State Route 84 Real McCoy Fenders and Ramps Replacement Project

SOLANO COUNTY, CALIFORNIA
DISTRICT 4 – SR-84 (PM 2.49)
EA 04-4H060 /EFIS 0413000081

Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment

Prepared by the
State of California, Department of Transportation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by Federal Highway Administration and Caltrans.

April 2022

Caltrans

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Maxwell Lammert, District 4, 111 Grand Avenue, MS: 8E, Oakland, CA 94612; (510) 506-9862 Voice, or use the California Relay Service TTY number, (800) 735-2929.

General Information About This Document

What's in this document:

The California Department of Transportation (Caltrans) has prepared this Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment (IS-MND/EA) to examine the potential environmental impacts of replacing the fender system and ramps for the Real McCoy Ferry on State Route 84 in Solano County, California (Project). Caltrans is the lead agency under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). The document tells you why the Project is being proposed, how the existing environment could be affected by the Project, the potential impacts of each proposed activity, and the proposed avoidance, mitigation, and minimization measures.

What you should do:

- Please read this document.
- This document is available to download at the Caltrans environmental document website (https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs). The technical studies listed in Appendix C are available to review electronically upon request. Additionally, the IS-MND/EA will be available at the following locations:
  Solano County Library - Rio Vista Library
  44 S 2nd Street
  Rio Vista, CA 94571
- We would like to hear what you think. Send comments to:
  Caltrans District 4 Environmental
  ATTN: Maxwell Lammert, Senior Environmental Planner
  P.O. Box 23660
  MS: 8E
  Oakland, CA 94623-0660
  Or Maxwell.Lammert@dot.ca.gov
- Be sure to send comments by the deadline: **May 28, 2022**.

What happens next:

Per CEQA Section 15073, Caltrans will circulate the IS-MND/EA for review for 30 days. During the 30-day public review period, the general public and responsible and trustee agencies can submit comments on this document to Caltrans. Caltrans will consider the comments and will respond to the comments after the 30-day public review period. After comments are received from the public and reviewing agencies, Caltrans may (1) grant environmental approval to the proposed Project, (2) conduct additional environmental studies, or (3) abandon the Project. If the Project is given environmental approval and funding is obtained, Caltrans could design and construct all or part of the Project.

Alternative formats:

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SCH# _____
04-SOL-84-PM 2.49
EA: 4H060
Project ID: 04-13000081

Improve ferry reliability and accessibility across the Cache Slough on State Route 84, in Solano County (Post Mile 2.49).

Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C)

THE STATE OF CALIFORNIA
Department of Transportation

Cooperating Agencies:
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Fish and Wildlife Service
National Marine Fisheries Service
Responsible Agencies:
California Department of Fish and Wildlife
California Transportation Commission
Central Valley Regional Water Quality Control Board
State Lands Commission

Dina El-Tawansy — 04/25/2022

DINA A. EL-TAWANSY
District 4 Director
California Department of Transportation
NEPA and CEQA Lead Agency

Date

The following person may be contacted for more information about this document:

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P.O. Box 23660, MS 8B
Oakland, CA 94623
Maxwell.Lammert@dot.ca.gov

Proposed Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

Caltrans proposes to replace the existing timber fender system with a new steel pile fender system covered with rubber facing material, replace the boat ramps with new, longer ramps extending further into Cache Slough, and extend the deck of the ferry boat itself to improve vehicular access on and off the ferry. The proposed improvements would restore the structural integrity of the ferry deck, fender system, and boat ramps to improve reliability of the ferry and allow for the continued access to SR 84 across Cache Slough.

Determination

This proposed Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that it is Caltrans' intent to adopt an MND for this project. This does not mean that Caltrans' decision regarding the project is final. This MND is subject to change based on comments received by interested agencies and the public.

Caltrans has prepared an Initial Study for this project, and following public review, has determined from this study that the proposed Project would not have a significant effect on the environment for the reasons described below.

The Project would have no effect on agricultural and forest resources, air quality, energy, land use and planning, mineral resources, noise, population and housing, recreation, utilities and service systems and wildfire.

In addition, the Project would have less than significant effects to aesthetics, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, public services, transportation, and tribal cultural resources.

With the following mitigation measures incorporated, the Project would have less than significant effects to biological resources.

Biological Resources

- **MM BIO-1 Cofferdam Installation**. During construction, cofferdams will be completed and sealed during low tide to minimize the potential for fish to be present within them. The contractor will be responsible for sealing the cofferdam.

- **MM BIO-2 Turbidity, Noise, and Vibration Reduction**. During construction, the contractor will use a sound attenuation system to reduce noise generated by vibratory pile driving into the water to minimize potential behavioral effects on fish species and marine mammals. If the attenuation system fails, vibratory pile driving will immediately stop and may not resume at the location until the sound attenuation system is put back into operation. Sound attenuation and potential hydroacoustic impacts on fish and marine mammals will be coordinated with the relevant regulatory agencies.

Dina El-Tawansy

DINA A. EL-TAWANSY
District 4 Director
California Department of Transportation
NEPA and CEQA Lead Agency

04/25/2022

Date

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List of Abbreviated Terms

Abbreviation/ Acronym	Description
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ADL	aerially deposited lead
AMM	avoidance and minimization measure
APE	Area of Potential Effects
BMP	best management practice
BSA	biological study area
Caltrans	California Department of Transportation
CAPTI	*Climate Action Plan for Transportation Infrastructure*
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CH_4	methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CO_2e(MT)	carbon dioxide equivalent (metric tons)
CTP	California Transportation Plan

Abbreviation/ Acronym	Description
CWA	Clean Water Act
dB	decibel(s)
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
GHG	greenhouse gas
MM	mitigation measure
$MMTCO_2e$	million metric ton(s) of carbon dioxide equivalent
MOU	Memorandum of Understanding
MTC	Metropolitan Transportation Commission
MPO	metropolitan planning organization
N_2O	nitrous oxide
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OPR	California Governor's Office of Planning and Research

Abbreviation/ Acronym	Description
PM	Post Mile
PQS	Professionally Qualified Staff
Project	State Route 84 Real McCoy Fenders and Ramps Replacement Project
RMS	root-mean-square
ROW	right of way
SB	Senate Bill
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SR	State Route
TCE	temporary construction easement
TMP	traffic management plan
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles traveled

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) is the lead agency under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) for the State Route (SR) 84 Real McCoy Fenders and Ramps Replacement Project at post mile (PM) 2.49 in Solano County, California (the Project). The Real McCoy Ferry provides access across Cache Slough between Ryer Island on the east side of Cache Slough and the City of Rio Vista on the west side of Cache Slough (Figure 1-1). Caltrans proposes to replace the existing timber fender system with a new steel pile fender system covered with rubber facing material, replace the boat ramps with new, longer ramps extending further into Cache Slough, and extend the deck of the ferry boat itself to improve vehicular access on and off the ferry. The proposed improvements would restore the structural integrity of the ferry deck, fender system, and boat ramps to improve reliability of the ferry and allow for the continued access to SR 84 across Cache Slough.

Regionally, SR 84 provides north-south connectivity from West Sacramento in Yolo County to SR 12 in Rio Vista in Solano County, along the Sacramento-San Joaquin River Delta. Cache Slough is within the Sacramento-San Joaquin River Delta and drains into the Sacramento River, then into Suisun Bay.

SR 84 within the Project vicinity is a two-lane conventional highway. The roadway in the Project area has no shoulder on the west side and a roughly 4-foot-wide shoulder on the east side. The surrounding area primarily consists of agricultural land uses.

The original ramps were built in 1967 and extended in 1976. The existing timber fender systems were built in 1979, repaired in 1987, and reconstructed in 2004. The existing timber fender systems were designed to guide the ferry to the boat ramps on both sides of the slough. As part of routine operations, the ferry makes contact with the fenders as it approaches the ramps on both sides of the slough. Over the years, minor contact from normal operations and natural deterioration from exposure to the elements has degraded the fenders. The fenders are in need of replacement to improve ferry reliability and accessibility across SR 84.

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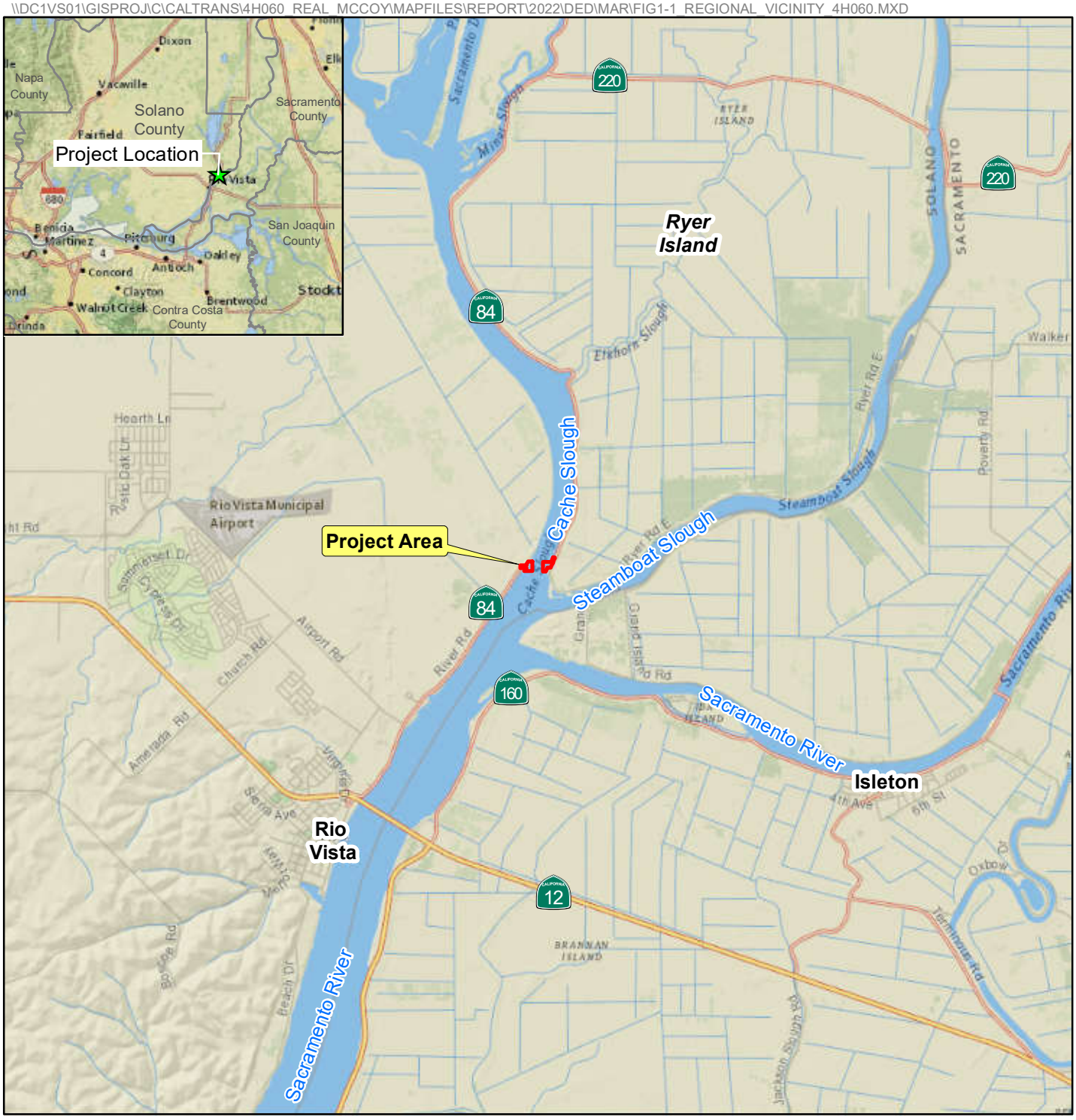


Legend

Project Area

Caltrans

0 N 6,000
Feet

FIGURE 1-1
Regional Vicinity
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

Total Project costs, including capital and support costs, are estimated at $9.8 million and would be funded through the 201.119 State Highway Operation and Protection Program for the 2019/2020 Fiscal Year.

1.1.1 NEPA Assignment

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program) pursuant to 23 United States Code 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (Public Law 112-141), signed by President Obama on July 6, 2012, amended 23 United States Code 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a Memorandum of Understanding pursuant to 23 United States Code 327 (NEPA Assignment MOU) with the Federal Highway Administration (FHWA). The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016, for a term of 5 years, which was granted an extension on December 8, 2021, until April 29, 2022. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 United States Code 326 Categorical Exclusion Assignment MOU, projects excluded by definition, and specific project exclusions.

1.2 Purpose and Need

1.2.1 Purpose

The purpose of the Project is to restore the structural integrity of the Cache Slough fender systems and improve ferry boat accessibility and reliability across the slough.

1.2.2 Need

A Scope Summary Report prepared for the Bridge Maintenance Project in 2015 found the fender systems to be in poor condition due to their deterioration, with many elements in need of replacement (Caltrans 2015). A 2019 Bridge Inspection Report found that the end piles of the fender system in Rio Vista are damaged and splitting (Figure 1-2), and the southwest fender system has missing sheathing members as well as splitting end piles (Caltrans 2019). As shown in Figure 1-3, the fender systems on

Ryer Island have vertical sheathing members missing, and the horizontal members are split and broken.

In addition, the ferry boat is not accessible by larger vehicles with a gross vehicle weight rating of 80,000 pounds, such as emergency vehicles, commercial trucks, and recreational vehicles, because they exceed the weight capacity of the ferry boat and concrete ramps (Caltrans 2015).

1.2.3 Independent Utility and Logical Termini

FHWA regulations (23 *Code of Federal Regulations* 771.111 [f]) require that the action evaluated do the following:

1. Connect logical termini and be of sufficient length to address environmental matters on a broad scope.

2. Have independent utility or independent significance (be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made).

3. Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

The proposed Project includes logical starting and ending points, or termini, that are centered around increasing the functionality of the Real McCoy Ferry across Cache Slough. The Project would have independent utility, which means that the proposed improvements can be implemented within the Project limits and completion of other projects would not be required to gain the operational benefits of the proposed improvements. The Project would not preclude consideration of alternatives for other reasonable, foreseeable transportation improvements in the area. The Project would restore the structural integrity of the Cache Slough fender systems and improve ferry accessibility and reliability, regardless of whether other transportation improvement projects in the area are implemented. In addition, the Project would not be a segment of a larger project or a commitment to a larger project with significant environmental effects. The Project would have independent utility and logical termini.

1.3 Project Description

Caltrans proposes to replace the fender systems and ramps at the Real McCoy Ferry. The Project would restore the structural integrity of the fender system and upgrade the boat ramps and ferry deck to improve ferry boat accessibility across Cache Slough on SR 84.

1.3.1 Project Alternatives

This section discusses the Build Alternative and No-Build Alternative.

Figure 1-2. Damaged End Piles of the Fender System in Rio Vista

Figure 1-3. Existing Fender System on Ryer Island

1.3.2 Build Alternative

The existing Real McCoy Ferry system consists of ramps and fender systems on both sides of the slough (Figure 1-4). The Project area, meaning the area on both sides of the slough that would be directly impacted by Project activities, is a total of 5.73 acres. The west side of the Project area is a total of 2.93 acres and the east side is a total of 2.80 acres. The existing concrete approach ramps are 60 feet long and 20 feet wide. The fender system on the west side is 120 feet long, ranging from 46 feet to 65 feet wide (Figure 1-5), and the fender system on the east side is 120 feet long, ranging from 46 feet to 74 feet wide (Figure 1-6).

Currently, the fender systems are deteriorating in the form of splitting piles and other damaged or missing wooden components due to previous impacts and natural wear and tear. Moreover, as the ferry approaches the concrete ramps, it bumps against the fender system and does not glide smoothly along the fenders towards the ramps (Caltrans 2019). The Build Alternative would replace the timber fender systems with new steel pile fender systems that would be 8 feet wider than the existing systems, creating more space for the ferry to navigate to the ramps. In addition, the front side of the fender panels would be covered with rubber facing materials, which would allow for a smoother transition when impacted by the ferry.

Under existing conditions, the concrete ramps cannot accommodate larger vehicles, such as commercial trucks or emergency vehicles. The Build Alternative would replace both of the existing concrete ramps with new concrete approach slab ramps. This would increase the ramps' weight capacity, allowing them to accommodate commercial trucks, recreational vehicles, and emergency vehicles, to better meet the needs of Ryer Island's residents and visitors.

The Build Alternative would also modify the ferry boat deck surface by extending it 8 feet on both ends and leveling up the surface kinks near both ends to help vehicles enter and exit the ferry more easily. Finally, the Project would install a monitoring station system within Caltrans' right of way (ROW) that includes a vehicle detection/census station controller on Rio Vista.

This Project contains a number of standardized project features that are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed Project. These measures are addressed in more detail in the impact analysis sections found in Chapter 2 and are presented in Appendix A.

PRE-CONSTRUCTION ACTIVITIES

Site Preparation

Site preparation would include delineating construction work areas, installing environmentally sensitive area fencing around sensitive habitats, installing wildlife exclusion fencing around staging areas, and installing best management practices (BMPs) in accordance with the Project's Stormwater Pollution Prevention Plan.

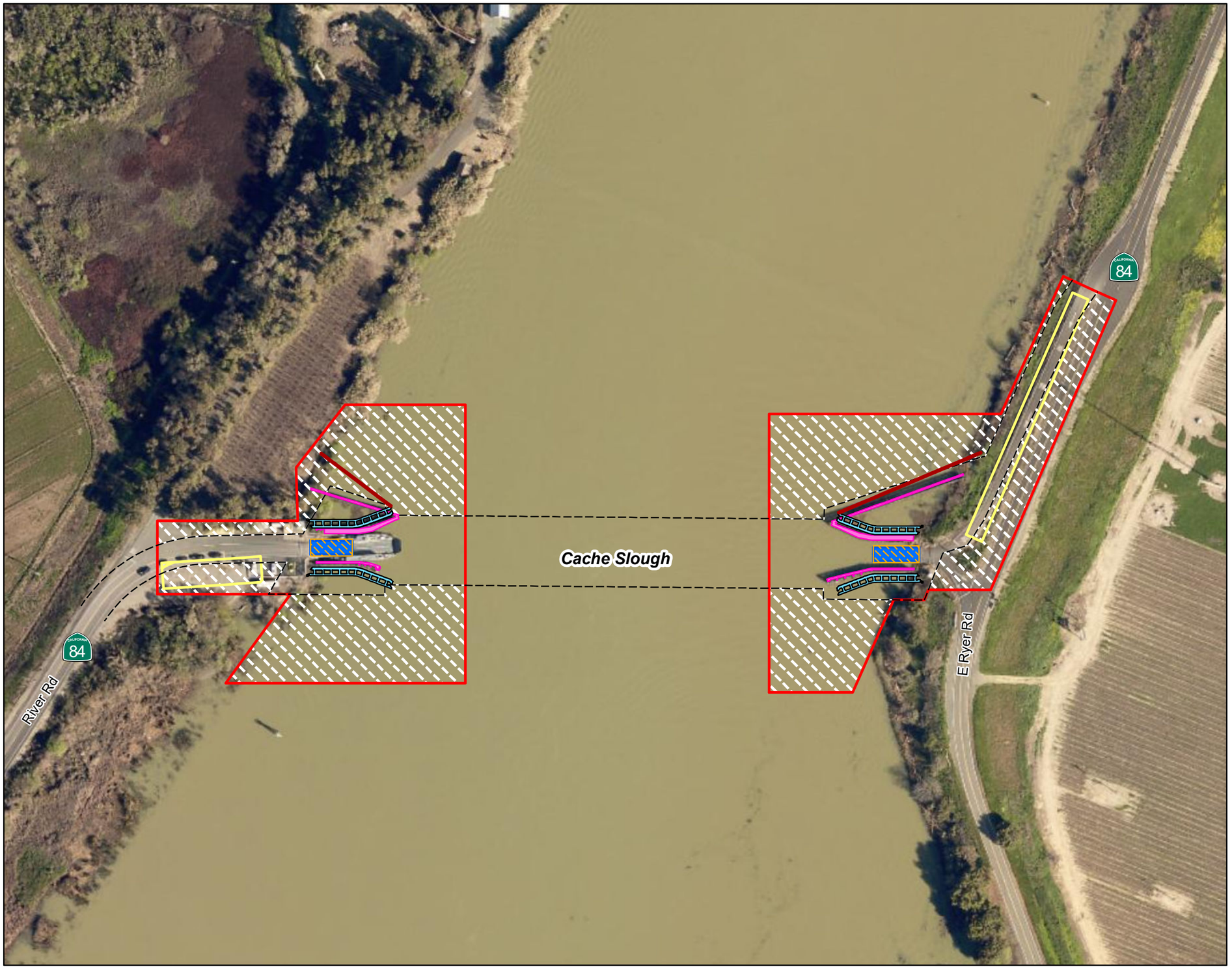
Vegetation clearing and removal would be confined to the area within the Project footprint and would be completed with hand tools where possible. Chainsaws, grinders, and excavators would be used for vegetation that cannot be removed by hand. Tree removal may occur up to 20 feet out from all Project activities. Up to ten trees along the banks of Cache Slough are expected to be removed. Section 2.10.1, Natural Communities, and Figure 2-7 provide more detail about the trees that would be removed. The trees would be replaced with native trees after Project construction is completed.

Staging Areas

Staging areas would be used to store construction equipment and materials. Construction equipment such as excavators, clamshell buckets, and vibratory hammers, as well as construction materials and fuels, would be stored in the staging areas on both sides of the slough. The staging area on the west side (Rio Vista side) of Cache Slough would be 0.12 acre located outside Caltrans' ROW on a paved and dirt parking area. The staging area on the east side (Ryer Island side) would be 0.22 acre and located within Caltrans' ROW (Figure 1-4). The total area of temporary disturbance from construction staging areas would be 0.34 acre.

Temporary Construction Easements

During construction, two temporary construction easements (TCEs) from the State Lands Commission would be needed for in-water work. TCEs are areas that would be temporarily used during construction. Caltrans will work with the State Lands Commission to obtain permission to perform the necessary construction activities within these two TCEs. These activities would include constructing the cofferdams to dewater the work areas, pulling out the existing piles, and driving the new steel piles. The TCE on the east side of the slough would be 2.22 acres, and the TCE on the west side would be 1.94 acres, as shown in Figure 1-4.



Legend

- Caltrans Right of Way
- Project Area
- Potential Staging Areas
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal
- Temporary Construction Easement

Imagery Source:
Solano County 2019

N

0 150 300
Feet

Caltrans

FIGURE 1-4
Project Area
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

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Legend

- Caltrans Right of Way
- Project Area
- Temporary Construction Easement
- Potential Staging Areas
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal

Imagery Source:
Solano County 2019

N

0 65 130
Feet

Caltrans

FIGURE 1-5
Rio Vista (West)
Project Footprint
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG1-5+1-6_PROJECT_FOOTPRINT_AND_ELEMENTS.MXD

Legend

- Caltrans Right of Way
- Project Area
- Temporary Construction Easement
- Potential Staging Areas
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal

Imagery Source:
Solano County 2019

N

0 65 130
Feet

Caltrans

FIGURE 1-6
Ryer Island (East)
Project Footprint
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG1-5+1-6_PROJECT_FOOTPRINT_AND_ELEMENTS.MXD

TCEs on land would also be required on the west and east sides of the Project area. The TCE on the west side would be used as a staging area and for construction activities. The total TCE area on land west of the slough would be 0.59 acre. The TCE on land on the east side would be used for construction activities, and the total area would be 0.46 acre.

Utility Relocation

Utility relocation would not be required prior to construction.

Traffic Management

The Real McCoy Ferry crossing of SR 84 would be closed throughout construction. Detour traffic on the western side of Cache Slough south of the ferry crossing would be diverted south to the junction of SR 84 and SR 12 in Rio Vista, west across the SR 12 Rio Vista Bridge over the Sacramento River to the junction with SR 160, then north and east on SR 160 to the junction with SR 220, and then west on SR 220 until it connects with SR 84 north of the ferry crossing (refer to Figure 2-1). The 16-mile detour would take approximately 45 minutes. Caltrans would prepare aTraffic Management Plan (TMP) to minimize delays on the traveling public. Elements of the TMP would include portable changeable message signs to provide advance warning to drivers and minimize delays to the traveling public. Throughout construction, access to the private road located south of the Project site (off East Ryer Road) would be maintained.

CONSTRUCTION ACTIVITIES

Construction activities at each fender system and ramp would occur over three stages: replacing the fender systems, replacing the ramps, and extending the ferry boat deck. Replacement of the fender systems would occur first, starting with one location and then moving across the slough to the next fender system. The ramps would be replaced one by one and the ferry boat deck would be extended last.

Fender Systems

Pile Removal

Piles would be pulled out directly using a barge-mounted crane or vibrated out using a vibratory hammer. Broken and damaged pilings that cannot be removed by either the vibratory hammer or direct pull would be removed with a clamshell bucket or environmental clamshell. A clamshell is a hinged steel apparatus that operates like a set of steel jaws. An environmental clamshell bucket includes overlapping sides, rubber seals, and other features designed to minimize release of sediment. To remove piles, either type of clamshell bucket is lowered from a crane and then the jaws grasp

the piling stub as the crane pulls up. The size of the bucket is minimized to reduce turbidity during piling removal. The clamshell bucket is emptied of material onto a contained area on a barge before it is lowered again into the water.

If the entire pile cannot be removed, the pile would be cut by an excavator or clamshell bucket or hydraulic underwater chainsaw at or below the mudline. When cutting piles, priority is placed on employee safety and minimizing sediment disturbance. Piles cut by chainsaw or clamshell below the mud line would be cut off at lowest practical tide condition and at slack water. This is intended to reduce turbidity due to reduced flowrate in the slough and a relatively short water column through which the pile must be withdrawn.

Similarly, if a pile breaks near or above the sediment surface during pile removal, it may subsequently be cut using a clamshell bucket or chain to remove as much of the pile as possible from the water column and shallow sediment. In deep subtidal areas, if the piling is broken off at least 1 foot below the mud line, the remnant portion of the piling below the mud line may remain in place. In intertidal and shallow subtidal areas, the contractor would be required to cut piles at least 2 feet below the mud line if they are accidentally broken off during removal.

If manual cutting by a diver working underwater is required, removing the pile below the mudline is not recommended because it increases sediment disturbance and poses increased risk to employees. To access the pile below the mudline, a diver must use air or water to jet the sediment surface, which generates significant turbidity extending a substantial distance from the pile. This poses a serious safety hazard to the diver not only because the turbidity reduces visibility but also because jetting can rapidly and forcefully dislodge large, sharp and unseen objects and propel them in the immediate vicinity of the worker.

Extracted piles removed by any method would be placed into a containment area to avoid dropping adhered sediment in the water. Sediments spilled on work surfaces would be contained and disposed of at an appropriate upland disposal site. Holes remaining after piling removal would be left to fill in through natural sediment settlement and deposition. Extracted piles with attached sediment would not be shaken, hosed off, or hung over water to drip; such piles would be moved expeditiously to the contained area prior removing adhered material.

Construct New Fender Pile Systems

The removed timber fender systems would be replaced with new steel pile fender systems covered with the rubber facing material at an appropriate offset from the existing system on both the east and west sides of the slough. The new fender systems would include debris catchers and dolphin systems for guiding the boat to the ramps.

There would be 150 new piles, each up to 60 feet long and 30 inches in diameter. Pile installation would involve the following three-step process:

- Prior to pile installation, the contractor would predrill an over-sized hole to a depth at least 15 feet below the levee prism. The diameter of the predrilled hole would be at least 6 inches larger than the pile to be installed.
- The piles would be driven into place by a vibratory hammer mounted on a barge to a depth of roughly 30 to 50 feet.
- After the piles were installed, the space around each pile would be filled to the ground surface with dry sand, pea gravel, or cement grout. Soil would mostly displace laterally, and displacement would be negligible at the ground surface.

Construct New Ramps

The existing concrete approach slab ramps on both sides of the ferry crossing would be replaced with longer ramps that are 4 feet wider.

To construct new ramps on both the east and west sides of the slough, the 30-foot-long section of the existing flexible pavement leading to the new concrete ramp and approach slab would be removed and replaced with a flexible pavement section with a 40-year design life.

Driven sheet piling would be vibrated into position around three sides of the perimeter of the new concrete ramp. After the sheet piling system is installed, dewatering would be performed using the open sump method. Then, the old ramp concrete would be demolished and removed. Next, the 4-foot-wide section for the new ramps would be excavated to match the depth of the current ramp systems. Due to the presence of soft soils, some over-excavation may be necessary to be replaced with better base material for the ramp concrete. The new reinforced concrete ramp, 1-foot thick, would be poured in place using the sheet piles as the form on three sides. These sheet piles would remain in place permanently to protect the at-grade ramp from local scour. The tops of the sheet piles would be flame cut level with the top of concrete.

Modify the Ferry Boat Deck Surface

The ferry boat deck surface would be extended by 8 feet on both ends to enable vehicles to enter and exit the ferry more easily. Extension of the ferry boat would occur offsite at a boating facility.

Install Traffic Operation System

Traffic operation system elements would be installed within Caltrans' ROW. The traffic operation system would include a traffic monitoring station system within Caltrans' ROW that would include a vehicle detection/census station controller on Rio Vista. Installation of these systems would involve minor earthmoving activities within the Project area.

Construction Equipment

During construction, required equipment may include, but not be limited to, backhoes, hand-operated augers, trenchers, dozers, cranes, excavators, loaders, vibratory hammer, concrete mixer trucks, pump trucks, manlifts, hoe ram, jackhammers, and compaction equipment. Construction equipment needed for the in-water work would be transported by barges to different locations within the work area as needed. After construction, these areas would be restored to pre-construction conditions in accordance with applicable permits and Caltrans requirements.

Schedule

The construction period is expected to start in November 2024 and end in June 2026. Pre-construction activities would take up to 1 month to complete and include tasks such as site preparation and fencing installation.. Post-construction work would take up to 2 months to complete and includes site cleanup and onsite restoration. All in-water work would be restricted to August 1 through November 30.

