthquake-induced dam failure, canal and levee damage, and tsunamis and seiches are also threats. Depending upon the magnitude, proximity to epicenter, and subsurface conditions (bedrock stability and the type and thickness of underlying soils) present at a given point beneath the earth's surface, ground shaking damage would vary from slight to intensive (Solano County 2008:4.7-12).

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. Under certain conditions, loosely consolidated soils may tend to amplify shaking and increase structural damage. Water-saturated soils compound the problem because of their susceptibility to liquefaction and corresponding loss of shear strength. Liquefaction potential in Solano County has increased over the years because of a rising water table in many parts of the county. Where these water conditions are combined with loose, fine-grained sands (i.e., prime agricultural soils), liquefaction potential is high. According to Figure 4.7-3 in the Solano County General Plan Draft EIR, the project site has areas of Low to Very High liquefaction potential (Solano County 2008:4.7-12–4.7-13).

According to Figure 4.7-4 in the Solano County General Plan Draft EIR, the project area consists of Capay-Clear Lake, Sacramento, Egnert-Ryde, Valdez, Joice-Suisun, and Reyes-Tamba soil associations. These soils are nearly level to gently sloping, moderately well-drained to very poorly drained soils on basin rims, alluvial fans, and saltwater marshes (Solano County 2008:Figure 4.7-4).

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. As a consequence of such volume changes, structural damage to buildings and infrastructure may occur if the potentially expansive soils were not considered in building design and during construction. According to Figure 4.7-7 in the Solano County General Plan Draft EIR, project area soils have a low shrink-swell potential; however, adjacent areas to the north, west and south have a high shrink-swell potential (Solano County 2008:Figure 4.7-7).

The Sacramento Valley is a northwest–southeast-trending structural trough that contains a thick sequence of sediments, ranging in age from the Jurassic to recent Pleistocene and Holocene alluvium. The eastern boundary of the county is the Sacramento River. The project area consists primarily of Holocene alluvial deposits. The Holocene alluvial deposits contain vertebrate and

invertebrate fossils of extant, modern taxa, which are generally not considered paleontologically significant.

A geotechnical investigation report and foundation report (Appendix J, *Geotechnical Investigation*) were prepared for the project by Shannon and Wilson (Shannon & Wilson 2024a and 2024b). The geotechnical investigations consisted of reviewing existing data collected at and near the project site, conducting cone penetration tests, excavating hand auger and exploratory borings, performing laboratory testing, and developing conclusions and recommendations regarding geotechnical aspects of the project.

Impacts

a.1. 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? Refer to Division of Mines and Geology Special Publication 42.

The project site is not in an area designated as an Alquist-Priolo Earthquake Fault Zone (California Department of Conservation 2021). According to the Solano County General Plan Draft EIR, the Great Valley Fault, which runs through the project site in a north-south direction, is not known to be active (Solano County 2008:4.7-10). **No impact** would occur.

a.2. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: Strong seismic ground shaking?

Restoration

The restoration component of the project would not consist of any activities that would directly or indirectly cause effects from strong seismic shaking because the restoration activities do not include any structures or facilities, and the project site is several miles east of the nearest active fault, the Green Valley Fault. **No impact** would occur.

Low Water Crossing

No known active faults are mapped as crossing the project site; however, ground motion could occur as a result of faults in the region. The project would have no direct or indirect impact on the potential for ground shaking or on the public's risk for loss, injury, or death from seismic events. The low water crossing component of the project would be constructed in compliance with Caltrans seismic standards. Because the project would be designed in accordance with the most recent seismic standards of Caltrans, the low water crossing component of the project's seismic hazard impacts would be **less than significant**, and no mitigation is required.

a.3. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: Seismic-related ground failure, including liquefaction?

Restoration

According to Figure 4.7-3 in the Solano County General Plan Draft EIR, the project site has areas of Low to Very High liquefaction potential (Solano County 2008:4.7-12–4.7-13). However, no habitable

structures or other developments are proposed as part of the restoration component of the project. The restoration activities would be limited to the interior of the project site and human occupation of the project site would not occur after the completion of restoration activities other than for occasional maintenance activities (if needed). Consequently, the restoration component of the project is not expected to expose people or structures to risks associated with seismic-related ground failure such as liquefaction. **No impact** would occur.

Low Water Crossing

The low water crossing is in an area of high liquefaction potential; however, the low water crossing component of the project would not further add to the potential hazard. The low water crossing would be constructed in compliance with Caltrans seismic standards. Because the project would be designed in accordance with the most recent seismic standards of Caltrans, the low water crossing component of the project's potential for liquefaction impacts would be **less than significant**, and no mitigation is required.

a.4. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: Landslides?

The project area is not located in an earthquake-induced landslide zone. Additionally, most of the project area is generally flat land, and no rainfall-induced landslides or existing landslides are mapped (California Department of Conservation 2021). **No impact** would occur.

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

Restoration

Restoration activities associated with the project would disturb soil that could be subject to water or wind erosion. The potential for soil erosion exists during the period of earthwork activities and between the time when earthwork is completed, and new vegetation is established. The project is required to obtain coverage under the NPDES Construction General Order. A site-specific SWPPP will be prepared and implemented for the project, as required by the Construction General Order. The SWPPP will include site appropriate BMPs to control erosion and reduce the potential release of water quality pollutants to receiving waters.

Additionally, project activities would be subject to CWA Section 401, Water Quality Certification, for discharges of dredged or fill materials through the CVRWQCB. As part of the certification, CVRWQCB would require erosion controls in all areas disturbed by project activities. Adherence to the recommendations in the geotechnical investigation (for berms, site preparation, fill material, compaction, and slopes) and implementation of erosion and sediment controls to comply with the Water Quality Certification and with any required SWPPP would ensure that project impacts resulting in substantial soil erosion or the loss of topsoil would be **less than significant**, and no mitigation is required.

Low Water Crossing

During construction, the project would implement erosion control measures and BMPs outlined in the SWPPP to minimize soil erosion or the loss of topsoil. Following construction, all disturbed soil areas would be stabilized with erosion control measures, erosion control materials such as straw,

and seed mixes would be certified weed-free. Therefore, impacts would be **less than significant**, and no mitigation is required.

c. Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

The project would not result in the creation of new structures that would be located on an unstable geologic unit or soils, nor would it cause a geologic unit or soils to become unstable resulting in landslide, lateral spreading, liquefaction, or collapse. **No impact** would occur.

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

The project would include a low water crossing under SR 84 and would re-establish tidal freshwater wetland and floodplain-associated vegetation communities within the interior of the Bank property. According to Figure 4.7-7 in the Solano County General Plan Draft EIR, project area soils have a low shrink-swell potential (Solano County 2008:Figure 4.7-7). Construction activities would not result in the creation of structures with substantial risks to life or property as a result of the potential presence of expansive soils. **No impact** would occur.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?

No aspect of the project would use septic tanks or alternative wastewater disposal systems; therefore, **no impact** would occur.

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

Paleontological resources are fossilized remains of plants and animals, and associated deposits. South of the project site is the Montezuma Formation, which is highly sensitive for paleontological resources; however, the project site includes Holocene alluvial deposits. Holocene alluvial deposits contain vertebrate and invertebrate fossils of extant, modern taxa, which are generally not considered paleontologically significant. The impact is **less than significant**, and no mitigation is required.

VIII. Greenhouse Gas Emissions

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

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
reducing the emissions of greenhouse gases?				

Environmental Setting

Unlike emissions of criteria and toxic air pollutants, which have local or regional impacts, emissions of greenhouse gases (GHGs) have a broader, global impact. Global warming associated with the "greenhouse effect" is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the earth's atmosphere. The principal GHGs contributing to global warming and associated climate change are carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), and fluorinated compounds, including hydrofluorocarbons (HFC). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that human-induced warming reached approximately 1°C above preindustrial levels in 2017, increasing at 0.2°C per decade. Under the current nationally determined contributions of mitigation from each country until 2030, global warming is expected to rise 3°C by 2100, with warming to continue afterward (Intergovernmental Panel on Climate Change 2018:4). Large increases in global temperatures could have substantial impacts on the natural and human environments worldwide and in California.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most accepted method to compare GHG emissions is the global warming potential (GWP) methodology. IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalent (CO_2e), which compares the gas in question to that of the same mass of CO_2 (CO_2 has a GWP of 1 by definition).

Table 3-7 lists the GWPs of CO_2, CH_4, N_2O, and HFC-134a and their lifetimes in the atmosphere. The GWPs are from the IPCC's fourth assessment report, consistent with statewide GHG emissions reporting protocol (California Air Resources Board 2024).

Table 3-7. Lifetimes and Global Warming Potentials of Principal Greenhouse Gases

Greenhouse Gas	Global Warming Potential (100 years)	Lifetime (years)
Carbon dioxide	1	-
Methane	25	12
Nitrous oxide	298	114
Hydrofluorocarbon-134a	1,430	14

Source: California Air Resources Board 2024.

Climate change is a global problem, and GHGs are global pollutants. Given the long atmospheric lifetimes of GHGs, the GHGs emitted by many sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Thus, GHG impacts are inherently cumulative, and the GHG area of an analysis includes the entire state and global atmosphere.

Impacts

Operations and maintenance activities would be similar to pre-project conditions, with two inspections per year and bridge repair work every 10 years. Accordingly, there would be negligible change in operational emissions relative to existing conditions. In addition, engine exhaust emissions are expected to diminish over time as zero-emission vehicles become more prevalent, due in part to state regulations and mandates. This analysis therefore focuses on construction-generated emissions as there would be no long-term operational GHG impact.

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

Project construction for both the restoration and low water crossing would generate GHG emissions through use of heavy-duty equipment, worker vehicle trips, truck hauling trips, and vegetation removal. GHG emissions generated by these sources were quantified using information provided by the project applicant and CalEEMod (version 2022.1) (Lagneaux pers. comm.). Table 3-8 summarizes emissions that would be generated by construction of the proposed restoration and low water crossing portions of the project, as well as total project emissions in 2026. Table 3-8 also includes a net reduction in emissions from the removal of 16 trees and then addition of 300 trees, represented as a negative value. Please refer to Appendix D, *Emissions Model Outputs*, for all modeling assumptions and outputs.

Table 3-8. Estimated GHG Emissions from Project Construction (metric tons)

Year	CO2	CH4	N2O	CO2e
2026 (Habitat Restoration)	961	<1	<1	966
2026 (Low Water Crossing)	238	<1	<1	242
2026 Total Project	1,199	<1	<1	1,208
Total Sequestrationa	-16	-	-	-16
Total Project with Sequestration	1,183	<1	<1	1,192

Source: Appendix D

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; HFC = hydrofluorocarbon; CO_2e = carbon dioxide equivalent, which includes the relative warming capacity (i.e., global warming potential) of each GHG.

[a] Sequestration refers to the process by which trees and vegetation absorb CO_2 from the atmosphere, mitigating greenhouse gas emissions. The negative values in the table represent the sequestration or carbon removal. Over the life of the trees (40 years) the total sequestration potential would be 640 metric tons CO_2e.

Table 3-8 indicates that construction of the restoration portion of the project would result in an estimated annual 966 metric tons (MT) CO_2e in 2026, while construction of the low water crossing portion of the project would result in an estimated annual 242 MT CO_2e in 2026. Construction of the total project, inclusive of tree planting, would result in an estimated annual 1,192 MT CO_2e in 2026. YSAQMD has not established a quantitative threshold for assessing construction GHG emissions.

Thus, the significance of the project's GHG impact is determined based on the potential for the project to conflict with the mandatory regulatory requirements and its consistency with the *2017 Climate Change Scoping Plan*. Consistency with AB 1279 and the *2022 Scoping Plan for Achieving Carbon Neutrality* is not specifically reviewed because all emissions generated by construction of the project are expected to occur in 2026, which is well before the AB 1279 target year (2045) (California Air Resources Board 2022).

USEPA and the National Highway Traffic Safety Administration have adopted standards for CO_2 emissions and fuel consumption from heavy- and medium-duty vehicles. CARB has also adopted the Advanced Clean Cars II and Advanced Clean Truck regulations, which will accelerate the use of zero-emission vehicles and trucks in California. The CALGreen Code contains mandatory requirements aimed at reducing construction waste and reducing environmental impacts during and after construction. For example, nonresidential projects must recycle and/or salvage for reuse a minimum of 65 percent of nonhazardous construction and demolition debris or meet local construction and demolition waste management ordinance requirements, whichever is more stringent (Sections 4.4081.1 and 5.408.1) (California Building Standards Commission 2022). In addition, 100 percent of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing for nonresidential projects must be reused or recycled (Section 5.408.3) (California Building Standards Commission 2022). The proposed project would comply with these mandatory requirements.

The state's near-term (2030, within which the project would be constructed) GHG strategy is defined by Senate Bill (SB) 32. The *2017 Climate Change Scoping Plan* identifies increasing sequestration as crucial to achieving the state's long-term climate change strategy (California Air Resources Board 2017:82). It outlines objectives to maintain natural lands as a resilient carbon sink and sets a goal to reduce GHG emissions from natural and working lands by at least 15 to 20 million MT CO_2e by 2030. SB 1386 also identifies the protection and management of natural and working lands as a key strategy towards meeting the state's 2030 GHG reduction target. The project would result in a net increase of trees with a sequestration potential of 16 MT CO_2e per year or 640 MT CO_2e over the 40-year lifetime of the trees (Table 3-8). This would align with the state's land use and sequestration goals.

Beyond sequestration, the *2017 Climate Change Scoping Plan* includes broad policy objectives to help meet the state's 2030 target across the California economy. While the *2017 Climate Change Scoping Plan* does not have explicit regulatory requirements related to construction equipment, broadscale policy implementation will achieve some GHG reductions in the construction sector.

The restoration and low water crossing portions of the project are analyzed separately below, as well as the total project in the conclusion section.

Restoration

Because the overall proposed project would comply with mandatory regulatory requirements and is consistent with the *2017 Climate Change Scoping Plan*, the proposed restoration portion of this project would be **less than significant**, and no mitigation is required.

Low Water Crossing

Because the overall proposed project would comply with mandatory regulatory requirements and is consistent with the *2017 Climate Change Scoping Plan*, the proposed low water crossing portion of this project would be **less than significant**, and no mitigation is required.