POST-CONSTRUCTION ACTIVITIES

Site Cleanup and Post-Construction Activities

After construction is complete, all construction materials and debris would be removed from the construction work areas and recycled or properly disposed of offsite. Caltrans would restore all areas temporarily disturbed by Project activities, such as staging areas, to near or better than pre-construction conditions in accordance with regulatory agency requirements. Caltrans would revegetate disturbed areas with locally appropriate native species.

1.3.3 No-Build Alternative

Under the No-Build Alternative, there would be no improvements to the existing Real McCoy Ferry and fender and ramp system. The end piles of the fender system would continue to deteriorate. The vertical sheathing members of the fender system would remain missing, and its horizontal members would remain split and broken. The boat deck surface would not be extended, and the ramps would not be replaced to accommodate larger vehicles. As a result, large vehicles such as emergency vehicles would continue to lack access across Cache Slough, delaying emergency service operations when needed. This alternative does not meet the purpose and need for the Project.

1.4 Alternatives Considered but Eliminated from Further Discussion

Alternatives and construction elements were considered during the early stages of Project development but were eliminated because they would have greater environmental effects compared to the Build Alternative and No-Build Alternative. The following sections describe construction options and why they were not advanced for further evaluation.

1.4.1 Push-in Method Alternative

Caltrans considered the "push-in method" alternative for the installation of the fender system. This alternative, as the name implies, would involve pushing in the piles into the slough bed. This alternative would result in minimal impacts on the delta smelt (*Hypomesus transpacificus*), a federal and state threatened species, because it would not require vibratory or impact pile driving for the installation of the fender system; however, this method would require the use of equipment not commercially available in the United States. This alternative method was eliminated from further consideration because it is not feasible.

1.4.2 Impact Pile Driving

The impact pile driving alternative would require the use of an impact hammer attached to a pile-driving rig to drive piles into place. Using an impact hammer attached to a pile-driving rig would have greater impacts on the delta smelt. This alternative was eliminated from further consideration due to the feasibility of using vibratory pile driving.

1.4.3 Rotate-in Method

This alternative would use a rotate-in method to install the piles. This method would involve the use of EDTTEX piles, which have a displacement drill tip that would allow a drill table to force the pile into the ground using constant vertical force and rotary torque. Due to the constant vertical force and the need to brace the rig on a solid surface, a trestle was determined to be the only feasible way to construct this alternative. Caltrans estimated that constructing a trestle for temporary use would require the installation of more than 200 piles, a greater number than would be needed for the fender systems. Using this method would require an unnecessarily larger footprint than using vibratory drilling and increase the duration of construction. This would result in more exposure of regulated species, including the delta smelt, to environmental impacts and stressors. This alternative was eliminated from further consideration because it would result in greater impacts than the Build Alternative.

1.5 Permits and Approvals Needed

The permits, agreements, and certifications that would be required for Project construction are summarized in Table 1-1. All Project permits will be obtained during the design phase and after certification of the final Mitigated Negative Declaration and Finding of No Significant Impact (FONSI). Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) will be initiated before issuance of the final environmental document.

Table 1-1. Permit or Approval Document and Approving Agency

Approving Agency	Permit or Approval Document
California Department of Fish and Wildlife (CDFW)	1602 Lake and Streambed Alteration Agreement Incidental Take Permit
National Marine Fisheries Service (NMFS)	Formal Section 7 consultation for threatened and endangered species
Regional Water Quality Control Board – Central Valley	Clean Water Act Section 401 Water Quality Certification
State Lands Commission	Temporary Construction Easement
U.S. Fish and Wildlife Service (USFWS)	Formal Section 7 consultation for threatened and endangered species (biological opinion)
U.S. Army Corps of Engineers (USACE)	Clean Water Act Section 404 Nationwide Permit 14 Section 10 Section 408
U.S. Coast Guard	Rivers and Harbors Act of 1899 Section 9

Chapter 2 Project Impacts

The 1992 Regulations for Implementing the Procedural Provisions of NEPA [National Environmental Policy Act] direct federal agencies to "concentrate on the issues that are truly significant to the action in question" (40 *Code of Federal Regulations* 1500.1(b)), "focus on significant environmental issues" (40 *Code of Federal Regulations* 1502.1), and include "only brief discussion of other than significant issues" (40 *Code of Federal Regulations* 1502.2(b)). Consideration and analysis were given to the resources listed in Table 2-1. These resources either do not occur in the Project area or would experience negligible or no impacts as a result of the Project. Therefore, they are not discussed further in this EA.

Table 2-1. Resource Topics Dismissed from Analysis

Resource	Rationale for Dismissal
Existing and Future Land Use	The Project would replace the existing fender systems and ramps. There would be no change to existing land uses or incompatibility with future uses in the surrounding area.
Consistency with State, Regional and Local Plans and Programs	The Project would replace the fender systems and ramps in-kind in the same location, which would provide the same vehicular capacity. Therefore, the Project is compatible with state, regional, and local plans and programs.
Coastal Zone	The Project is not located within the coastal zone. The Project is located in unincorporated Solano County and is not located within Bay Conservation and Development Commission jurisdiction.
Wild and Scenic Rivers	There are no wild and scenic rivers in the Project vicinity. Therefore, the Project is not subject to the National Wild and Scenic Rivers Act or the California Wild and Scenic Rivers Act.
Parks and Recreation Facilities	The Project would not affect parks and recreational facilities. Cache Slough would remain accessible to recreationists during construction.
Farmlands/ Timberlands	The Project would occur in previously disturbed areas, outside of surrounding farmlands. There are no timberlands in the Project vicinity. Therefore, the Project would not affect farmlands or timberlands.
Community Character and Cohesion	The Project would improve ferry operation reliability, which would benefit community cohesion. There would be no adverse effect to community character as the Project would replace an existing facility in-kind in the same location. Community character and cohesion are not discussed further in this document.

Resource	Rationale for Dismissal
Growth	The proposed new improvements would not increase vehicular service capacity on State Route (SR) 84 or the Real McCoy Ferry. The Project would neither provide new access to an undeveloped area nor influence development opportunities by expanding capacity. Therefore, the Project would not directly or indirectly contribute to growth in the region.
Relocation and Real Property Acquisition	The Project does not propose to temporarily or permanently relocate persons or businesses from the surrounding Project area. The Project would not require parcel acquisition. Therefore, relocation and real property acquisition are not discussed further in this document.
Environmental Justice	No minority or low-income populations that would be adversely affected by the Project have been identified. This Project is not subject to the provisions of Executive Order 12898.
Utilities	There are no utilities within the Project area. The Project would not temporarily or permanently affect utility services.
Paleontology	The Holocene alluvium at the Project site does not contain sensitive paleontological resources (Solano County 2008a). Project activities at the site would not expose fossils and are unlikely to significantly affect sensitive paleontological and/or geologic units (Caltrans 2021b). Impacts to paleontological resources are not evaluated in this document.
Air Quality	Construction activities would not last more than 5 years at one general location. Construction-related emissions do not need to be included in a regional and project-level conformity analysis (40 *Code of Federal Regulations* 93.123(c)(5)).
Noise	Type I projects are defined as proposed federal or federal-aid highway improvements for the construction of a highway in a new location, or the physical alteration of an existing highway that significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes. Type II projects are defined as federal highway improvements for noise abatement on an existing highway. The Project is not considered a Type I or Type II Project per 23 *Code of Federal Regulations* 272. There would be no effect to noise.
Section 4(f)	There are no historic sites, parks and recreational resources, or wildlife or waterfowl refuges that meet the definition of a Section 4(f) resource within the Project vicinity. Therefore, this Project is not subject to the provisions of Section 4(f) of the Department of Transportation Act of 1966.
Wildfire	The Project is not located in an area of very high wildfire hazard. Therefore, wildfire is not discussed further in this document.

2.1 Resource Topics Warranting Further Analysis

2.1.1 Emergency Services

2.1.1.1 AFFECTED ENVIRONMENT

Fire Protection

The Rio Vista Fire Department is responsible for the management of fire operations within the City of Rio Vista and surrounding areas during emergency response efforts. The Fire Department is continuously staffed with full-time, paid, firefighters/paramedics, 24 hours a day, 365 days a year; responses are augmented by volunteer and reserve firefighters and by surrounding fire departments and districts (City of Rio Vista n.d.). Operations include the immediate first responder effort to manage any fires and emergency medical calls, as well as safe scene management, recognition of potential hazardous materials, traffic accidents, public safety on scene, and many other responsibilities (City of Rio Vista n.d.). There is one Rio Vista Fire Department station in the study area, located at 350 Main Street (2.5 miles southwest of the Real McCoy Ferry).

In the event of major disasters, the Rio Vista Fire Department coordinates with the Solano County Office of Emergency Services in Fairfield. The Rio Vista Fire Department also contracts with the Delta Fire Protection District to provide service and administrative services to the River Delta Fire District (City of Rio Vista n.d.). The Montezuma Fire Protection District provides similar services as the Rio Vista Fire Department, but also services approximately 200 square miles of farmland, pasture land, and surrounding Delta towns of Birds Landing, Collinsville, Hastings Island, Prospect Island, Ryer Island, and Holland Tract (MFPD 2021). Fire Station 51 is located in the City of Rio Vista, at 21 N 4th Main Street (2.5 miles southwest of the Real McCoy Ferry) (MFPD 2021). The Montezuma Fire Protection District merged with the Ryer Island Fire Protection District in 2006; following this consolidation, the fastest way to access Ryer Island and provide emergency services is through the Real McCoy Ferry (Caltrans 2022a). When the Real McCoy and other nearby ferries are out of service (which is reported to be often by both users and by ferry operators), the Montezuma Fire Protection District uses the Courtland Fire Department of Sacramento County and the Clarksburg Fire Department of Yolo County to respond to incidents (Caltrans 2022a).

The Isleton Fire Department provides basic life support services, fire suppression, vehicle extrication, and limited hazardous material and spill response 24 hours a day, 365 days a year (Isleton Fire Department 2021). Two stations are located in the study

area: the Isleton Fire Department in the City of Isleton, at 201 2nd Street (3 miles southeast of the Real McCoy Ferry) (Isleton Fire Department 2021), and the Jacks Valley Fire Department next to the River Delta Fire District, at 16969 Jackson Slough Road in Sacramento County (3.7 miles southeast of the Real McCoy Ferry). The River Delta Fire District supports the Isleton Fire Department, along with other fire stations in the region, on a 24-hour-day basis, covering more than 27 square miles and a population of more than 10,000 residents during the summer months (River Delta Fire District 2021).

Police Protection

The Rio Vista Police Department is responsible for law enforcement operations and terrorism prevention within the city and surrounding area. The City of Rio Vista Police Department station, located at 50 Poppy House Road in Rio Vista, is approximately 1.75 miles southwest of the Real McCoy Ferry. The Sacramento County Sheriff's Department provides police and community services to the City of Isleton (Sacramento County Sheriff 2021).

2.1.1.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

In 2020, the Real McCoy Ferry was closed for 3,500 hours and 25 minutes, which is approximately 40 percent of a standard 8,760-hour year (Caltrans 2022a). The yearly average downtime between 2011 and 2022, was 2,058 hours.

The Build Alternative would allow for the ferry to operate more frequently and reliably across Cache Slough; therefore, there would be an increase in reliability and access for emergency vehicles and navigation. The Build Alternative would minimize the use of SR 160 and SR 12 as a detour route for vehicles trying to access Ryer Island via the Real McCoy Ferry. The Build Alternative would improve ferry boat accessibility and reliability across Cache Slough, thus benefitting access to emergency services and the local community.

Construction

Access to the ferry would be down for the duration of construction. However, the Project would not result in inadequate emergency access as the Project would implement temporary traffic detour routes and establish a Traffic Management Plan (TMP) through PF-TRA-1 to maintain emergency access.

No-Build Alternative

Under the No-Build Alternative, the ferry fender and ramps would not be replaced. Therefore, there would continue to be reduced reliability of access for emergency services.

2.1.2 Traffic and Transportation/Pedestrian and Bicycle Facilities

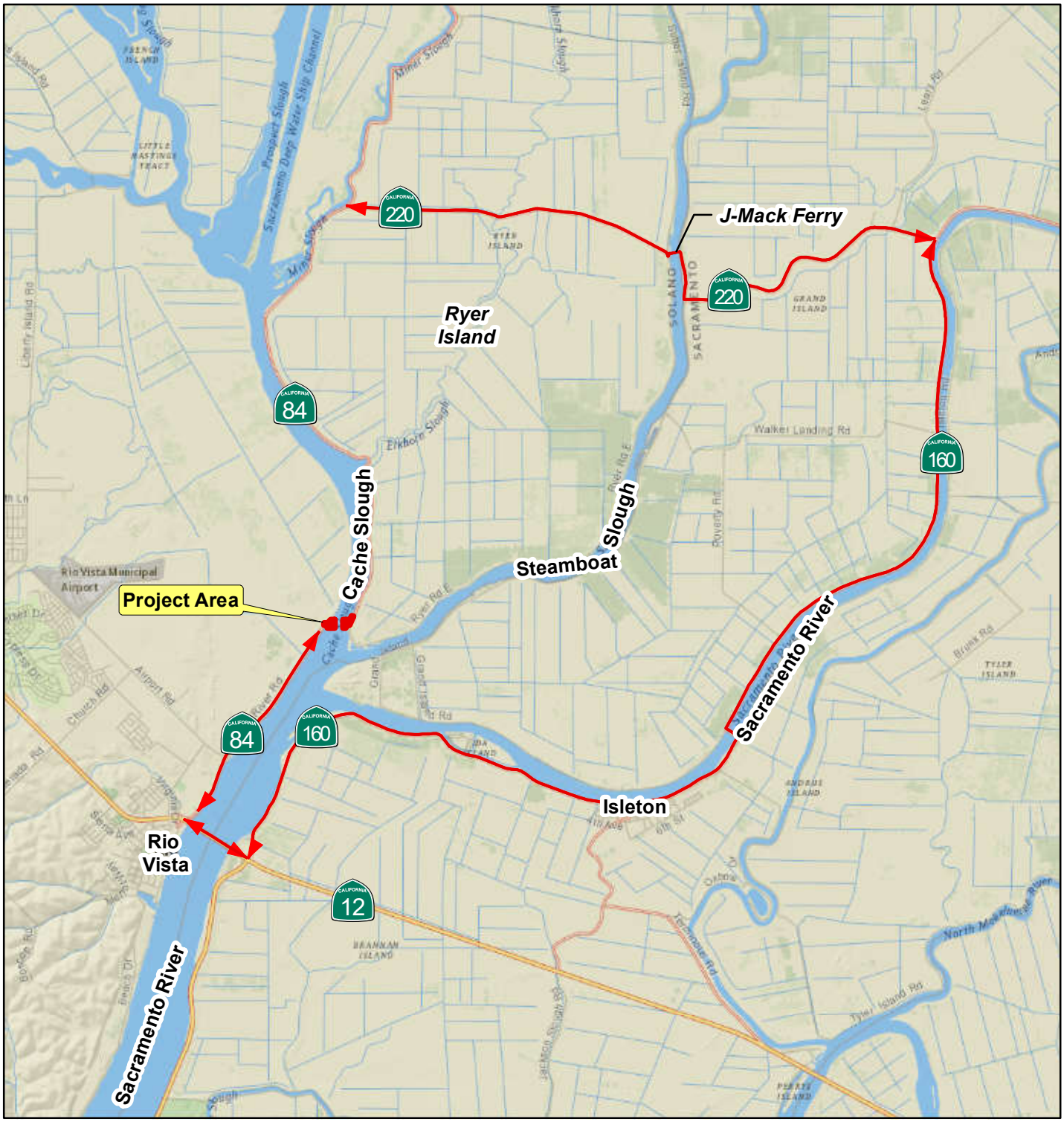
2.1.2.1 AFFECTED ENVIRONMENT

Access, Circulation, and Parking

Regionally, there are four California State Routes (SR 12, SR 84, SR 160, and SR 220) in the vicinity of the Project area. All of these routes are used for regional travel within and across Solano, Contra Costa, and Sacramento counties, and are major arterial highways for access to community and recreational services. These four highways would be used for traffic detours during construction (Figure 2-1).

Within the Project area, SR 84 is considered a "route of regional significance" for Solano County and is a two-lane south-north highway that connects Rio Vista to the Real McCoy Ferry along the west side of the Sacramento River (Solano Transportation Authority 2020). Because the Real McCoy Ferry is classified as an extension of SR 84 (Caltrans n.d.), the highway continues north from the east side of the Sacramento River crossing through Miner Slough until it terminates in Sacramento County (Solano Transportation Authority 2020). SR 84 does not experience significant congestion (Solano Transportation Authority 2020). SR 84 links agricultural areas, community facilities, aquatic recreational and marina resources, and the City of Rio Vista with other regional rural portions of the county. The portion of the route within the Project area is a conventional, two-lane highway with no high-occupancy vehicle lanes. There are six parking spots on the western side of Cache Slough, of which two are for Caltrans employees. There are no parking facilities on the eastern side of Cache Slough, on Ryer Island.

The ferry that services the Real McCoy at SR 84 can carry pedestrians and a maximum of eight vehicles across Cache Slough once every 20 minutes. Each trip lasts approximately 10 minutes (Caltrans 2022a). SR 84 does not experience significant congestion (Solano Transportation Authority 2020). In 2020, the annual average daily traffic volume (annualized average number of vehicles per day) for the Real McCoy Ferry was 900 (Caltrans 2022a). Caltrans operates the ferry with a valid U.S. Coast Guard license, which requires drydock inspections every 5 years that last 2 to 3 months. Caltrans informs the public and emergency services of the closures.



Legend

- 84 — State Route
- Project Area
- Traffic Detour Route

0 7,000 Feet

N

Caltrans

FIGURE 2-1
Detour Route
State Route 84 Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-PM 2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-1_DETOUR_ROUTE_4H060.MXD

As noted in Section 2.1.1.2, the Real McCoy Ferry was closed for 3,500 hours and 25 minutes in 2020, which is approximately 40 percent of the year. The yearly average downtime between 2011 and 2022 was 2,058 hours. These downtimes do not include closure due to drydock requirements, which happen every 5 years and take 2 to 3 months to complete. The last time the Real McCoy Ferry went into dry dock for the 5-year inspection was on February 11, 2021 (Caltrans 2022a).

During ferry closures, traffic is routed to use the J-Mack Ferry on SR 220, which is on demand 24 hours per day, to access Ryer Island. In 2020, the J-Mack Ferry had 1,403 hours and 45 minutes of downtime, which was 16 percent of the year. The yearly average downtime between 2011 and 2022 was 814 hours, which is 9.5 percent of the year. These downtimes do not include downtime due to U.S. Coast Guard drydock requirements. The J-Mack Ferry was last drydocked in 2019 (Caltrans 2021a).

Another route to reach Ryer Island if both ferries are down is via the Miner Slough Bridge on SR 84. From the Project area, the Miner Slough bridge is accessible via Courtland Road from SR 160. Courtland Road intersects SR 160 and SR 84 north of the Project area.

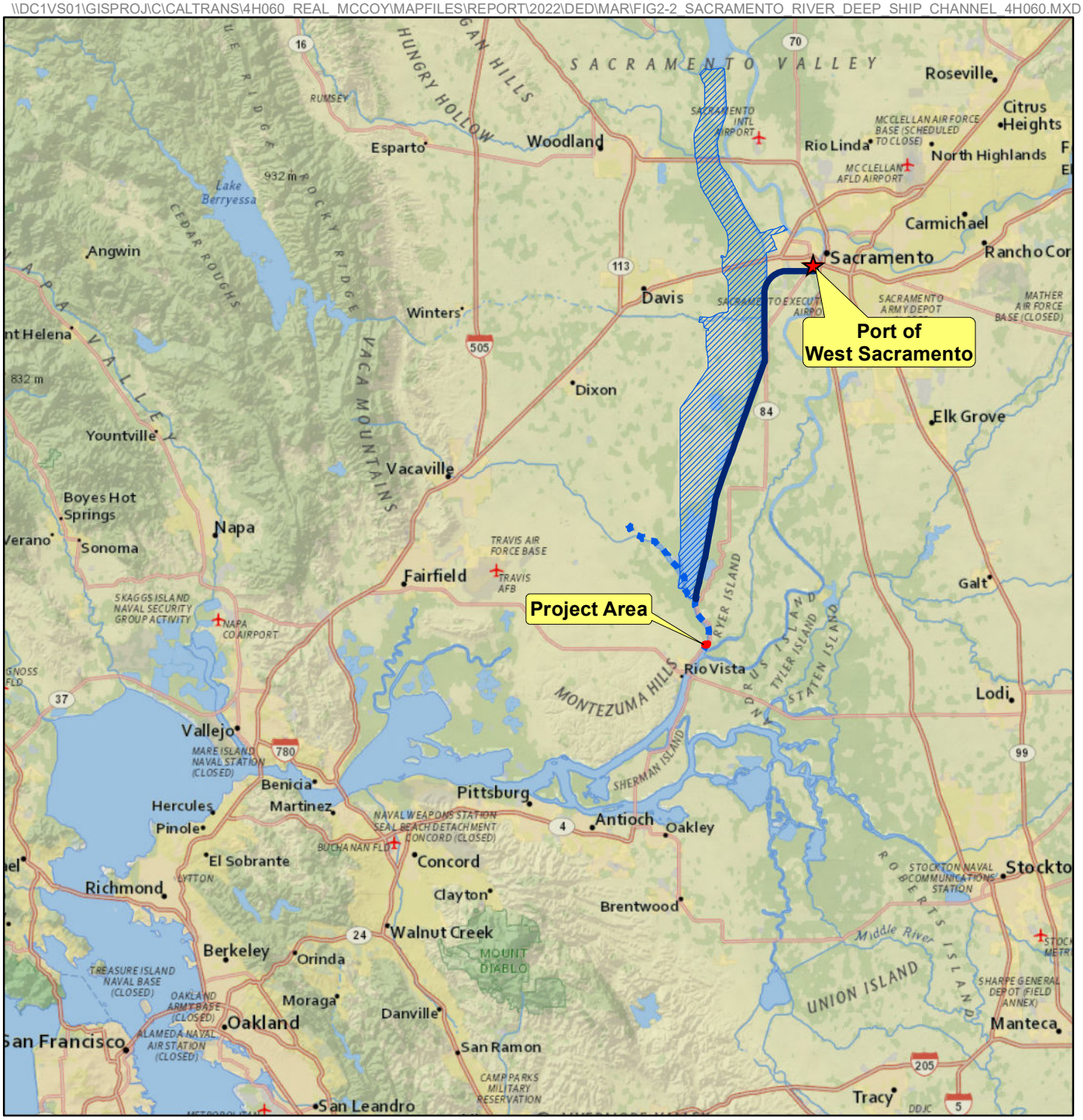
Marine Navigation

Cache Slough, at the confluence of the main stem of the Sacramento River and the constructed portion of the Sacramento River Deep Water Ship Channel, is adjacent to the southern end of the Yolo Bypass. The Sacramento River Deep Water Channel serves the marine terminal facilities at the Port of West Sacramento. The channel provides shipping access to the San Francisco Bay Area and Pacific Ocean via Cache Slough (USACE 2020). The Yolo Bypass is a 59,000-acre flood bypass that runs adjacent to the western bank of the Sacramento River Deep Water Ship Channel, extending south from the confluence of the Feather and Sacramento rivers (Figure 2-2). The southern reach of Yolo Bypass includes Liberty Island, Cache, Prospect, and Lindsey sloughs and the Yolo Bypass toe drain (USACE and Port of West Sacramento 2011).

Public Transportation

The SR 84 corridor is not served by any public transit bus service. Rio Vista Delta Breeze offers fixed route bus services within the City of Rio Vista (City of Rio Vista 2022), and paratransit for the elderly and individuals with disabilities is provided by Solano County (Solano County 2022).

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-2_SACRAMENTO_RIVER_DEEP_SHIP_CHANNEL_4H060.MXD



Legend

- Project Area
- Cache Slough
- Sacramento River Deep Water Ship Channel
- Yolo Bypass

N

0 10

Miles

FIGURE 2-2
Sacramento River Deep Ship Channel
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

Pedestrian and Bicycle Facilities

There are no designated bicycle and pedestrian facilities in the Project area. Noncontinuous segments of SR 84 have shoulders that provide adequate widths (minimum 5 feet) for pedestrians and cyclists.

2.1.2.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

The Build Alternative would improve ferry reliability across Cache Slough for the community and tourists. The Build Alternative would minimize the use of SR 160 and SR 12 as a detour route from vehicles trying to access Ryer Island via the Real McCoy Ferry. The Build Alternative would improve ferry boat accessibility and reliability across Cache Slough, thus benefitting the local community.

Construction

During construction, SR 84 at Real McCoy would be closed for 4 to 5 months. Vehicular traffic would be diverted to use the detour route on SR 12 and SR 160 and the J-Mack Ferry on SR 220 while the existing fenders system and ramps are replaced (Figure 2-1). The detour is 16 miles and would take approximately 45 minutes. The proposed detour route is the detour route used when the Real McCoy Ferry is halted because of mechanical problems, regularly scheduled maintenance, or staffing shortages, or when water conditions prevent safe crossing (Caltrans 2022a). Because the ferry is frequently closed, the temporary closure and detour of vehicles on the regional highways would be similar to existing conditions. The six parking spaces on the west side of Cache Slough would be unavailable for public and employee use. However, with the ferry closed during construction, the parking spaces would not be needed by employees or ferry customers. In the event that both ferries are down, traffic would be routed to use the Miner Slough bridge. The Build Alternative would not have an adverse effect on circulation and traffic in the region.

During construction, the fender systems and ramps would be replaced one at a time. The Project would only close off either the east or west Project areas to allow for continued uses such as navigation and recreation on the Cache Slough. During the design phase, Caltrans would obtain a permit from the U.S. Coast Guard for work in the slough. The permit from the U.S. Coast Guard would require ship accessibility through the slough. The Build Alternative would have no effect on the navigational uses of the slough.

Caltrans would implement PF-TRA-1, Traffic Management Plan, which would include elements such as coordination with local emergency service providers, notification of businesses and residences on Ryer Island and the Port of West Sacramento of closure times, and the use of flaggers to detour traffic.

No-Build Alternative

Under the No-Build Alternative, there would be no improvements to the fender systems, ramps, and ferry deck. The ferry would continue to be out of service for a high percentage of the year, and there would be no temporary effects on traffic volumes in the area. There would be no impact on traffic, marine navigation, and transportation.

2.1.2.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

No avoidance and minimization measures (AMMs) or mitigation measures (MMs) would be required to reduce effects related to traffic, marine navigation and transportation, or pedestrian and bicycle facilities.

2.1.3 Visual/Aesthetics

This section was prepared using the Scenic Resource Evaluation and Visual Impact Assessment Memorandum (Caltrans 2021d) prepared by Caltrans.

2.1.3.1 AFFECTED ENVIRONMENT

The Project is located along Cache Slough, part of the Sacramento River Delta, approximately 3 miles north of the town of Rio Vista in unincorporated Solano County. The landscape is characterized by Cache Slough, the Sacramento River Delta, and farmland located on the eastern and western sides of SR 84. Within the Project area, SR 84 is not officially designated as a scenic highway.

The visual environment of SR 84 within and adjacent to the Project area is primarily rural and agricultural. Areas next to the boat ramps are vegetated with riparian grasses, shrubs, and trees. Views from each boat ramp are of nearby agricultural fields and Cache Slough. Distant views both north and south along Cache Slough are available of the Sacramento River Delta. Utility poles outside the Project area line SR 84 to both the west and east landings. At the boat ramps, the view has encroaching elements such as light poles, signage for ferry queuing, and automatic swing gates. There is a cluster of small structures at the west landing associated with ferry operations.

2.1.3.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

The Build Alternative would be compatible with the existing visual character and quality of the corridor as the fender system and ramps would be replaced in-kind. The Build Alternative would have similar forms, line, color, texture, scale, and continuity as the existing condition. Therefore, the Build Alternative would have no effect on the visual character and quality of the corridor.

Construction

During construction, vegetation within the Project area would be removed, causing temporary minimal visual changes in the area. Trees may be removed or trimmed to clear obstructions for construction activities. Shoreline clearing and grubbing of shrubs would be required for replacement of the fender systems.

Visual impacts during construction would include the appearance of construction equipment, temporary construction area lighting, and staging of materials. Caltrans would minimize these impacts with the implementation of standards PF-AES-1 through PF-AES-6.

No-Build Alternative

Under the No-Build Alternative, there would be no improvements to the Real McCoy Ferry, fender systems, or ramps, and there would be no visual impacts.

2.1.3.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

No AMMs or MMs would be required to reduce effects related to visual or aesthetics.

2.1.4 Cultural Resources

2.1.4.1 AFFECTED ENVIRONMENT

The studies for this undertaking were carried out by Caltrans Professionally Qualified Staff (PQS) in a manner consistent with Caltrans regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 *Code of Federal Regulations* Part 800) and pursuant to the January 2014 Programmatic Agreement between the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and Caltrans regarding compliance with National Historic Preservation Act Section 106 as it pertains to the administration of the Federal Aid Highway Program in California. These studies include the results of background literature and records research, pedestrian field surveys, and consultations with the Native American community, the

State Historic Preservation Officer, and other interested parties, as well as local and state authorities.

Caltrans prepared a Historic Property Survey Report, an Archaeological Survey Report, an Extended Phase I Report, a Finding of No Adverse Effect Without Standard Conditions, and a Post-Review Discovery and Environmentally Sensitive Area and Monitoring Plan for the Project; results of these studies are summarized in the Section 106 Memorandum provided for the Project (Caltrans 2022c). The Area of Potential Effects (APE) defined for cultural resources includes all areas in the physical footprint of improvements proposed for the Build Alternatives and extends to the maximum depth of excavation, which is assumed to be up to 50 feet for the new fender system.