Conclusion

The overall proposed project would comply with mandatory regulatory requirements and is consistent with the *2017 Climate Change Scoping Plan.* This impact is **less than significant**, and no mitigation is required.

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

The Solano County Climate Action Plan (CAP), adopted in 2011, does not have a 2030 goal that is consistent with the statewide GHG target mandated by SB 32 (Solano County 2011). However, consistency with this plan is analyzed below. The *2017 Climate Change Scoping Plan* is the state's plan for reducing GHG emissions to achieve the 2030 GHG reduction target outlined by SB 32. The proposed project's consistency, including both the restoration and low water crossing, with SB 32 (including the *2017 Climate Change Scoping Plan*) and other applicable state regulations is assessed below to determine the significance of this impact. Consistency with AB 1279 and the *2022 Scoping Plan Update* is not specifically reviewed because all emissions generated by construction of the project are expected to occur in 2026, which is well before the AB 1279 target year (2045).

Solano County Climate Action Plan

The County CAP does not have a 2030 goal that is consistent with the statewide GHG target mandated by SB 32. However, this project would be consistent with the CAP for several reasons. Firstly, as the project's goal is to create a mitigation bank and restore habitat, the project would support the CAP's objective LU-2: *Land Conservation*, which is to protect and preserve forested areas, agricultural lands, wildlife habitat, and wetlands that provide carbon sequestration. Further, by planting 300 native trees, the project would also support the CAP's objective LU-3: *Tree Planting*, which aims to protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way and require the planting of shade and roadside trees in development projects. By supporting these measures, this project would not conflict with the County CAP.

Senate Bill 32

SB 32 codified the state's GHG emissions reduction target for 2030. CARB adopted the *2017 Climate Change Scoping Plan* as a framework for achieving the 2030 GHG emissions target. The addition of a mitigation bank, which is the primary purpose of this project, would support the scoping plan's objective to maintain natural lands as a resilient carbon sink. Therefore, there would not be a conflict with SB 32.

Other State Regulations

California has adopted statewide legislation addressing various aspects of GHG emissions reduction. Regulations, such as the SB 100/1020-mandated 100 percent carbon-free electricity by 2045 and new vehicle mandates and emission standards, will be necessary to attain the magnitude of

reductions required for the state's 2030 GHG target. The proposed project would be required to comply with all regulations applicable to new infrastructure construction or would be directly affected by the outcomes (e.g., vehicle travel would be less carbon intensive due to the increasingly stringent zero-emission standards). Unlike the *2017 Climate Change Scoping Plan*, which explicitly calls for additional emissions reductions from local governments and new projects, none of these state regulations identify specific requirements or commitments for new development beyond what is already required by existing regulations or will be required in forthcoming regulation. Therefore, there is no conflict or inconsistency.

The restoration and low water crossing portions of the proposed project are analyzed separately below, as well as the total project in the conclusion section.

Restoration

Because the overall proposed project would not be inconsistent or conflict with any part of SB 32, the County CAP, or other state regulations, the proposed restoration portion of this project would be **less than significant**, and no mitigation is required.

Low Water Crossing

Because the overall proposed project would not be inconsistent or conflict with any part of SB 32 the County CAP, or other state regulations, the proposed low water crossing portion of this project would be **less than significant**, and no mitigation is required.

Conclusion

The overall proposed project would not be inconsistent or conflict with any part of SB 32, the County CAP, and other state regulations. This impact is **less than significant** and no mitigation is required.

IX. Hazards and Hazardous Materials

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c.	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-				X

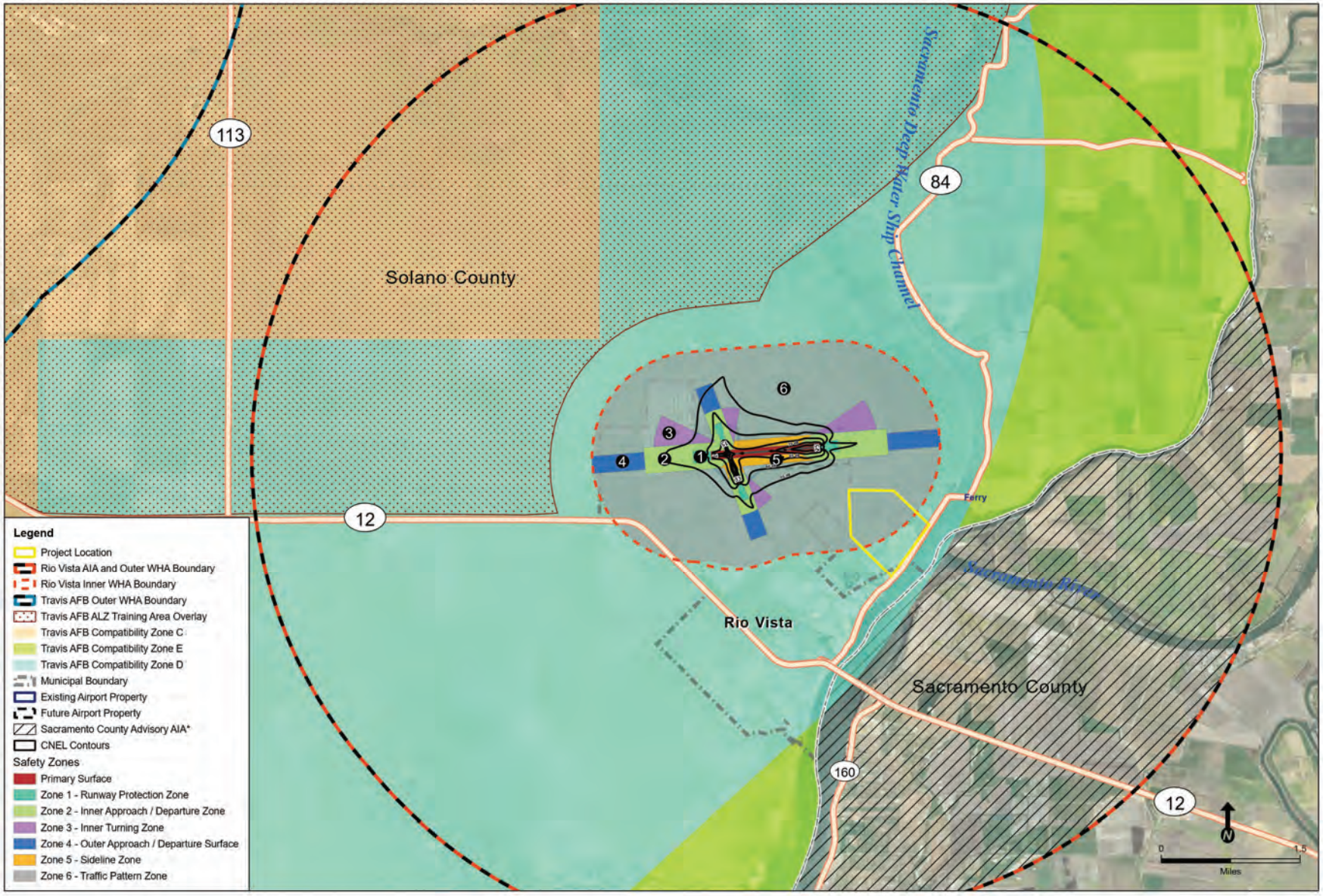
		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	quarter mile of an existing or proposed school?				
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e.	Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard or excessive noise for people residing or working in the project area?		X		
f.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
g.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?		X		

Environmental Setting

Hazardous materials include chemicals and other substances defined as hazardous by federal, state, and local laws and regulations. Hazardous materials that may be associated with construction sites include fuels, motor oil, grease, various lubricants, solvents, soldering equipment, and glues. The California Department of Toxic Substances Control maintains a database containing information on properties in California where hazardous substances have been released, or where the potential for a release exists. This database is commonly known as EnviroStor and is one of a number of lists that make up the "Cortese List" (i.e., a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5). There are no active sites included on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 in the vicinity of the project area (California Environmental Protection Agency 2023).

According to California Department of Forestry and Fire Protection (CAL FIRE), the project area is in a Local Responsibility Area (LRA) and not in a High or Very High fire hazard severity zone (FHSZ) in the LRA (California Department of Forestry and Fire Protection 2007). LRAs are incorporated cities, urban regions, agriculture lands, and portions of the desert where the local government is responsible for wildfire protection.

The project site is within the airport influence area of two nearby airports. Travis Air Force Base (Travis AFB) is roughly 14 miles northwest of the project and the Rio Vista Municipal Airport is approximately 2 miles west of the project (Figure 3-4).



SOURCE: Solano County, October 2015 and March 2018; State of California, 2024; ESA, 2023; Maxar, 2021.
***NOTE:** Crosshatched areas are in Sacramento County, outside the jurisdiction of the Solano County Airport Land Use Commission. The Rio Vista ALUCP is advisory only in these areas

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Figure 3-4
Project Setting within the Solano County Airport Environs

The California Airport Land Use Planning Handbook (Handbook) is the guidance airport land use commissions must reference when preparing airport land use compatibility plans (ALUCPs) (Public Utilities Code Section 21674.7(a)). The Handbook identifies four primary elements of compatibility to consider when formulating airport land use policies and criteria (California Department of Transportation 2011). Of these compatibility factors, the following three have implications for exposure to safety hazards and excessive noise: noise, safety and airspace protection.

Noise addresses the potential for exposure of the public to aircraft noise. Safety concerns risks to people on the ground as well as to aircraft in flight. Airspace protection concerns preservation of the critical airspace traversed by aircraft in flight. Airspace protection is further subdivided into three hazards to flight: airspace obstructions, wildlife hazards, and other hazards to flight. Airspace obstructions include objects, such as buildings, communication towers, and trees, penetrating imaginary airspace surfaces delineated in accordance with federal guidance (Federal Aviation Administration, 2010). Wildlife hazards include interactions by aircraft with animals, particularly birds, which may endanger the aircraft and occupants. Other hazards to flight include a variety of phenomena which can include glare, distracting lights, smoke, dust, steam, electromagnetic interference, and thermal plumes.

As required by the 2018 Rio Vista ALUCP (SCALUC 2018) and the updated 2024 public draft Rio Vista ALUCP (County of Solano 2024) Policies WH-1 and WH-2, a wildlife hazard analysis (WHA) was conducted for the project to evaluate existing and potential future conditions for wildlife hazards to aircraft. Detailed information regarding methods and results of the WHA can be found in that report (Environmental Science Associates 2024; Appendix K, *Wildlife Hazard Analysis*).

A Phase I Environmental Site Assessment was prepared for the project by Geocon Consultants, Inc. (Geocon Consultants, Inc. 2023) (Appendix L, *Phase I Environmental Site Assessment*).

Impacts

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

Restoration and construction activities associated with the project would require the use of heavy equipment and vehicles. Most of this equipment requires petroleum products such as fuel, hydraulic fluids, antifreeze, and lubricants for effective operation. There is a risk of small fuel or oil spills as a result of fuel replenishment and other lubricant and hydraulic fluid changes and replenishments that may be required during equipment use; however, this would have a negligible impact on public health because all hazardous materials would be stored, handled, and disposed of according to manufacturers' recommendations, and any spills would be cleaned up in accordance with existing regulations. Restoration and construction activities would be conducted with standard construction practices and in accordance with all applicable California Division of Occupational Safety and Health and other safety regulations to minimize the risk to the public. Compliance with federal, state, and local hazardous materials laws and regulations would minimize the risk to the public presented by potential hazards during restoration/construction activities associated with the project. Transportation of any hazardous materials generated by demolition or excavation is regulated by the U.S. Department of Transportation and Caltrans. As such, transportation of hazardous materials offsite must be handled by licensed hazardous waste haulers.

To further reduce the risk of hazardous materials releases, the environmental protection measures detailed in Chapter 2 will be implemented, specifically the preparation of an HMMP and SPCCP. Therefore, potential impacts would be **less than significant**, and no mitigation is required.

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

The project would include the use of petroleum products such as fuel, hydraulic fluids, antifreeze, and lubricants for effective operation. Improper use, storage, or handling could result in a release of hazardous materials into the environment, which could pose a risk to construction workers and the public. However, contractor(s) would be required to comply with existing government regulations in its use and disposal of these materials, and such materials would not be used in sufficient strength or quantity to create a substantial risk to human or environmental health. The proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. To further reduce the risk of hazardous materials releases, the environmental protection measures detailed in Chapter 2 will be implemented, specifically the preparation of a HMMP and SPCCP. The impact would be **less than significant**, and no mitigation is required.

Additionally, a Phase I Environmental Site Assessment (Appendix L) was prepared for the project by Geocon Consultants, Inc. (Geocon Consultants, Inc. 2023). The Phase I Environmental Site Assessment revealed no evidence of recognized environmental conditions, controlled recognized environmental conditions, or significant data gaps in connection with the site or on adjoining or adjacent properties. The past agricultural use on the site from as early as 1964 to sometime prior to 1993 is considered a potential environmental concern for the site, as pesticides applied during the 1950s to 1970s (if any) may have included environmentally persistent pesticides such as organochlorine pesticides (and associated metals such as arsenic and lead) may be present in the soil as a result. Given the planned livestock grazing and wetland restoration of the site, an assessment of soil for pesticides was not recommended in the Phase I Environmental Site Assessment. If the land use of the site is ever planned for residential, institutional, or daycare, collection and chemical analysis of soil samples to assess the potential presence or absence of persistent pesticides and associated metals in shallow soil on the site may be warranted. The impact is **less than significant**, and no mitigation is required.

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

The project would not emit hazardous emissions, nor would hazardous or acutely hazardous materials, substances, or waste be located within 0.25 mile of a school because there are no schools within 0.25 mile of the project site. The closest school to the project site is D.H. White Elementary School, approximately 1.1 miles to the southwest, at 500 Elm Way in Rio Vista. **No impact** would occur.

d. Be located on a site that 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?

The project site is not located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (California Environmental Protection Agency 2023). **No impact** would occur.

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

This section relies on information and findings presented in the Cache Slough Mitigation Bank Wildlife Hazard Analysis (WHA) (Environmental Science Associates 2024). That analysis included an evaluation of the potential for the proposed project to attract wildlife hazardous to aircraft in flight as well as recommended mitigation measures to reduce the attractiveness of the site enhancements to potentially hazardous wildlife.