Area of Potential Effects

The APE was established in consultation with Caltrans PQS in February 2022. The APE for both architectural history and archaeology encompasses the Project area, including all areas of ground-disturbing activity, and all areas of potential indirect effects.

The archaeological and architectural APE includes the entire Project area (east and west sides of Cache Slough) at PM 2.49 along SR 84 where construction activities would take place, including all areas of potential direct and indirect effects. This includes staging and access areas, temporary construction easements (TCEs), fender excavation and installation areas, concrete approach slab ramp installation, traffic operation system and vehicle detection systems elements, and upgraded swing gate systems. The archaeological APE also includes the site boundaries of a previously recorded prehistoric archaeological site, CA-SOL-276. The vertical APE and area of direct impacts consists of all activities that would impact the APE below the current ground surface, including excavation. The vertical APE varies between 3 feet above surface for vegetation removal disturbance to 50 feet to accommodate the fender system construction.

Archaeology

Caltrans PQS conducted archaeological surveys within the archaeological APE in January and October 2021. Extended Phase I Investigations took place in December 2021.

Caltrans contacted the Native American Heritage Commission on January 18, 2021, requesting that they conduct a search of their Sacred Lands file to determine if there

were known significant sites within or near the APE for the proposed Project. A negative finding of Native American cultural resources in the Project area was reported from the Sacred Lands file records search on January 21, 2021. The Commission list of 12 interested Native American individuals, representing eight tribes, was used to send emails inviting participation in our efforts to identify archaeological and Native American resources. Emails requesting input along with a Project area map were sent to one representative from each of the eight tribes (with any additional tribal members from the list copied) on January 26 and November 23, 2021.

Follow-up phone calls were made in December 2021 to discuss the current Project elements and record search results. Detailed messages were left for Charlie Wright, Chairperson of the Kletsel Dehe Band of Wintun Indians; Chairperson Donald Duncan of Guidiville Indian Rancheria; Clifford Mota, Tribal Preservation, of Cachil Dehe Band of Wintun Indians of the Colusa Indian Community; Chairperson Cosme Valdez of Nashville Enterprise Miwok-Maidu-Nishinam Tribe; and the Preservation Department for United Auburn Indian Community of the Auburn Rancheria. Monica Fox from Chicken Ranch Rancheria of Me-Wuk Indians stated no concerns about the Project as it is out of their tribal area. Chairperson Corrina Gould from The Confederated Villages of Lisjan requested formal consultation. At a meeting on January 12, 2022, Ms. Gould requested follow-up information regarding the Project (provided via email) and a copy of any reports when finalized. Laverne Bill, Cultural Resources Manager of the Yocha Dehe Wintun Nation, requested formal consultation. On January 19, 2022, Caltrans met with Yocha Dehe Tribal Cultural Monitor Eric Hernandez, who recommended cultural monitors be present during all ground disturbance, including backhoe trenching and excavations, as well as cultural sensitivity training for involved staff. No further responses have been received to date.

Identification efforts found one previously recorded prehistoric archaeological site (CA-SOL-276) within the APE. No new archaeological resources were identified as part of this effort. Pending concurrence from the Caltrans Division of Environmental Analysis Cultural Studies Office, CA-SOL-276 will be assumed eligible for the National Register for the purposes of this undertaking under Criterion D, for the demonstrated and potential contributions to regional research issues and as a historical resource under the California Environmental Quality Act (CEQA).

Architectural History

Caltrans PQS conducted architectural history research in December 2020, April 2021, and February 2022. Caltrans PQS used the National Parks Service's online National Register of Historic Places library, and the California Office of Historic Preservation online registry inventory to search for properties listed or determined eligible for the National Register of Historic Places, the California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest. PQS conducted additional research using historical contexts, comparable properties, and other available documents on the Caltrans Cultural Resource Database, Caltrans highway as-built maps, Caltrans statewide bridge surveys, and U.S. Army Corps of Engineers (USACE) river surveys.

Caltrans PQS has determined that the only built resources present within the APE meet the criteria for Section 106 PA Stipulation VIII.C.1 and Attachment 4 for Properties Exempt from Evaluation (minor, ubiquitous, or fragmentary infrastructure elements).

2.1.4.2 Environmental Consequences

Build Alternative

Operation

Operation of the Build Alternative would not require earthmoving activities or ground disturbance. The Build Alternative would not have any permanent impacts.

Construction

As described in Section 2.1.4.1, identification efforts resulted in the identification of one previously recorded prehistoric archaeological site (CA-SOL-276) within the APE. Archaeological testing within the boundaries of CA-SOL-276 failed to identify the site within the area of direct impacts. Caltrans anticipates that the Build Alternative would not result in an adverse effect to this resource, but the effect determination is still pending. As documented in the Historic Property Survey Report, Caltrans will continue to consult with the State Historic Preservation Officer on the assessment of effects to CA-SOL-276. AMM-CUL-1 and AMM-CUL-2 include a Post-Review Discovery and Environmentally Sensitive Area and Monitoring Plan for the Project.

If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the nature and significance of the find as outlined in PF-CUL-1.

If human remains are discovered, California Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner shall be contacted. If the remains are thought by the Coroner to be Native American, the Coroner would notify the Native American Heritage Commission, who, pursuant to Public Resources Code Section 5097.98, would then notify the Most Likely Descendent. At this time, the person who discovered the remains would contact Kathryn Rose, Archaeology Branch Chief, in the Caltrans Office of Cultural Resource Studies in District 04, Oakland, so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code Section 5097.98 are to be followed as applicable. PF-CUL-2 outlines requirements in the event human remains are discovered.

No-Build Alternative

Under the No-Build Alternative, the fenders and ramps would not be removed and replaced at the Real McCoy Ferry crossing. Therefore, there would be no impact to cultural resources.

2.1.4.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Project would implement the following AMM to minimize impacts on cultural resources:

- **AMM-CUL-1, Environmentally Sensitive Area Fencing:** Prior to construction, the contractor would install environmentally sensitive area fencing around the boundary of CA-SOL-276 to visibly mark the boundaries of avoidance. Caltrans would maintain the fence in place throughout the construction phase to avoid direct construction activities in this area.

- **AMM-CUL-2, Post-Review Discovery and Monitoring Plan:** During construction, archaeological monitoring by a professionally qualified archaeologist and Native American representative of all construction-related activities in the proximity of the site boundary would occur to account for the unlikely event of identifying subsurface deposits associated with CA-SOL-276.

2.1.5 Hydrology and Floodplain

2.1.5.1 AFFECTED ENVIRONMENT

This section was prepared using the Floodplain Encroachment Review Memorandum developed for this Project (Caltrans 2021f).

Floodplain

The Project is located within Federal Emergency Management Agency Flood Insurance Rate Map Number 06095C0541E, effective date May 4, 2009, and is within a base floodplain. Map 06095C0541E shows that, at PM 2.49 on SR 84, the floodplain is identified as Zone AE, a special flood hazard area, with a base floodplain of 12 feet (Figure 2-3).

Watershed

The Project area is within the Sacramento Delta hydrologic unit and within the Toe Drain-Cache Slough watershed. The watershed receives an average of 17.19 inches of rainfall annually. The watershed covers an area of 289,458 acres that spans Solano and Yolo counties (Figure 2-4).

Beneficial Uses

The Central Valley Regional Water Quality Control Board establishes the beneficial uses for the waterways and waterbodies. The beneficial uses for Cache Slough are those designated for the Delta waterways, which are agricultural supply, municipal and domestic supply, warm freshwater habitat, wildlife habitat, water contact recreation, and noncontact water recreation. Water contact recreation includes water skiing and kayaking, and non-water contact includes boating and fishing.

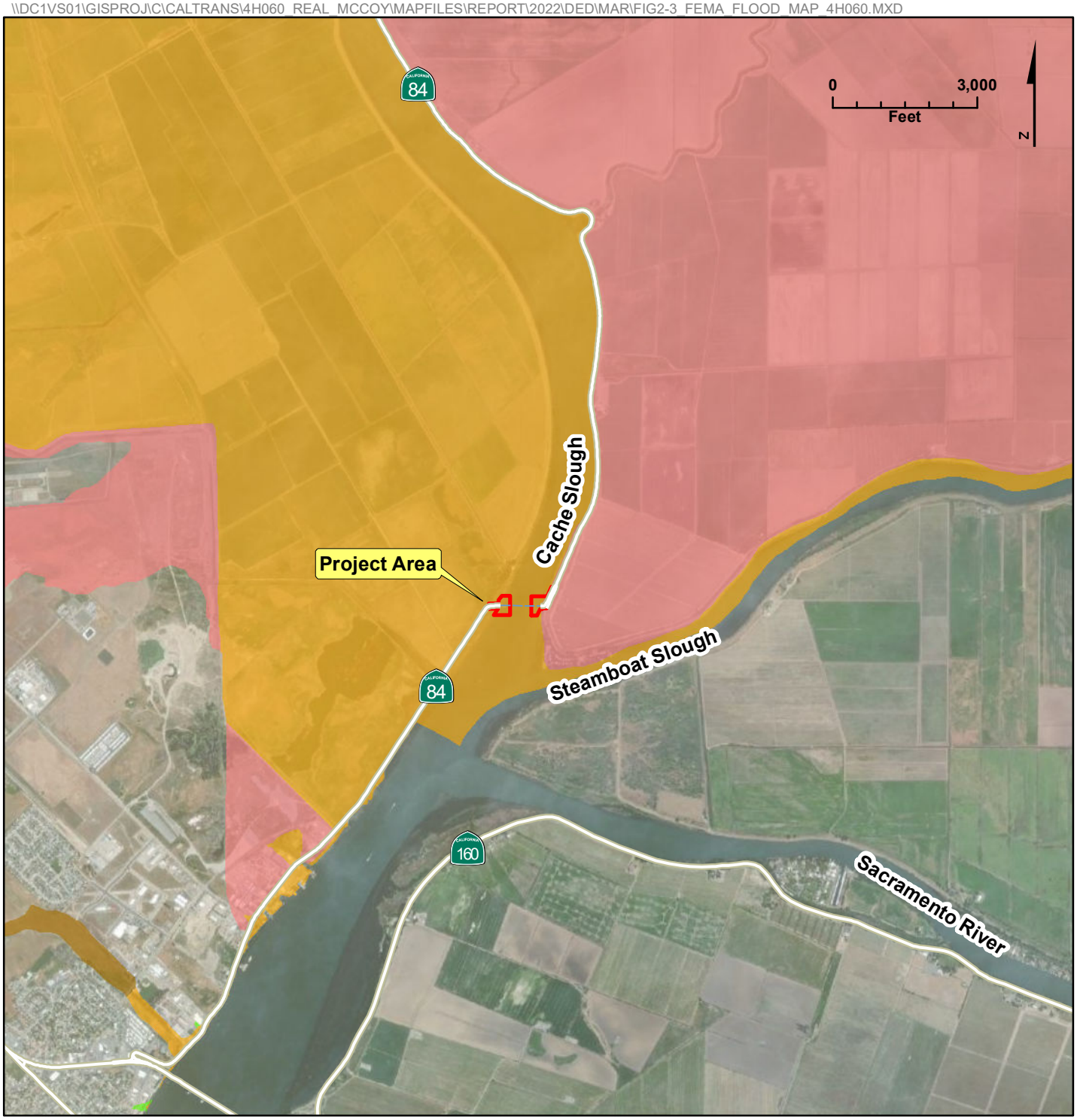
2.1.5.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

The Build Alternative would not change existing land uses in the surrounding area. The land uses in the Project area are dominated by agriculture. The Build Alternative would increase the total impervious surface in the floodplain by replacing the existing boat ramps with new wider and longer boat ramps. This increase in fill from the new impervious surface is negligible compared to the size of the floodplain. Therefore, the Build Alternative would have minimal impacts to the floodplain.

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-3_FEMA_FLOOD_MAP_4H060.MXD



Legend

Project Area

FEMA Flood Zone Type

- A: 1% annual chance of flooding, no base flood elevations determined
- AE: 1% annual chance of flooding, base flood elevations determined
- AO: 1% annual chance of shallow flooding. (usually sheet flow on sloping terrain) base flood elevations determined
- X: 2% annual chance of flooding, base flood elevations determined

Sources:
Federal Emergency Management Agency, 2019

Caltrans

FIGURE 2-3
FEMA Flood Zones
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

Construction

Construction activities would occur within the floodplain, but all construction activities would be temporary. During construction, mobility upstream and downstream of Cache Slough would remain available for noncontact water recreation. In the Project area, water contact recreation would be accessible to recreationalists outside the construction work areas. In-water construction activities such as installing cofferdams and the use of a vibratory pile hammer would temporarily impact wildlife habitat and warm freshwater habitat. Because the Build Alternative's construction activities would be temporary, the effect on the beneficial and natural values of the floodplain would be minimal.

No-Build Alternative

Under the No-Build Alternative, there would no impacts on natural and beneficial floodplain values or encroachment on a floodplain. There would be no effect.

2.1.5.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

No AMMs or MMs would be required to reduce effects related to the hydrology and floodplain.

2.1.6 Water Quality and Stormwater Runoff

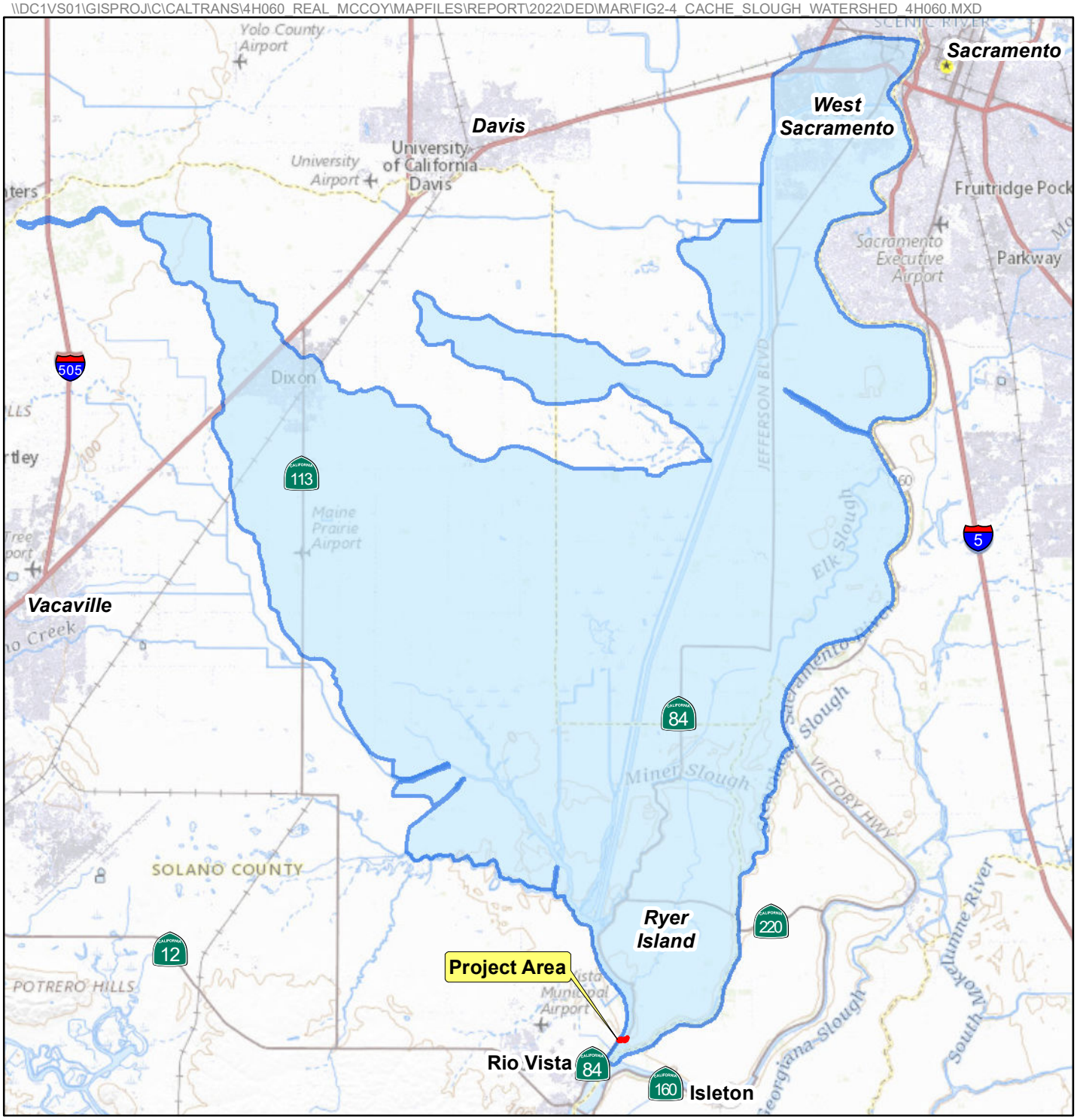
2.1.6.1 AFFECTED ENVIRONMENT

This section was prepared using the Water Quality Study developed for this Project (Caltrans 2021c).

The Central Valley Regional Water Quality Control Board has jurisdiction of the surface waterbodies in the Project area. Cache Slough is part of the 53,000-acre Cache Slough Complex located in the northwest corner of the Sacramento-San Joaquin River Delta in Solano and Yolo counties, at the downstream of the Yolo Bypass/Cache Slough (Regional Water Quality Control Board 2017). Cache Slough is a tributary of the Sacramento River, which drains into Suisun Bay.

As described in Section 2.1.4, the Project area is within the Sacramento Delta hydrologic unit and within the Toe Drain-Cache Slough watershed (Figure 2-4). The watershed receives an average of 17.19 inches of rainfall annually. The watershed covers an area of 289,458 acres that spans across Solano and Yolo counties.

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-4_CACHE_SLOUGH_WATERSHED_4H060.MXD



Legend

- Project Area
- Toe Drain-Cache Slough

Caltrans

N

0 4

Miles

FIGURE 2-4
Toe Drain-Cache Slough Watershed
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

As discussed in Section 2.1.4.1, the beneficial uses for Cache Slough are those designated for the Delta waterways, which are agricultural supply, municipal and domestic supply, warm freshwater habitat, wildlife habitat, water contact recreation and noncontact water recreation.

Clean Water Act Section 303(d) requires states, territories, and authorized tribes to develop a list of water quality limited segments that do not meet water quality standards. The Delta Waterway (northwestern portion) is listed on the California 2018 Integrated Report 303(d) List. Pollutants of concern for the Delta Waterway (northwestern portion) are chlordane, chlorpyrifos, dichloro-diphenyl-trichloroethane (DDT), diazinon, dieldrin, group A pesticides, invasive species, mercury, polychlorinated biphenyls, and toxicity (California State Water Resources Control Board 2021).

Stormwater runoff in the Project area drains into the municipal separate storm sewer system (Phase 1), located outside the Project area, which then drains into San Francisco Bay and eventually discharges into the Pacific Ocean.

2.1.6.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

Under the Build Alternative, there would be no changes to service frequency or type of ferry vessel used to carry vehicles and people across Cache Slough on SR 84. Therefore, there would be no adverse effects to water quality.

Construction

Impacts to water quality would occur from the replacement of the existing fender systems and debris catcher, and construction of the new ramps. Construction staging would occur on the east and west side of Cache Slough on existing paved areas at least 50 feet from Cache Slough. The total disturbed soil area would be 0.4 acre. Construction work would occur in Cache Slough, and the Project would require a Section 404 permit from USACE and a Section 401 Water Quality Certification from the Central Valley Regional Water Quality Control Board. There would be 0.7 acre of new additional impervious area.

During construction, impacts to water quality from excavating and vibratory pile driving activities can include debris deposition and sedimentation. Other potential pollutants include oil and grease from vehicles and construction equipment, concrete

waste, sanitary waste, trash, and any other chemicals used for equipment that could enter Cache Slough from accidental spills or via stormwater runoff during rain events.

Dewatering would be required during removal of the existing piles and construction of the fender systems and debris catcher. Generated effluent from dewatering would be captured, stored, sampled and, depending on sampling results, hauled offsite. Any water stored onsite would be stored and released in accordance with the appropriate regulatory requirements.

Replacement would start at the east or west side of Cache Slough with installation of cofferdams prior to the removal and replacement of the piles. Piles would be pulled out directly using a barge-mounted crane or vibrated out using a vibratory hammer. The new piles would be installed with a vibratory pile hammer from a crane mounted on a barge. Replacement of the piles would cause sedimentation in Cache Slough and vibrations that could impact aquatic life. Refer to Section 2.1.11, Section 2.1.13, and Section 2.1.14 for an analysis of impacts to aquatic life. Sedimentation from pile replacement would increase water turbidity, which can adversely impact water quality. Water removed from the cofferdams would be discharged into Cache Slough. Implementation of PF-HYD-1 and PF-HYD-3 would minimize sedimentation impacts to water quality.

The Build Alternative would comply with the National Pollutant Discharge Elimination System Construction General Permit and the Caltrans Municipal Separate Storm Sewer System (MS4) Permit. In accordance with the Construction General Permit, the Build Alternative would implement PF-HYD-1 and implement a stormwater pollution prevention plan during construction. Prior to the start of construction activities, the stormwater pollution prevention plan would be prepared by the contractor and approved by Caltrans pursuant to the Construction General Permit and the Caltrans MS4 Permit. The plan would include best management practices (BMPs) to protect sensitive areas and prevent and minimize stormwater and non-stormwater discharges.

No-Build Alternative

Under the No-Build Alternative, there would be no earthmoving activities or in-water work, as there would be no improvement to the existing ferry system. There would be no impacts to water quality or groundwater.

Avoidance, Minimization, and/or Mitigation Measures

No AMMs or MMs would be required to reduce effects related to geology, soils, seismicity, and topography.

2.1.7 Geology/Soils/Seismic Topography

2.1.7.1 AFFECTED ENVIRONMENT

Caltrans completed a Geologic and Seismic Memorandum for the Project (Caltrans 2021b). This section summarizes the findings of that review.

Seismicity

The U.S. Geological Survey Quaternary Faults and Folds Database (2006) indicates that the northwesterly-trending inferred trace of the Quaternary-active (age-undifferentiated) Midland fault is located approximately 2,460 feet southwest of the Project site.

The Project area is not intersected by an active fault. However, the Project is located in a seismically active region and would be exposed to periods of strong ground shaking during a seismic event along nearby faults in the region.

Topography/Geology/Soils

The Project site lies within the Great Valley geomorphic province and is situated within and on the banks of Cache Slough and the adjacent, relatively level modern marsh and floodplain. The Project site is underlain by late Holocene intertidal deposits comprised of peat, peaty mud and clay, silt, and sand from natural levees. These deposits are described as being generally thicker than 3.3 feet and locally capped by constructed levees, dredge spoils, and up to 10 feet of silt and sand to shore up or repair constructed levees (Caltrans 2021b). Cache Slough is a southerly-flowing, gently meandering river channel and is 750 to 800 feet wide at the site. The slough's confluence with Steamboat Slough and the Sacramento River proper, respectively, is approximately 1,200 and 3,300 feet north (upstream) of the site.

The Project is not located on expansive soil (as defined in Table 18-1-B of the Uniform Building Code [1994]), and there are no septic tanks, alternative wastewater disposal systems, or any other solid waste disposal facilities planned as part of the Project. In addition, the Project is not located in an area that contains a geologic unit that is paleontologically sensitive.

2.1.7.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

The Build Alternative would be designed in accordance with Caltrans' Standard Specifications and current seismic design criteria. Operation of the Build Alternative would not affect the geology and soils present at the Project site. There would be no impact.

Construction

The Project scope of work is unlikely to expose the public to hazards from strong ground shaking, fault rupture, liquefaction, slope instability or landslide. The Project is not located in a geologic unit or soil that is unstable or that would become unstable because of the Project. In addition, this Project would not increase the risk of on- or offsite landslides, lateral spreading, subsidence, liquification, or collapse. Water quality PF-HYD-1 through PF-HYD-2, described in Appendix A, would minimize potential for erosion during construction. There would be no impact.

No-Build Alternative

Under the No-Build Alternative, the Project would not be built, and the fender systems and concrete ramps would not be replaced. The existing ferry infrastructure would remain. Therefore, the No-Build Alternative would not have any effects related to geologic resources.

2.1.7.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

No AMMs or MMs would be required to reduce effects related to geology, soils, seismicity, and topography.

2.1.8 Climate Change

Neither the United States Environmental Protection Agency (EPA) nor FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas (GHG) analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and executive orders on climate change, the issue is addressed in the CEQA evaluation in Chapter 3. The CEQA analysis may be used to inform the NEPA determination for the Project.

2.1.9 Hazardous Waste/Materials

2.1.9.1 AFFECTED ENVIRONMENT

The analysis summarized in this section focuses on determining if health risks related to hazardous waste and materials are present within the Project area. The Project vicinity is mostly agricultural lands. The original concrete ramps were built in 1967 and extended in 1976. SR 84 is a two-lane conventional highway with relatively low traffic (in 2020, the average daily traffic number of vehicles was 900 vehicles per day) and would not have historically accommodated the high traffic volumes that are typically associated with aerially deposited lead (ADL) deposition concerns related to travel prior to the 1980s, when gasoline in California was permitted to contain tetraethyl lead.

Databases pertaining to past and present hazardous materials uses and releases on properties at or near the Project site were reviewed. The Project site was not identified in any of the records, including lists of hazardous materials release sites compiled pursuant to Government Code 65962.5. The analysis is based on the following database search:

- An EnviroStor database search for environmental records and data for facilities regulated by the California Department of Toxic Substance Control (2022) within a 1-mile radius of the Project area boundary.

- A Geotracker database search for environmental records and data for facilities regulated by the California State Water Resources Control Board (2022) within the Project area and surrounding areas as described above.

The database search did not identify any known or potential releases of hazardous materials that could impact soils and/or groundwater within a 1-mile radius of the Project area.

2.1.9.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

Operation of the Real McCoy Ferry system would improve connectivity to SR 84 from Cache Slough. The Project proposes to (1) improve the structural integrity for continued access on SR 84 by replacing the existing timber fender systems and boat ramps and (2) extend the deck of the ferry to improve vehicular access on and off the ferry.

The Project would not involve the use, storage, or transportation of hazardous materials. Operation of the Real McCoy Ferry system would generate non-point source pollution including vehicle fuel and oil leaks while transporting vehicles from east to west across Cache Slough between Ryer Island. The release of these pollutants would be considered minimal and identical to those under existing conditions; therefore, the Project would not result in any new adverse effects.

Construction

Caltrans project features would be implemented throughout construction to prevent the exposure or release of hazardous waste or materials such as asbestos and lead-based paint (PF-HAZ-1), ADL (PF-HAZ-2), and spills or leaks from construction equipment (PF-HAZ-3).

ADL from the historical use of leaded gasoline exists along roadways throughout California. If encountered, soil with elevated concentrations of lead as a result of ADL along the State Highway System within the limits of the Project would be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. This agreement allows such soils to be safely reused within the Project limits as long as all requirements of the ADL Agreement are met.

The existing structures, such as the original concrete ramps built in 1967 and extended in 1976 would be tested for asbestos and lead-based paint by a qualified licensed inspector prior to demolition (PF-HAZ-1).

There are no known hazardous waste and/or material release sites that would impact humans or the environment due to releases and exposures during construction, and no major sources of offsite contamination that need to be considered or mitigated.

No-Build Alternative

The No-Build Alternative would not replace or make alterations to the existing Real McCoy Ferry system. In addition, there is no known existing lead paint and asbestos in or around the area and it would remain undetected and untreated. However, the existing wood fender systems are comprised of treated wood, which are continuously degrading and releasing metals such as cooper or arsenic (common to wood preservatives) into the waterway. The No-Build Alternative would contribute to further decline of the current Real McCoy Ferry system; however, it would not pose as an environmental risk associated with any hazardous waste or materials.

2.1.9.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

No AMMs or MMs would be required to reduce effects related to hazardous waste or materials.

2.1.10 Natural Communities

2.1.10.1 AFFECTED ENVIRONMENT

This section summarizes the Natural Environment Study (NES) prepared for this Project (Caltrans 2022c).

The biological study area (BSA) for the Project encompasses the Project area and a 50-foot buffer. The BSA is defined as the area (aquatic and terrestrial) that may be directly, indirectly, temporarily, or permanently impacted by construction. The established BSA for the Project is 10.6 acres in two areas on each side of the slough and contains the ferry terminals and associated work and staging areas, as shown in Figure 2-5.

Some areas outside of the identified BSA were also studied for the NES analysis. For example, the Swainson's hawk study area extended to a 0.5-mile buffer around the Project area. The NES section regarding hydroacoustic impacts on fish species addressed areas up to 5,315 feet to the north and 22,802 feet to the south of the Project area in Cache Slough. Areas outside the BSA were visually assessed from accessible locations or were assessed using literature, aerial images, satellite imagery, and database searches.

The BSA is located in the Delta subsection of the Great Valley Ecological section (Miles and Goudey 1997). Land cover adjacent to SR 84 and in the vicinity of the survey area is primarily used for agricultural purposes. Various technical studies and surveys of protected resources such as general habitat assessments, plant surveys, wetland delineations, and tree surveys were conducted between March and October 2021. The BSA contains a diverse array of land cover types, including developed land (the ferry terminal and roadway), orchards and irrigated crops, open water (Cache Slough, a water of the United States), and seven vegetation types. Figure 2-6 displays the vegetation types mapped in the BSA.

Habitat Types

Habitats may be of special concern if they meet one or more of the following criteria:

- There are federal, state, or local laws regarding their development.
- They are limited in their distribution.

Legend

- Caltrans Right of Way
- Biological Study Area
- Project Area
- Temporary Construction Easement
- Potential Staging Area
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal
- Cofferdam

Imagery Source:
Solano County 2019

N

0 70 140
Feet

Caltrans

FIGURE 2-5
Map 1 of 2
Rio Vista (West)
Biological Study Area
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-5_BSA_4H060.MXD

Legend

- Caltrans Right of Way
- Biological Study Area
- Project Area
- Temporary Construction Easement
- Potential Staging Area
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal
- Cofferdam

Imagery Source:
Solano County 2019

N

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Feet

Caltrans

FIGURE 2-5
Map 2 of 2
Ryer Island (East)
Biological Study Area
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-5_BSA_4H060.MXD

- They support the habitat requirements of special-status plants or animals occurring onsite.

These habitats and communities include riparian corridors, waters of the United States and water of the state, coastal wetlands, designated critical habitat, and essential fish habitat. Table 2-2 lists the habitat types present within the 10.6-acre BSA. This section describes each habitat type as it exists within the BSA (Figure 2-6). The following vegetation types were identified in the BSA during biological surveys:

- California Annual Grassland
- Riparian Scrub
- Riparian Forest
- Soft Rush Tidal Marsh
- California Bulrush Tidal Marsh
- Giant Reed Tidal Marsh
- Eucalyptus

Acreages for these vegetation types are listed in Table 2-2. These vegetation types and their natural history are described in detail in the NES (Caltrans 2022c). This section focuses on their potential to occur in the BSA and be impacted by the Project.

Table 2-2. Habitat Types in the BSA

Vegetation Types	Acres
Open Water	6.26
Developed	1.54
Annual Grassland	1.12
Riparian Scrub	0.41
Riparian Forest	0.39
Orchard	0.27
Soft Rush Tidal Marsh	0.26
Eucalyptus	0.24
Giant Reed Tidal Marsh	0.09
California Bulrush Tidal Marsh	0.05
Total	**10.63**

Aquatic

Aquatic areas make up approximately 6.3 acres of the BSA. Cache Slough contains all of the open water habitat in the BSA. The channeled, leveed, and riprapped areas within the BSA have low habitat diversity and complexity and are expected to have low abundance of food organisms and offer little protection from predation by fish and birds.

Habitat Connectivity

Cache Slough serves as a corridor of aquatic connectivity between the greater San Francisco Bay downstream of the Project (via the Sacramento River and Suisun Bay) and the sloughs and wetlands of the greater Sacramento Valley Delta region upstream of the Project. Upstream of the Project, major waterways that drain through Cache Slough at the Project area include Lindsey Slough, Prospect Slough, Miner Slough, the Sacramento River Deep Water Ship Channel, and upstream regions of Cache Slough itself. Cache Slough is connected to the Sacramento River 0.75 mile southwest of (downstream from) the ferry.

As a corridor of aquatic connectivity, Cache Slough provides a pathway for seasonal migration and other non-migration movement of aquatic species. As the Cache Slough Restoration Planning Partnership notes, the Cache Slough Complex "provides spawning and rearing habitat for populations [of delta smelt] migrating from the estuary's low-salinity zone," as well as "seasonal migration, spawning, and rearing habitats for adult and juvenile native and anadromous fish" (CSRPP 2017). These movements are essential for some aquatic species to complete their life cycles.

Several avian species also rely on visual landmarks such as rivers to navigate (Bingman and Cheng 2005). In this way, Cache Slough, as a large aquatic feature visible from the air, may serve as a navigational reference for bird navigation and migration.

Riparian Habitat

Riparian habitats are plant communities supporting woody vegetation (ranging from dense thickets of shrubs to a closed canopy of large mature trees) that line the banks of rivers, creeks, and streams. These areas provide habitat for several special-status species and serve valuable ecosystem functions, including water filtration, nutrient input from falling leaves, and stream shading. Because of their sensitivity and ecosystem value, many riparian areas are under the jurisdiction of the California Department of Fish and Wildlife (CDFW) pursuant to California Fish and Game Code Section 1602.

A total of 2.0 acres of riparian habitat occurs within the BSA; these areas are under the jurisdiction of CDFW pursuant to California Fish and Game Code Section 1602.

Essential Fish Habitat

The Project is located in the Rio Vista U.S. Geological Survey 7.5-minute topographic quadrangle, which has designated essential fish habitat for Chinook salmon and groundfish (NMFS 2021). Essential fish habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (Caltrans 2022c). Chinook salmon and groundfish have potentially suitable habitat within the BSA, and essential fish habitat is present. The Project effects on Chinook salmon and groundfish covered under provisions of the Magnuson-Steven Fishery Conservation and Management Act (Public Law 94-265) were fully assessed.

Within the Project limits, Cache Slough is a brackish water and tidally influenced system in which marine essential fish habitat is present. Marine essential fish habitat for Chinook salmon consists of three major components: (1) estuarine rearing, (2) ocean-rearing, and (3) juvenile and adult migration. Of the three major components of marine essential fish habitat for Chinook salmon, the two components within the Project area are estuarine rearing and juvenile and adult migration. However, juvenile rearing habitat for Chinook salmon in the Project area is marginal because the channeled, leveed, and riprapped river reaches and sloughs common in the Delta typically have low habitat diversity and complexity, have low abundance of food organisms, and offer little protection from predation by fish and birds. Suitable spawning and incubation habitat is not present in the Project area.

Within the Project area, Cache Slough contains groundfish essential fish habitat because it is the appropriate depth and is tidally influenced.

Trees

Trees with a diameter at breast height of 2 inches or greater that are likely to be potentially affected (removed or trimmed) during construction are shown in Figure 2-6. The October 2021 tree survey identified 61 trees present within the 6.60-acre tree survey area (defined as the Project area \with a dripline buffer of 10 feet); of these, 10 occur within the Project area and may need to be removed to complete construction (Figure 2-7).

Of the 61 trees in the tree survey area, 39 trees occur in riparian habitat along the slough, and 22 are in upland areas (Figure 2-7). Of the 10 trees that may need to be removed, all 10 are within CDFW-jurisdictional riparian habitat. Caltrans estimates 10 trees would need to be removed during construction, though all trees occurring within the Project area have the potential to be affected by construction.

2.1.10.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

Operation of the Build Alternative would have no adverse effect on natural communities.

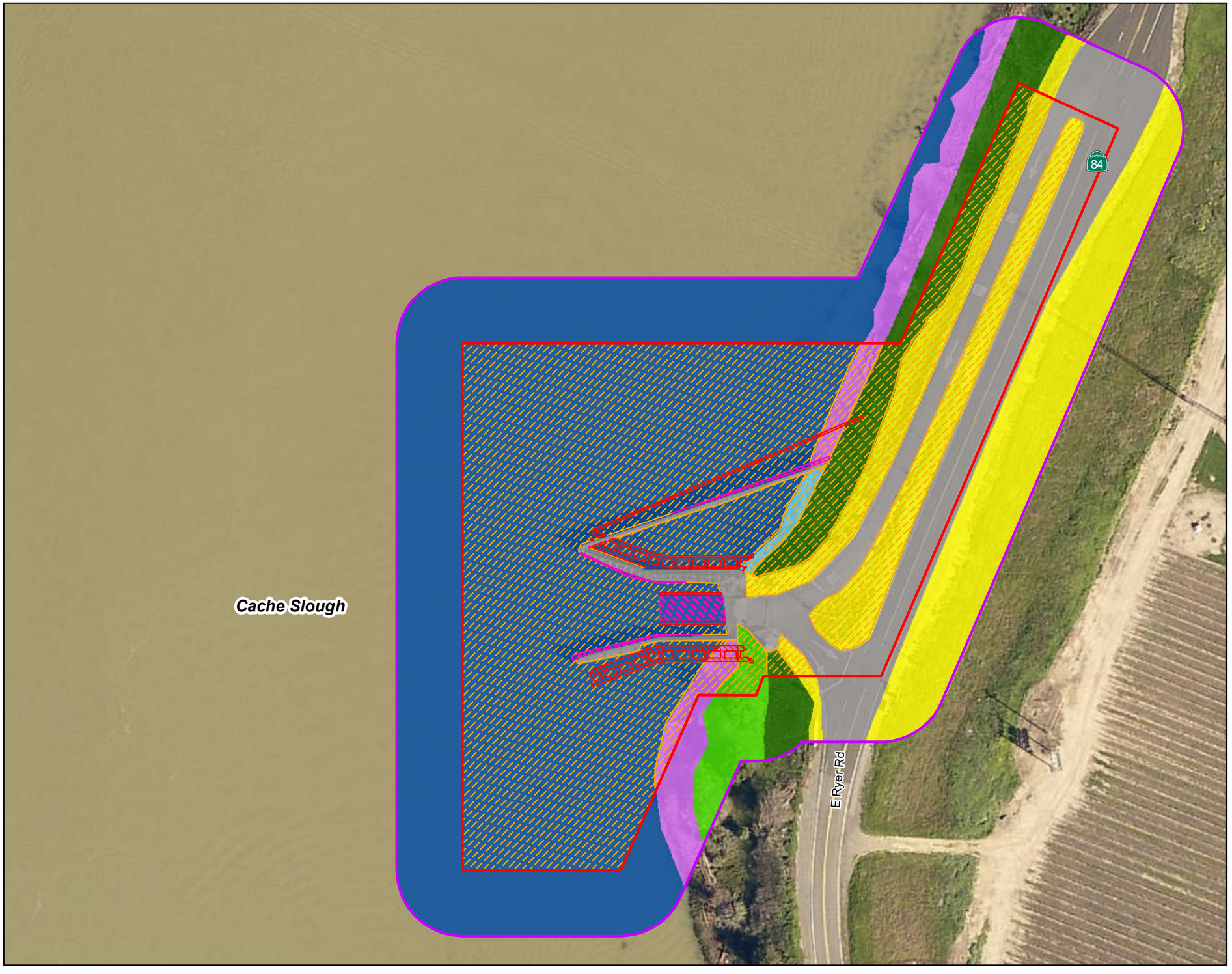
Construction

Direct permanent impacts would result from the installation of permanent structures such as the proposed fenders, debris catchers, and ramps. Impacts to vegetation types are presented in Table 2-3. The Project would have permanent impacts on 0.05 acres of vegetation and temporary impacts on 4.62 acres of vegetation.

Table 2-3. Impacts to Vegetation Types

Vegetation Types	Permanent Impacts (acres)	Temporary Impacts (acres)
Open Water	0.04	3.72
Developed	0.0	0.0
Annual Grassland	0.002	0.40
Riparian Scrub	0.004	0.25
Riparian Forest	0.003	0.06
Orchard	0.0	0.03
Soft Rush Tidal Marsh	0.006	0.06
Eucalyptus	0.0	0.02
Giant Reed Tidal Marsh	0.0	0.04
California Bulrush Tidal Marsh	0.0	0.04
Total	**0.05**	**4.62**

Of the 1.2 acres of riparian habitat in the BSA, 0.01 acre would be permanently impacted from the installation of hardened structures.



Legend

- Biological Study Area
- Project Area

Habitat Types

- CA Bulrush Tidal Marsh
- Developed
- Open Water
- Riparian Forest
- Riparian Scrub
- Annual Grassland
- Soft Rush Tidal Marsh

Impacts to Habitat Types

- Permanent - Benifical
- Permanent
- Temporary

Imagery Source:
Sacramento County 3/26/2018

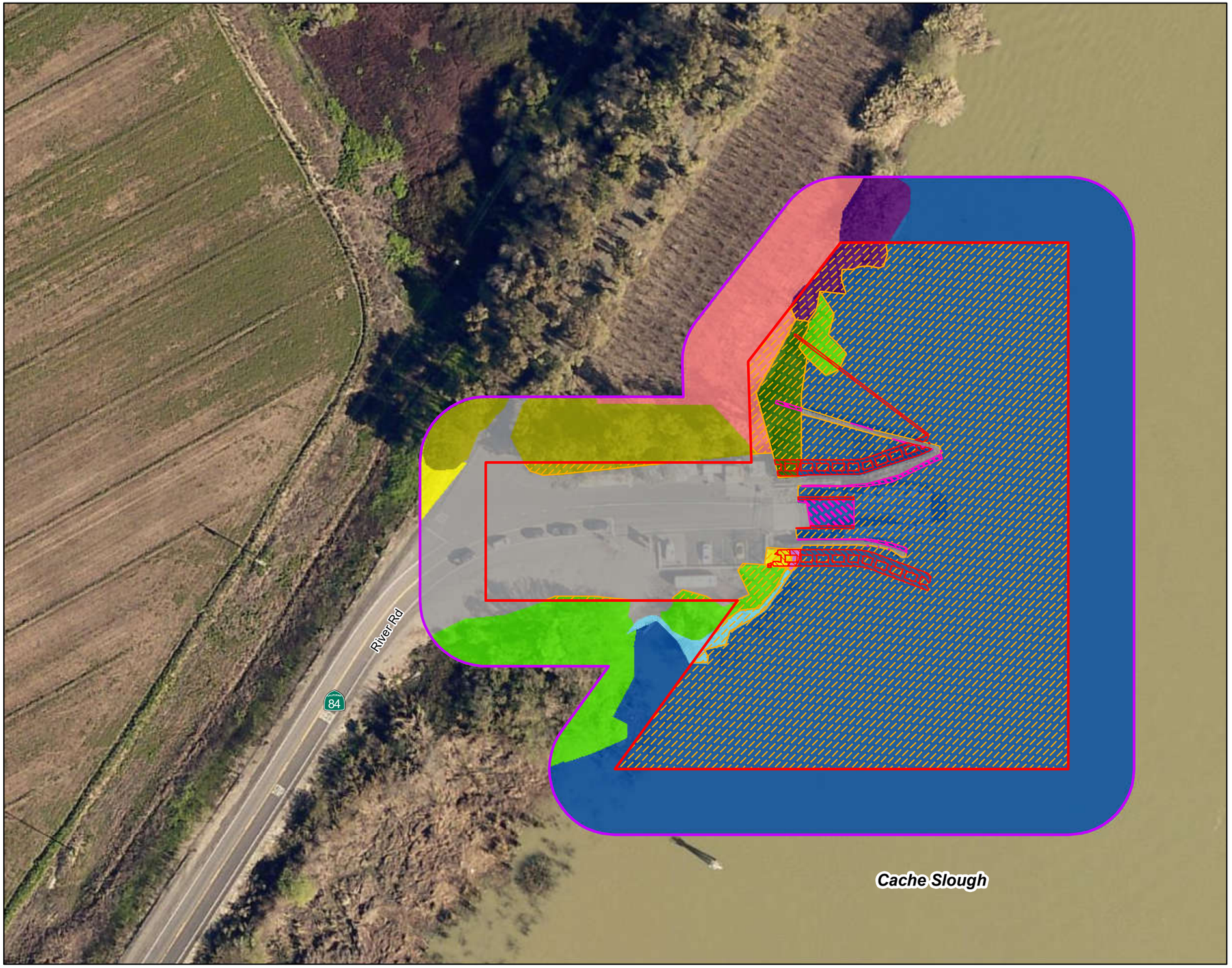
N

0 75 150
Feet

Caltrans

FIGURE 2-6
Map 2 of 2
Ryer Island (East)
Impacts to Habitat Types within the BSA
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-6_POTENTIAL_IMPACTS_TO_HABITAT_TYPES_WITHIN THE BSA_4H060.MXD



Legend

- Biological Study Area
- Project Area

Habitat Types

- CA Bulrush Tidal Marsh
- Developed
- Eucalyptus
- Giant Reed Tidal Marsh
- Open Water
- Orchard
- Riparian Forest
- Riparian Scrub
- Annual Grassland
- Soft Rush Tidal Marsh

Impacts to Habitat Types

- Permanent - Benifical
- Permanent
- Temporary

Imagery Source:
Sacramento County 3/26/2018

N

0 75 150
Feet

Caltrans

FIGURE 2-6
Map 1 of 2
Rio Vista (West)
Impacts to Habitat Types within the BSA
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-6_POTENTIAL_IMPACTS_TO_HABITAT_TYPES_WITHIN THE BSA_4H060.MXD

The proposed Project would not permanently or substantially adversely affect essential fish habitat for Chinook salmon and groundfish for the following reasons: replacement of the fenders and ramps would not permanently adversely affect the quality of habitat within Cache Slough, construction activities would not negatively affect migratory corridors or migration of salmonids, and the water quality, water temperature, forage base, and depth of Cache Slough would not change in the long run.

Direct temporary impacts would occur in areas where vegetation clearing would be required as part of construction for access to the Cache Slough channel and installation and removal of fenders and ramps. Vegetation removal, including clearing and grubbing, would be completed with hand tools where possible. Chainsaws, grinders, and excavators would be used for vegetation that cannot be removed by hand. Habitat that can be avoided during construction would be flagged and delineated with an environmentally sensitive area fence as appropriate. Impacts to vegetation types are presented in Table 2-3.

A total of 1.198 acre of riparian habitat occurs within the BSA, and 0.45 acre would be temporarily impacted as a result of Project construction (Figure 2-8). Several project features would be implemented to minimize impacts to sensitive natural communities. Project features related to biological resources (Appendix A) that would protect riparian areas include limiting vegetation removal to the minimum necessary to complete the work, working during dry weather periods only, implementing water pollution control and erosion control BMPs, and restricting construction staging areas to locations within the Project area outside any designated environmentally sensitive area. Further measures would be developed during the Project design phase and in consultation with state and federal regulatory agencies (e.g., CDFW).

Affected riparian areas would be recontoured to match the re-established riparian corridor, and affected areas would be revegetated with native species following Project completion.

Of the 10 trees that may need to be removed within the Project area, all are within CDFW-jurisdictional riparian habitat. Trees directly affected by the proposed Project would either be fully removed or trimmed. Attempts to minimize tree removal would include trimming wherever possible. Each individual tree location would be assessed by the Project biologist in coordination with Caltrans construction personnel to see if

the work can be performed without affecting the trees. The trees to be removed would be cut down to the stumps and removed between October 1 and January 31, 1 year ahead of construction, to avoid the bird nesting season to the extent feasible. In addition, no grubbing would occur during this time period. If trees are to be removed during the bird nesting season, the biologist would survey for active nests, in accordance with permit conditions, prior to vegetation removal.

Project construction activities could affect migrating adult Chinook salmon and juvenile Chinook salmon if they are present or move through the Project area during construction. With implementation of the proposed seasonal work window (August 1 to November 30), the potential for adult and juvenile salmonids to be present in the Project area during in-water work activities would be minimized. In-water work activities may result in temporary increases in turbidity and sound levels within the Project area. Turbidity is expected to subside quickly, and increased noise levels would only occur during vibratory pile driving.

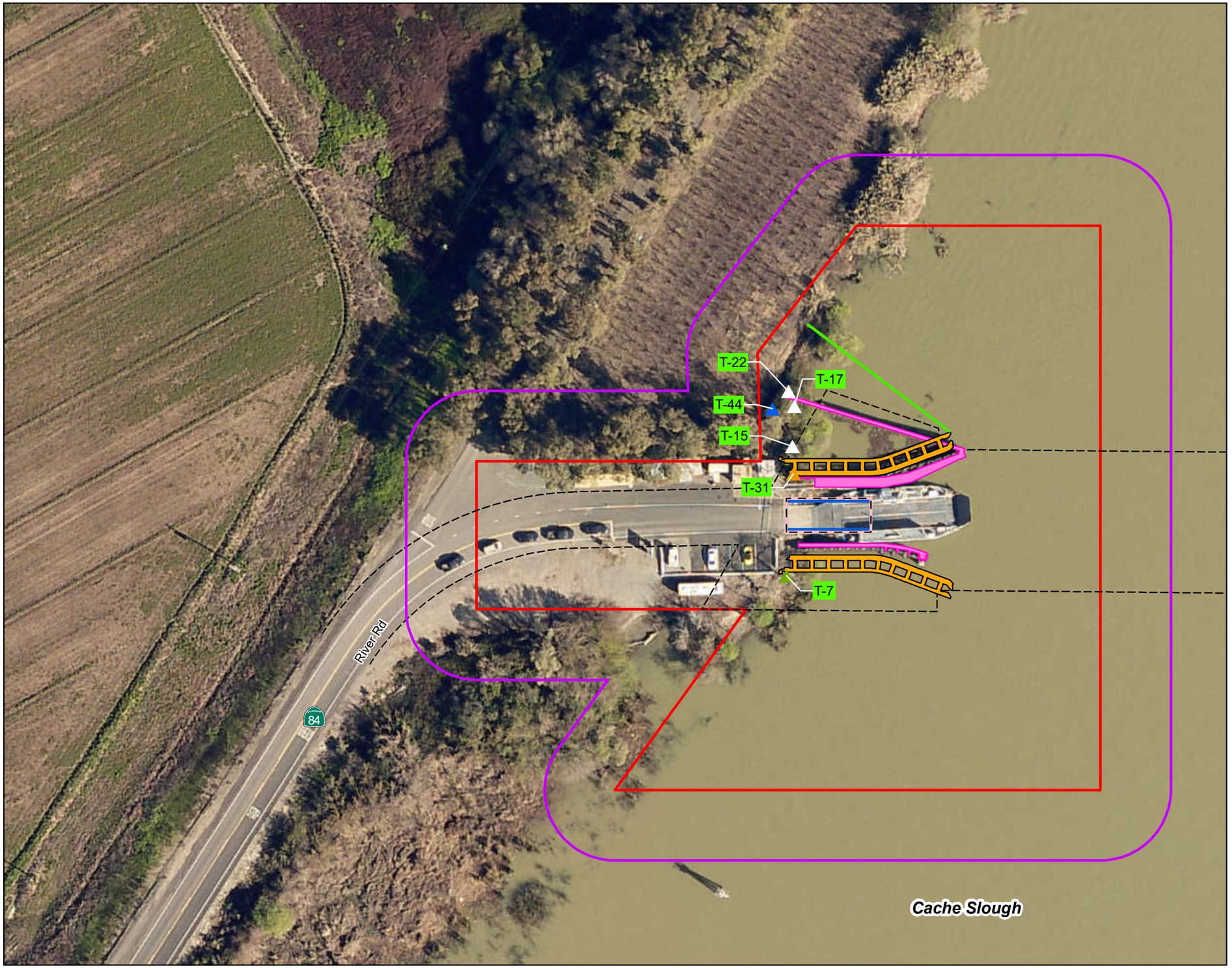
No-Build Alternative

The No-Build Alternative would have no effect on vegetation or natural communities within the BSA because the existing Real McCoy fenders and ramps would not be replaced.

2.1.10.3 Avoidance, Minimization and/or Mitigation Measures

The following AMMs would be implemented to minimize and reduce impacts on natural communities:

- **AMM-BIO-1, Restore to Pre-Project Conditions:** After construction is complete, any temporary fill or construction debris would be removed, and disturbed areas would be restored to their pre-Project conditions. Temporarily disturbed areas are those impacted during construction but having the potential to be revegetated and restored after construction. All habitats subject to temporary ground disturbances, including storage and staging areas and temporary roads, would be restored. These areas would be recontoured, if appropriate, and revegetated with appropriate locally collected native plant species to promote restoration of the area to pre-Project conditions. Appropriate methods and plant species used to revegetate such areas would be determined on a site-specific basis. Restoration work may include replanting emergent vegetation.



Legend

- Project Area
- Biological Study Area
- Caltrans Right of Way
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal
- T-16 Riparian Trees

Impacted Tree Species

- Black walnut, *Juglans hindsii*
- Blue gum, *Eucalyptus globulus*
- Hollyleaf cherry, *Prunus ilicifolia*
- White alder, *Alnus rhombifolia*

N

0 70 140
Feet

Caltrans

FIGURE 2-7
Map 1 of 2
Rio Vista (West)
Tree Impacts
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-7_TREE_IMPACTS_4H060.MXD

Legend

- Project Area
- Biological Study Area
- Caltrans Right of Way
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal
- T-16 Riparian Trees

Impacted Tree Species

- Coastal live oak, *Quercus agrifolia*
- Valley oak, *Quercus lobata*
- White alder, *Alnus rhombifolia*

N

0 70 140
Feet

Caltrans

FIGURE 2-7
Map 2 of 2
Ryer Island (East)
Tree Impacts
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-7_TREE_IMPACTS_4H060.MXD

- **AMM-BIO-2, Restoration Monitoring:** Caltrans would restore the site to pre-construction conditions and monitor the Project site for 1 year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort would be submitted to the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and CDFW immediately after construction and 1 year following restoration activities. Monitoring reports would include details such as photo-documentation and details on plant species used following agency guidelines.

2.1.11 Wetlands and Other Waters

2.1.11.1 Affected Environment

This section summarizes the NES prepared for this Project (Caltrans 2022c).

A total of 6.79 acres of Cache Slough was identified as waters of the United States under USACE jurisdiction. A total of 4.18 acres of Cache Slough was identified as waters of the United States within the Project area. Cache Slough is also, by definition, waters of the state. The slough, including the bed, bank, channel, and adjacent riparian area, is also within CDFW jurisdiction.

An aquatic resources assessment conducted on October 1 and 7, 2021, did not identify any potential USACE-jurisdictional wetlands within the BSA. All areas of hydrophytic vegetation onsite occur below the high tide line and were included as potential waters of the United States rather than wetlands.

2.1.11.2 Environmental Consequences

Build Alternative

Operation

Operation of the Build Alternative would not adversely affect wetlands and other waters. Refer to Chapter 2.1.5, Water Quality and Stormwater, for a discussion of potential effects to the water quality of Cache Slough from the operation of the ferry.

Construction

Permanent, direct impacts on waters would occur. During construction, 0.19 acre of waters of the United States would be permanently affected with installation of the replacement debris catchers, fenders, and ramps (Figure 2-9). Removal of the existing debris catchers, fenders, and ramps would result in 0.12 acre of fill removal (Figure 2-9). The net permanent impact on waters of the United States would be 0.07 acre (Table 2-4).

Table 2-4. Permanent Impacts and Fill in Potentially Jurisdictional Waters of the United States

Impact	Impact Type	Permanent Acreage
Old Fender and Debris Catch Removal	Fill Removal - Permanent Beneficial	-0.07
Old Ramp Removal	Fill Removal - Permanent Beneficial	-0.05
Subtotal Fill Removal	**Fill Removal - Beneficial**	**-0.12**
New Debris Catchers	New Permanent Impact	0.01
New Fenders	New Permanent Impact	0.09
New Ramps	New Permanent Impact	0.09
Subtotal New Impact/New Fill	**New Permanent Impact**	**0.19**
Total	**All Permanent Impacts**	**0.07**

Staging and construction access activities would result in up to 3.95 acres of direct temporary impact on waters of the United States (Figure 2-9). Grading, clearing, and grubbing of upland areas could result in indirect temporary impacts on waters of the United States from increased erosion and sedimentation.

Project features that would minimize impacts to waters of the United States include working in dry weather only, implementing water pollution control and erosion control BMPs, and restricting construction staging areas to locations within the Project area outside any designated environmentally sensitive area. In addition, planting wetland and riparian species following ground-disturbing activities would reduce potential erosion and sedimentation from the upland areas post-construction. Temporary and permanent erosion control measures would be part of the approved Project stormwater pollution prevention plan. Further measures would be developed during the design phase.

Prior to construction, Caltrans would obtain a Clean Water Act (CWA) 404 permit from USACE, a CWA 401 Water Quality Certification from the Central Valley Regional Water Quality Control Board, and a Lake and Streambed Alteration Agreement under California Fish and Game Code Section 1600 from CDFW. Caltrans would consult with the Central Valley Regional Water Quality Control Board and CDFW to finalize an agreed upon list of conditions for the permit.