Analysis of Project Compatibility with Applicable ALUCPs

The project site occurs within the airport influence areas for Travis AFB and Rio Vista Airport (Figure 3-4). Thus, the ALUCPs for each facility have been reviewed to assess the compatibility of the project site. The project is discussed in the context of each ALUCP in the sections below.

Travis AFB

The project site is outside of the Outer Perimeter of the WHA Boundary where a WHA relating to operations at Travis AFB is required. The project site is within Compatibility Zone D of the Travis Air Force Base Land Use Compatibility Plan (Travis AFB LUCP). Compatibility Zone D is comprised of areas beneath imaginary airspace surfaces and other areas subject to overflights. Limits on the heights of structures and notification of overflights are the compatibility criteria primarily applicable in this zone. No land uses are prohibited within Compatibility Zone D. Buildings proposed to be 200 feet or higher above the ground level require review by the Solano County Airport Land Use Commission (Solano County Airport Land Use Commission 1988). The Compatibility Zone D development criteria indicate hazardous wildlife attractants and other hazards to flight shall not be permitted (Solano County 2015). The compatibility of the project with the Travis AFB LUCP according to each compatibility factor is summarized below.

Noise

No noise criteria are applicable in Compatibility Zone D.

Safety

No safety criteria are applicable in Compatibility Zone D.

Airspace Protection

No structures are proposed as part of the project, so no penetrations of 14 CFR Part 77 airspace surfaces would occur. Likewise, no new sources of glare, lights, or electrical interference would be introduced.

As depicted in Figure 3-4, the project site is outside of the Travis AFB Outer WHA Boundary. Thus, a WHA is not required to demonstrate compatibility with the Travis AFB LUCP. However, the airspace protection criteria for Compatibility Zone D states that no "land uses that may attract birds to increase in the area shall be permitted."

A WHA was prepared for the project (Environmental Science Associates 2024; Appendix K), as required for projects within the WHA boundaries for Rio Vista Municipal Airport. The WHA indicated that although the project would alter the habitat and bird activity in the area around the proposed site, it would not constitute a hazard to aviation. An assessment of the preliminary design of the project determined hazardous wildlife activity would not be increased due to multiple factors including:

- The restoration would significantly reduce occurrences of large aggregations of waterfowl in the winter.
- Assemblages of resident breeding birds during non-winter months would not change.
- The distribution of large-canopy trees throughout the site would be sufficiently spaced to avoid suitable roosting and nesting sites.

These findings indicate the attractiveness of the project site would decrease significantly. When considered in tandem with a regimen of mitigation measures, enumerated below, the project does not present any incompatibility with any of the policies, criteria, or standards of the Travis AFB LUCP.

Rio Vista Municipal Airport

As delineated in the 2018 Final Rio Vista ALUCP (Solano County 2018) and the Revised Draft Rio Vista ALUCP (Solano County 2024) and depicted in Figure 3-4, the northwestern portion of the project site (205 acres) overlaps with the Inner WHA Boundary and Safety Zone 6, the traffic pattern zone, for Rio Vista Airport. The remainder of the site is within the Outer WHA Boundary.

Safety Zone 6 includes the area beneath the regular traffic patterns and entry and exit routes to and from Rio Vista Airport. In Safety Zone 6, nonresidential intensity for new development is limited to 200 people per acre with a limit of 800 people on any single acre. Airport Land Use Commission review is required for any proposed objects 200 feet or more in height above ground level in Safety Zone 6. The safety compatibility criteria for Zone 6 requires that a WHA be prepared for any project with potential to attract wildlife hazardous to aircraft operations, and all feasible mitigation measures must be incorporated into the planned land use.

Land uses that enhance or restore natural areas with potential to attract birds proposed outside the Inner WHA Boundary but within the Outer WHA Boundary require preparation of a WHA and incorporation of all feasible mitigation measures. The WHA must demonstrate that wildlife movement to and from the site will not pose a hazard to aircraft in flight. The compatibility of the project with the Rio Vista ALUCP according to each compatibility factor is summarized below.

Noise

The project site is outside of the noise contour range in which the Rio Vista ALUCP noise criteria would apply, and the project would be compatible with the ALUCP noise policies and criteria.

Safety

The project would be maintained as a natural area and does not propose any assemblages of people which would conflict with the development intensity limits applicable in Safety Zone 6. The project would be compatible with the safety policies and criteria of the Rio Vista ALUCP.

Airspace Protection

No structures are proposed as part of the project, and no penetration of 14 CFR Part 77 airspace surfaces for Rio Vista Airport would occur. Likewise, no new sources of glare, lights, or electrical interference would be introduced.

The project site is located partially within the Inner WHA Boundary and partially within the area between the Inner and Outer WHA Boundaries. Therefore, a WHA demonstrating the project would not create or expand wildlife attractants which could pose a risk to aircraft in flight is needed. Furthermore, the WHA must demonstrate wildlife movement to and from the site will also not pose a hazard to aircraft in flight.

As stated in the airspace protection discussion regarding Travis AFB, a WHA was prepared for the project (Environmental Science Associates 2024; Appendix K) as required by the Rio Vista ALUCP. The WHA findings regarding the proposed project preliminary design characteristics indicate that hazards related to movement of wildlife to and from the site would be reduced relative to existing conditions, as the attractiveness of the site to migratory birds, specifically large waterfowl, would be decreased during winter months compared to the current condition of the site.

Based on the proposed project design, general bird-habitat associations, and nearby sites with habitat conditions similar to the post-project conditions, the WHA identifies the following potential changes in wildlife hazards.

- Reduced risk through elimination of prolonged standing or ponded water that is attractive to waterfowl as refuge and foraging habitat. Current water management practices will cease and there will be a reduction in the availability of forage (i.e., seeds) for ducks and geese associated with the inundation of areas that support annual plants. Conversion to a tidal hydrologic regime, with ebb and flow of tidal waters across the site, may still attract waterfowl, but in lower numbers than are currently present under the existing management regime.
- Reduced risk through changes in management activities and vegetation structure that will reduce foraging opportunities for geese. Conversion from managed marsh, seasonal wetlands, and grassland to tidal marsh will eliminate current management practices such as disking and grazing that promote new vegetative growth that provide forage for geese. The dense growth of emergent vegetation within a mature tidal marsh and riparian shrub/scrub will be less of an attractant to geese due to the reduction in forage and refuge areas.
- Reduced risk from terrestrial-foraging raptors (e.g., turkey vultures) due to conversion of grassland to riparian and tidal freshwater marsh.
- Slight potential increased risk from wading birds (e.g., herons, egrets) that use shallow fringes of open water and tule marshes.
- Potential increase in nesting raptors after riparian trees have matured. Any risk is likely to be negligible given the presence of other tree-nesting habitat in the vicinity of the Project area and the spatial limit of the number of raptor nesting territories the site could support.

- Potential hazards from blackbirds are likely to remain similar to current conditions in the Project area because they will continue foraging in grasslands and nearby fields during winter and nesting in emergent freshwater vegetation during spring and summer.

In summary, habitat restoration on the project site will result in a transition from a landscape dominated by managed marsh, seasonal wetlands, and annual grassland to a landscape dominated by perennial marsh and riparian. Changes to the current water regime (non-tidal to tidal) and vegetation composition (seasonal to perennial) is expected to favor birds smaller in body size (e.g., passerines and icterids [i.e., blackbirds]) and reduce the numbers of large migratory waterfowl (geese and ducks) that are supported by existing habitat conditions. The expected shift from larger migratory birds to smaller resident bird species as the primary occupants of the project site is expected to reduce flight hazards for the airport. In general, resident birds are not likely to fly as high as migratory birds since their movements are focused on moving between nearby habitats, and they don't need to gain altitude for purposes of long-range flights.

Detailed methods, results, and conclusions of the WHA are presented in Appendix K.

Prescribed mitigation measures in tandem with preliminary design features would prevent the project from resulting in an increase in bird attractants at the proposed site, and with mitigation incorporated, the project would not present any incompatibility with any of the policies, criteria, or standards of the Rio Vista ALUCP.

Mitigation Measures

As it would not conflict with applicable ALUCP noise and safety criteria, the project would not result in exposure of any population to excessive noise, and no populations on the ground would be exposed to a safety hazard. However, the restored natural features of the project site could potentially attract wildlife, which could be hazardous to aircraft in flight. The WHA prepared for the project in accordance with the Rio Vista ALUCP recommends specific mitigation measures that would decrease the attractiveness of the project site to wildlife that could be hazardous to aircraft. Implementation of mitigation measures HAZ-1, HAZ-2, HAZ-3, HAZ-4, HAZ-5, HAZ-6, HAZ-7, and HAZ-8, would reduce potentially significant impacts to **less-than-significant** with mitigation.

Mitigation Measure HAZ-1: Design Habitat Features that Minimize Bird Attractants

The following measures will be incorporated into the final habitat design and planting plan to reduce vegetation characteristics that promote large congregations of birds that pose the greatest hazard to aircraft.

1. Develop a planting plan that conforms to the following guidelines:
    a. Tree planting will be limited to a minimum average of 20 feet on-center to promote an open tree canopy and reduce overlapping branches.
    b. Riparian plantings will favor tree species that provide limited forage for birds, such as alders, cottonwoods, willows, and oaks.
    c. Planted fruit and nut-bearing trees and shrubs such as elderberry, blackberry, dogwood, and walnut will be avoided.

   d. Willow and dogwood plantings will be limited to no more than 10 percent of restoration area to minimize dense vegetation thickets that can be inhabited by large groups of songbirds.

2. Subtidal channels will be designed to a depth of 7 feet or greater at high tide to discourage the growth of emergent vegetation within open water portions of the project site, limiting habitat for dense-nesting birds such as blackbirds.
3. Aquatic features on the tidal marsh plain will be designed to drain to the subtidal channels on low tide to prevent the establishment of persistent ponds or basins.
4. Avoid installing infrastructure that is designed to attract birds or other wildlife (e.g., nesting boxes) in the project area.

Mitigation Measure HAZ-2: Dewater the Restoration Area Prior to and during Construction

Prior to initiating restoration activities, existing managed water levels onsite will be reduced to the extent practicable to minimize areas of standing water that could attract birds. Groundwater encountered during construction will be managed to avoid large areas of prolonged ponding.

Mitigation Measure HAZ-3: Conduct Periodic Biological Monitoring during Construction

During construction, if a biological monitor is not already required by project permits, a qualified biologist will conduct site visits on a minimum bi-weekly basis to evaluate site conditions, identify potential attractants, and advise on wildlife management methods as needed. Areas of concern (i.e., ongoing construction activities or conditions attracting large flocks of birds for extended periods) will be brought to the attention of the construction manager and the Rio Vista Airport Land Use Commission representative and appropriate actions to address bird attractants will be implemented according to Mitigation Measures HAZ-4 and HAZ-5.

Mitigation Measure HAZ-4: Implement Construction Best Management Practices to Maintain a Clean Work Area

Follow standard construction BMPs such as properly disposing of trash to avoid attracting wildlife to the construction site. At minimum, food-related trash will be placed in closed containers and removed from the project site at the end of each work week.

Mitigation Measure HAZ-5: Deter Bird Use of Disturbed Areas during and Immediately Following Construction

If large flocks of birds are attracted to the project site during grading or grubbing activities, a means of harassment (e.g., lasers, pyrotechnics) will be used to disperse birds. Ultrasonic bird deterrents may be used in active construction areas where preconstruction bird surveys have confirmed the absence of nearby nesting activity. After initial seeding and outside of the nesting season, deploy deterrents (e.g., propane cannons, lasers, pyrotechnics, or other agency-approved methods) to haze birds such as geese, who may be attracted to new plant growth. The use of bird deterrents will comply with all relevant state and federal laws. As applicable, preconstruction bird surveys will be performed prior to use of deterrents when performed

during the breeding season (generally March 1 through August 31) to ensure that suitable buffers are established to prevent adverse effects on nesting birds.

Mitigation Measure HAZ-6: Develop and Implement Adaptive Management Strategies to Address Wildlife Hazards

Incorporate an adaptive management strategy for wildlife hazards in the mitigation bank's long-term management plan. Management actions would be implemented on an as-needed basis to address observed wildlife hazards and may include, but are not limited to, vegetation management actions such as pruning mature trees to maintain an open canopy, removing snags, and use of bird deterrents as described under Mitigation Measure HAZ-5. The need for and type of adaptive management actions would be coordinated between the mitigation bank land manager, the Rio Vista Municipal Airport, and the Conservation Easement holder for the mitigation bank. Wildlife hazard concerns identified by the Rio Vista Airport would be communicated to the land manager through a through a memorandum of understanding, as described under Mitigation Measure HAZ-7.

Mitigation Measure HAZ-7: Develop and Implement a Public Safety Memorandum of Understanding

Establish a chain of communication between the mitigation bank land manager and the Rio Vista Municipal Airport related to public safety concerns. A communication protocol will be outlined in a memorandum of understanding between the mitigation bank land manager and the city of Rio Vista. The MOU will identify primary contacts, preferred methods and frequency of communication between mitigation bank land manager and the Rio Vista Airport, and timelines for responses and remediation. At minimum, the land manager will coordinate with the Rio Vista Airport at least once annually to discuss current concerns and outcome of any adaptive management activities implemented in accordance with Mitigation Measure HAZ-6.

Mitigation Measure HAZ-8: Conduct a Post-construction Wildlife Hazard Assessment

Westervelt will conduct a Wildlife Hazard Assessment (12-month continuous survey according to Federal Aviation Administration protocols) for the Rio Vista Municipal Airport following project implementation. The assessment will be initiated at least 3 years and no more than 6 years after the completion of construction activities that restore tidal connection to the project site. This will allow time for the establishment of vegetation cover representative of tidal marsh habitat. The assessment will identify the current degree of wildlife hazards to document that habitat restoration activities have not resulted in an increase in wildlife hazards relative to baseline no-project conditions. The post-construction Wildlife Hazard Assessment will be provided to the Rio Vista Airport and Solano County Airport Land Use Commission.

If the Wildlife Hazards Assessment demonstrates that there is an increase in wildlife hazards during a particular time of year or within a particular portion of the project area, then adaptive management strategies will be implemented according to Mitigation Measure HAZ-6 to address these concerns. Management actions to address the hazards will be implemented within a reasonable timeframe, as determined by the land manager, Rio Vista Airport, and applicable resource agencies. Following implementation of management actions, a subsequent Wildlife Hazards Assessment will be performed to verify that the management actions addressed the wildlife hazards concerns.