Legend

- Biological Study Area
- Project Area
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal

Habitat Types

- CA Bulrush Tidal Marsh
- Riparian Forest
- Riparian Scrub
- Soft Rush Tidal Marsh

Impacts to Riparian Vegetation Types

- Permanent - Benifical
- Permanent
- Temporary

Imagery Source:
Solano County 2019

N

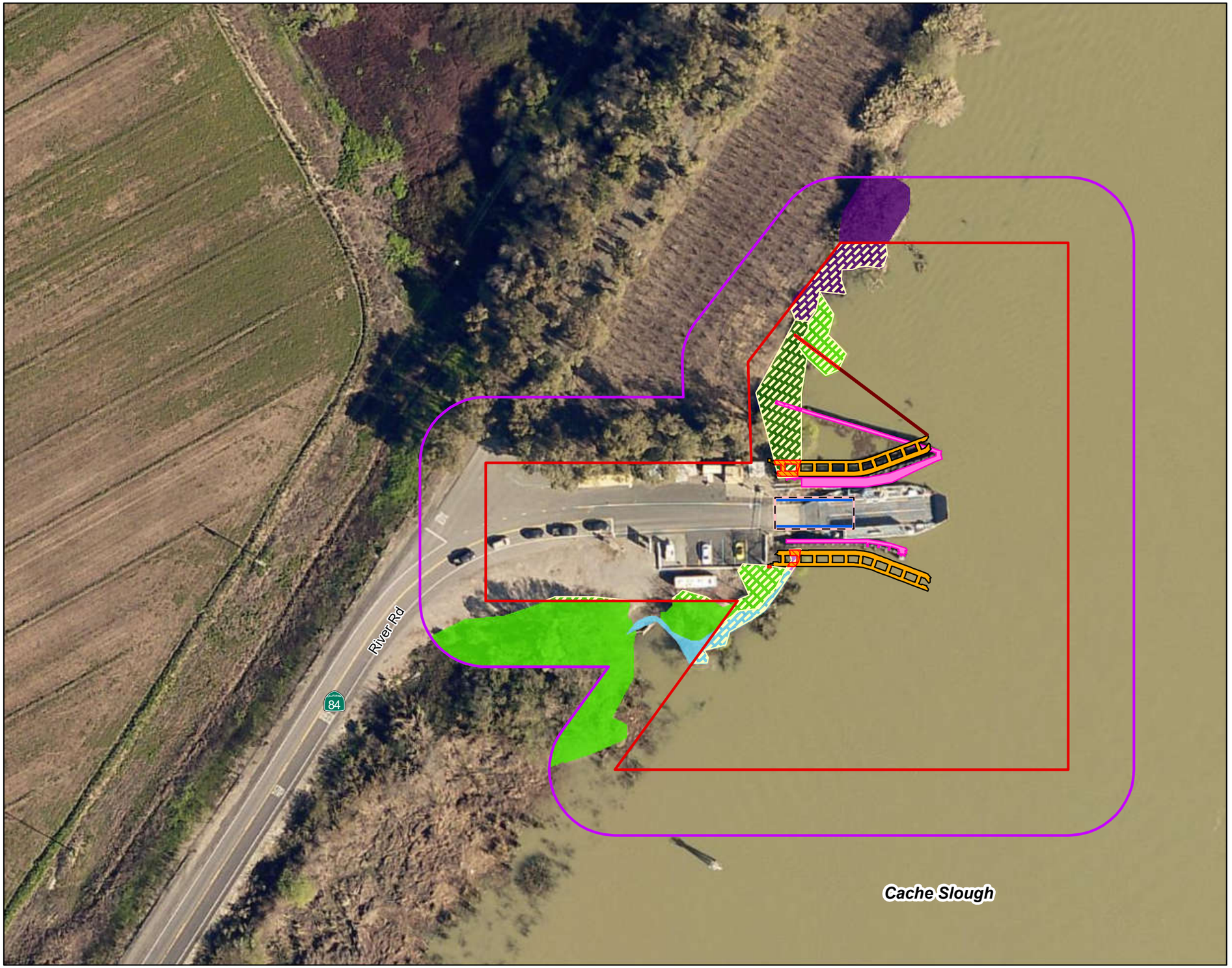
0 75 150

Feet

Caltrans

FIGURE 2-8
Map 2 of 2
Ryer Island (East)
Impacts to Riparian Vegetation
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-8_IMPACTS_TO_RIPARIAN_4H060.MXD



Legend

- Biological Study Area
- Project Area
- New Debris Catcher
- New Fender
- Old Fender and Debris Catcher
- New Ramp
- Old ramp removal

Habitat Types

- CA Bulrush Tidal Marsh
- Giant Reed Tidal Marsh
- Riparian Forest
- Riparian Scrub
- Soft Rush Tidal Marsh

Impacts to Riparian Vegetation Types

- Permanent - Benifical
- Permanent
- Temporary

Imagery Source:
Solano County 2019

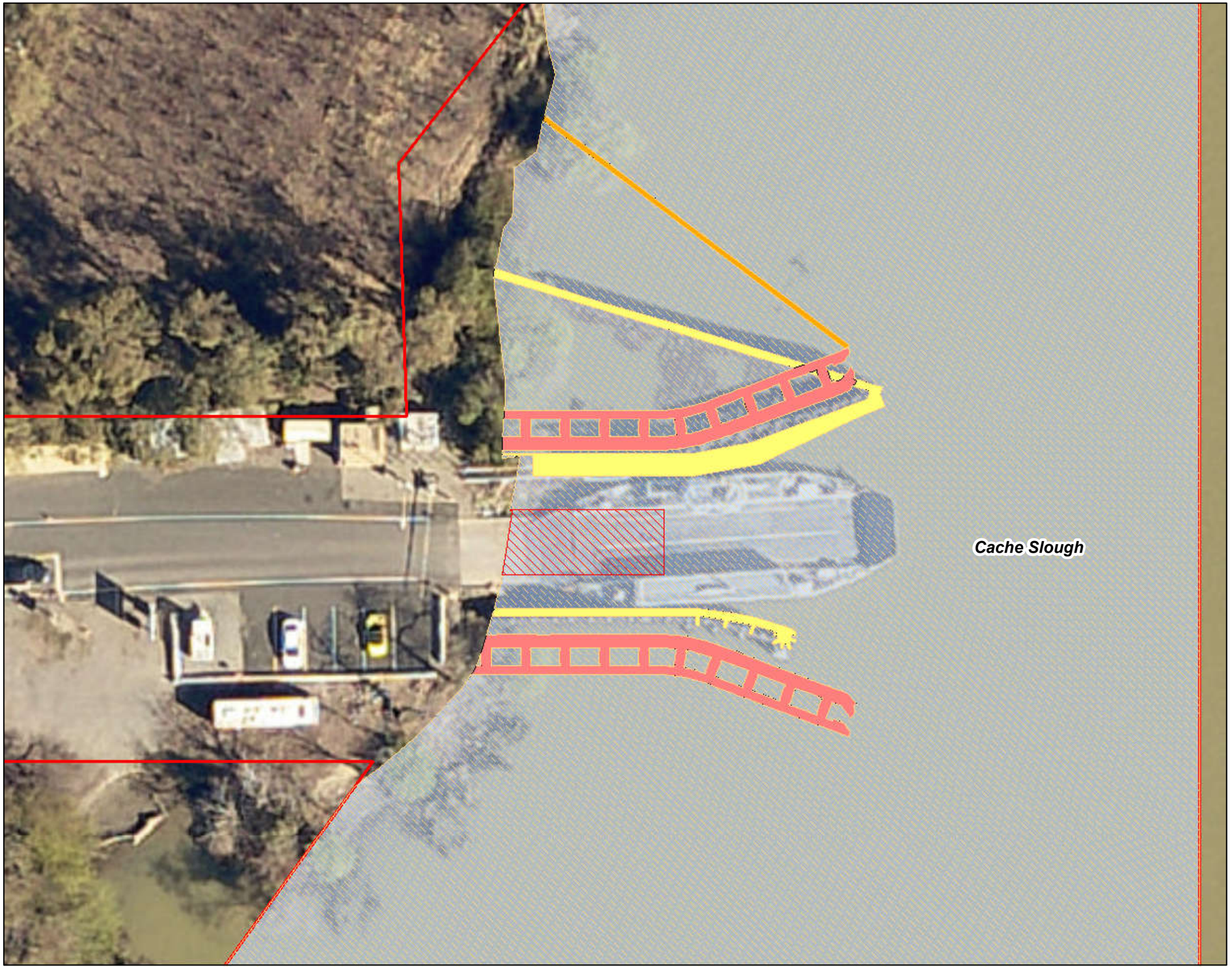
N

0 75 150
Feet

Caltrans

FIGURE 2-8
Map 1 of 2
Rio Vista (West)
Impacts to Riparian Vegetation
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-8_IMPACTS_TO_RIPARIAN_4H060.MXD



Legend

Project Area

Other Waters of the U.S. and State

Other Waters

Permanent Impacts to Waters of the U.S. and State

Fill Removal

Old fender and debris catch removal

Old ramp removal

New Impact

New Debris Catcher

New Fender

Temporary Impact to Waters of the U.S. and State

Temporary Access

Note:
SF = square foot
LF = linear feet
Imagery Source:
Solanao County 2019

N

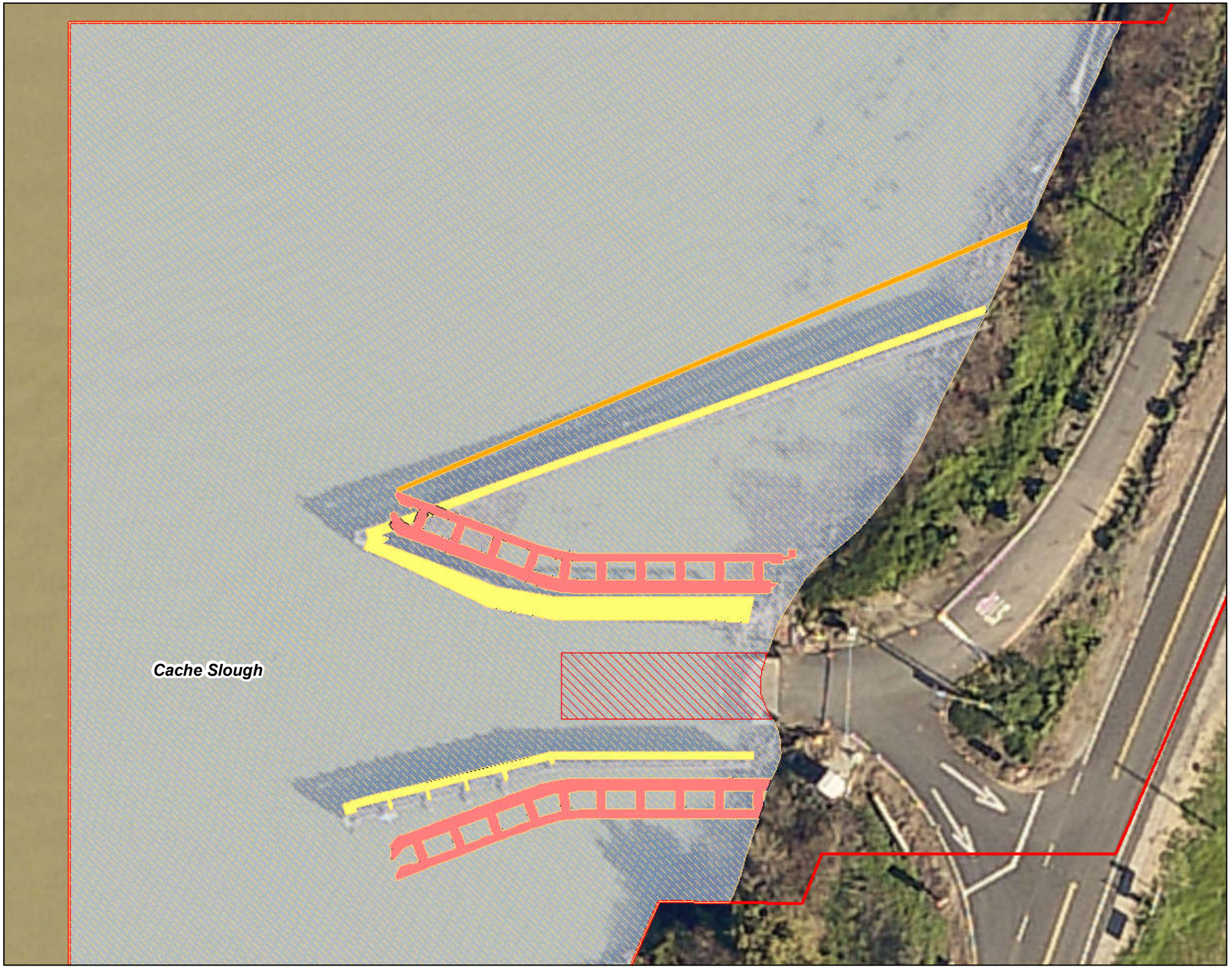
0 30 60

Feet

Caltrans

FIGURE 2-9
Map 1 of 2
Rio Vista (West)
Impacts to Waters of the U.S. and State
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-9_IMPACTS_TO_WATERS_US_AND_STATE_4H060.MXD



Legend

Project Area

Other Waters of the U.S. and State

Other Waters

Permanent Impacts to Waters of the U.S. and State

Fill Removal

Old fender and debris catch removal

Old ramp removal

New Impact

New Debris Catcher

New Fender

Temporary Impact to Waters of the U.S. and State

Temporary Access

Note:
SF = square foot
LF = linear feet
Imagery Source:
Solanao County 2019

N

0 30 60
Feet

Caltrans

FIGURE 2-9
Map 2 of 2
Ryer Island (East)
Impacts to Waters of the U.S. and State
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-9_IMPACTS_TO_WATERS_US_AND_STATE_4H060.MXD

No-Build Alternative

The No-Build Alternative would have no effect on waters within the BSA because the existing Real McCoy fenders and ramps would not be replaced.

2.1.11.3 Avoidance, Minimization, and/or Mitigation Measures

No AMMs or MMs would be required to reduce effects related to wetlands and other waters.

2.1.12 Plant Species

2.1.12.1 Affected Environment

This section summarizes the NES prepared for this Project (Caltrans 2022c).

Based on a literature review, 44 special-status plants may occur in the vicinity of the Project area. Most of these species are unlikely to occur within the BSA due to a lack of suitable habitat. Four special-status plant species described in the following sections were identified as having potential to occur within the BSA based on their habitat requirements.

*Suisun Marsh Aster (*Symphyotrichum lentum*)*

Suisun marsh aster is a native perennial rhizomatous herb endemic to California in the Asteraceae family (CNPS 2021). This species typically flowers between May and November and has a California Rare Plant Rank of 1B.2, meaning "endangered in California and elsewhere; fairly threatened in California" (CNPS 2021). Suisun marsh asters grow in marshes at elevations generally less than 300 meters (985 feet). It is threatened by marsh habitat alteration and loss, erosion, and possibly herbicide application (CNPS 2021).

Suisun marsh aster was observed during rare plant surveys as clusters. Individuals were difficult to discern and count because of the cluster growth pattern of this species. Within the BSA, 61 clusters of Suisun marsh aster were observed.

*Delta Tule Pea (*Lathyrus jepsonii *var.* jepsonii*)*

Delta tule pea is a native perennial herb endemic to California in the Fabaceae family (CNPS 2021). This species typically flowers between April and July and has a California Rare Plant Rank of 1B.2 (CNPS 2021). Delta tule pea grows in coastal estuarine marshes at elevations generally less than 30 meters. It is threatened by agriculture, water diversion, and erosion (CNPS 2021). Within and adjacent to the BSA, 13 clusters of Delta tule pea were observed.

Mason's Lilaeopsis (*Lilaeopsis masonii*)

Mason's lilaeopsis is a native perennial herb endemic to California in the Apiaceae family (CNPS 2021). Mason's lilaeopsis is state listed as rare and has a California Rare Plant Rank of 1B.1, meaning "endangered in California and elsewhere; seriously threatened in California" (CNPS 2021). This species typically flowers between April and November. Mason's lilaeopsis grows in intertidal marshes and streambanks at elevations generally less than 36 meters. It is threatened by erosion, channel stabilization, development, flood control projects, recreation, agriculture, shading resulting from marsh succession, and competition with non-native common water hyacinth (CNPS 2021).

Dense populations of Mason's lilaeopsis totaling more than a thousand individuals were observed within and adjacent to the BSA. This species is a diminutive (very small) rhizomatous perennial with thread-like leaves that occurs in dense mats. Plants were identified and counted as discrete and small populations.

Sanford's Arrowhead (*Sagittaria sanfordii*)

Sanford's arrowhead is a rhizomatous perennial herb in the Alismataceae family. The CNPS rates this species as a List 1B.2 on its inventory of rare and endangered plants. This species is endemic to California and almost always occurs within marshes and swamps in shallow fresh water (CNPS 2021). It blooms from May through November. It is considered extirpated from southern California, and mostly extirpated from the Central Valley. It is threatened by grazing, development, recreational activities, non-native plants, road widening, channel alteration, and maintenance (CNPS 2021).

Three Sanford's arrowhead plants were observed within and adjacent to the BSA. Sanford's arrowhead was observed growing with lanceleaf water plantain (*Alisma lanceolatum*), a species in the same family as Sanford's arrowhead.

2.1.12.2 Environmental Consequences

Build Alternative

Operation

Operation of the Build Alternative would have no adverse effects on plant species.

Construction

Four special-status plant species were identified as having potential to occur within the BSA based on their habitat requirements. All four of these special-status plants were observed during general floristic surveys completed throughout 2021.

Of these four special-status plant species, three special-status plant species occur in the Project area. A total of 5 Delta tule pea clusters, 54 Suisun marsh aster clusters, and 1,085 Mason's lilaeopsis plants would be directly affected by construction activities. There would be no direct effects to Sanford's arrowhead.

Caltrans would implement avoidance measures to minimize and avoid direct temporary impacts on these special-status plants. Project features such as environmental training, identifying and fencing environmentally sensitive areas, vegetation and tree removal, and restoring disturbed areas would reduce the potential impacts to these species and their associated habitat. Caltrans also proposes the following AMM to minimize impacts on special-status plant species:

- AMM-BIO-3, Rare Plant Pre-Construction Survey

If special-status plants cannot be avoided, individual plants may be relocated to avoid permanent impacts.

No-Build Alternative

The No-Build Alternative would have no effect on special-status plant species within the BSA because the existing Real McCoy fenders and ramps would not be replaced.

2.1.12.3 Avoidance, Minimization, and/or Mitigation Measures

The following AMM would minimize and reduce impacts on plant communities:

- **AMM-BIO-3, Rare Plant Pre-Construction Survey**: During the spring season prior to construction, Caltrans would conduct focused pre-construction surveys for the rare plants identified in the Project area. The extent and abundance of the rare plants would be mapped and flagged in the field for future relocation, salvage, and transplantation. These surveys would be conducted during the season that the rare plants are detectable and in the correct phenological stage of development for correct identification (typically late spring).

  If a rare plant is identified within the Project area during the pre-construction survey, a rare plant transplantation plan would be prepared. The transplantation plan would be submitted to the regulatory agencies for approval prior to the beginning of construction. The rare plant salvage and transplantation plan would include salvage and replanting methods, success criteria, the establishment of photo points, and monitoring methods. The rare plant salvage and transplantation plan would be prepared and approved by the regulatory agencies prior to the beginning of construction.

2.1.13 Animal Species

2.1.13.1 AFFECTED ENVIRONMENT

This section summarizes the NES prepared for this Project (Caltrans 2022c).

Based on a literature review, 40 special-status animals may occur in the vicinity of the Project. Many of these species are unlikely to occur within the BSA due to a lack of suitable habitat and a lack of habitat connectivity to and from the Project area and patches of suitable habitat. The five special-status animal species in the following sections were identified as having a moderate or high potential to occur within the BSA based on their habitat requirements. These five special-status animals are described in detail in the NES, and their natural history information is explained in that document (Caltrans 2022c). This section focuses on their potential to occur in the BSA and be impacted by the Project.

Sacramento Splittail (Pogonichthys macrolepidotus)

The Sacramento splittail is a CDFW species of special concern. Splittail are large cyprinids (belonging to the carp and minnow family), growing in excess of 40 centimeters in length. There are no California Natural Diversity Database (CNDDB) occurrences of Sacramento splittail within 5 miles of the BSA (CDFW 2021). However, the Yolo Bypass, approximately 6 miles north of the BSA, provides spawning and rearing habitat (Feyrer et al. 2006); therefore, Sacramento splittail have the potential to occur within the potential fish 150-decibel (dB) behavioral threshold buffer, associated with hydroacoustic impacts from vibratory pile driving activities. This potential fish 150-dB behavioral threshold buffer area is defined as the area of effects in which temporary behavioral changes, such as elicitation of a startle response, or feeding disruption, may occur to fish (Caltrans 2020b). The Sacramento splittail may rear or forage in the potential fish behavioral threshold buffer or migrate through them to spawning grounds. Between 2009 and 2012, 301 Sacramento splittail were captured in the vicinity of the Yolo Bypass (Durand et al. 2019).

Western Pond Turtle (Emys marmorata)

The federal listing status of the western pond turtle is under review under the federal Endangered Species Act as of April 10, 2015, and is listed as a California species of special concern by CDFW. This species occurs in a variety of permanent and intermittent aquatic habitats, such as ponds, marshes, rivers, streams, and ephemeral pools. No western pond turtle surveys have been conducted for this Project. There are two CNDDB occurrences of western pond turtle within 5 miles of the BSA (CDFW 2021). The first, located 4.6 miles east of the Project, is located in Georgiana Slough

near Isleton. The second is located in Sevenmile Slough on the northern side of Twitchell Island. Cache Slough represents suitable aquatic habitat for this species, although the water velocity in the main channel is likely faster than the preferred velocity for western pond turtles, and the water is brackish which limits suitability for the species as well. Suitable upland nesting substrate may also be present in the BSA. There is potential for this species to be present in the BSA.

White-tailed Kite (Elanus leucurus)

The white-tailed kite is a state fully protected species. They inhabit herbaceous and open stages of most habitats of coastal and valley lowlands. There are no CNDDB occurrences of white-tailed kite within 5 miles of the BSA (CDFW 2021). eBird, an online database of bird sightings, was also queried; the closest eBird occurrence to the BSA is located 0.20 mile southeast of the eastern ferry terminal; several more are located 0.36 mile southwest of the western ferry terminal (Sullivan et al. 2009). Based on known occurrences and the presence of foraging and nesting habitat, white-tailed kite may occur in the BSA. Trees within the Project area are likely too small and close to the disturbance of the ferry to be suitable nesting habitat for this species. However, groves of trees adjacent to the BSA provide suitable nesting habitat, especially the eucalyptus groves on both sides of Cache Slough.

Other Nesting Birds/Raptors

Special-status bird species, raptors, and other species protected under the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Fish and Game Code Sections 3503 and 3800 may occur in or near the BSA. Raptors that could potentially forage within the vicinity of the BSA include golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), and northern harrier (*Circus cyaneus*). The BSA and adjacent landscape provides nesting and foraging habitat for a wide range of avian species; for example, the protocol-level surveys for Swainson's hawk in 2021 detected 50 species of birds over six surveys. Most birds found in the BSA are protected under the Migratory Bird Treaty Act.

CNDDB records show occurrences of special-status avian species in the vicinity of the BSA, and a vegetation characterization and habitat assessment indicate that the BSA and surrounding areas include suitable foraging and potential nesting habitats.

Pacific Harbor Seal (Pogonichthys macrolepidotus)

The Pacific harbor seal is protected throughout its range under the federal Marine Mammal Protection Act. The Marine Mammal Protection Act lists the following two levels of harassment:

- Level A harassment means any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild.
- Level B harassment refers to acts that have the potential to disturb (but not injure) a marine mammal or marine mammal stock in the wild by disrupting behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

From their known life history characteristics, Pacific harbor seals have the potential to occur within areas that may experience elevated sound levels associated with in-water vibratory pile driving activities (Figure 2-10).

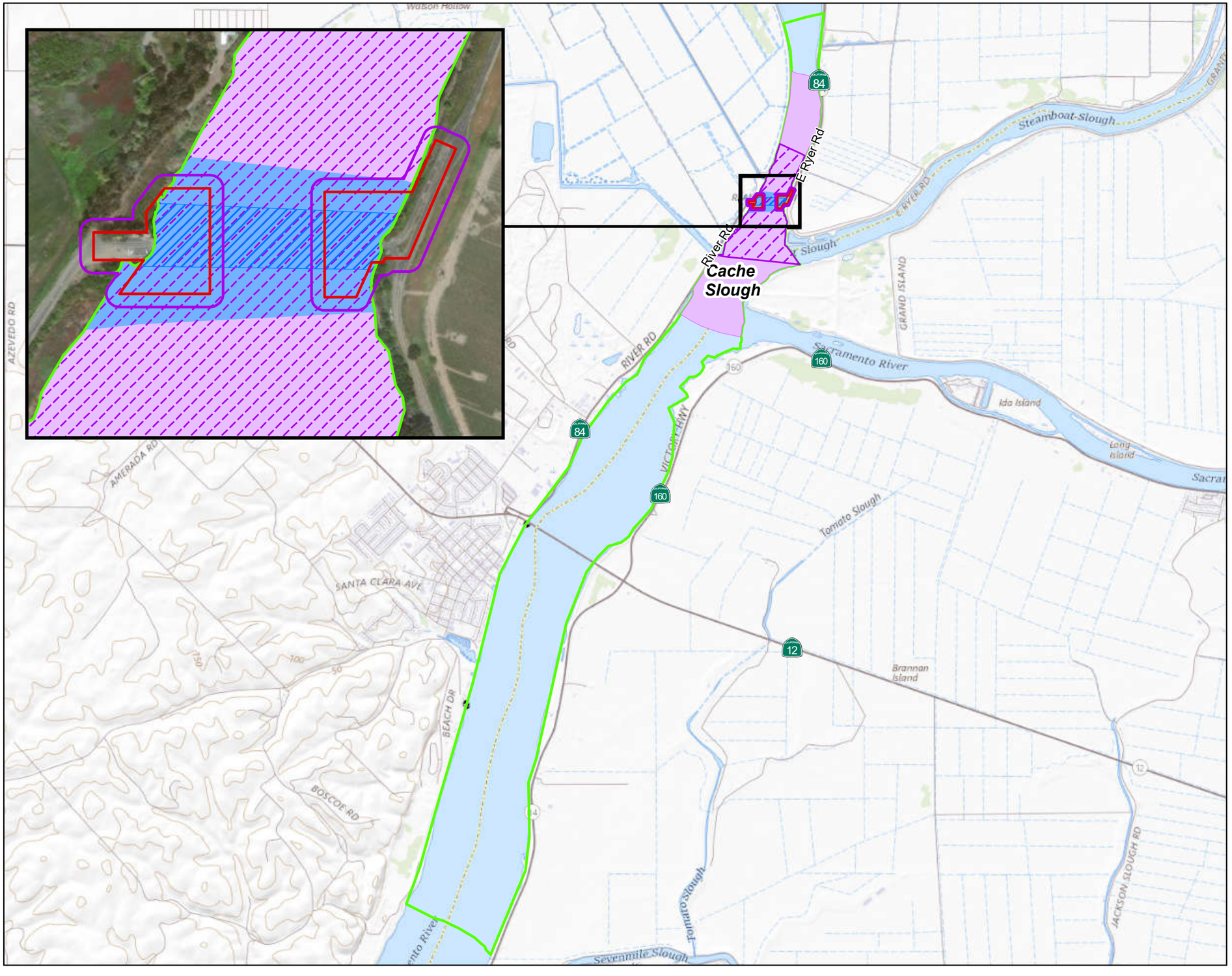
Caltrans biologists obtained an official NMFS species list for the Rio Vista 7.5-minute topographic quadrangle. The NMFS species list indicated there are no marine mammal species listed (NMFS 2021a). Based on the distance to known haul-out sites for the species and the lack of observations in the area, the potential for occurrence is anticipated to be low.

California Sea Lion (Zalophus californianus)

The California sea lion is protected throughout its range under the federal Marine Mammal Protection Act.

From their known life history characteristics, California sea lions have the potential to occur within areas that may experience elevated sound levels associated with in-water vibratory pile driving activities (Figure 2-10). Though there are no marine mammal species included on the official species list for this Project (NMFS 2021), sea lions have been observed within the vicinity of the BSA and at the Real McCoy Ferry during the March and April 2021 biological surveys.

Because California sea lions breed from the Channel Islands in southern California to central Mexico from late June to early August, adults only have the potential to occur in the BSA from September through November, when sea lions may be migrating or foraging through the BSA during the in-water work window.



Legend

- Project Area
- Biological Study Area

Marine Mammal Harassment Zones

- Attenuated Pile - Level A Zone - Otariid Pinnipeds
- Attenuated Pile - Level A Zone - Phocid Pinnipeds
- Unattenuated Pile - Level A Zone - Otariid Pinnipeds
- Unattenuated Pile - Level A Zone - Phocid Pinnipeds
- Level B Zone Phocid & Otariid Pinnipeds

N

0 3,000 6,000
Feet

Caltrans

FIGURE 2-10
Level A and B Harassment Zones for Phocid and Otariid Pinnipeds
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-PM 2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-10_LEVEL A_AND_B_HARASSMENT_ZONES_4H060.MXD

Bat Species

Bat species (suborder Microchiroptera) have the potential to use highway structures, such as bridges, if conditions for roosting are appropriate, as well as nearby trees (Erikson et al. 2003, H.T. Harvey and Associates 2004). Clusters of leaves and vines provide suitable maternity roost habitat for foliage roosting bats (such as western red bat [*Lasiurus blossevillii*], California species of special concern). Potentially suitable foliage roost habitat is found throughout the Cache Slough riparian corridor. In addition, trees within the BSA may contain leaf clusters potentially suitable for foliage roosting species.

2.1.13.2 Environmental Consequences

Build Alternative

Operation

Operation of the ferry under the Build Alternative would have no effect on animal species.

Construction

During construction, animal species within the Project area would be impacted. Refer to the discussion below for more detail.

Sacramento Splittail

If the Sacramento splittail is present within the BSA, aspects of the Project may result in behavioral changes from waterborne noise from vibratory pile driving, increased turbidity during in-water work, dewatering during ramp installation, and handling of listed species individuals during relocation from the active work area.

The piles for the replacement fenders and debris catchers would result in a loss of 0.10 acre of aquatic habitat, but this would be offset by the removal of existing fenders and debris catchers, which would open up 0.07 acre of aquatic habitat (Figure 2-12). This would result in a net decrease of 0.03 acre of aquatic habitat. The presence of the new fenders, debris catchers, and ramps would not appreciably diminish foraging habitat or the ability of Sacramento splittail to migrate upstream to spawning habitat or downstream to estuarine marshes.

Hydroacoustic modeling of the proposed vibratory pile driving was conducted to identify the extent of hydroacoustic impacts on fish that could cause behavioral changes. The results are presented in Table 2-5 and the extent of the hydroacoustic impact zone is mapped in Figure 2-11 as a fish behavioral threshold buffer.

Installation of the cofferdams around the work areas may result in fish stranding. To minimize potential effects on Sacramento splittail, a qualified fisheries biologist would conduct fish rescue and relocation to collect fish located within the cofferdam, as safe and feasible to do so. This rescue effort would be implemented during dewatering of the area behind the cofferdam.