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

Restoration

The project site is on privately owned land. All restoration work would be completed within the interior of the site. No aspect of the restoration component of the project would substantially impair an adopted emergency response plan or emergency evacuation plan. **No impact** would occur.

Low Water Crossing

The project site is on privately owned land. The low water crossing over SR 84 would be coordinated with Caltrans and would always have at least one lane open for travel and include flaggers to control traffic. The project would not cause rerouting of traffic or road closures; also, construction activities would not result in emergency vehicles or law enforcement delays. Staging is planned to be within the project site and outside of public roads and SR 84. Therefore, the project would have **no impact** on local emergency response plans or emergency evacuation plans.

g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The project would include the construction of a low water crossing over SR 84 and would re-establish tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the project site. The project site is on privately owned land that is not in a High or Very High FHSZ. The slope of the project site is generally level and there are no residences. Even though the project area is not in a High or Very High FHSZ, during the construction/restoration period, the potential exists for an accidental ignition of a wildland fire due to the use of power equipment and vehicles. However, Mitigation Measure HAZ-9 would reduce this impact to less-than-significant levels by requiring onsite fire suppression equipment and spark arrestors on all equipment with internal combustion engines and restricting activities on high fire danger days. The proposed project does not involve construction of residential or commercial structures or any other structures for human occupation. Therefore, the project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. The impact is **less than significant** with adherence to environmental protection measure 14 (Wildfire Prevention) and Mitigation Measure HAZ-9.

Mitigation Measure HAZ-9: Fire Prevention Measures.

The following fire prevention measures will be implemented.

1. All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors.
2. Work crews will have appropriate fire suppression equipment available at the work site.
3. On high fire danger days a burn permit is required (as issued by YSAQMD), flammable materials will be kept at least 10 feet away from any equipment that could produce a spark, fire, or flame.

X. Hydrology and Water Quality

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

Environmental Setting

The project site is predominantly within the Sherman Lake-Sacramento River watershed; however, a small northeastern portion of the project site is within the Cache Slough watershed. Both the Sherman Lake-Sacramento River and the Cache Slough watersheds are within the larger Lower Sacramento watershed. The project site is at the southern end of the Yolo Bypass and at the confluence of the Sacramento River, Cache Slough, Steamboat Slough, and Watson Hollow Slough. The Sacramento River and Cache slough are adjacent to the project site to the southeast; Watson Hollow Slough is north and northeast of the project site; and Steamboat Slough is less than half a mile east of the project site. Currently the site does not have a direct hydraulic connection to Cache

Slough or the Sacramento River under non-flood conditions. Field drains are aligned in a southwest to northeasterly direction and drain directly into Watson Hollow Slough through culverts. Watson Hollow Slough ties into Cache Slough through four 60-inch culverts below SR 84 (MBK Engineers 2024). The Sacramento River provides a significant source of fresh water to the Delta. The Sacramento River (Sacramento City Marina to Suisun Marsh Wetlands) is impaired for fipronil, pyrethroids, water temperature, and toxicity. Cache Slough is impaired for bifenthrin, cyhalothrin, lambda, mercury, permethrin, and pyrethroids. The project site drains into the Delta waterways (northern portion), which is impaired for chlordane, chlorpyrifos, DDT (dichlorodiphenyltrichloroethane), diazinon, dieldrin, Group A pesticides, invasive species, mercury, polychlorinated biphenyls, and toxicity (State Water Resources Control Board 2022).

The project site is in the greater Sacramento Valley Groundwater Basin, specifically the Solano Subbasin (California Department of Water Resources 2004). The subbasin is considered a medium priority basin. Five Groundwater Sustainability Agencies in the Solano Subbasin developed a single Groundwater Sustainability Plan to manage groundwater in the Subbasin (Luhdorff & Scalmanini Consulting Engineers 2021). Groundwater recharge is primarily from rivers and streams draining the Sierra Nevada and the Coast Ranges, and infiltration of precipitation and surface water applied for irrigation (Bennett et al. 2011). Groundwater conditions in the Solano Subbasin are generally stable. Short-term groundwater level fluctuations from spring to fall with rising levels occur in response to groundwater recharge during the winter and lowering levels in the fall result from increased seasonal groundwater demands during the summer. Longer-term trends in groundwater levels are associated with changing hydrologic conditions (i.e., wet and dry periods). Groundwater in the Solano Subbasin is considered to be of generally good quality, and useable for both domestic and agricultural purposes (California Department of Water Resources 2004). In the study area, one or more trace elements were detected at high and medium concentrations of the primary aquifers in about 30 percent and 24 percent, respectively. Arsenic and boron were the two trace elements that were most frequently detected at concentrations greater than benchmarks (Bennett et al. 2011).

Land surface elevation in the Delta is as much as 25 feet below sea level. The area is protected from daily flooding by an extensive system of privately owned levees and levees that are part of the State Plan of Flood Control (California Department of Water Resources 2023). The Mellin Levee–Rio Vista levee system is a portion of a large-scale levee project, the Sacramento River Flood Control Project. The Mellin Levee–Rio Vista levee system protects a small area within the City of Rio Vista from flood waters coming down the Yolo Bypass that pass into the Sacramento River. A nonurban population and a significant number of structures are present within the leveed area. SR 84 crosses through the leveed area. The Mellin Levee–Rio Vista levee system is constructed of earthen embankments and requires year-round maintenance. The Central Valley Flood Protection Board is the non-federal sponsor and is the responsible agency for the operation and maintenance of the levee system. The Mellin levee segment is 1.17 miles long and protects 0.32 square mile (U.S. Army Corps of Engineers 2022a). The Solano County Levee 28 is a 6.09-mile-long levee along Cache Slough and the Sacramento River protecting 6.45 square miles (U.S. Army Corps of Engineers 2022b). Projects are planned to enhance flood protection including improving the Mellin levee (Little Egbert Joint Powers Agency 2021).

Areas with a 1-percent probability of annual flooding are considered to be in a Special Flood Hazard Area, otherwise known as a 100-year floodplain. According to the Federal Emergency Management Agency (FEMA), the project is within the FEMA 100-year flood zone, specifically Zone AE, where base flood elevations are known (Federal Emergency Management Agency 2009a, 2009b).

Impacts

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Restoration

Construction

Construction activities associated with the proposed project include ground-disturbing activities such as trenching, backfilling, and grading. Ground-disturbing activities and runoff from work areas could cause soil erosion and sedimentation, reducing water quality in Cache Slough or the Sacramento River. The potential impacts on water quality are related to sediment and sediment-bound pollutants that may be mobilized into waterbodies. Additionally, hazardous materials (e.g., gasoline, oils, grease, lubricants) from construction equipment could be accidentally released during construction. Accidental discharge of hazardous materials to surface waters during construction could temporarily adversely affect water quality or result in a violation of water quality standards. Contaminants from construction vehicles and equipment and sediment from soil erosion could increase the pollutant load in runoff being transported to receiving waters.

However, the project would prepare and implement a SWPPP that would be consistent with the Statewide Construction General Permit (Order No. 2022-0057-DWQ). The SWPPP would detail the construction-phase erosion and sediment control BMPs and the housekeeping measures for control of contaminants other than sediment. Erosion control BMPs would include source control measures, such as wetting of dry and dusty surfaces to prevent fugitive dust emissions, minimizing vegetation disturbance, and effective soil cover to control erosion such as natural fibers (e.g., straw mulch, jute, hydroseeding) for inactive areas and finished slopes to prevent sediments from being dislodged by wind, rain, or flowing water. Sediment control BMPs would include measures such as installation of fiber rolls and sediment basins to capture and remove particles that have already been dislodged. The SWPPP would establish good housekeeping measures such as construction vehicle storage and maintenance, handling procedures for hazardous materials, and waste management BMPs, which would include procedural and structural measures to prevent the release of wastes and materials used at the site. The SWPPP also would detail spill prevention and control measures to identify the proper storage and handling techniques of fuels and lubricants, and the procedures to follow in the event of a spill. In addition, prior to the construction mobilization, an HMMP and SPCCP would be developed and implemented to reduce the likelihood of a spill of toxic chemicals and other hazardous materials during construction.

Dewatering may be necessary to remove any standing water in grading areas. Dewatering could result in the exposure of pollutants from spills or other activities and may contaminate groundwater. The Construction General Permit includes dewatering activities as authorized non-stormwater discharges, provided that dischargers prove the quality of water to be adequate and not likely to affect beneficial uses. The permit also includes discharge sampling, monitoring, and reporting requirements. In addition to the requirements outlined in the Construction General Permit, the project would be in compliance with the Waste Discharge Requirements Limited Threat Discharges to Surface Waters (Order No. R5-2022-0006), including meeting water quality standards prior to discharge or treated and disposed of, as needed.

Additionally, project activities would be subject to CWA Section 401 Water Quality Certification for discharges of dredged or fill materials through the CVRWQCB. This certification would ensure that project activities are consistent with the state's water quality standards and criteria. As part of this certification, CVRWQCB would require erosion controls in all areas disturbed by project activities and the completion of monitoring. In addition, measures to protect water quality include managing in-water work access and in-water placement of materials, structures, and operation of equipment including practices for construction equipment that may enter wetlands or below the water bank and the type of hydraulic fluids used to operate such equipment.

Compliance with the requirements of the Construction General Permit and CWA Section 401 Water Quality Certification would ensure that the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Therefore, impacts would be less than significant.

Operation

The project involves re-establishing tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the project site. A series of open water features, including tidal and subtidal channels, would be excavated throughout the project site, and sized to accommodate water flows associated with daily tidal fluctuations to prevent scour velocities. The direct hydraulic connection to tidal waters would allow full ecological functions and species access to the interior of the site and to minimize erosion.

Restoring tidal flows to the project site could alter salinity concentrations and associated beneficial uses. However, the project would result in an unsubstantial change in regional salinity in the Delta. Water quality impacts of the project were modeled relative to baseline and future conditions (Appendix M, *Modeling Evaluation of Water Quality Changes*). The baseline condition includes recently constructed or underway tidal marsh restoration projects while the future condition also includes restoration of Prospect Island, McCormack Williamson Tract and the Little Egbert Multi-Benefit Project, and the proposed project. Based on modeling results, the largest increase (0.4 percent) would occur at Emmaton, the nearest downstream station from the project site. The largest decrease (less than 0.1 percent) would occur at the San Joaquin River at Antioch. Salinity increases at the North Bay Aqueduct and City of Vallejo intakes are less than 0.1 percent and salinity increases at south Delta exports and Contra Costa Water District water intakes are 0.1 percent or less. In addition, no violations of the maximum mean daily chloride objective are anticipated at any of the intakes (Resource Management Associates 2023; Appendix M).

The fate of dissolved organic carbon (DOC) that could potentially be produced in the marsh plain on the project site were also modeled. The change in DOC concentrations are anticipated to be very low outside the project site, although impacts are predominantly expected downstream. DOC may reach Chipps Island on peak ebb tide in 30 or more days. On flood tide, similar low DOC concentrations moved upstream, into Liberty Island in approximately 6 to 8 days. However, DOC concentrations are anticipated to remain low at the North Bay Aqueduct intake in Barker Slough and the City of Vallejo intake in Cache Slough, indicating that a very small fraction of any DOC potentially produced on the project site would be conveyed to these intakes (Resource Management Associates 2023). Therefore, long-term operation of the project would not violate any water quality standards or waste discharge requirements and impacts would be less than significant.

Low Water Crossing

Similar to the discussion above related to restoration, the project would implement a SWPPP. The SWPPP would include erosion control measures and BMPs to minimize water quality impacts including erosion or the accidental discharge of hazardous materials into receiving waters during construction. Construction of the low water crossing would also be in compliance with dewatering requirements to minimize water quality impacts on surface water and groundwater. Additional measures to protect water quality include management of concrete use including preventing concrete from contact with surface or groundwater during initial curing. Stormwater runoff water quality from the low water crossing would be similar to existing conditions. The project would result in an unsubstantial change in regional salinity or DOC. Construction and operation of the low water crossing would not violate any water quality standards or waste discharge requirements and impacts would be **less than significant**, and no mitigation is required.

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

The project involves re-establishing tidal freshwater wetland and floodplain-associated vegetation communities. A series of open water features, including tidal and subtidal channels, would be excavated throughout the project site. The connection to tidal waters would allow full ecological functions and species access to the interior of the site and minimize erosion. During construction, dewatering may be necessary to remove any standing water in grading areas. In the event that groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a significant impact on groundwater recharge or result in depletion of groundwater supplies. Construction-related dewatering activities, including handling and discharge of water, monitoring, and reporting, would comply with the Construction General Permit, CVRWQCB regulations, and other requirements related to dewatering activities and groundwater resources. The project is not expected to divert water away from areas in the region that would have provided groundwater recharge under existing conditions and, therefore, the local groundwater table level is not expected to be depleted. The proposed project would not result in an increase in impervious surfaces. Therefore, recharge in the area would continue to occur through infiltration of precipitation. Further, groundwater supply would not be used for construction activities or project operation, and no groundwater pumping is required. The proposed project would not significantly affect groundwater supplies, groundwater recharge, or impede sustainable groundwater management of the basin. Therefore, there would be **no impact** on groundwater supplies or recharge.

c.1. 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 that would: Result in substantial erosion or siltation on or off site?

Restoration

Construction

Project construction earth-disturbing activities such as grading and stockpiling could result in short-term water quality impacts associated with soil erosion and subsequent sediment transport and siltation. Existing drainage patterns could also be temporarily altered during construction through

grading, also potentially resulting in temporary erosion. Erosion control BMPs, defined in the project SWPPP and required by the Construction General Permit, would be implemented to manage runoff and potential erosion. Good housekeeping practices identified in the SWPPP would prevent runoff and contain associated sediment. Measures to protect water quality during construction include erosion control materials to reduce sedimentation in nearby aquatic habitat when activities are the source of potential erosion. Appropriate in-water materials use may include selection and use of gravels, cobble, boulders, and instream woody materials during restoration activities. Gravels would be clean-washed and of appropriate size to minimize the potential for siltation. Further, appropriate in-water placement of materials, structures, and operation of equipment during bank stabilization or in-water restoration would minimize the discharge of sediments. Additionally, a CDFW Lake and Streambed Alteration Agreement would be required which would prohibit leaving bare ground and require revegetation of exposed soils, as well as soil stabilization until new vegetation becomes established. Project activities would also be subject to CWA Section 401 Water Quality Certification for discharges of dredged and fill materials through the CVRWQCB. As part of this certification, CVRWQCB would require erosion controls in all areas disturbed by project activities.

Compliance with CWA Section 401 Water Quality Certification, CDFW Lake and Streambed Alteration Agreement, and Construction General Permit requirements through erosion and sediment controls would ensure impacts from erosion or siltation are **less than significant**, no mitigation is required.

Operation

The project involves establishing tidal freshwater wetland and floodplain-associated vegetation communities. A series of open water features, including tidal and subtidal channels, would be excavated throughout the project site, and sized to accommodate water flows associated with daily tidal fluctuations to prevent scour velocities. The connection to tidal waters would allow full ecological functions and species access to the interior of the site and minimize erosion. Further, rip-rap rocks are proposed as a form of erosion protection along areas of high velocities. As a result, the potential for erosion due to increases in flow velocities would be reduced. Changes in flow velocities would be localized to the area of the tidal opening at the proposed water crossing structure. Therefore, the potential for sediment deposition within the deep water shipping channel, which is approximately 4 miles away, is not expected to be considerable (MBK Engineers 2024). Following implementation, downstream erosion and siltation would be reduced, resulting in a beneficial environmental effect. There would be **no impacts** from erosion or siltation.

Low Water Crossing

Construction of the low water crossing would involve earth-disturbing activities such as grading and stockpiling which could result in short-term erosion or siltation. Existing drainage patterns could also temporarily be altered during construction. However, a SWPPP and associated erosion control measures and BMPs would minimize erosion during construction. Construction of the low water crossing would also be in compliance with CWA Section 401 Water Quality Certification, CDFW Lake and Streambed Alteration Agreement, and Construction General Permit requirements. Following implementation, erosion and siltation would be similar to or reduced compared to existing conditions. There would be no impacts related to erosion or siltation.

c.2. 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 that would: Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?

Restoration

The project would reconnect the site with Cache Slough and the Sacramento River through a new water crossing structure. Construction of a tidal opening to Cache Slough and the Sacramento River under SR 84 would allow full tidal influence currently not present at the site. After project implementation, the project area would be tidally connected on a daily basis. Under winter or summer tidal conditions, changes to daily tidal highs and lows are expected to be minimal (at most +/- 0.01 foot).

The restoration plan includes excavating tidal channels to increase tidal influence and provide habitat. Recontouring the existing pastures to create topographic complexity would promote diverse plant and habitat assemblages, including perennial emergent marsh, shallow subtidal wetlands, riparian scrub, and riparian woodlands. Construction of habitat berms and upland buffers would minimize tidal impacts on adjacent levees. Overall, existing drainage patterns onsite and offsite would not be substantially altered. Further, water diversions that rely on tidal stage to function such as siphons and pump intakes are not expected to be affected.

Two hydraulic models of the lower Sacramento River flood control system were developed to study the hydraulic impact of the project using HEC-RAS version 6.4.1 (Appendix N, *Hydrologic and Hydraulic Impact Analysis*). A flood hydraulic model was used to simulate and evaluate impacts of the project for the flood condition simulations, and a tidal model was used to simulate and evaluate impacts of the project under tidal and lower flow conditions. Model results indicate that the maximum increase in water surface elevations for the 100- and 200-year simulated flood events are no greater than +0.03 foot. Localized increase in maximum water surface elevations and flow rates would occur immediately downstream of the opening of the proposed water crossing structure at SR 84. Increases in maximum water surface elevation of +0.12 foot are modeled to occur in the property and along the northern perimeter berm of Watson Hollow Slough. The potential impacts of water surface elevations during winter tidal conditions and summer irrigation periods, including the mean higher high water surface elevation and the mean lower low surface water elevation, as a result of project implementation are considered negligible (MBK Engineers 2024; Appendix N).

Maximum water surface elevations and maximum flood extent were also evaluated for the 100-year, 24-hour rainfall-runoff event from Watson Hollow Slough. The change in maximum water surface elevation would be no greater than +0.07 foot and occurs at the junction of Watson Hollow Slough and Little Egbert Tract. The project would result in an increase in the extent of inundation onto neighboring parcels north of Watson Hollow Slough and west of the Solano County Levee 44 during a 100-year, 24-hour rainfall event on the Watson Hollow Slough basin. However, under existing conditions, areas north of the project area potentially receive runoff water from a 100-year, 24-hour rainfall event from Watson Hollow Slough. Areas north of the project site are agricultural fields and not designed or intended to drain a 100-year, 24-hour rainfall-runoff event. Additional runoff would typically be managed by pump stations which were not included in modeled simulations. Therefore, the increase in floodplain extent is not expected to be considerable (MBK Engineers 2024). The project is not expected to increase flood risk to neighboring properties or flood control infrastructures. Therefore, flood impacts would be **less than significant**, and no mitigation is required.

Low Water Crossing

The project would include the construction of a low water crossing over SR 84 and re-establish tidal connection and floodplain-associated vegetation communities within the project site. Changes in impervious surfaces could alter drainage rates and volumes. However, the low water crossing would be constructed in compliance with Caltrans drainage standards and specifications and an increase in impervious surfaces is not anticipated. Operation of the low water crossing would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite and impacts would be **less than significant**, no mitigation is required.

c.3. 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 that would: Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Restoration

Channel excavation would convert approximately 24 acres to open water. Excavated material from the channels would be used to create a habitat berm around the perimeter of the project area and create planting mounds along the channels. Construction of a tidal opening and excavation of tidal channels to increase tidal influence would transport nutrients to support the local aquatic food web. Outside of the open water channels, the project area would be revegetated with three vegetation types: emergent marsh (206.7 acres), grassland (21.5 acres), and riparian scrub shrub (78 acres). Habitat berms and upland buffers would also be constructed to minimize tidal impacts on adjacent levees (MBK Engineers 2024).

Sub-tidal and tidal channels would be excavated throughout the project area. The channels are proposed at thalweg elevations[3] ranging between -5 feet and -2 feet NAVD 88. The grading would start at the tidal opening under SR 84 and extend throughout the project area. The channels are intended to allow water to spread throughout the project area under tidal conditions. Changes in flow velocities were also compared near and within the Sacramento Deep Water Shipping Channel navigation lane to evaluate potential effects on ships navigating through the designated lane. During a tidal prism between approximately elevations 2 feet to 7 feet, the maximum change in flow velocity within the navigation lane that occurred during the tidal conditions simulations were no greater than +0.8 foot per second during an ebb tide and +0.1 foot per second during a flood tide (MBK Engineers 2024). Therefore, the project would not create or contribute runoff that would exceed the capacity of drainage systems or provide substantial additional sources of polluted runoff and there would be **no impact**.

Low Water Crossing

Construction of a low water crossing over SR 84 would be in compliance with Caltrans standards, CWA Section 401 Water Quality Certification, CDFW Lake and Streambed Alteration Agreement, and Construction General Permit requirements. Stormwater runoff water quality from the low water crossing would be similar to existing conditions. Operation of the low water crossing would not

[3] The thalweg elevation joins the lowest points along the length of a streambed in its downward slope, defining its deepest channel, marking the profile of a watercourse.

create or contribute runoff that would exceed the capacity of drainage systems or provide substantial additional sources of polluted runoff and there would be **no impact**.

c.4. 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 that would: Impede or redirect flood flows?

Restoration

Restoration includes construction of a tidal opening under SR 84 to allow tidal influence at the project site. After project implementation, the project area would be tidally connected on a daily basis. The water crossing structure would have a natural bottom opening and be constructed to provide connectivity between the project area and Cache Slough and the Sacramento River. The structure would have an invert elevation at -2 feet NAVD 88 and 3-foot-tall concrete barriers.

Channel excavation would convert approximately 24 acres to open water. Excavated material from the channels would be used to create a habitat berm around the perimeter of the project area at elevations ranging between 5 and 11 feet. Habitat mounds would provide upland transition habitat and create planting mounds along the channels. The project area would also be revegetated with emergent marsh, grassland, and riparian scrub shrub vegetation. A perimeter habitat berm is proposed along the western and northern perimeter of the project area. The berm would be constructed with elevations along the top of the berm ranging from 9.5 to 10.5 feet at finished grade and is intended to contain tidal waters on the project area, keeping the Mellin levee and other flood control features dry under regular tidal conditions. Therefore, the project would not impede or redirect flood flows and there would be **no impact**.

Low Water Crossing

The abutments for the low water crossing would be outside the top of bank and not within the ordinary high-water mark. Further, the structure would be a free-span, open bottom and with no support piers. The low water crossing would be constructed in compliance with Caltrans drainage standards and specifications. Therefore, the low water crossing would not impede or redirect flood flows and impacts would be **less than significant**, no mitigation is required.

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The project site is not in an area mapped as a Tsunami Inundation Zone (California Governor's Office of Emergency Services et al. 2022) nor is it near a river, reservoir, pond, or lake that could result in seismic seiche waves generated from an earthquake. The project site is in a FEMA 100-year flood zone. However, construction staging areas would be placed outside of the 100-year floodplains. Further, construction BMPs would reduce the risk of pollutants released in the event of inundation during construction. Following completion of construction, no pollutants would be stored or present on site. The proposed project would restore tidal freshwater marsh and riparian floodplain habitats. Therefore, the proposed project would not risk release of pollutants due to project inundation. There would be **no impact**.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Commonly practiced BMPs would be implemented to control construction site runoff and to reduce the discharge of pollutants from stormwater and other nonpoint-source runoff, as required by the Construction General Permit. The proposed project would also be required to comply with requirements set forth by the CDFW Lake and Streambed Alteration Agreement, and CWA Section 401 Water Quality Certification. As part of compliance with permit requirements during ground-disturbing or construction activities, water quality control measures and BMPs would ensure that water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface and groundwater, as defined in the Water Quality Control Plan. The NPDES Construction General Permit also requires stormwater discharges not to contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards, including designated beneficial uses. With adherence to these regulatory requirements, the project would not result in water quality impacts that would conflict with the Regional Water Quality Control Board's Water Quality Control Plan for the Central Valley Region. Therefore, impacts related to conflict with a water quality control plan would be **less than significant**, and no mitigation is required.

The proposed project would not use groundwater during construction or operation. Therefore, there would be no impact related to groundwater supply or sustainability. Further, groundwater recharge would remain similar to existing conditions, as required by a sustainable groundwater management plan. Thus, the proposed project would not conflict with a sustainable groundwater management plan. Therefore, the project would not affect the implementation of a water quality control plan or sustainable groundwater management plan. There would be **no impact**.

XI. Land Use and Planning

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

Environmental Setting

The project site is located at the southernmost reach of the Yolo Bypass at the confluence of Cache Slough, Sacramento River, and Steamboat Slough, directly south of the proposed Little Egbert Multi-Benefit Project (Figures 1-1 and 1-2). The unincorporated area of the county includes approximately 773 square miles. Approximately 81,678 acres of the county, or 14 percent of the total land area, is in cities. Solano County's cities include Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo (Solano County 2008:LU-4). Agriculture, marsh, water and watershed uses are the top four

land uses by acreage in the county (Solano County 2008:LU-5). The project area has a General Plan Land Use designation of Agriculture and is zoned Exclusive Agriculture (A-80) (Solano County 2023). The Agriculture land use designation provides areas for the practice of agriculture as the primary use, including areas that contribute significantly to the local agricultural economy, and allows for secondary uses that support the economic viability of agriculture (Solano County 2023:LU-19). The Exclusive Agriculture zoning permits conservation and mitigation banking as an allowed use with a use permit.

Impacts

a. Physically divide an established community?

The project is in an agricultural area and would not result in the construction of any features that could physically divide an established community. **No impact** would occur.

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The project site is in the Yolo Bypass area which is part of the Sacramento River Flood Control Project. The Solano County General Plan Agriculture element provides goals and policies for the future long-term protection of agricultural opportunities in the county through recognition of economic, environmental and social equity benefits. The project area is covered by three flood easements that allow flood waters from the Yolo Bypass and from Watson Hollow Slough to drain through the site. The proposed land uses would not restrict the passage of flood waters or decrease flood capacity and therefore would not conflict with the Flood Control Project.

The project would establish tidal channels deep enough to support a range of fish species while also accommodating future transitions from floodplain to tidal marsh resulting from sea level rise. The Bank property is ideally situated for restoration because it is in the greater Cache Slough Complex and is in the central portion of the North Delta Habitat Arc, which is the main river corridor area used by native migratory fish through the Delta. The project would contribute to regional conservation goals and align with priorities of California EcoRestore, the Delta Plan, and the Yolo Bypass Cache Slough Partnership Multi-Benefit Program Master Plan, by providing more than 300 acres of restored aquatic habitat for locally protected species. Land use designations would not be changed, and the project would not conflict with relevant existing land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect. **No impact** would occur.

XII. Mineral Resources

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			X	
b.	Result in the loss of availability of a locally important mineral resource recovery site				X

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
delineated on a local general plan, specific plan, or other land use plan?				

Environmental Setting

Mineral resources mined or produced in Solano County include mercury, sand and gravel, clay, stone products, calcium, and sulfur (Solano County 2008:RS-32). These resources are located throughout the county. According to Figure RS-4 in the Resources Element (Solano County 2008:RS-33), the closest mineral resource site is a sulfur site just south of the project site. There are no other active mines or mineral processing plants, or mineral resource zones in the project area and no mineral resource zones are located on the project site.

WES owns surface rights over the Bank property. However, subsurface mineral rights have been severed and are shared by various mineral rights owners. Subsurface mineral ownership is split into two areas. The northwest 59 acres of the property has three mineral owners 5,000 feet and above and one mineral owner below 5,000 feet. The southeastern 290 acres of the property has 14 subsurface mineral owners at all depths and three mineral owners below 5,450 feet.

Currently, an abandoned gas well identified by the California Geologic Energy Management Division (CalGEM) as Rio Vista Gas Unit 45 is located in the northwest corner of the project area. This well was productive between 1977 and 2017. The well was plugged and abandoned in September 2024 by California Resources Corporation in compliance with CalGEM Department of Conservation regulations.