Table 2-5. Results of Hydroacoustic Modeling

Driving Method	Pile Type	Size	Piles per Day	Estimated Minutes of Vibratory Driving per Pile	Distance to Various Adopted Fish Thresholds (feet)
					RMS 150 dB [a]
Vibrate	Steel pile in water	30-inch	8	20	243
Vibrate	Sheet pile	AZ 17-700	8	20	207

[a] dB re 1 µPa = dB re 1 micropascal

RMS = root-mean-square

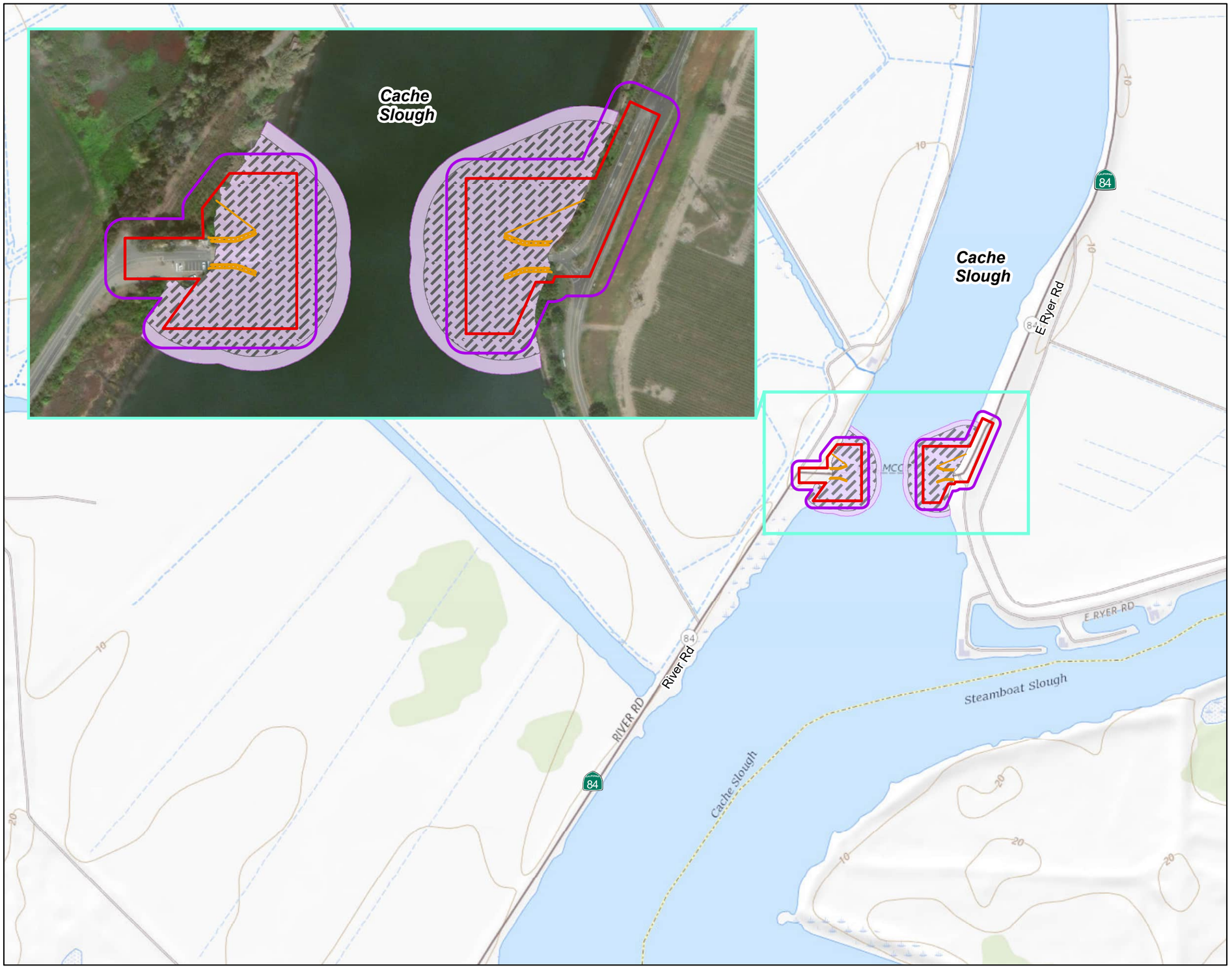
Project features such as environmental training, stormwater management, and use of erosion control materials would minimize potential impacts on Sacramento splittail. However, because suitable habitat is present within the potential fish behavioral threshold buffer, Caltrans would also implement the following AMMs and MMs for the Sacramento splittail:

- AMM-BIO-4, Seasonal Avoidance
- AMM-BIO-5, Fish Removal and Relocation Plan
- AMM-BIO-6, Agency Notification of Take or Injury
- MM-BIO-1, Cofferdam Installation
- MM-BIO-2, Turbidity, Noise, and Vibration Reduction

Western Pond Turtle

If western pond turtles are present within the BSA, aspects of the Project, including the following, may result in an increased risk of mortality or species take:

- Operating heavy machinery and construction equipment
- Soil removal or grading



Legend

- Project Area
- Biological Study Area

Hydroacoustic Impact Zones for Fishes

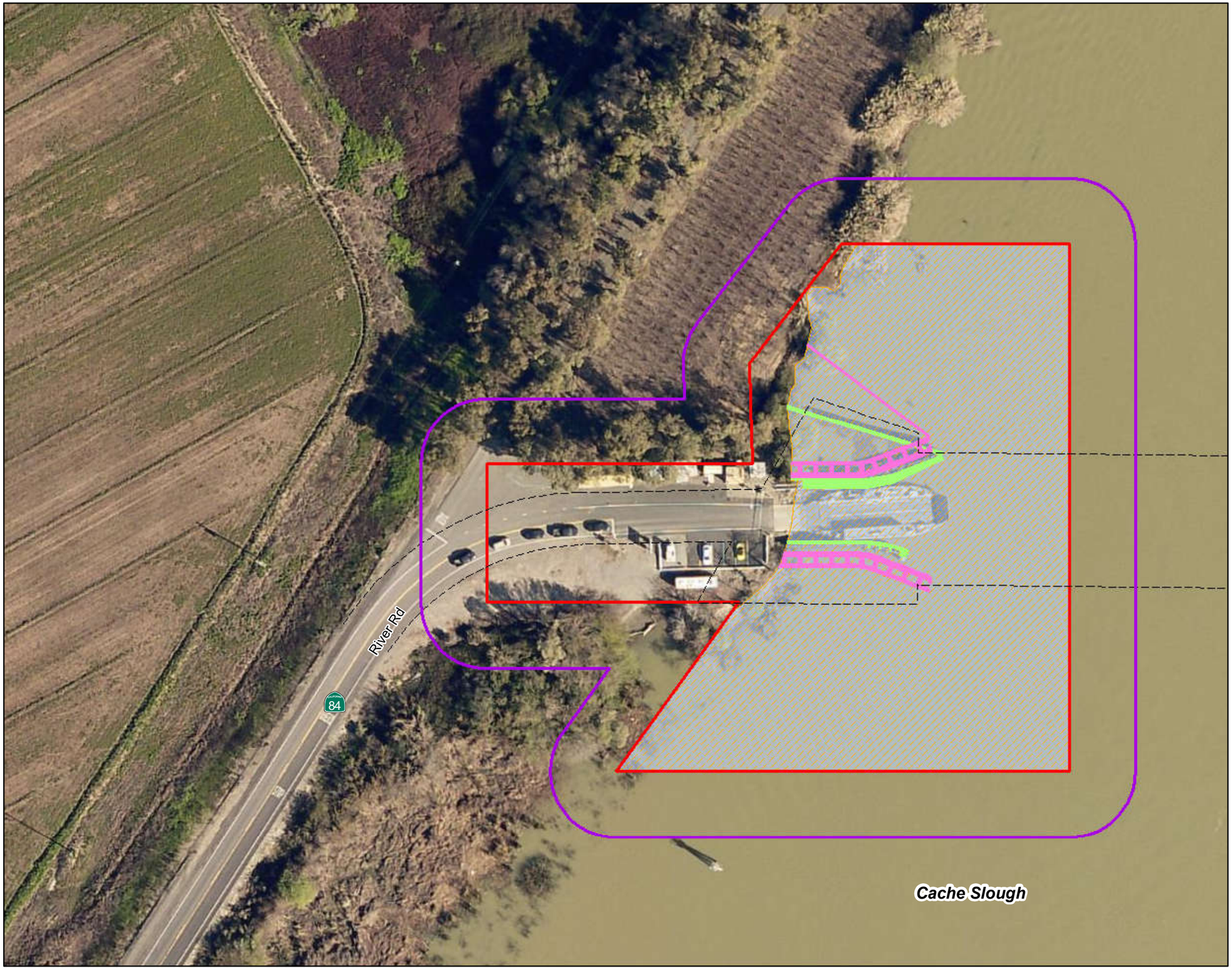
- 150-dB RMS Zone for AZ 17-700 Sheet Pile
- 150-dB RMS Zone for 30-inch Steel Pile

N

0 700 1,400
Feet

FIGURE 2-11
Fish Injury Zone
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-11_FISH_INJURY_ZONES_4H060.MXD



Legend

- Caltrans Right of Way
- Biological Study Area
- Project Area
- Other Waters

Impacts to Waters

- Permanent
- Permanent Beneficial
- Temporary

Imagery Source:
Solano County 2019

N

0 70 140
Feet

Caltrans

FIGURE 2-12
Map 1 of 2
Rio Vista (West)
Potential Impacts to Fish Habitat
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-12_POTENTIAL_IMPACTS_TO_FISH_HABITAT_4H060.MXD

Legend

- Caltrans Right of Way
- Biological Study Area
- Project Area
- Other Waters

Impacts to Waters

- Permanent
- Permanent Beneficial
- Temporary

Imagery Source:
Solano County 2019

N

0 70 140
Feet

Caltrans

FIGURE 2-12
Map 2 of 2
Ryer Island (East)
Potential Impacts to Fish Habitat
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-12_POTENTIAL_IMPACTS_TO_FISH_HABITAT_4H060.MXD

- Habitat modification, including removal of terrestrial vegetative cover or removal of burrows or other cover sites during ground disturbance and excavation
- Installation of wildlife exclusion and environmentally sensitive area fencing
- Handling of listed species individuals during relocation from the active work area

Figure 2-13 depicts impacts on potentially suitable western pond turtle habitat. Work associated with the proposed Project would temporarily affect 0.20 acre of potentially suitable upland habitat and 0.06 acre of potentially suitable emergent wetland habitat within the Project area.

The piles for the replacement fenders and debris catchers would result in a loss of 0.01 acre of potentially suitable upland habitat and 0.01 acre of potentially suitable wetland habitat within the Project area (Figure 2-13). The removal of existing fenders and debris catchers would open up 0.001 acre of potentially suitable upland habitat and 0.001 acre of potentially suitable wetland habitat within the Project area. This would result in a net decrease of 0.01 acre of potentially suitable upland habitat and 0.01 acre of potentially suitable wetland habitat for western pond turtle within the Project area (Figure 2-13).

Project features such as environmental training, use of erosion control materials, wildlife entrapment, and environmentally sensitive area fencing would reduce potential impacts on western pond turtle and its associated habitat. However, because suitable habitat is present within the Project area, Caltrans would implement the following AMMs to further minimize the potential for the Project to affect western pond turtle:

- AMM-BIO-1, Restore to Pre-Project Conditions
- AMM-BIO-6, Agency Notification of Take or Injury
- AMM-BIO-7, Designated Biologists
- AMM-BIO-8, Pre-Construction Surveys
- AMM-BIO-9, Biological Compliance Monitoring
- AMM-BIO-10, Designated Biologist/Biological Monitor Authority
- AMM-BIO-11, Special-status Species Handling
- AMM-BIO-12, Special-status Species Release

Bat Species

Ten trees are anticipated for removal, including trees that could provide potential roosting habitat. Loss of these trees would be considered a permanent impact (Figure 2-7). In addition, foliage-nesting bats may be harmed by tree removal activities.

If night work is required, indirect impacts could occur during night work. Night roost disturbance could come in the form of habitat degradation, such as results from light and noise disturbance. Most insectivorous bats rely on hearing the returning echoes of their ultrasonic echolocation calls to orientate, detect prey, and communicate. Night construction noise may mask prey-generated sounds and the lower frequency components of echolocation calls (Altringham and Kerth 2016). Light can also attract some bat species, particularly open-air foragers (Rydell 1992, Blake et al. 1994), because short-wavelength light attracts insect prey. Bats exploiting insect swarms around (night) construction lights may be at greater risk of collision with traffic (Altringham and Kerth 2016).

Potential impacts to bats would be minimized with the implementation of the following project features (described in Appendix A):

- PF-BIO-13, Bat Protection, which would require pre-construction bat surveys and bat-friendly tree removal techniques.
- PF-BIO-15, Nighttime Lighting, which would reduce impacts to bats feeding around nighttime construction lights.

White-tailed Kite and Other Nesting Bird/Raptors

White-tailed kite uses California annual grassland as foraging habitat. The Project would result in the permanent loss of 0.002 acre and the temporary loss of 0.40 acre of white-tailed kite foraging habitat (Figure 2-6).

Project construction has the potential to result in the take of nests, eggs, young, or individual bird species. The Project is not expected to affect bird nesting habitat because the trees in the Project area are likely not suitable for nesting. Construction disturbance during the breeding season could result in the incidental failure of nearby nests, leading to loss of fertile eggs or nestlings.

Legend

- Project
- Biological Study

Giant Garter Snake and Western Pond Turtle Habitat

- Upland Habitat
- Wetland Habitat

Impacts to Giant Garter Snake and Western Pond Turtle Habitat

- Permanent Benifical Impact
- Perrmanent Impact
- Temporary Impact

Imagery Source:
Solano County 2019

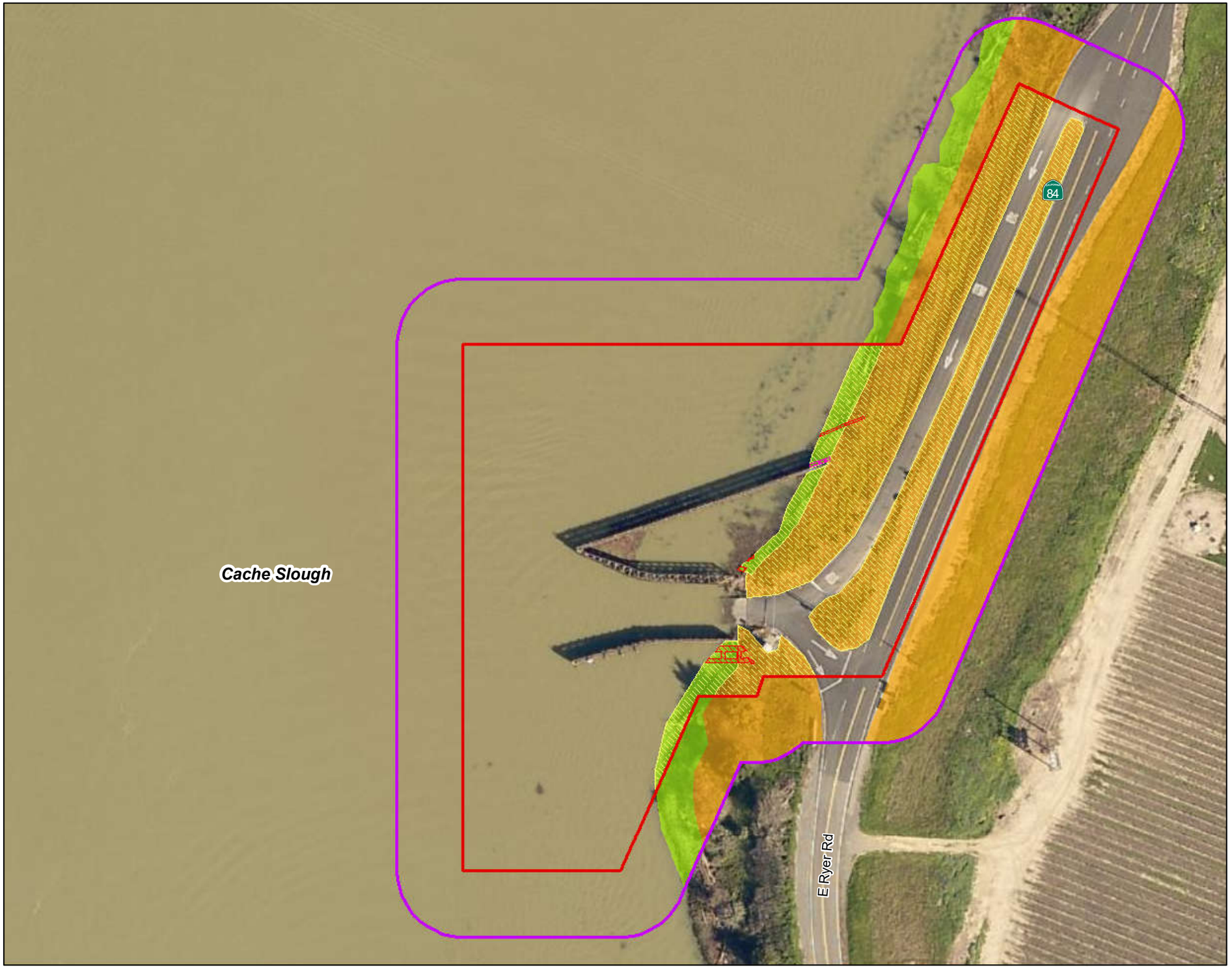
0 75
Feet

N

Caltrans

FIGURE 2-13
Map 1 of 2
Rio Vista (West)
Potential Impacts to Giant Garter Snake and Western Pond Turtle Habitat
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-PM 2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-13_POTENTIAL_IMPACTS_TO_GGS_AND_WPT_HABITAT_4H060.MXD



Legend

- Project
- Biological Study

Giant Garter Snake and Western Pond Turtle Habitat

- Upland Habitat
- Wetland Habitat

Impacts to Giant Garter Snake and Western Pond Turtle Habitat

- Permanent Benifical Impact
- Perrmanent Impact
- Temporary Impact

Imagery Source:
Solano County 2019

0 75
Feet

N

Caltrans

FIGURE 2-13
Map 2 of 2
Ryer Island (East)
Potential Impacts to Giant Garter Snake and Western Pond Turtle Habitat
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-PM 2.49
Solano County, California

\\DC1VS01\GISPROJ\C\CALTRANS\4H060_REAL_MCCOY\MAPFILES\REPORT\2022\DED\MAR\FIG2-13_POTENTIAL_IMPACTS_TO_GGS_AND_WPT_HABITAT_4H060.MXD

With the incorporation of project features and AMMs into the proposed Project, no take of migratory birds or eggs is anticipated. Where possible, vegetation and tree removal activities would be performed outside of the active nesting season (February 1 to September 30). Pre-construction surveys for migratory birds would be conducted prior to the commencement of any Project activities if they occur during the February 1 through September 30 timeframe; these surveys would target both passerine birds and raptors, including golden and bald eagles. If a nesting bird is discovered, appropriate buffers would be applied to Project work until all birds have fledged.

Pacific Harbor Seal and California Sea Lion

The piles for the replacement fenders and debris catchers would result in a loss of 0.10 acre of aquatic habitat, but this would be offset by the removal of existing fenders and debris catchers, which would open up 0.07 acre of aquatic habitat (Figure 2-12). This would result in a net decrease of 0.03 acre of aquatic habitat. The presence of the new fenders, debris catchers, and ramps would not appreciably diminish foraging habitat or the ability of California sea lion and Pacific harbor seal to migrate upstream or downstream.

As detailed in Section 2.1.13.1, the Marine Mammal Protection Act lists two levels of harassment, Level A and Level B. From a hydroacoustic perspective, Level A harassment corresponds to distances at which permanent threshold shift or temporary threshold shift (permanent or temporary hearing loss) could occur for marine mammals.

Because California sea lion and Pacific harbor seal may be migrating or foraging through the Level A and B Harassment Zones during the proposed in-water work window, there is the possibility of impacts associated with sound pressure waves from vibratory pile driving activities.

If California sea lions or Pacific harbor seals are present in the Level A and B Harassment Zones during vibratory pile driving, they could experience direct impacts caused by hydroacoustic noise from vibratory pile driving. See Table 2-6 for the distances to these thresholds.

Given that these marine mammals are highly mobile, it is unlikely that individuals would experience changes in their hearing sensitivity (either temporary or permanent) because of exposure to sound with sufficient duration and sound pressure level.

Table 2-6. Distance to the Adopted Marine Mammal Thresholds for Different Vibratory Pile-driving Activities – Level A and Level B Zones

Driving Method	Pile Type	Size	Piles per Day	Estimated Minutes of Vibratory Driving per Pile	Condition [a]	Level A Injury Zone Using Cumulative Sound Exposure Level Threshold (feet)		Level B Harassment Zone (feet)
						Pinnipeds		
						Phocid	Otariid	
Vibrate	Steel pile in water	30-inch	8	20	Unattenuated	36	-- [b]	-- [c]
Vibrate	Sheet pile	AZ 17-700	8	20	Unattenuated	33	-- [b]	5,315/20,702 [c]

Notes:

[a] Attenuated condition assumes 5-dB-lower sounds.

[b] Within the near-field of the sound source - less than 33 feet.

[c] Constrained by slough channel as 5,315 feet to the north and 22,802 feet to the south.

With implementation of project features such as environmental training, stormwater management, and erosion control materials potential impacts to marine mammals and their associated habitat would be reduced.

Potential impacts to California sea lion and Pacific harbor seal would be minimized with the implementation of the following AMMs:

- AMM-BIO-4, Seasonal Avoidance
- AMM-BIO-13, Marine Mammal Monitoring

No-Build Alternative

The No-Build Alternative would have no effect on special-status animal species within the BSA because the existing Real McCoy fenders and ramps would not be replaced.

2.1.13.3 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs and MMs would be implemented to minimize and reduce impacts on animal species:

- **AMM-BIO-4, Seasonal Avoidance**: All in-water work would be conducted by the contractor between August 1 and November 30 to avoid potential impacts to listed fish species.

- **AMM-BIO-5, Fish Removal and Relocation Plan**: Prior to construction, the Caltrans biologist will prepare a fish removal and relocation plan for the project. This plan would include measures to relocate fish within cofferdams and other areas to be dewatered. The plan will include reasonable and prudent efforts that will be taken to prevent and minimize injury, stress, or death of captured fish, while ensuring safety of the biologists conducting the fish removal and relocation. A qualified fisheries biologist will act as the lead monitor during implementation of the plan during construction.

- **AMM-BIO-6, Agency Notification of Take or Injury**: Caltrans would notify the USFWS, NMFS, or the CDFW within 1 day if any listed species under the respective jurisdiction of those agencies is taken or injured by a Project-related activity, or if any listed species under the respective jurisdiction of those agencies is otherwise found dead or injured within the Project BSA.

  Caltrans staff or the designated biologists would provide initial notification to the respective agencies by calling the appropriate regional office. The initial

notification to the agency would include information regarding the location, species, and number of animals taken or injured. Caltrans would also send a written report to the agency within 3 calendar days. The report would include the date and time of the finding or incident, and the location of the animal or carcass. The report should include a photograph, and if possible, an explanation as to the cause of take or injury.

- **AMM-BIO-7, Designated Biologists**: At least 30 days prior to commencing Project activities covered by the biological opinion, Caltrans would submit to USFWS, NMFS, and CDFW, for review and approval, the qualifications for a number of qualified designated biologists and biological monitors who would oversee implementation of the conditions of the Project permits. The designated biologists may be assisted by approved biologists identified as biological monitors that do not meet the qualifications to be a designated biologist. Biological monitors and their activities would be approved in advance and in writing by USFWS, NMFS, and CDFW.

- **AMM-BIO-8, Pre-Construction Surveys**: The Project site would be surveyed for giant garter snake, western pond turtles, and other special-status species by a qualified designated biologist or biological monitor within a time window 24 hours prior to the commencement of construction activities. The Project area would be re-inspected by such biologist whenever a lapse in construction activity of 2 weeks or greater occurs.

- **AMM-BIO-9, Biological Compliance Monitoring**: A biologist approved by USFWS, NMFS, and CDFW would inspect construction-related activities at the proposed Project site to ensure that no unauthorized take of special-status species or destruction of their habitat occurs. The biologist would be available for monitoring throughout all construction phases that may result in adverse effects on special-status species.

- **AMM-BIO-10, Designated Biologist/Biological Monitor Authority**: The designated biologists and biological monitors would communicate to the resident engineer when any activity is not in compliance with Project permits, and the resident engineer would immediately stop the activity that is not in compliance and/or order any reasonable measure to avoid the unauthorized take of a special-status species.

- **AMM-BIO-11, Special-status Species Handling**: Where feasible, special-status species discovered in the Project area would be allowed to exit the Project area of their own volition. If there is an immediate and unavoidable threat to the special-status species, the agency-approved designated biologist or biological monitor may capture and move the special-status species outside of the area of danger to avoid the death or injury of the species.

  If needed, an agency-approved (by USFWS, NMFS, and/or CDFW, depending on the species and agency jurisdiction) biologist would handle special-status species using approved handling techniques respective to the taxa of wildlife in question.

- **AMM-BIO-12, Special-status Species Release**: Any captured special-status individuals would be released within appropriate habitat outside of the construction site within the Cache Slough riparian corridor. The release habitat would be determined by the agency-approved designated biologist or biological monitor.

- **AMM-BIO-13, Marine Mammal Monitoring**: During in-water and near-water impacts and vibratory pile driving activities, a marine mammal monitor, or monitors as appropriate, would be present for the installation of all piles. If a marine mammal is observed with the Level A harassment buffer area identified in Table 2-6 for the appropriate pile size, the vibratory pile driving would temporarily cease until the individual has left the buffer area. Vibratory pile driving would not resume until 15 minutes after the animal has left the buffer area. If a marine mammal is observed in proximity to, but not within, the buffer area, the construction crew would be notified of the potential need to stop work if the mammal continues into the buffer area.

- **MM-BIO-1, Cofferdam Installation**: During construction, cofferdams will be completed and sealed during low tide to minimize the potential for fish to be present within them. The contractor will be responsible for sealing the cofferdam.

- **MM-BIO-2, Turbidity, Noise, and Vibration Reduction**: During construction, the contractor will use a sound attenuation system to reduce noise generated by vibratory pile driving into the water to minimize potential behavioral effects on fish species and marine mammals. If the attenuation system fails, vibratory pile driving will immediately stop and will not resume at the location until the sound attenuation system is put back into operation. Sound attenuation and potential

hydroacoustic impacts on fish and marine mammals will be coordinated with the relevant regulatory agencies.

2.1.14 Threatened and Endangered Species

Based on a literature review, 40 special-status animals may occur in the vicinity of the Project. Many of these species are unlikely to occur within the BSA due to a lack of suitable habitat and a lack of habitat connectivity to and from the Project area and patches of suitable habitat. The nine threatened and endangered animal species in the following sections were identified as having a moderate or high potential to occur within the BSA based on their habitat requirements. These nine threatened and endangered animals are described in detail in the NES, and their natural history information is explained in that document (Caltrans 2022c). This section focuses on their potential to occur in the BSA and be impacted by the Project.

2.1.14.1 Affected Environment

Delta Smelt (Hypomesus transpacificus)

The delta smelt was federally listed as a threatened species on March 5, 1993. Critical habitat for delta smelt was designated on December 19, 1994. The delta smelt is listed as endangered under the California Endangered Species Act.

Delta smelt are native (endemic) to the upper Sacramento-San Joaquin estuary (Delta). They occur in the Delta primarily downstream of Isleton on the Sacramento River, downstream of Mossdale on the San Joaquin River, and in Suisun Bay in the western Delta. During a technical assistance meeting with USFWS Senior Biologist Brian Hansen on November 4, 2021, Mr. Hansen stated that delta smelt are present in Cache Slough in all parts of the calendar year (Hansen, pers. comm. 2021). Mr. Hansen also stated during the call that Cache Slough was one of the last areas in the Delta to reliably support a population of delta smelt.

Longfin Smelt (Spirinchus thaleichthys)

The longfin smelt is currently considered a candidate for listing under the federal Endangered Species Act and is listed as threatened under the California Endangered Species Act. The longfin smelt is a small silvery fish that can be distinguished from other smelts by their long pectoral fins and incomplete lateral line (Moyle 2002). In the San Francisco Estuary, longfin smelt are rarely found upstream of Rio Vista or Medford Island in the Delta.

During a technical assistance meeting with USFWS Senior Biologist Brian Hansen on November 4, 2021, Mr. Hansen stated that longfin smelt are present in low numbers

in Cache Slough in all parts of the calendar year (Hansen, pers. comm. 2021). Longfin smelt adults, juveniles, and larvae would typically only be present within the BSA between December and July; however, during technical guidance with USFWS, it was discussed that low numbers of this species may be present in the BSA year-round.

Central Valley Spring-run Chinook Salmon (Oncorhynchus tshawytscha)

The Central Valley spring-run Chinook salmon evolutionarily significant unit was listed as federally threatened on September 16, 1999 (NMFS 1999), and as California-threatened on February 5, 1999. Critical habitat for this evolutionarily significant unit was designated on September 2, 2005 (USFWS 2005).

Central Valley spring-run Chinook are large salmonids, reaching a 2.5- to 3.3-foot standard length and weighing up to 22 pounds or more (Moyle et al. 1995). Central Valley spring-run Chinook salmon returning to spawn in the Sacramento River system enter the San Francisco Estuary from the ocean in January to late February, and the Delta and Sacramento River between March and May (Moyle et al. 1995). The Sacramento River channel is the main spring-run Chinook salmon migration route through the Delta.

From their known life history characteristics, adult Central Valley spring-run Chinook salmon are spawning in the upper regions of the Sacramento River basin and are not likely to be present in the BSA during the August 1 to November 30 proposed in-water work window. Adult Chinook salmon do not feed during their upstream migration and spawning; therefore, adult foraging habitat within the BSA is not an issue. Yearlings may enter the BSA as early as November or December. Juvenile Chinook salmon are not expected to use habitat within the BSA for rearing because the leveed and riprapped banks of Cache Slough have low habitat diversity and complexity, and by implication, a low abundance of food organisms, and the minimal overhanging riparian corridor provides little protection from predation by fish and birds. Habitat for Central Valley spring-run Chinook salmon within the BSA is likely limited to migration habitat for both adults and juveniles.

Sacramento River Winter-run Chinook Salmon (Oncorhynchus tshawytscha)

The Sacramento River winter-run Chinook salmon evolutionarily significant unit was listed as federally endangered on January 4, 1994, and as California endangered on September 22, 1989. Critical habitat for winter-run Chinook salmon was designated on June 16, 1993.

Adult winter-run Chinook salmon return to fresh water during the winter but delay spawning until the spring and summer. Adults migrate through the Delta during the winter and into late spring (May/June) en route to their spawning grounds in the mainstem Sacramento River, downstream of Keswick Dam (USFWS 2001, 2003). This generally occurs from December through July, with a peak occurring in March (Moyle 2002). Adults are believed to primarily use the mainstem Sacramento River for passage through the Delta (NMFS 2009). From their known life history characteristics, adult Sacramento River winter-run Chinook salmon in the upper regions of the Sacramento River basin spawn from December through July and are not likely to be present in the BSA during the August 1 to November 30 proposed in-water work window.