In 2019, GEOCON Consultants prepared a Mineral Evaluation and Remoteness Opinion to assess the potential presence of economical quantities of mineral resources on or near the project site and to provide an opinion (mineral remoteness opinion) regarding the likelihood that mineral rights, which are severed from the surface estate, would be exercised and mineral extraction conducted (GEOCON Consultants 2019). An update to this assessment was prepared in 2022 (GEOCON Consultants 2022). GEOCON made the following conclusions related to non-petroleum and petroleum-based minerals:

- The probability of a third-party holder of mineral rights exploring for or extracting non-petroleum mineral resources on the property by current surface or subsurface mining methods is so remote as to be negligible.
- From a review of the CalGEM database, economic deposits of oil or natural gas are not present at depths less than 500 feet beneath the property, and therefore the probability of a third-party holder of mineral rights exploring for or extracting petroleum resources from the property at this depth interval is so remote as to be negligible.
- Based on past exploration activities and presence of an existing well on the project site, the presence of petroleum hydrocarbons and natural gas underlying the property (below 500 feet) cannot be ruled out and therefore, a third-party holder of mineral rights could choose to explore for or extract additional petroleum and natural gas resources from the property.

- Future oil or gas exploration and/or extraction could be accommodated on the property by establishing a single drilling "island" of approximately 2 to 5 acres.

Impacts

a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The project would not result in the loss of availability of any known mineral resource of value to the region or state because no such sites occur in the project site. To accommodate potential future oil or gas exploration and extraction activities on the Bank property, WES would establish a minimum 2-acre mineral site, including access and utility corridor, outside the conservation easement boundary of the mitigation bank. In the unlikely event that oil and/or gas drilling were to be conducted on the project site, the impact on the property could be limited to the designated mineral site and associated access. The project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; therefore, the impact is **less than significant**, and no mitigation is required.

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

The project would not result in the loss of availability of a locally important mineral resource recovery site because no such sites occur within the project area. **No impact** would occur.

XIII. Noise

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

Environmental Setting

Noise is generally defined as unwanted sound. The sound pressure level is the most common descriptor used to characterize the loudness (or amplitude) of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because the human ear does not perceive every sound frequency with equal loudness, sounds are often adjusted in a process called "A-weighting." The A-weighted decibel (dBA) refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy equivalent sound/noise descriptor is called equivalent noise level.

The 2008 Solano County General Plan includes guidelines and policies pertaining to noise in the county. The County's Land Use Compatibility Guideline (Table HS-3), Noise Standards for New Uses Affected by Traffic and Railroad Noise (Table HS-4) and Nontransportation Noise Standards (Table HS-5) in the County's Public Health and Safety Chapter, identify noise thresholds for various types of land uses. The following policies are applicable to the project:

- HS.P-48 - Consider and promote land use compatibility between noise-sensitive and noise-generating land uses when reviewing new development proposals.
- HS.P-52: Minimize noise conflicts between current and proposed land uses and transportation networks by encouraging compatible land uses around critical areas with higher noise potential.
- HS.I-60: Develop, adopt and implement a County noise ordinance that includes:
    - performance standards and exemptions;

- restrictions on noise-emitting construction activities based on standards for construction equipment;
- regulations for mobile or single event types of noise emissions or noise generated by added equipment including truck loading and unloading, operation of construction equipment, and amplified music;
- standards to ensure that the County personnel charged with enforcing such an ordinance are properly trained and equipped for on-site measurement techniques and other necessary tasks; and
- standardized, broadly accepted documented procedures for noise measurement collection to ensure that field measurements are conducted in a consistent manner.

The County does not include a codified noise ordinance addressing construction; however, the County Municipal Code does include Performance Standards under Chapter 28.70.10 B. b. that requires that noise not exceed 65 dBA at any property line.

The existing project site is completely undeveloped, with SR 84 on the eastern perimeter of the project area. In the project area, the principal noise sources would likely include vehicle traffic along SR 84, aircraft flyover from Rio Vista Municipal Airport (approximately 1.25 miles northwest) and typical ambient noise levels associated with undeveloped land with distance development. The primary public use airport near the project area is the Rio Vista Municipal Airport.

Sensitive noise receptors are defined as schools, hospitals, rest homes, long-term care, mental care facilities, and residences (Solano County 2008). The closest few residences near the project area are approximately 4,000 feet to the west located west of Airport Road. No schools, long-term care, or hospitals were identified based on a review of the project area.

Impacts

a. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Restoration

The restoration components of the project would re-establish approximately 300 acres of tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the project site. This would be accomplished through the grading and engineering of portions of the project site to allow water to flow on the site.

Haul and vendor trucks would be used for mobilization and demobilization of construction equipment and materials. Trucks would likely access and egress the project site via SR 84. Haul truck and vendor truck passbys would result in periodic instantaneous increases in noise but would not result in a noticeable increase in noise.[4] The project would not result in a doubling of traffic

[4] A 3 dB increase in noise is considered the point at which an increase in noise would result in the average person recognizing a change in noise levels. A doubling of a noise source with equal power would result in a 3 dB increase in noise.

noise along SR 84 associated with haul and vendor truck traffic. Therefore, impacts associated with haul and vendor truck traffic would be **less than significant**, and no mitigation is required.

Restoration activities would likely involve the use of heavy equipment such as dozers, cranes, grades, and loaders. To evaluate the effects of construction equipment on the general noise environment, construction noise was evaluated using data and modeling methodologies from the Federal Highway Administration's Roadway Construction Noise Model (Federal Highway Administration 2008) and Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual (Federal Transit Administration 2018), which predicts the average noise levels at nearby receptors based on the type of equipment proposed for use, the distance from the source to receptor, and the equipment usage factor (the fraction of time the equipment is operating in its noisiest mode while in use). This analysis estimates combined noise by modeling noise from the three loudest pieces of equipment (where applicable) that may be used concurrently (based on the equipment list included in Table 3-9) and assuming these are located near one another and near the portion of the project site closest to offsite sensitive land uses.

It was assumed that construction noise levels would be reduced at the standard rate of 6 dB per doubling of distance from the source. In addition, to provide a conservative assessment, potential barrier effects provided by walls, fences, buildings, and other objects were not included in the calculations. The equivalent continuous sound level (L_{eq}) during each phase was calculated at a reference distance of 50 feet. The reference noise levels were then adjusted for each receiver based on the horizontal distance from the project site to each receiver. These distances were estimated using project plans and aerial photography (Google Earth).

Table 3-9. Estimated Construction Noise Levels Associated with Restoration

Phase	Equipment Type	# of equip per day	Construction Noise Level @ 50 Feet, L_{eq} **(dBA)**	Construction Noise Level @ 4,000 Feet, L_{eq} **(dBA)**
Restoration	Dozer	1	83	45
	Front end Loader	1		
	Grader	1		

Noise levels from construction would not be expected to exceed 45 dBA L_{eq} during the restoration process of the project. The closest noise-sensitive receivers are approximately 4,000 feet west of the project site. At this distance construction may be audible but would not be expected to dominate the noise environment. The County does not include a quantitative construction noise threshold for construction. The County does require that noise not exceed 65 dBA at any residential property line. Noise from construction would not exceed this standard. Therefore, noise from construction is considered **less than significant**, and no mitigation is required.

The project would not include new operational noise sources which would result in changes to the ambient noise environment associated with restoration. Therefore, **no impact** would occur.

Low Water Crossing

Similar to the discussion above on restoration, construction noise was evaluated using data and modeling methodologies from the Federal Highway Administration's Roadway Construction Noise Model (Federal Highway Administration 2008) and Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual (Federal Transit Administration 2018). Table 3-10

estimates combined noise by modeling noise from the three loudest pieces of equipment (where applicable) that may be used concurrently and assuming these are located near one another and near the portion of the project site closest to offsite sensitive land uses. The same assumptions as referenced for restoration were assumed for construction of the low water crossing, with the exception of the distance to the nearest noise-sensitive receptor, which is approximately 1.5 miles from the low water crossing.

Table 3-10. Noise Level by Construction Phasing and Equipment Type

Phase	Equipment Type	# of equip per day	Construction Noise Level @ 50 Feet, Leq (dBA)	Construction Noise Level @ 3,000 Feet, Leq (dBA)
Site Mobilization	Forklift	1	78	40
	Skip Loader	1		
SR 84 Shoofly	Excavator	1	84	46
	Dozer	1		
	Grader	1		
SR 84 Bridge Excavation	Excavator	1	80	42
	Dozer	1		
SR 84 Bridge Foundation	Pile Driver	1	94	56
	Forklift	1		
	Air Compressor	1		
SR 84 Bridge Superstructure	Forklift	1	81	43
	Excavator	1		
	Compactor	1		
SR 84 Roadwork	Grader	3	86	48
SR 84 Shoofly Removal	Forklift	1	81	43
	Excavator	1		
	Dozer	1		
Site Demobilization	Forklift	1	78	40
	Skip loader	1		

There are eight phases proposed for project construction. Based on the relevant construction list, the bridge foundation phase would be the loudest phase because it would include the use of a pile driver. Noise levels from construction would not be expected to exceed 56 dBA L_{eq} during this phase and would not be expected to exceed 46 dBA L_{eq} during any other phase of construction. The bridge foundation phase of construction may be audible during construction at the closest residence (approximately 3,000 feet northeast of the project site). The County does not include a quantitative construction noise threshold for construction. The County does require that noise not exceed 65 dBA at any property line. Noise from construction would not exceed this standard. Therefore, noise from construction is considered **less than significant**, and no mitigation is required.

b. Generate excessive groundborne vibration or groundborne noise levels?

Restoration

Vibration from construction-related activities at the project site is evaluated to determine if

potential impacts related to structural damage or human annoyance/sleep disturbance would be expected to occur. Vibration levels at nearby receptors from construction activities are calculated using the source vibration levels and attenuation equation of PPV = PPV_{ref} x (25/distance)$^{1.5}$ from the Federal Transit Administration guidance, where PPV stands for peak particle velocity.[5] In the absence of specific local numerical construction vibration thresholds, calculated values are compared to the Caltrans structural damage criteria, which vary according to structure type, and the Caltrans annoyance criteria. These criteria are shown in Tables 3-11 and 3-12.

Table 3-11. Vibration Damage Potential Threshold Criteria Guidelines

	Maximum PPV (inches per second)	
Structure and Condition	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2020.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or the use of drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 3-12. Vibration Annoyance Potential Criteria Guidelines

	Maximum PPV (inches per second)	
Human Response	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation 2020.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or the use of drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

The project site is undeveloped, and the closest vibration-sensitive receptor is approximately 4,000 feet to the west. At a reference distance of 25 feet, the most vibration-intensive equipment anticipated to be used for the restoration phase of the project would be a dozer which would produce a PPV vibration level of 0.089 inch per second (in/sec) (California Department of Transportation 2020).

[5] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, FTA Report No. 0123, 2018, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf, accessed August 7, 2023.

Damage

Regarding potential vibration-related damage impacts, the nearest physical structure to the project site is a prefab metal building approximately 265 feet southwest of the project site boundary. Based on the structure age, type, and condition of this structure, it would likely be a commercial building (which has an applicable vibration-related damage threshold of 2.0 PPV in/sec). At a distance of 265 feet from construction activities vibration from a large bulldozer would not be noticeable (0.003 PPV in/sec). Because this vibration level is well below the damage criterion of 2.0 PPV in/sec that would apply to this nearby structure, and vibration levels at further distances would be even lower, vibration from construction of the proposed project is not anticipated to result in any damage impacts on nearby structures. For these reasons, vibration-related damage impacts would be considered less than significant.

Annoyance

Regarding the potential for annoyance-related vibration impacts, residential land uses are considered to be most sensitive to vibration during nighttime hours when people generally sleep. The nearest land use where people sleep is approximately 4,000 feet west of the project site. At this distance, vibration levels from project construction would not be noticeable. Because vibration from project construction would not be expected to exceed the applicable vibration-related annoyance criteria at nearby sensitive uses, vibration-related annoyance impacts would be less than significant.

Low Water Crossing

Similar to the discussion above, vibration associated with the low water crossing was evaluated to determine whether vibration would result in impacts associated with the proposed project.

Damage

Regarding potential vibration-related damage impacts, the nearest physical structure to the project site is a residence located approximately 3,000 feet northeast of the project site boundary. The location is a residence (which has an applicable vibration-related damage threshold of 0.5 PPV in/sec). Construction of the low water crossing would include the use of pile driving. At a reference distance 25 feet, an impact pile driver would result in a PPV vibration level of 0.65 in/sec (California Department of Transportation 2020). At a distance of 3,000 feet from construction activities vibration from a pile driver would not be noticeable (0.0005 PPV in/sec). Because this vibration level is well below the damage criterion of 0.5 PPV in/sec that would apply to this nearby structure, and vibration levels at further distances would be even lower, vibration from construction of the proposed project is not anticipated to result in any damage impacts on nearby structures. For these reasons, vibration-related damage impacts would be considered **less than significant**, and no mitigation is required.

Annoyance

Regarding the potential for annoyance-related vibration impacts, residential land uses are considered to be most sensitive to vibration during nighttime hours when people generally sleep. The nearest land use where people sleep is approximately 3,000 feet northeast of the project site. At this distance, vibration levels from project construction would not be noticeable. Because vibration from project construction would not be expected to exceed the applicable vibration-related

annoyance criteria at nearby sensitive uses, vibration-related annoyance impacts would be **less than significant**, and no mitigation is required*.*

In addition to possible damage and annoyance, vibration impacts associated with pile driving could affect special-status fish. The project includes installation of piles to support the foundation of the low-water crossing and sheet piles to prevent ground water seepage into the water crossing construction area. Most of these piles would be located on dry land, with the exception of the sheet piles, which may be located close to the edge of the water. As such, vibration resulting from pile driving could impact special-status fish species and would be potentially significant. Potential pile-driving impacts on special-status are described in *Section IV. Biological Resources.* In addition to the project's environmental commitment restricting in-water construction activities from June 1 to November 1 when most special-status fish species would not be present in the project area, the project will implement Mitigation Measures BIO-10 and BIO-11, which include methods to reduce sound pressures below agency threshold limits, consistent with the Fisheries Hydroacoustic Working Group's Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities (Fisheries Hydroacoustic Working Group 2008) and *Guidance for Assessment of Hydroacoustic Effects of Pile Driving on Fish* (California Department of Transportation 2020). As such, vibration impacts on special-status fish would be reduced to l**ess than significant with mitigation**.

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

The closest public use airport to the project site would be Rio Vista Municipal Airport approximately 1.25 miles northwest of the project site. However, as the project would not include any component that would develop residential or commercial development (which would result in people being exposed to excessive aircraft noise), there would be **no impact** related to excessive aircraft noise levels.

XIV. Population and Housing

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

Environmental Setting

In 2022, Solano County's estimated population was 448,747 and total housing units was 164,682 (U.S. Census Bureau 2022). The project site is rural and unpopulated with agricultural lands and rural residences in each direction and the community of Rio Vista to the south and west. The proposed Little Egbert Multi-Benefit Project site is to the north and also does not include any residences.

Impacts

a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

The project does not include construction of any new housing, establish substantial new permanent employment opportunities, or remove any obstacle to additional growth; therefore, it would not induce population growth in Solano County either directly or indirectly. **No impact** would occur.

b. Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere?

The project would not displace existing housing or any people or necessitate the construction of replacement housing elsewhere. **No impact** would occur.

XV. Public Services

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	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:				
	Fire protection?				X
	Police protection?				X
	Schools?				X
	Parks?				X
	Other public facilities?				X

Environmental Setting

The project site is located in Solano County and is served by the following existing public services.

Fire Protection. Solano County does not have its own fire department. The city of Rio Vista Fire Department is a participant in the Solano County Mutual Aid Agreement and would provide fire protection services in the project area. The nearest fire station to the project site is Rio Vista Fire Station #55 at 350 Main Street in Rio Vista, approximately 1.5 miles south of the project site.

Police Protection. Police protection services are provided by Solano County Sheriff's Office. Its main office is located at 530 Union Avenue in Fairfield.

Schools. The project area is served by the River Delta Unified School District (RDUSD). The RDUSD is a tri-county district in Sacramento, Solano and Yolo counties. RDUSD currently has an enrollment of 1,863 students (River Delta Unified School District 2023).

Parks. The project site does not include any parks or recreational resources. The closest park is Egbert Field Park on St. Francis Way in Rio Vista approximately 1 mile to the southwest.

Impacts

a. 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 public services:

Increases in demand for public services generally result from population increases. The project would not result in a population increase; therefore, **no impact** would occur.

XVI. Recreation

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

Environmental Setting

The project site is on private property with no public recreational opportunities or amenities. The community of Rio Vista has recreational opportunities including parks, playfields, and golf courses,

and there are fishing, boating, and river access areas along the Sacramento River, Steamboat Slough, and Cache Slough in the project area. Sandy Beach County Park is approximately 2.5 miles south of the project site and includes a beach park, boat launch, fishing, campgrounds, picnic area, volleyball, and related amenities.

Impacts

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

The project would not 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. There are no recreational facilities on the project site. **No impact** would occur.

b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The project would not require the construction or expansion of recreational facilities that could result in an adverse physical effect on the environment. **No impact** would occur.

XVII. Transportation

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

Environmental Setting

The project site would be accessed from SR 84. SR 84 is classified as a major arterial from north of Rio Vista to the Yolo County line. Along the project frontage SR 84 is a two-lane rural roadway with an approximately 2-foot shoulder.

According to the Solano County General Plan Draft EIR, in 2007, SR 84 north at the Yolo County line had daily traffic totaling approximately 1,000 vehicles and under the maximum development scenario in the General Plan was forecast to have daily traffic up to 3,000 vehicles by 2030 (Solano County 2008:4.4-8–4.4-17).

For the restoration component of the project, the site would be accessed from SR 84 at the southern end of the site through an access gate. All construction staging areas would be contained within the project site and would be shown on the final grading plans. Staging areas that are not within the restoration footprint would be maintained as designated maintenance pads as part of the project. Staging and access for offsite utility improvements would be along existing farm roads accessed from SR 84 (Figure 2-4).

For the low water crossing component of the project, construction will occur on SR 84 and the road shoulder, as well as a proposed maintenance pad that will be constructed during the restoration phase adjacent to the water crossing structure to allow equipment staging during construction and to support long-term maintenance. One-way reversible traffic control will be established according to Caltrans standard plans to manage traffic flow through the construction area (Appendix B: Sheet SC-1 and SC-2).

Impacts

a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Primary vehicle access to the project site is provided from SR 84. There are no significant transit, bicycle, or pedestrian facilities in the project area. The proposed project would include the construction of a low water crossing over SR 84 and would re-establish tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the project site. Following construction, the proposed project would have negligible impacts on the area's transportation system as minimal inspection or maintenance activities would be required once the project is complete. No new traffic would be generated once project construction activities are completed.

A small increase in traffic would occur in the project area during the restoration/construction phase of the project from construction vehicles and construction workers accessing the site. However, these impacts would be short-term, occurring only during daylight hours during the construction period.

The project would be consistent with the Solano County General Plan, including policies that promote the preservation of natural resources. The proposed project would not affect local roadways or preclude the provision of bicycle, pedestrian, or other alternative transportation modes. Therefore, the project would not conflict with a program, plan, policy or ordinance addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. No impact would occur.

b. Conflict or be inconsistent with State CEQA Guidelines section 15064.3, subdivision (b)?

The California Office of Planning and Research guidelines for vehicle miles traveled analyses state that projects that generate fewer than 110 trips per day may be assumed to cause less-than-significant vehicle miles traveled impacts (California Office of Planning and Research 2018:10). The total roundtrip hauls for the restoration phase of the project as a whole would be approximately 279 trips. The estimated maximum number of haul truck trips for the low water crossing during construction is 10, which may occur during any phase of the work. The number of roundtrips per day for various phases of construction would range from a low of approximately 11 during site mobilization/site demobilization (10 days total) to a high of approximately 25 during SR 84 shoofly/SR 84 roadwork (up to 18 days total). Therefore, the project would not conflict with State

CEQA Guidelines Section 15064.3(b). This impact would be **less than significant**, and no mitigation is required.

c. Substantially increase hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Restoration

The restoration component of the project would re-establish tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the Bank property. The restoration component of the project would not alter SR 84 in any way. Therefore, the project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or introduce an incompatible use (e.g., farm equipment). **No impact** would occur.

Low Water Crossing

The low water crossing component of the project would replace a small section of SR 84 with a low water crossing. The low water crossing would only affect motorists during construction and would have no operational impacts. The low water crossing over SR 84 would be coordinated with Caltrans and would always have at least one lane open for travel and include flaggers to control traffic. An encroachment permit will be obtained from Caltrans for the low water crossing over SR 84. The project would not cause rerouting of traffic or road closures and would not change the existing roadway infrastructure such that there would be an increase in hazards attributable to design features. The impact is **less than significant**, and no mitigation is required.

d. Result in inadequate emergency access?

Restoration

The project site is on privately owned land. All restoration work would be completed in the interior of the site. No aspect of the restoration component of the project would result in inadequate emergency access. **No impact** would occur.

Low Water Crossing

During construction the low water crossing under SR 84 would be coordinated with Caltrans and would always have at least one lane open for travel and include flaggers to control traffic (see Sheets SC-1 and SC-2 in Appendix C). Construction equipment would not interfere with emergency access on Old River Road/North Harbor Boulevard, or any other local or regional roads in the vicinity of the project site. The project would not cause rerouting of traffic or road closures; also, construction activities would not result in emergency vehicles or law enforcement delays. Staging is planned to be within the project site and outside of public roads and SR 84. The project would not permanently change the existing roadway infrastructure in a way that would result in inadequate emergency access. The impact would be **less than significant**, and no mitigation is required.

XVIII. Tribal Cultural Resources

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
a.	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		X		
b.	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

This section examines the potential impacts of the project on tribal cultural resources. The area of study for tribal cultural resources includes the project site and the offsite utility improvements area, collectively referred to as the project area.

For purposes of this analysis, Tribal cultural resources are defined by CEQA (PRC Section 21074a) as:

> *Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are listed, or determined to be eligible for listing, in the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), or a local register of historical resources.*

This section relies on the information and findings presented in the project's cultural resources technical reports: *Cache Slough Mitigation Bank Project, Solano County, California: Archaeological and Architectural Resources Inventory Report* (Hoffman et al. 2023) and *Addendum Archaeological and Architectural Resources Inventory Report for the Cache Slough Mitigation Bank Project, Solano County, California* (Hoffman 2024) (Appendix I-1 [Confidential; Not for Public Distribution]). These reports include an overview of the environmental, ethnographic, and historic background of the project area, with an emphasis on aspects related to human occupation.

Much of the background context and methodology for analyzing potential impacts of the project on tribal cultural resources is the same as for the cultural resources impact analysis. Therefore, to avoid

redundancy, some of the background context and methods information presented in the *Cultural Resources* section of this IS are summarized here.

Environmental Setting

Background Research

In October 2022, Environmental Science Associates staff conducted cultural resources records searches for the project area and vicinity of the CHRIS. The study area for the records search consisted of the project area with a 0.25-mile buffer. The CHRIS has record of 16 previously recorded cultural resources mapped within 0.25 mile of the project area, one of which is indigenous and overlaps with the project area, P-34-005225 (tribal cultural landscape). P-34-005225 was previously recommended California Register eligible by Tremaine (2018).

Ethnographic Literature Research

With respect to the project area, a review of ethnographic literature for the project revealed that the Plains Miwok village *Anizumne*, which was documented as just northeast of Rio Vista, was either in or in close proximity to the project area (Bennyhoff 1977:Map 3). Bennyhoff (1977:78) explains that *Anizumne* "may have been at Rio Vista or on the knoll one-half mile north of Rio Vista, beside the small marsh on the west bank of the Sacramento River"; this may refer to the southern portion of the project area or its immediate environs. Bennyhoff (1977:79–80) explains that the *Anizumne* tribelet was moderately sized, missionized early on, possibly the majority as early as 1812, and subsequently mostly resided near Mission San Jose with some eventually returning to their ancestral area.

Native American Correspondence

In October 2022, Environmental Science Associates contacted the NAHC in request of a search of the NAHC's SLF and a list of Native American representatives who may have interest in the project. From May 2023 to present, Environmental Science Associates assisted WES with outreach and communications with the following Tribes: Wilton Rancheria and YDWN. This outreach included letters, emails, phone calls, and site visits with representatives from the two Tribes, including a reconnaissance-level pedestrian survey of the project area with Environmental Science Associates and representatives from both Tribes. The communications also included providing the two Tribes with opportunities to review and comment on field methods, resource identification, findings, project design, and long-term access to the project area.

The NAHC replied to Environmental Science Associates' SLF and Native American contacts request on December 9, 2022, in which they stated that the SLF has no record of sacred sites in the project area. The reply also included a list of 14 Native American individuals, representing nine Tribes. During WES' coordination with Wilton Rancheria and YDWN, Wilton Rancheria requested that a pedestrian survey of the project area be conducted by Environmental Science Associates and representatives from Wilton Rancheria and YDWN. As a result, Environmental Science Associates, Wilton Rancheria, and YDWN representatives conducted a reconnaissance-level pedestrian survey of the project area in September 2023 (see *Field Survey* section). Also, coordination between WES, Wilton Rancheria, and YDWN has resulted in Tribal input into project design and opportunities for long-term access and use of the project area. Correspondence between WES and the Tribes regarding these areas is ongoing.

On March 5, 2024, the County contacted the NAHC in request of a list of Native American representatives who may have interest in the Project. The NAHC replied to the request on March 8, 2024, in which they provided a list of 23 Native American individuals, representing 11 Tribes.

In support of required Native American consultation for the Project pursuant to California Public Resources Code (PRC) Section 21080.3, the County sent letters on April 25, 2024, via certified mail, to Native American representatives from the following Tribes: [Cachil Dehe Band of Wintun Indians of the Colusa Indian Community, Chicken Ranch Rancheria of Me-Wuk Indians, Confederated Villages of Lisjan Nation, Cortina Rancheria - Kletsel Dehe Band of Wintun Indians, Guidiville Rancheria of California, Muwekma Ohlone Indian Tribe of the SF Bay Area, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Northern Valley Yokut / Ohlone Tribe, United Auburn Indian Community of the Auburn Rancheria, Wilton Rancheria, and Yocha Dehe Wintun Nation]. These letters provided information on the Project and requested that the recipients notify the County if they would like to consult pursuant to PRC Section 21080.3. The County received a request for consultation on the Project, pursuant to PRC Section 21080.3, from one these Tribes, in an email from the Northern Valley Yokut/Ohlone Tribe (NVYT) on May 4, 2024. The County and the NVYT conducted a video conference call on July 10, 2024, to discuss the Project, cultural resources study conducted for the Project, and any concerns the Tribe may have regarding potential Project impacts on cultural resources and tribal cultural resources. The NVYT stated that they did not have any concerns regarding Project impacts on cultural resources and tribal cultural resources, and, at the end of the meeting, agreed to conclude consultation on the Project pursuant to PRC Section 21080.3. The county sent an email on July 22, 2024, to the NVYT summarizing the results of the July 10, 2024 video conference call and confirming the conclusion of consultation. The correspondence with Native American representatives conducted to date is included in Appendix I-2.

Field Survey

In September 2019, Peak & Associates conducted a cultural resources pedestrian survey of all accessible portions of the project area. Intensive pedestrian survey methods were used, consisting of walking parallel transects spaced at no more than 30 meters apart and inspecting the surface for cultural material (archaeological or architectural) or evidence thereof. In March 2021, Environmental Science Associates conducted a reconnaissance-level pedestrian survey of the project area. The survey consisted of visiting the locations of all the previously identified cultural resources (either on file at the CHRIS or as identified by Peak & Associates during their 2019 survey) in the project area and assessing their current conditions. In September 2023, Environmental Science Associates, Wilton Rancheria, and YDWN representatives conducted a reconnaissance-level cultural resources and tribal resources pedestrian survey of the project area. The survey consisted of walking the perimeter of the project area and areas of interest in the project area, as expressed by the Tribal representatives, and inspecting the surface for cultural material (archaeological) or evidence thereof and assessing biological species and overall setting for possible Tribal concerns.