No spawning habitat is located in the BSA. Adult Chinook salmon do not feed during their upstream migration and spawning; therefore, adult foraging habitat within the BSA is not an issue. Juvenile Chinook salmon are not expected to enter this area of the Sacramento River until November and December. In the unlikely event that juvenile Chinook salmon are present in the vicinity of the Project during the in-water work window, they would not be expected to use habitat within the BSA for rearing because the leveed and riprapped banks of Cache Slough provide minimum habitat value (low habitat complexity). Juvenile Sacramento River winter-run Chinook salmon are not expected to rear within Cache Slough. Potential habitat for Sacramento River winter-run Chinook salmon within the BSA is, therefore, limited to migration habitat for both adults and juveniles and to marginal rearing habitat for juveniles.

Central Valley Steelhead (Oncorhynchus mykiss)

The Central Valley steelhead distinct population segment was listed as federally threatened on March 19, 1998. Following a status review, the threatened status was reaffirmed on January 5, 2006. Critical habitat was originally designated on February 16, 2000. NMFS announced its final critical habitat designation for Central Valley steelhead on September 2, 2005 (NMFS 2005). The Project is within critical habitat for Central Valley steelhead.

Steelhead are sea-run rainbow trout. Although steelhead are trout (which are part of the salmon family), they are often referred to as salmon because they make the same journey as other salmonids. Existing wild steelhead stocks in the Central Valley are mostly confined to the upper Sacramento River and its tributaries, including Antelope, Deer, and Mill creeks and the Yuba River. The Sacramento-San Joaquin

River Delta serves as an adult and juvenile migration corridor and as a nursery area for juvenile steelhead (McEwan and Jackson 1996). Populations of Central Valley steelhead occur primarily within the watersheds of the Sacramento River basin, although not exclusively.

Based on existing literature and the documented life history characteristics of Central Valley steelhead, adult steelhead would be expected to be migrating upstream from the ocean/estuary into fresh waters to spawn from July through the winter. Therefore, adult Central Valley steelhead may be present within the BSA during the proposed August 1 to November 30 in-water work window. Juvenile Central Valley steelhead are not expected to be present in the BSA during the proposed in-water work window.

North American Green Sturgeon (Acipenser medirostris)

The Southern distinct population segment of North American green sturgeon was listed as federally threatened on April 7, 2006. NMFS determined that the Southern distinct population segment currently contains only a single spawning population from the Sacramento River. Critical habitat for the Southern distinct population segment of green sturgeon was designated in 2009. The Project is within critical habitat for green sturgeon. Southern green sturgeon is a long-lived anadromous species that makes migrations into the fresh waters of the Sacramento River to spawn (CDFW 2002).

From what is known of their life history, the adult green sturgeon southern distinct population segment migrates upstream outside of the August 1 to November 30 in-water work window, and spawning does not occur in the BSA. Post-spawning, the adult green sturgeon generally remains upstream near their spawning grounds in the Sacramento River through the fall. It is possible that some post-spawning adults may pass through the area during the proposed in-water work window on their way to estuarine areas in the San Pablo and San Francisco bays. The juvenile/sub-adult green sturgeon Southern distinct population segment remains in the Delta region for 1 to 3 years prior to entering the estuary or ocean; therefore, individual juvenile/sub-adult southern green sturgeon may be present within the BSA during the proposed in-water work window.

Giant Garter Snake (Thamnophus gigas)

The giant garter snake was listed as threatened in California in 1971 and federally in 1993. The currently known distribution of giant garter snake is patchy but is thought to extend from near Chico, in Butte County, south to Mendota Wildlife Area in Fresno County. The Project is within the historical and currently recognized range of

the species, specifically within the range of the Delta Basin population (USFWS 2020). Habitats occupied by giant garter snake contain permanent or seasonal water, mud bottoms, and vegetated dirt banks (Fitch 1940, Hansen and Brode 1980).

No giant garter snake surveys have been conducted for this Project. This document relies on the best available scientific and commercial data, including a CNDDB database search and visual assessment of habitat in the BSA to evaluate the potential for the occurrence of giant garter snake. A search of the CNDDB revealed that there are no CNDDB occurrence records for giant garter snake within 5 miles of the BSA. Within a 10-mile buffer of the BSA, there are eight giant garter snake occurrence records (CDFW 2021). Within the BSA, potential giant garter snake habitat is concentrated around the levee banks of Cache Slough (Figure 2-13). During a technical assistance meeting with USFWS Senior Biologist Brian Hansen on November 4, 2021, Mr. Hansen stated that giant garter snakes are unlikely to be present in significant numbers in Cache Slough near the BSA (Hansen, pers. comm. 2021). Combined with historical and recent locality records, the presence of marginal habitat indicates a low potential for giant garter snake to occur in the BSA.

Swainson's Hawk (Buteo swainsoni)

Swainson's hawk is listed as state-threatened. The Swainson's hawk breeds in the western U.S. and Canada, and winters in South America as far south as Argentina (Bechard et al. 2020). In California, most breeding occurs in the Central Valley between Modesto and Sacramento (Bloom 1980), and approximately 95 percent of breeding pairs now occur in the Central Valley. Swainson's hawks generally nest in isolated trees, narrow bands of vegetation, or along riparian corridors in grassland, shrubland, and agricultural landscapes.

There are 14 CNDDB occurrences of this species within 5 miles of the BSA (CDFW 2021a). There are no occurrences within 0.5 mile of the Project area. The closest occurrence, located approximately 1 mile south of the Project, was recorded in 2009 and describes Swainson's hawks nesting on the southeastern bank of the Sacramento River at the confluence of Cache Slough and the Sacramento River. The nesting habitat is described as a "riparian tree;" however, the exact nest location is not given. Nesting success is unknown for this occurrence. During protocol-level surveys in 2021, one Swainson's hawk nest was detected 0.66 mile west of the western terminal of the Project area (Caltrans 2022c).

The agricultural areas surrounding the BSA offer foraging habitat for *Buteo*-genus hawks, including the Swainson's hawk. Trees within the Project area are likely too

small and close to the disturbance of the ferry to be suitable nesting habitat for this species. However, groves of trees adjacent to the BSA provide suitable nesting habitat, especially the eucalyptus groves on both sides of Cache Slough. Although Swainson's hawk did not successfully nest within the Swainson's hawk survey area in 2021, their presence within the BSA vicinity, numerous suitable nesting trees within 0.5 mile of the Project, and historical nesting records suggest potential for Swainson's hawk to nest within 0.5 mile of the Project area in future years.

Tricolored Blackbird (Agelaius tricolor)

The tricolored blackbird is a state-threatened species and a California species of special concern. In most years, the Central Valley alone holds greater than 90 percent of all breeding adults (Zeiner et al. 1990, updated 2008). For breeding site selection, the species requires open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony. Nonbreeding congregations of tricolored blackbirds are often found in wetland habitats near abundant food sources such as rice fields, pastureland, recently cultivated cropland, and grain stores at dairies (USFWS 2019). There are no CNDDB occurrences of this species within 5 miles of the BSA. The closest eBird occurrence to the BSA is located 0.36 mile southwest of the western ferry terminal, and several other occurrences are noted in the eBird database near the confluence of Cache Slough and the Sacramento River (Sullivan et al. 2009).

Cache Slough at the BSA provides emergent wetland vegetation and adjacent blackberry bushes bordering the slough. Although these areas are likely too small and close to disturbance to support a breeding colony of tricolored blackbirds (which can number in the thousands of birds), there is potential for the area to be used as wintering and foraging habitat. Because of the presence of the freshwater emergent wetland within and adjacent to Cache Slough, the species cannot be ruled out and may be present in the BSA. The following vegetation types represent suitable habitat for tricolored blackbird: California annual grassland, riparian scrub, soft rush tidal marsh, giant reed tidal marsh, and California bulrush tidal marsh.

2.1.14.2 Environmental Consequences

Build Alternative

Operation

Operation of the ferry under the Build Alternative would have no effect on threatened and endangered animal species.

Construction

Tables 2-7 and 2-8 present the impact summary to protected species under the Federal Endangered Species Act and California Endangered Species Act.

Table 2-7. Federal Endangered Species Act Species Impact Summary

Species	Determination
Delta smelt, longfin smelt, Central Valley steelhead DPS, and North American green sturgeon	May affect, and is likely to adversely affect
Giant garter snake, Central Valley Spring Run Chinook salmon ESU, and Sacramento River Winter Run Chinook salmon ESU	May affect, and is not likely to adversely affect
Pacific harbor seal and California sea lion	May subject to temporary threshold shift in hearing or Level B harassment
Chinook salmon essential fish habitat	Would have temporary and minimal adverse effects
Delta smelt, Central Valley Spring Run Chinook salmon ESU, Sacramento River Winter Run Chinook salmon ESU, Central Valley steelhead DPS, and North American green sturgeon	Will not adversely affect designated critical habitat
Federally listed plant species under FESA, all other federally listed animal species under FESA	No effect

Table 2-8. California Endangered Species Act Species Impact Summary

Species	Determination
Delta smelt and longfin smelt	May result in take
State-listed plant species under CESA, all other state-listed animal species under CESA	Will not result in take

Delta Smelt, Longfin Smelt, Central Valley Spring-run and Sacramento River Winter-run Chinook Salmon, Central Valley Steelhead, and North American Green Sturgeon

During construction, the piles for the replacement fenders and debris catchers would result in a loss of 0.10 acre of aquatic habitat, but this would be offset by the removal of existing fenders and debris catchers, which would open up 0.07 acre of aquatic habitat (Figure 2-12). This would result in a net decrease of 0.03 acre of aquatic habitat. The presence of the new fenders, debris catchers, and ramps would not appreciably diminish foraging habitat, or the ability of delta smelt, longfin smelt, Central Valley spring-run and Sacramento River winter-run Chinook salmon, Central

Valley steelhead, and North American green sturgeon to migrate upstream or downstream to estuarine marshes.

If the delta smelt, longfin smelt, Central Valley spring-run and Sacramento River winter-run Chinook salmon, Central Valley steelhead, and North American green sturgeon are present within the BSA, aspects of the Project may result in behavioral changes from waterborne noise from vibratory pile driving, increased turbidity during in-water work, dewatering during ramp installation, and handling of listed species individuals during relocation from the active work area.

Hydroacoustic modeling of the proposed vibratory pile driving was conducted to identify the extent of hydroacoustic impacts on fish that could cause behavioral changes. For vibratory pile driving, the 150-dB root-mean-square (RMS) level provides an estimated zone of possible acoustic effects. The 150-dB RMS zone associated with vibratory pile driving for this Project would include a 243-foot buffer for the 30-inch steel piles and a 207-foot buffer for the AZ 17-700 sheet piles in water. These results are presented in Table 2-5, and the extent of the hydroacoustic impact zone is mapped in Figure 2-11 as a fish behavioral threshold buffer.

Installation of the cofferdams around the work areas may result in fish stranding. To minimize potential effects on special-status fish species, a qualified fisheries biologist would conduct fish rescue and relocation efforts to collect fish located within the cofferdam where safe and feasible. This rescue effort would be implemented during dewatering of the area behind the cofferdam.

Project features such as environmental training, stormwater management, and use of erosion control materials would minimize potential impacts on delta smelt, longfin smelt, Central Valley spring-run and Sacramento River winter-run Chinook salmon, Central Valley steelhead, and North American green sturgeon. However, because suitable habitat is present within the potential fish behavioral threshold buffer, Caltrans would also implement the following AMMs and MMs to reduce adverse effects:

- AMM-BIO-4, Seasonal Avoidance
- AMM-BIO-5, Fish Removal and Relocation Plan
- AMM-BIO-6, Agency Notification of Take or Injury
- MM-BIO-1, Cofferdam Installation
- MM-BIO-2, Turbidity, Noise, and Vibration reduction

Giant Garter Snake

If giant garter snakes are present within the BSA, aspects of the Project, including the following, may result in an increased risk of mortality or species take:

- Operating heavy machinery and construction equipment
- Soil removal or grading
- Habitat modification, including removal of terrestrial vegetative cover or removal of burrows or other cover sites during ground disturbance and excavation
- Installation of wildlife exclusion and environmentally sensitive area fencing
- Handling of listed species individuals during relocation from the active work area

Figure 2-13 depicts impacts on potentially suitable giant garter snake habitat. The piles for the replacement fenders and debris catchers would result in a loss of 0.01 acre of potentially suitable upland habitat and 0.01 acre of potentially suitable wetland habitat within the Project area (Figure 2-13). The removal of existing fenders and debris catchers would open up 0.001 acre of potentially suitable upland habitat and 0.001 acre of potentially suitable wetland habitat within the Project area. This would result in a net permanent decrease of 0.01 acre of potentially suitable upland habitat and 0.01 acre of potentially suitable wetland habitat for giant garter snake within the Project area (Figure 2-13). Work associated with the proposed Project would also temporarily affect 0.20 acre of potentially suitable upland habitat and temporarily affect 0.06 acre of potentially suitable wetland habitat within the Project area.

Project features such as environmental training, use of erosion control materials, wildlife entrapment, and environmentally sensitive area fencing would reduce the Project's potential impacts on giant garter snake and its associated habitat. However, because suitable habitat is present within the Project area, Caltrans would also implement the following AMMs:

- AMM-BIO-1, Restore to Pre-Project Conditions
- AMM-BIO-6, Agency Notification of Take or Injury
- AMM-BIO-7, Designated Biologists
- AMM-BIO-8, Pre-Construction Surveys
- AMM-BIO-9, Biological Compliance Monitoring
- AMM-BIO-10, Designated Biologist/Biological Monitor Authority

- AMM-BIO-11, Special-status Species Handling
- AMM-BIO-12, Special-status Species Release

Swainson's Hawk

There is potential for Swainson's hawk to nest within 0.5 mile of the Project area; therefore, Project construction may impact nests, eggs, young, or individual Swainson's hawks. The Project is not expected to affect Swainson's hawk nesting habitat because the trees in the Project area are likely not suitable for nesting. Construction disturbance during the breeding season could result in the incidental failure of nests in the vicinity of the Project area, leading to loss of fertile eggs or nestlings. With the incorporation of project features and AMMs into the proposed Project, no take of migratory birds or eggs is anticipated.

Potential Project impacts include permanent and temporary impacts on foraging habitat resulting from vegetation clearing. Swainson's hawk uses California annual grassland as foraging habitat. The 0.002 acre of permanent impact on California annual grassland is considered a permanent impact on potential foraging habitat for Swainson's hawk and 0.40 acre of temporary impacts on Swainson' hawk foraging habitat (Figure 2-6).

Potential impacts on Swainson's hawk would be minimized with the implementation of the project features including worker environmental training, nesting bird surveys, active nest buffer, and construction site management practices. Because suitable habitat is present within the Project area, Caltrans would also implement the following species-specific AMM for Swainson's hawk:

- AMM-BIO-14, Protocol-level Swainson's Hawk Pre-Construction Surveys

Tricolored Blackbird

Project construction has the potential to impact nests, eggs, young, or individual tricolored blackbirds. The Project is not expected to affect tricolored blackbird nesting habitat because the vegetation in the BSA is likely not large enough to support a tricolored blackbird nesting colony. Construction disturbance during the breeding season could result in the incidental failure of nearby nests, leading to loss of fertile eggs or nestlings.

Potential Project impacts include permanent and temporary impacts on foraging habitat resulting from vegetation clearing. The piles for the replacement fenders and debris catchers would result in 0.01 acre of permanent impacts on potential wintering

or foraging habitat for tricolored blackbird (Table 2-3 and Figure 2-6). In addition, there would be 0.76 acre of temporary impact on potential wintering or foraging habitat for tricolored blackbird (Table 2-3 and Figure 2-6).

With the incorporation of project features and AMMs into the proposed Project, no take of migratory birds or eggs is anticipated. Where possible, vegetation and tree removal activities would be performed outside of the active nesting season (February 1 to September 30). Pre-construction surveys for migratory birds would be conducted prior to the commencement of any Project activities if they occur during the February 1 through September 30 timeframe. If a nesting bird is discovered, appropriate buffers would be applied to Project work until all birds have fledged.

No-Build Alternative

The No-Build Alternative would have no effect on threatened and endangered species within the BSA because the existing Real McCoy fenders and ramps would not be replaced.

2.1.14.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Project would require a biological opinion from the USFWS and from NMFS, as well as a Lake and Streambed Alteration Agreement under California Fish and Game Code Section 1600 from CDFW. The following AMMs and MMs are proposed here; note that AMMs and MMs not described in detail have been previously introduced in Section 2.1.12.3 and are described in Appendix D:

- **AMM-BIO-1, Restore to Pre-Project Conditions**
- **AMM-BIO-4, Seasonal Avoidance**
- **AMM-BIO-5, Fish Removal and Relocation Plan**
- **AMM-BIO-6, Agency Notification of Take or Injury**
- **AMM-BIO-7, Designated Biologists**
- **AMM-BIO-8, Pre-Construction Surveys**
- **AMM-BIO-9, Biological Compliance Monitoring**
- **AMM-BIO-10, Designated Biologist/Biological Monitor Authority**
- **AMM-BIO-11, Special-status Species Handling**

- **AMM-BIO-12, Special-status Species Release**
- **AMM-BIO-13, Marine Mammal Monitoring**
- **AMM-BIO-14, Protocol-level Swainson's Hawk Pre-Construction Surveys**: If the Project takes place within any portion of the Swainson's hawk nesting season (March 15 to September 15), Caltrans would conduct six pre-construction, protocol-level Swainson's hawk surveys in March and April during the spring prior to construction, using guidelines set forth by the Swainson's Hawk Technical Advisory Committee (2000). If a nest is discovered within 0.25 mile of the Project area, and the nest has the potential to be active during Project construction, Caltrans would immediately inform and coordinate with CDFW for further guidance.
- **MM-BIO-1, Cofferdam Installation**
- **MM-BIO-2, Turbidity, Noise, and Vibration Reduction**

2.1.15 Invasive Species

2.1.15.1 AFFECTED ENVIRONMENT

The California Invasive Plant Council (Cal-IPC) rates non-native invasive plants as high, moderate, or limited based on their threat of ecological impacts. A full list of invasive plants observed within the BSA is included in Table 2-9.

Table 2-9. Invasive Plant Species Present within the BSA

Scientific Name	Common Name	Cal-IPC Rating
Alternanthera philoxeroides (Mart.) Griseb.	alligator weed	I-H
Schinus terebinthifolius Raddi	Brazilian pepper tree	I-L
Conium maculatum L.	poison hemlock	I-M
Carduus pycnocephalus L.	Italian thistle	I-M
Cirsium vulgare (Savi) Ten.	bull thistle	I-M
Dittrichia graveolens (L.) Greuter	stinkwort	I-M
Lepidium latifolium L.	perennial pepperweed	I-H
Raphanus sativus L.	wild radish	I-L
Sesbania punicea (Cav.) Benth.	rattlebox	I-H
Myriophyllum aquaticum (Vell.) Verdc.	parrot feather watermilfoil	I-H
Eucalyptus camaldulensis Dehnh.	red gum	I-L

Scientific Name	Common Name	Cal-IPC Rating
Eucalyptus globulus Labill.	glue gum	I-L
Ludwigia hexapetala (Hook. & Arn.) Zardini, H. Gu, & P. H. Raven	six petal water primrose	I-H
Rubus armeniacus Focke	Himalayan blackberry	I-H
Egeria densa Planch.	Brazilian water weed	I-H
Arundo donax L.	giant reed	I-H
Avena fatua L.	wild oat	I-M
Avena barbata Pott ex Link	slender wild oat	I-M
Polypogon monspeliensis (L.) Desf.	annual beard grass	I-L
Eichhornia crassipes (Mart.) Solms	common water hyacinth	I-H

Notes:

Source: Cal-IPC 2021

The Cal-IPC (2021) rating system is as follows:

I-H: Invasive – High; species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure; moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

I-M: Invasive – Moderate; species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure; moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

I-L: Invasive – Limited; species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score; low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

2.1.15.2 ENVIRONMENTAL CONSEQUENCES

Build Alternative

Operation

Once construction is completed, the Build Alternative would have the same vehicular capacity as existing conditions and would have minimal potential to spread invasive species. Therefore, operation of the Build Alternative would have no impact.

Construction

The Build Alternative is expected to have minimal effects on the spread of invasive species within the BSA. The area is currently colonized by 20 species of invasive plants, which may be removed during construction. Overall, the proposed Project is not expected to result in the colonization of additional species. None of the species on the California list of noxious weeds are currently used by Caltrans for erosion control or landscaping.

With implementation of project features, the proposed Project would prevent the introduction of invasive species and provide for their control to minimize their economic, ecological, and human health impacts. All equipment and materials would be inspected for the presence of invasive species. In the event that high- or medium-priority noxious weeds, as defined by the California Department of Food and Agriculture or the Cal-IPC, are disturbed or removed during construction-related activities, the contractor would contain the plant material associated with these noxious weeds and dispose of it in a manner that would not promote the spread of the species. The contractor would be responsible for obtaining all permits, licenses, and environmental clearances for properly disposing of such materials.

No-Build Alternative

The No-Build Alternative would have no effect on invasive species within the BSA because the existing Real McCoy fenders and ramps would not be replaced.

2.1.15.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

No AMMs or MMs would be required to reduce effects related to invasive species.

2.2 Cumulative Impacts

This section provides information regarding past, present, and reasonably foreseeable development projects dating from 2010 onward, which, together with the proposed Project, could potentially have a substantial or considerable contribution to cumulative environmental impacts in the respective resource study area. While the past is generally represented by the current existing condition, this analysis reviews known projects that have resulted in recent changes in the previous 10 years. The reasonably foreseeable future is generally a 20-year timeframe.

Incremental impacts that may result from the Project are considered in the context of the cumulative condition that exists from previous human actions and in light of other reasonably foreseeable future actions. The analysis proceeds as follows:

1. Determine which resources would be significantly impacted by the Project.

2. Determine whether there is a detrimental condition or deterioration in health of a resource within the context of impacts from past, present, and other reasonably foreseeable future actions.

3. Determine whether, collectively, the proposed Project and foreseeable condition combine to result in a cumulative impact.

2.2.1 Resource Study Areas

Table 2-10 lists all resource areas included in the cumulative analysis, as well as the resource study area that corresponds to the cumulative analysis for each resource. The resource study areas in the context of the cumulative analysis are different than the BSA for analyzing the direct and indirect impacts to each resource area. This difference is because a cumulative impact analysis reviews the resources in the Project vicinity as a whole rather than merely the potential range of direct and indirect impacts from the Project.

Data for this cumulative impact analysis were obtained from Solano County Transportation Authority, Solano County Resource Management Building and Safety Division, CEQAnet (an online environmental database of the State Clearinghouse), agency websites (including the California Department of Water Resources, USACE, Bureau of Reclamation, USFWS, and CDFW), and from review of environmental documents for local projects archived by Caltrans.

Table 2-10. Cumulative Impacts Analysis by Resource Area

Resource Area	Inclusion in IS-MND/EA Cumulative Analysis	Resource Study Area
Human Environment		
Farmlands/Timberlands	No	N/A
Community Impacts	No	N/A
Traffic and Transportation/Pedestrian and Bicycle Facilities	No	N/A
Visual/Aesthetics	No	N/A
Cultural Resources	No	N/A
Physical Environment		
Hydrology and Floodplain	No	N/A
Water Quality/Stormwater Runoff	No	N/A
Geology/Soils/Seismic/Topography	No	N/A
Biological Environment	Yes	Cache Slough vicinity, including the BSA

Notes:

EA = Environmental Assessment
IS-ND = Initial Study with Proposed Negative Declaration
N/A = not applicable

Table 2-11 identifies the various past (within 10 years), present, and reasonably foreseeable private and public development projects that comprise the context by which the proposed Project's cumulative impacts (in all resource areas identified in Table 2-8) are evaluated. The Project vicinity is largely rural/agricultural and consequently has few development proposals.

Table 2-11. Cumulative Projects: Past, Present, and Reasonably Foreseeable Projects in the State Route 84 Vicinity

Project Name	Location	Characteristics	Status
Private Projects			
Electrical work on an agricultural pump	4868 State Highway 84, Walnut Grove, CA 95690	N/A	Project permitted through Solano County. Work completed in 2014.
Public Projects			
Miner Slough Levee Repair	SR 84 and Holland Road, located on the west side of Ryer Island	Repair sections of Miner Slough levee by placing rock slope protection and soil mix.	IS/MND completed February 2014. Addendum to the IS/MND completed January 2015. Work anticipated to begin summer/fall 2015. Agency consultation ongoing.
Prospect Island Tidal Habitat Restoration Project	Prospect Island located between Sacramento Deep Water Ship Canal and Miner Slough	Restore property to freshwater tidal wetland and open water habitats.	Public draft Environmental Impact Report released in 2015. Section 404 and Section 401 permits are pending.
Antioch Bridge Seismic Retrofit	Route 160 connecting City of Antioch in Contra Costa County to Sherman Island in Sacramento County	Seismic retrofit completed on a 2-mile bridge crossing	CEQA and NEPA documents and permits approved for the project. Work completed in 2012.
State Route 84 Miner Slough Bridge Replacement Project	Solano County, SR 84, at Minor Slough at northern tip of Ryer Island	Bridge Replacement Project	Construction is scheduled to last for 2 to 3 years. In-water pile driving would be between August 1 and November 30. Nighttime and weekend lane closures for SR 84 to realign roadway north of the bridge could occur to allow for construction activities. Ready to list pending project reprogramming.

Project Name	Location	Characteristics	Status
I 80/SR 29 Bridge Replacement Project Vallejo	I-80 bridge deck at SR 29 Interchange in Vallejo	New construction would include a Class 1 bike path on northbound State Route 29, increase vertical clearance of the bridge from 15.2 feet to 18.7 feet and add new drainage inlets on Interstate Highway (I-) 80 upstream and downstream of the bridge.	Construction began early June 2021. Various I-80 on-ramps would be closed on or around June 11, 2021, and would remain closed until June 2023.
I-80/I-680/SR 12 Interchange Project	Interchange is located in Fairfield	The I-80/I-680/SR 12 Interchange project would replace the existing single-lane eastbound SR 12 to eastbound I-80 connector with a new two-lane connector bridge structure that would be constructed and designed to accommodate future project phases. The project would also construct a new slip ramp from eastbound SR 12 directly to Green Valley Road and a new braided off-ramp from eastbound I-80 to Green Valley Road and southbound I-680.	This project is expected to be completed by fall 2022.
SR 12/SR 113 Intersection Improvements	The intersection of these highways is located in unincorporated Solano County, approximately 6 miles west of the City of Rio Vista.	This project enhanced safety at this busy intersection by installing a roundabout to reduce both the number and severity of collisions.	The construction of this project is complete (October 2020) and is now operational.

Project Name	Location	Characteristics	Status
California Water Fix and Eco Restore (Delta Tunnels Project)	The Project proposes to build two large, four-story tall tunnels to carry fresh water from the Sacramento River under the Sacramento-San Joaquin Delta toward the intake stations for the State Water Project and the Central Valley Project.	Each tunnel would be 150 feet below ground, 40 feet in diameter, and 30 miles in length.	As of May of 2019, the Department of Water Resources withdrew the proposed permits for the Water Fix project, is conducting a new environmental review, and began the planning processes for a significantly smaller singular tunnel project that would replace the Water Fix project.

Sources:
Caltrans District 4 Antioch Bridge Project at https://mtc.ca.gov/operations/programs-projects/bridges/antioch-bridge
Caltrans District 4 Bay Area Projects at https://dot.ca.gov/caltrans-near-me/district-4/d4-projects
Solano County Resource Management, Building and Safety Division
Solano Transportation Authority Countywide Plans & Studies at https://sta.ca.gov/projects-plans/?term=highways

2.2.2 Issues with No Cumulative Effect

If a project would not result in a direct or indirect adverse effect on a resource, then it would not contribute to a cumulative impact on that resource and does not need to be further evaluated. The proposed Project was determined not to have any potential for effects on the following resources, which therefore would not have any cumulative impact from the Project:

- Existing and Future Land Use
- Consistency with State, Regional and Local Plans and Policies
- Coastal Zone
- Wild and Scenic Rivers
- Parks and Recreational Facilities
- Farmlands/Timberlands
- Growth
- Community Character and Cohesion
- Environmental Justice
- Relocation and Real Property Acquisition
- Utilities/emergency service systems
- Paleontology
- Hazards and Hazardous Materials
- Air quality
- Noise
- Section 4(f)

The following resources with the potential for Project effects were evaluated in their respective subsections in this chapter. The analysis determined that, with the implementation of the project features in Appendix A and the AMMs summarized in Appendix D, the proposed Project would have no adverse effect and therefore no cumulative impact on these resources:

- Traffic and Transportation/Pedestrian and Bicycle Facilities
- Visual/Aesthetics
- Cultural Resources
- Hydrology and Floodplains
- Water Quality/Storm Water

Certain resources are not susceptible to incremental/cumulative effects. One example is geologic/seismic hazards. Geological/seismic hazards are site-specific and relate to

the type of building or structure proposed as well as soil composition and slope on the site. There is no additive effect of the geologic/seismic hazards associated with other approved or foreseeable development together with the proposed Project; therefore, no further cumulative analysis of this resource is warranted.

2.2.3 Resource Trends/Historical Context

2.2.3.1 Biological Resources

For the cumulative impact analysis, the resource study area for biological resources includes the Cache Slough vicinity and the BSA. The Project area is the area that would be directly affected by construction. The Project area is composed of two areas, one on each side of the slough, and contains the ferry terminals and associated work and staging areas. These areas are located within Caltrans' ROW and the TCEs. The BSA, which includes the Project footprint and an additional 50-foot-radius buffer around the Project footprint, encompasses a total of 10.63 acres.