Though previously recorded tribal cultural landscape P-34-005225 is mapped in the southern portion of the project area, the highly modified nature of the project area (from historic-era and modern agriculture, reclamation, and levee construction) is such that Environmental Science Associates did not observe any clearly contributing elements of the resource in the project area. No tribal cultural resources were identified during the field survey conducted by Environmental Science Associates, Wilton Rancheria, and YDWN in September 2023. Neither Tribe expressed

specific concerns regarding the project and potential impacts on cultural resources or tribal cultural resources, including biological communities.

Summary of Resources Identified

Through background research conducted for the project, one potential tribal cultural resource, P-34-005225, was identified in the project area. P-34-005225 was previously recommended California Register eligible by Tremaine (2018). Therefore, P-34-005225 is herein treated as a tribal cultural resource for CEQA purposes. Through Native American correspondence and field surveys, no apparent contributing elements of P-34-005225 were observed in the project area.

P-34-005225

This resource was recorded in 2018 (Tremaine 2018), and is a tribal cultural landscape called *Hoyo Sayo/Tah Sayo* by the Nisenan and *Waka-ce/Waka-Ly* by the Plains Miwok. The landscape roughly encompasses the Lower Sacramento River and environs, and consists of waterways, tule habitat, fisheries, and other wildlife, important to Native American peoples. Specifically, the resource is mapped in all portions of the project area and throughout a much wider area. Tremaine (2018) provided the following detail:

> These natural resources once served as the lifeblood of the local inhabitants. Today, relics of historical habitat still survive with the river supporting anadromous and resident fish populations, as well as shellfish, and waterfowl. The natural levees lining the banks of the river were covered with riparian forests. Behind the levee/forests were flood basins filled with both tidal and non-tidal freshwater emergent wetlands hosting vast stands of tules and large backwater lakes. The upland margins behind these wetlands/lakes, vegetated with willow thickets, were dissected by distributary networks of creeks that emptied into the flood basin sinks.

Tremaine (2018) evaluated the resource as California Register eligible under Criterion 1. Tremaine (2018) stated that the resource has significance under California Register Criterion 1 due to its association with the cultural practices and beliefs of the Nisenan and Plains Miwok, maintaining the continuing cultural identity of the living descendants, and contributing to the broader patterns of prehistory. Tremaine (2018) stated that the Wilton Rancheria, United Auburn Indian Community, and Ione Band of Miwok Indians regard this landscape as an area of tribal importance because of its association with events (traditional stories) such as how fire was acquired and how salmon received its color. The resource is also important due to its tule and tule habitat, which are materials for creating traditional structures, clothing, and watercraft. P-34-005225 was previously recommended California Register eligible by Tremaine (2018). Therefore, P-34-005225 is herein treated as a tribal cultural resource for CEQA purposes.

Through Native American correspondence and field surveys, no apparent contributing elements of P-34-005225 were observed within the project area. This included field surveys and extensive correspondence with representatives from Wilton Rancheria and YDWN, who did not identify any contributing elements or concerns regarding project-related impacts on P-34-005225. As part of the 2021 NHPA Section 106 consultation for the Little Egbert Tract Geotechnical Explorations Project (overlapping with the project area), USACE determined that no contributing elements of P-34-005225 are present in the (current) project area (Jenkins 2021), receiving concurrence from the SHPO (Polanco 2021). Potential project impacts on this tribal cultural resource are discussed below.

Impacts

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

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

A tribal cultural resource is defined in PRC Section 21074 as either a site, feature, place, or 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 the California Register or a resource determined significant by the lead agency. PRC Sections 21080.3.1, 21080.3.2, and 21082.3 require lead agencies to engage in tribal consultation with Tribes, and PRC Sections 20174 and 21083.09 require CEQA lead agencies to analyze project impacts on tribal cultural resources separately from archaeological resources.

Through background research conducted for the project, one potential tribal cultural resource, P-34-005225, was identified in the project area. The resource was previously recommended California Register eligible by Tremaine (2018) and, therefore, is herein treated as a tribal cultural resource for CEQA purposes.

Through Native American correspondence and field surveys, no apparent contributing elements of P-34-005225 were observed in the project area. This included field surveys and extensive correspondence with representatives from Wilton Rancheria and YDWN, who did not identify any contributing elements or concerns regarding project-related impacts on P-34-005225. Contributing elements, as defined by Tremaine (2018), would comprise relic historical habitats such as natural levees with riparian forests, natural flood basins with tidal and non-tidal freshwater emergent wetlands with large stands of tules, as well as willow thickets and tributary creek systems. Historic-era and modern modifications to the project area have dramatically altered the historical landscape, eliminating most evidence of any such elements. As part of the 2021 Section 106 consultation for the Little Egbert Tract Geotechnical Explorations Project (overlapping with the project area), USACE determined that no contributing elements of P-34-005225 are present in the (current) project area (Jenkins 2021), receiving concurrence from the SHPO (Polanco 2021).

Although P-34-005225 is a tribal cultural resource mapped in the project area, it is a landscape-scale resource that does not appear to have any elements in the project area that would contribute to its California Register eligibility (i.e., ability to qualify as a tribal cultural resource). As such, it does not appear that the project would result in any impact on P-34-005225 or any other tribal cultural resource, as defined in PRC Section 21074. Because one of the goals of the project is to reestablish

some bygone ecological communities, including those that comprise elements of P-34-005225, the project may, in fact, result in a long-term benefit to P-34-005225, a tribal cultural resource.

Because the project would involve ground-disturbing activities that may extend into undisturbed soil, it is possible that such actions could unearth, expose, or disturb subsurface archaeological resources that were not identified on the surface. If previously unrecorded archaeological deposits are present in the project area, and if they are found to qualify as tribal cultural resources pursuant to PRC Section 21074, any impacts of the project on the resource would be potentially significant. Implementation of Mitigation Measures CUL-1, CUL-2, and CUL-3 would reduce these impacts to **less than significant with mitigation**.

XIX. Utilities and Service Systems

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

Environmental Setting

The project site is in a rural, agricultural area in Solano County; however, Rio Vista is just to the south and west. Groundwater is pumped from privately owned wells and wastewater is treated using individual septic systems, which is common for wastewater treatment in rural areas that lack

a community- or city-owned treatment plant. The project area is within the boundaries of the CVRWQCB. PG&E provides electrical and natural gas service to customers in Solano County.

The County contracts for collection, processing, and disposal services for solid waste, recyclables, and organic waste. Various service providers serve the unincorporated communities outside of Solano County's cities. Rio Vista Sanitation Service (Garaventa Enterprises) serves the unincorporated area outside of Rio Vista, which includes the project site (Solano County 2008:4.9-10).

Two privately owned landfills are located in the unincorporated area of Solano County. Potrero Hills Landfill is owned by Republic Services and located outside of Suisun City near SR 12. Hay Road Landfill, owned by Norcal Waste Systems, is located east of Vacaville and Dixon near SR 113. The Potrero Hills Landfill disposal capacity is through approximately 2045 and the Hay Road Landfill disposal capacity is through approximately 2069 (Solano County 2008:4.9-10).

Impacts

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Restoration

The restoration component of the project would not require the construction of new water, wastewater, stormwater drainage, electric power, natural gas, or telecommunications facilities. Some PG&E power poles and lines would be removed prior to earthmoving activities but no new PG&E facilities would be constructed. **No impact** would occur.

Low Water Crossing

The low water crossing over SR 84 would not require the construction of new water, wastewater, stormwater drainage, electric power, natural gas, or telecommunications facilities. Two existing electrical distribution lines traverse the project site. WES is coordinating the possible removal or relocation of one of the electrical distribution lines (consisting of 15 poles) with PG&E.

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

The project does not include any elements during restoration or operation that would require external water supplies. **No impact** would occur.

c. Result in a determination by the wastewater treatment provider that 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 project does not include any elements during restoration or operation that would affect the service of wastewater treatment providers. Wastewater services for construction crews would be provided by temporary portable facilities, and the project would not require relocation or construction of new wastewater treatment facilities. **No impact** would occur.

d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

The project is small in scope and does not include any elements during restoration or operation that would generate solid waste in excess of local landfill capacity or state or local standards. Therefore, the project would have no impact on local infrastructure capacity or solid waste reduction goals. **No impact** would occur.

e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The project would comply with federal, state, and local statutes and regulations related to solid waste. **No impact** would occur.

XX. Wildfire

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

Environmental Setting

In California, wildfire protection jurisdictions are separated and overseen by three areas of government: local, state, and federal. Each of the three areas have determined Fire Hazard Severity Zone (FHSZs) in each county. The zone classification is based on a multitude of factors: fire behavior models using vegetation density, adjacent wildland areas, and distance to wildland areas, another factor being the probability of a fire threatening nearby structures.

According to CAL FIRE, the project area is in an Local Responsibility Area (LRA) and not in a High or Very High FHSZ in the LRA (California Department of Forestry and Fire Protection 2007). LRAs are incorporated cities, urban regions, agriculture lands, and portions of the desert where the local government is responsible for wildfire protection.

Solano County does not have its own fire department. The following individual fire districts serve the unincorporated county: CAL FIRE–Gordon Valley Fire Station, Cordelia Fire Protection District (FPD), Dixon FPD (under contract with City of Dixon Fire Department), East Vallejo FPD (under contract with the City of Vallejo Fire Department), Montezuma FPD, Suisun FPD, and Vacaville FPD (Solano County 2008:4.9-14). The Montezuma FPD provides fire protection to the project site.

Impacts

a. Substantially impair an adopted emergency response plan or emergency evacuation plan?

Restoration

The project site is on privately owned land that is not within a High or Very High FHSZ. All restoration work would be completed in the interior of the site. No aspect of the restoration component of the project would substantially impair an adopted emergency response plan or emergency evacuation plan. **No impact** would occur.

Low Water Crossing

The project site is on privately owned land that is not within a High or Very High FHSZ. The low water crossing over SR 84 would be coordinated with Caltrans and would always have at least one lane open for travel and include flaggers to control traffic. The project would not cause rerouting of traffic or road closures; also, construction activities would not result in emergency vehicles or law enforcement delays. Staging is planned to be within the project site and outside of public roads and SR 84. Therefore, the project would have no impact on local emergency response plans or emergency evacuation plans.

b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks of, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The project would include the construction of a low water crossing over SR 84 and would re-establish tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the project site. The project site is on privately owned land that is not within a High or Very High FHSZ. The slope of the project site is generally level and there are no residences. Even though the project area is not in a High or Very High FHSZ, during the construction/restoration period, the potential exists for an accidental ignition of a wildland fire due to the use of power equipment and vehicles. However, Mitigation Measure HAZ-9 would reduce this impact to less-than-significant levels by requiring onsite fire suppression equipment and spark arrestors on all equipment with internal combustion engines and restricting activities on high fire danger days, as detailed in Section IX, *Hazards and Hazardous Materials*. The proposed project does not involve construction of residential or commercial structures or any other structures for human occupation. Therefore, the project would not exacerbate wildfire risks and expose project area occupants to pollution

concentrations from a wildfire. This potential impact would be reduced to **less than significant with mitigation**.

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

The proposed project would include the construction of a low water crossing over SR 84 and would re-establish tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the project site. The project would not require the installation or maintenance of a new road, fuel break, water source, power line, or other utilities. Two existing electrical distribution lines traverse the project site. WES is coordinating the possible removal or relocation of up to two electrical distribution lines (consisting of up to 30 poles) with PG&E. The removal or relocation would occur on the project site and within the offsite utility improvement area. The impact is **less than significant**, an no mitigation is required.

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The project site is generally level and is not located within a State Responsibility Area High or Very High FHSZ. The proposed project would include the construction of a low water crossing over SR 84 and would re-establish tidal freshwater wetland and floodplain-associated vegetation communities in the interior of the project site. All disturbed areas would be revegetated to minimize the potential for erosion and scour along the levee banks. The proposed project would result in a beneficial effect related to flood hazards and stormwater runoff. Therefore, the proposed project would not 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. The impact would be **less than significant**, and no mitigation is required.

XXI. Mandatory Findings of Significance

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a.	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		X		

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
b.	Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)		X		
c.	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?		X		

Impacts

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

As indicated in Sections 3.IV, 3.V, 3.IX, 3.XIII, 3.XVIII, and 3.X.X impacts on biological resources, cultural resources, hazards and hazardous materials, noise, tribal cultural resources, and wildfire were reduced to a less-than-significant level with incorporation of mitigation measures. As a result, the project with the proposed mitigation measures incorporated would not create environmental effects that would degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal community, or eliminate important examples of major periods of California history or prehistory.

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

As indicated throughout this IS, impacts on all environmental resources were either less than significant or had no impact or were reduced to a less-than-significant level with incorporation of mitigation measures. Effects of past, present, and reasonably foreseeable probable future projects were assessed qualitatively. The project's contribution to cumulative impacts with these past, present, and reasonably foreseeable probable future projects would not be considerable and would be comparable to existing adjacent activities.

The 3,126-acre proposed Little Egbert Multi-Benefit Project, adjacent and to the north, would reinforce the existing flood control levees and breach the restricted-height levee along Cache Slough (Solano County Levee 28) to allow for system-wide flood control benefits and ecosystem

restoration. The project would provide similar ecological functions and would be compatible with the multi-benefit project to provide regional benefits to sensitive fish and wildlife species that occupy the north Delta.

The project with proposed mitigation measures would not create environmental effects that would have impacts that are individually limited, but cumulatively considerable. Therefore, the impacts would be **less than significant with mitigation**.

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

As indicated throughout this IS, potential impacts on resources are less than significant or were reduced to a less-than-significant level with incorporation of mitigation measures. As a result, the project with proposed mitigation measures incorporated would not create environmental effects that would cause substantial adverse effects on human beings either directly or indirectly.

Chapter 4
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Chapter 5
Consultation and Coordination

5.1 Consultation and Coordination with Public Agencies

The Initial Study is being circulated for public comment and referred to the State Clearinghouse for coordinated review by state agencies. In addition, it will be sent to the Department of Conservation and the Solano County Agriculture Commissioner and other local agencies for review and comment.

5.2 Public Participation Methods

The Initial Study is available at the Solano County Department of Resource Management and online at the Department's Planning Services Division website at:

http://www.solanocounty.com/depts/rm/documents/eir/default.asp

Interested parties may contact the planner assigned to this project at the contact points provided below:

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