2.2.3.2 Natural Communities, Wetlands and other Waters, Plants, and Animal Species

Of the past, present, and reasonably foreseeable future projects identified in the resource study area, only the Miner Slough Bridge Replacement Project has the potential to impact natural communities, wetlands and other waters, plants, and animal species. When viewed in connection with the effects of past, current, and probably future projects, and together with the proposed Project, the potential incremental effects to natural communities, plants, and animal species would not be cumulatively considerable.

Incremental effects to wetlands and other waters by the proposed Project, when viewed in connection with effects of past, current, and probable future projects, would not be cumulatively considerable with mitigation incorporated.

2.2.3.3 Threatened and Endangered Species

Caltrans has determined that the Project may result in take of the following species listed under the federal Endangered Species Act and the California Endangered Species Act:

- Delta smelt and longfin smelt

Delta Smelt

Delta smelt critical habitat is defined as areas of all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including contiguous Grizzly and Honker bays); the length of Goodyear,

Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma sloughs; and the existing contiguous waters contained within the Delta, as defined in Section 12220 of the California Water Code. The Project BSA is located within designated critical habitat for delta smelt.

The delta smelt was federally listed as a threatened species on March 5, 1993. Critical habitat for delta smelt was designated on December 19, 1994. The Sacramento-San Joaquin Delta Native Fishes Recovery Plan was completed in 1996 (USFWS 1996). Five-year status reviews for the delta smelt were completed in 2004 and 2010 (USFWS 2004 and 2010). CDFW recategorized delta smelt from threatened to endangered status on August 7, 2008. USFWS is considering up listing delta smelt from threatened to endangered status (USFWS 2016). Refer to Section 2.1.4 for a discussion of the life history of this species.

In the unlikely event that delta smelt are present within the BSA during the proposed in-water work window, aspects of the Project may result in an increased risk of mortality or species take from waterborne noise from vibratory pile driving, increased turbidity during in-water work, dewatering during ramp installation, and handling of listed species individuals during relocation from the active work area.

Cumulative impacts result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges and infrastructure throughout Solano County, past and current farming operations, and the use of agricultural pesticides, and in the Delta (including water conveyance and diversion operations from the State Water and Central Valley projects) and the surrounding region. These projects would all undergo (or have undergone) separate environmental review and would require separate environmental permitting from regulatory agencies. Although these and similar projects could result in impacts on delta smelt, most current and future projects that affect this species and its habitats are expected to be required to mitigate these impacts through permitting processes: CEQA, Section 1600 of the Fish and Game Code, or Sections 401/404 of the CWA. As a result, most projects in the region would mitigate their impacts on delta smelt, thus minimizing cumulative impacts on this species. With implementation of project features and AMMs, this Project would not make a considerable contribution to cumulative impacts on the delta smelt.

Longfin Smelt

As of 2012, the longfin smelt is currently considered a candidate for listing under the federal Endangered Species Act. Refer to Section 2.1.14 for a discussion of the life history of this species.

In the unlikely event that longfin smelt are present within the BSA during the proposed in-water work window, aspects of the Project may result in an increased risk of mortality or species take from waterborne noise from pile driving, increased turbidity during in-water work, dewatering during ramp installation, and handling of listed species individuals during relocation from the active work area.

Cumulative impacts may result from past, current, and reasonably foreseeable future projects in the region, including periodic maintenance and replacement of bridges and infrastructure throughout Solano County, past and current farming operations, and the use of agricultural pesticides, and in the Delta (including water conveyance and diversion operations from the State Water and Central Valley projects) and the surrounding region. These projects would all undergo (or have undergone) separate environmental review and would require separate environmental permitting from regulatory agencies. Although these and similar projects could result in impacts on longfin smelt, most current and future projects that affect this species and its habitats are expected to be required to mitigate these impacts through the following permitting processes: CEQA, Section 1600 of the Fish and Game Code, or Sections 401/404 of the CWA. As a result, most projects in the region would mitigate their impacts on longfin smelt, thus minimizing cumulative impacts on this species. With implementation of project features and AMMs, this Project would not make a considerable contribution to cumulative impacts on the longfin smelt.

2.2.4 Cumulative Impacts Analysis

2.2.4.1 Build Alternatives

A cumulative analysis is required for any resource significantly impacted by a proposed project. Based on the analysis presented in this IS-ND/EA, the Project would not significantly impact resources identified under Sections 2.1.10 through 2.1.15. No Project cumulative impacts would likely occur in conjunction with the projects listed in Table 2-11 and with the proper implementation of project features and AMMs. However, a cumulative analysis is also required for any impacted resources that are in poor health, declining health, or at risk. The two resources evaluated under biological resources, delta smelt and longfin smelt, would be potentially at risk for significant impacts from the Project due to the declining

population numbers of these two Delta fish from a cumulative and historic context. However, in spite of these two potential resources at risk for significant impacts, there would be no cumulative impacts because other current and reasonably foreseeable projects in the Project vicinity are located distant from the Project area or would not interact with the Project in construction timing.

2.2.4.2 NO-BUILD ALTERNATIVE

No construction would occur under the No-Build Alternative. Existing conditions would be perpetuated, and the potential impacts associated with the Build Alternative would not occur. This includes the beneficial effects of the Project, which would replace the deficient ferry fender systems and ramps and improve travel conditions at the Real McCoy Ferry at Cache Slough.

2.2.5 Conclusion

Project effects to threatened and endangered species are expected to be minimal and reduced with the AMMs and MMs incorporated. Projects identified as potentially contributing to cumulative Project effects are listed in Table 2-11. These projects could affect biological resources, but the net effect would be minor given the limited area affected. Furthermore, each project would be subject to environmental review and permitting and would have to offset for unavoidable impacts. Overall, the projects included in Table 2-11 are not anticipated to contribute to further declines in delta smelt or longfin smelt or interact to contribute to landscape scale changes in the Delta. For these reasons, Project effects to biological resources are not cumulatively considerable.

Chapter 3 California Environmental Quality Act Evaluation

3.1 Determining Significance Under CEQA

The SR 84 Real McCoy Fenders and Ramps Replacement Project (Project) is a joint Project by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation has been prepared in accordance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other actions required by applicable federal environmental laws for this Project are being or have been carried out by Caltrans pursuant to 23 United States Code Section 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans. Caltrans is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way that significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS) or a lower level of documentation would be required. NEPA requires that an EIS be prepared when the proposed federal action (i.e., a project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated, and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the Project and ways to mitigate each significant effect. If the Project may have a significant effect on any environmental resource, then an Environmental Impact Report (EIR) must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of

actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this Project and CEQA significance.

3.2 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed Project. In many cases, background studies performed in connection with the projects will indicate that there are no impacts to a particular resource. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the Project and standardized measures that are applied to all or most Caltrans projects such as best management practices (BMPs) and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the Project and have been considered prior to any significance determinations documented here. Chapters 1 and 2 provide a more detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2, to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please refer to Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

Section 3.2.1 through Section 3.2.21 present the CEQA determinations under Appendix G of the CEQA Guidelines. The CEQA determination depends on the level of potential environmental impact that would result from the Project. The level of significance determinations is defined as follows:

- No Impact: Indicates no physical environmental change from existing conditions.
- Less than Significant Impact: Indicates the potential for an environmental impact that is not significant with or without the implementation of avoidance and minimization measures.

- Less than Significant Impact with Mitigation Incorporated: Indicates the potential for a significant impact that would be mitigated with the implementation of a mitigation measure to a level of less than significant.
- Potentially Significant Impact: Indicates the potential for significant and unavoidable environmental impact.

3.2.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No Impact
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 a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Less Than Significant Impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No Impact

Refer to Chapter 2.1.2 for a more detailed discussion about aesthetics.

a, b) No Impact

Within the Project area, SR 84 is not officially designated as a scenic highway. There would be no impact.

c) Less Than Significant Impact

The Project area is characterized as rural and is part of the agricultural delta landscape. During construction, equipment would be staged and stored along Cache Slough making it visible to recreationalists on Cache Slough and vehicles on SR 84. The views of water recreationalists from Cache Slough of the agricultural delta landscape would be temporarily disrupted with construction staging and construction activities; however, their views would be brief and out of focus as their focal point would either be upstream or downstream. Removal and trimming of vegetation and trees along the riparian areas would occur for the replacement of the fender systems, including the debris catcher. With PF-AES-1 through PF-AES-6, all disturbed areas would be revegetated with native plants and trees would be replanted and temporary visual impacts from construction activities would be minimized

The Project's new fender systems and boat ramps would be similar to the existing facilities. Therefore, the Project would not install a new structure that would be

visually incompatible with the existing visual character of the area. Impacts on a scenic vista and scenic resources would be less than significant.

d) No Impact

The Project would not create a permanent, new source of light or glare. Lighting would not be used during construction. There would be no impact.

3.2.2 Agriculture and Forestry Resources

In determining whether impacts to 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 Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to 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 Forest Protocols adopted by the California Air Resources Board. Would the project:

Question	CEQA Determination
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact
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 Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	No Impact

a, b, c, d, and e) <u>No Impact</u>

The Project is located adjacent to an area classified as Prime Farmland by the California Department of Conservation (CDC 2021). The Project footprint is not located on an active Williamson Act contract (Solano County 2021). In addition, the Project would be consistent with the Solano County Uniform Rules and Procedures Governing Agricultural Preserves and Land Conservation Contracts, as the Project would not compromise the long-term productive agricultural capability of the Prime Farmland parcel or significantly displace current or future agricultural operations on the parcel (Solano County 2012). The Project would be considered a compatible use

of contracted Williamson Act lands and the requirements of Solano County. Therefore, there would be no impact.

In addition, the Project is not located on any land that is designated for timber-related use, such as a Timber Production Zone. The Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Protection, nor will the Project result in the loss of forest land or conversion of forest land to non-forest use. There would be no impact.

3.2.3 Air Quality

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:

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

The Project is a ferry fender systems and ramps replacement project that provides no additional travel lanes on SR 84 or capacity increase on the existing ferry, and therefore qualifies for an exception from project-level conformity requirements under 40 *Code of Federal Regulations* 93.126, Table 2, Exempt Projects under Widening Narrow Pavements or Reconstructing Bridges (no addition travel lanes). Therefore, no air quality study is necessary for this Project.

a, b, c, and d) No Impact

The Project would not conflict with the applicable air quality plan for the Yolo/Solano Air Quality Basin. The Project would not result in a net increase in any criteria pollutant, individually or cumulatively, for the Project region under applicable federal or state ambient air quality standards. There are no sensitive receptors in the Project vicinity; therefore, no residents would be exposed to substantial pollutant concentrations or other emissions such as odors. There would be no impact.

3.2.4 Biological Resources

Would the project:

Question	CEQA Determination
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, U.S. Fish and Wildlife Service, or National Marine Fisheries Service?	Less Than Significant Impact with Mitigation
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	Less Than Significant Impact
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	Less Than Significant Impact
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 useof native wildlife nursery sites?	Less Than Significant Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Less Than Significant Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	No Impact

Please refer to Sections 2.1.10 through 2.1.15 for a detailed discussion of biological resources. This section summarizes the impact analysis in Sections 2.1.10 through 2.1.15.

a) Less Than Significant Impact with Mitigation

SPECIAL-STATUS ANIMAL SPECIES

The biological study area (BSA) contains suitable habitat for several special-status species. The following species have the potential to occur within the BSA: delta smelt, longfin smelt, Central Valley spring-run and Sacramento River winter-run

Chinook salmon, Central Valley steelhead, North American green sturgeon, Sacramento splittail, giant garter snake, western pond turtle, and Swainson's hawk,

Delta Smelt, Longfin Smelt, Central Valley Spring-run and Sacramento River Winter-run Chinook Salmon, Central Valley Steelhead, North American Green Sturgeon, and Sacramento Splittail

If these special-status fish species are present within the BSA, aspects of the Project would result in an increased risk of behavioral changes from waterborne noise from vibratory pile driving, increased turbidity during in-water work, dewatering during ramp installation, and handling of listed species individuals during relocation from the active work area.

Hydroacoustic modeling of the proposed pile driving was conducted to identify the extent of hydroacoustic impacts on fish that could cause behavioral changes. The 150-decibel (dB) root-mean-square (RMS) zone associated with vibratory pile driving for this Project would include a 243-foot buffer for the 30-inch steel piles and a 207-foot buffer for the AZ 17-700 sheet piles in water. These results are presented in Table 2-5 in Section 2.1.13.2, and the extent of the hydroacoustic impact zone is mapped on Figure 2-11 as a fish behavioral threshold buffer. Because these species are highly mobile, it is unlikely that, over the course of a workday, delta smelt, longfin smelt, Sacramento splittail, Central Valley spring-run and Sacramento River winter-run Chinook salmon, Central Valley steelhead, and green sturgeon would be affected by the 150-dB RMS level associated with vibratory pile driving.

Installation of cofferdams around the work areas may result in fish stranding. To minimize potential effects on special-status fish species, a qualified fisheries biologist would conduct fish rescue and relocation to collect fish located within the cofferdam where safe and feasible to do so. This rescue effort would be implemented during dewatering of the area behind the cofferdam.

The piles for the replacement fenders and debris catchers would result in a loss of 0.100 acre of aquatic habitat, but this would be offset by the removal of existing fenders and debris catchers, which would open up 0.066 acre of aquatic habitat (Figure 2-12). This would result in a net decrease of 0.034 acre of aquatic habitat. The presence of the new fenders, debris catchers, and ramps would not appreciably diminish the ability of special-status fish species to migrate upstream or downstream or forage in the BSA.

With implementation of project features such as environmental training, stormwater management, and erosion control materials, potential impacts to special-status fish species and their associated habitat would be reduced. Implementation of AMM-BIO-4, Seasonal Avoidance and AMM-BIO-5, Fish Removal and Relocation Plan, would further reduce potential impacts to delta smelt, longfin smelt, Central Valley spring-run and Sacramento River winter-run Chinook salmon, Central Valley steelhead, North American green sturgeon, and Sacramento splittail. With implementation of the following mitigation measures; MM-BIO-1, Cofferdam Installation and MM-BIO-2, Turbidity, Noise, and Vibration Reduction, impacts to special-status fish species would be less than significant with mitigation.

Giant Garter Snake and Western Pond Turtle

Giant garter snake (*Thamnophis gigas*) and western pond turtle (*Emys marmorata*) have potential to occur within aquatic and upland habitat of the BSA.

Work associated with the proposed Project would result in temporary and permanent impacts to suitable upland habitat and potentially suitable non-jurisdictional wetland habitat for the giant garter snake and western pond turtle (Figure 2-13). The removal of the existing debris catcher would create potentially suitable upland habitat and potentially suitable wetland habitat for giant garter snake and western pond turtle. Refer to Section 2.1.13.2, Environmental Consequences, for more in-depth discussion of impacts to animal species.

With implementation of project features such as environmental training, erosion control materials, avoidance of wildlife entrapment, and environmentally sensitive area and wildlife exclusion fencing, potential impacts to giant garter snake and western pond turtle and their associated habitat would be reduced. Implementation of the following AMMs described in Section 2.1.13.3 and Appendix D would further reduce potential impacts to the species:

- AMM-BIO-1, Restore to Pre-Project Conditions
- AMM-BIO-6, Agency Notification of Take or Injury
- AMM-BIO-7, Designated Biologist
- AMM-BIO-8, Pre-Construction Surveys
- AMM-BIO-9, Biological Compliance Monitoring
- AMM-BIO-10, Designated Biologist/Biological Monitor Authority
- AMM-BIO-11, Special-status Species Handling
- AMM-BIO-12, Special-status Species Release

Swainson's Hawk, Tricolored Blackbird, and White-tailed Kite

Swainson's hawk (*Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*), and white-tailed kite (*Elanus leucurus*) have potential to occur within the BSA, as there is suitable foraging habitat present. There is also potential for these species to nest adjacent to the BSA.

As discussed for animal species in Section 2.1.13.2, Environmental Consequences, potential Project impacts include temporary and permanent impacts to foraging habitat. California Annual Grasslands are considered impacts to potential foraging habitat for Swainson's hawk, tricolored blackbird, and white-tailed kite (Figure 2-6).

With implementation of project features such as environmental training, nesting bird surveys, active nest buffers, and construction site management practices, potential impacts to Swainson's hawk, tricolored blackbird, and white-tailed kite and their eggs and associated habitat would be reduced. Implementation of AMM-BIO-14, Protocol-level Swainson's Hawk Pre-construction Surveys, would further reduce potential impacts to the species. With the incorporation of the proposed project features and AMMs into the proposed Project, no take of migratory birds or eggs is anticipated.

California Sea Lion and Pacific Harbor Seal

California sea lion (*Zalophus californianus*) and Pacific harbor seal (*Phoca vitulina richardii*) have potential to occur within aquatic habitat of the BSA as there is suitable foraging and migration habitat present.

Because California sea lion and Pacific harbor seal maymigrate or forage within the Level A and B Harassment Zones during the proposed in-water work window, there is the possibility of impacts associated with sound pressure waves from vibratory pile driving activities.

With implementation of project features such as environmental training, stormwater management, and erosion control materials potential impacts to marine mammals and their associated habitat would be reduced. Implementation of AMM-BIO-4, Seasonal Avoidance, and AMM-BIO-13, Marine Mammal Monitoring, would reduce potential impacts to California sea lion and Pacific harbor seal.

SPECIAL-STATUS PLANT SPECIES

As discussed for plant species in Section 2.1.12.2, Environmental Consequences, all four special-status plant species that have potential to occur in the BSA were

observed. These species include Suisun marsh aster (*Symphyotrichum lentum*), Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), Mason's lilaeopsis (*Lilaeopsis masonii*), and Sanford's arrowhead (*Sagittaria sanfordii*).

Implementation of AMM-BIO-3, Rare Plant Pre-Construction Survey, and project features would reduce potential impacts to special-status plant species to less than significant. Refer to Section 2.1.12.2, Environmental Consequences, for a more in-depth discussion of impacts to special-status plant species.

b) Less Than Significant Impact

As discussed in Section 2.1.10, Natural Communities, the Project would result in temporary and permanent impacts on riparian habitat (Figure 2-8). Impacts to riparian habitat would result from clearing vegetation for access to the Cache Slough channel and installation and removal of the fenders and ramps. In addition, of the 10 trees that may need to be removed within the Project footprint, all 10 are within California Department of Fish and Wildlife (CDFW)-jurisdictional riparian habitat.

With implementation of project features and AMM-BIO-1, Restore to Pre-Project Conditions, and AMM-BIO-2, Restoration Monitoring, impacts to riparian habitat would be less than significant.

c) Less Than Significant Impact

As discussed in Section 2.1.11, Wetlands and other Waters, a total of 6.79 acres of Cache Slough was identified as potential waters of the United States under USACE jurisdiction within the BSA. There are no jurisdictional wetlands within the BSA. The Project would result in temporary and permanent impacts to waters of the United States (Figure 2-9). Grading, clearing, and grubbing of upland areas could result in indirect temporary impacts to waters of the United States from increased erosion and sedimentation.

With implementation of project feature PF-BIO-8, Stormwater Best Management Practices, and restricting construction staging areas to locations within the Project area outside any designated environmentally sensitive area, potential impacts to waters of the United States would be reduced. Therefore, impacts to waters of the United States would be less than significant.

d) Less Than Significant Impact

As discussed in Section 2.1.10, Natural Communities, Cache Slough and its adjacent riparian habitat provide dispersal and migration corridors for regionally occurring plant and wildlife species and a corridor of aquatic connectivity between the greater San Francisco Bay downstream of the Project (via the Sacramento River and Suisun Bay) and the sloughs and wetlands of the greater Sacramento Valley Delta region upstream of the Project.

Migratory birds may move through the BSA during work activities and may nest in the vicinity. Construction activities may temporarily degrade nesting habitat within the immediate vicinity of the Project footprint; however, any potential effect is expected to be minimal due to the large amount of surrounding habitat that will remain post-construction. PF-BIO-6, Nesting Bird Surveys, and PF-BIO-7, Active Nest Buffers, would also be implemented to minimize any potential impacts to nesting birds.

Discrete portions of the Project footprint are located within the migratory pathway of special-status fish species and marine mammals, and if work activities occur during migratory movement for these species, it may impede their movements. However, work activities would take place between August 1 and November 30 per AMM-BIO-4, Seasonal Avoidance, when the potential for these species to make migratory movements through the Project footprint during in-water work activities is minimized. Due to this, work activities are not expected to impede movements of these species.

The Project would not interfere substantially with the movement of native fish and wildlife, resulting in a less than significant impact.

e) Less Than Significant Impact

As discussed in Section 2.1.13, Animal Species, 10 trees would be removed to complete construction (Figure 2-7).

Trees potentially affected by the proposed Project would either be removed or trimmed; however, these impacts would be minimized with the implementation of PF-BIO-11, Vegetation and Tree Removal, and PF-BIO-12, Restore Disturbed Areas.

The Project is located within the jurisdiction of the County of Solano. Although not subject to local regulations, Caltrans strives to be consistent with local requirements

for the protection of biological resources, where feasible, while remaining consistent with safety considerations. Project activities are not anticipated to conflict with any local policies or ordinances protecting biological resources and therefore impacts would be less than significant.

f) No Impact

The Project is not located within the boundaries of a Habitat Conservation Plan. Therefore, there would be no impact.

3.2.5 Cultural Resources

Would the project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Less than Significant Impact
c) Disturb any human remains, including those interred outside of formal cemeteries?	Less than Significant Impact

a) No Impact

As discussed in Chapter 2.1.3, Cultural Resources, Caltrans determined that the only built resource present within the Area of Potential Effects (APE) is not a historic resource under CEQA. There would be no impact on a historical resource.

b, c) Less Than Significant Impact

Caltrans identified one archaeological resource within the APE, CA-SOL-276, that was assumed eligible for listing on the National Register of Historic Places under Criterion D for the demonstrated and potential contributions to regional research issues and as historical resources under CEQA for the purposes of this Project only. As discussed in Section 2.1.4, Cultural Resources, archaeological testing within the boundaries of CA-SOL-276 failed to identify the site within the area of direct impact. Caltrans anticipates that the Build Alternative would not result in an adverse effect to this resource; however, the effect determination is still pending. AMM-CUL-1 would require environmentally sensitive area fencing to be installed prior to construction to visibly mark the boundaries of avoidance. AMM-CUL-2 would require archaeological monitoring of all construction-related activities in the proximity of the site boundary to account for the unlikely event of identifying subsurface deposits associated with CA-SOL-276. With the implementation of AMM-CUL-1 and AMM--CUL-2, the Project's potential to result in an adverse change in the significance of the archaeological resource would be less than significant.

If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the nature and significance of the find as outlined in PF-CUL-1. PF-CUL-2 outlines requirements in the event human remains are discovered.

3.2.6 Energy

Would the project:

Question	CEQA Determination
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	No Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No Impact

a, b) No Impact

The 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 Project site during construction and to deliver construction materials. Under PF-GHG-2, the Project would use solar energy to reduce the use of non-renewable energy during construction. The Project is not a capacity-increasing transportation project and would not increase the use of energy resources during operation of the ferry. The Project would not conflict with state and local plans for renewable energy and energy efficiency. There would be no impact.

3.2.7 Geology and Soils

Would the project:

Question	CEQA Determination
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	Less Than Significant Impact
ii) Strong seismic ground shaking?	Less Than Significant Impact
iii) Seismic-related ground failure, including liquefaction?	Less Than Significant Impact
iv) Landslides?	Less Than Significant Impact
b) Result in substantial soil erosion or the loss of topsoil?	Less Than Significant Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less Than Significant Impact
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?	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	No Impact

The Project site lies within the Great Valley geomorphic province and is situated within and on the banks of Cache Slough and the adjacent, relatively level modern marsh and floodplain. The Project site is underlain by late Holocene intertidal deposits comprised of peat, peaty mud, and clay, silt and sand from natural levees (Caltrans 2021b).

a(i),(ii),(iii),(iv) Less Than Significant Impact

The U.S. Geological Survey Quaternary Faults and Folds Database (2006) indicates that the northwesterly-trending inferred trace of the Quaternary-active (age-

undifferentiated) Midland fault is located approximately 2,460 feet southwest of the Project site. However, the scope of work is unlikely to expose the public to hazards due to strong ground shaking, fault rupture, liquefaction, slope instability or landslide.

b) Less Than Significant Impact

Caltrans would design the Project so that no erosion or loss of topsoil would occur as a result, either directly or indirectly, of the Project. There would be a less than significant impact.

c) Less Than Significant Impact

The Project is not located in a geologic unit or soil that is unstable or that would become unstable because of the Project. In addition, this Project would not increase the risk of on- or offsite landslides, lateral spreading, subsidence, liquification, or collapse.

d, e, and f) No Impact

The Project is not located on expansive soil (as defined in Table 18-1-B of the Uniform Building Code [1994]), and there are no septic tanks, alternative wastewater disposal systems, or any other solid waste disposal facilities planned as part of the Project. In addition, the Project is not located in an area that contains a geologic unit that is paleontologically sensitive, and Caltrans does not anticipate the discovery or destruction of any unique paleontological resources during construction. There would be no impact.

3.2.8 Greenhouse Gas Emissions

Would the project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less Than Significant Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less Than Significant Impact

a) Less Than Significant Impact

The Project would result in greenhouse gas (GHG) emissions during construction; however, it is anticipated that the Project would not result in an increase in operational GHG emissions. BMPs and emission reduction measures would be implemented to reduce and minimize criteria pollutants (e.g., maintaining equipment in good operation condition and limiting idling time would also reduce GHG emissions during construction). With implementation of these BMPs and PF-GHG-1, Waste Reduction, and PF-GHG-2, Energy Reduction, the impact of the Project would be less than significant. Section 3.3, Climate Change, contains further discussion.

b) Less Than Significant Impact

The Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. With implementation of construction GHG reduction measures, the impact would be less than significant. Section 3.3 contains further discussion.

3.2.9 Hazards and Hazardous Materials

Would the project:

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

a, b) Less Than Significant Impact

Caltrans Standard Specifications BMPs would be implemented to prevent spills or leaks from construction equipment and from the storage of fuels, lubricants, and solvents. All aspects of the Project associated with removal, storage, transportation, and disposal of hazardous material would be done in accordance with the appropriate California Health and Safety Code. Handling of hazardous materials would comply with Caltrans Standard Specification 14-11, Hazardous Waste and Contamination, which outlines handling, storing, and disposing of hazardous waste.

A survey for asbestos containing materials would be conducted during the next phase of the Project to determine what special provisions would be required to limit the impact on workers and the public. The impact would be less than significant.

c) No impact

There are no existing or proposed schools within 0.25 mile of the Project. The River Delta Unified School District office, Rio Vista High School, Riverview Middle School, and White Elementary School are all located within the City of Rio Vista, approximately 2 miles southwest of the Real McCoy Ferry. Isleton Elementary School is located 3.15 miles southeast of the Real McCoy Ferry in Isleton. There would be no impact.

d) No Impact

As discussed in further detail in Chapter 2.1.7, Hazardous Waste/Materials, there are no hazardous waste sites in the Project area. Screening of environmental regulatory databases (the State Water Resources Control Board's Geotracker database and the California Department of Toxic Substances Control's EnviroStor) revealed no known hazardous waste sites within a 0.25-mile radius of the Project area boundary. Therefore, there would be no impact.

e) No Impact

There are no airports or airstrips in the Project vicinity. The nearest airport, Rio Vista Municipal Airport, is 2.14 miles northwest of the Project site. Therefore, there would be no impact.

f) No Impact

While the ferry landing is along SR 84 and historically has served as a connecting point between Walnut Grove and Rio Vista over the Sacramento River, this area would not be used for any emergency evacuation because of the unreliability of the ferry and very rural setting of this Project location. In the event of an emergency threatening one or more of the surrounding communities, Caltrans would coordinate with local officials to ensure existing evacuation routes remain in place for emergency traffic. Further, this area is overseen by the River Delta Fire District, which has rescue boats that would be used in case of emergency requiring water rescue. This area is also overseen by the Isleton Fire Department, Montezuma Fire Protection District, Rio Vista Fire Department, and the Rio Vista Police Department,

which would also serve the area in case of emergency. Implementation of PF-TRA-1 addresses emergency response and emergency evacuation plans during construction would minimize impacts on emergency response. Therefore, there would be no impact.

g) Less Than Significant Impact

The Project is not located on lands classified as very high fire hazard severity (CAL FIRE 2008). Caltrans proposes to replace the existing timber fender systems with a new steel pile fender systems covered with rubber facing material and replace the boat ramps with new, longer ramps made of concrete, which would have a limited susceptibility to fires. Further, PF-TRA-1 would reduce fire risk to local residents and the traveling public by limiting any possible delays to emergency services during construction. The impact would be less than significant.

3.2.10 Hydrology and Water Quality

Would the project:

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

Refer to Section 2.1.5 and Section 2.1.6 for a more detailed discussion about hydrology and water quality.

a, b) Less Than Significant Impact

During construction, impacts to water quality from excavating and vibratory pile driving activities can include debris deposition and sedimentation. Other potential pollutants are oil and grease from vehicles and construction equipment, concrete waste, sanitary waste, trash, and any other chemicals used for equipment that could enter Cache Slough from accidental spills or via stormwater runoff during rain events.

Implementation of PF-HYD-1 through PF-HYD-3 would minimize impacts to water quality.

The Project would comply with the National Pollutant Discharge Elimination System Construction General Permit and the Caltrans Municipal Separate Storm Sewer System (MS4) Permit. In accordance with the Construction General Permit, the Project would implement PF-HYD-1 and implement a stormwater pollution prevention plan during construction. Prior to the start of construction activities, the stormwater pollution prevention plan would be prepared by the contractor and approved by Caltrans pursuant to the Construction General Permit and the Caltrans MS4 Permit. The plan would include BMPs to protect sensitive areas and prevent and minimize stormwater and non-stormwater discharges from degrading water quality.

The Project would increase the impervious surface area in the groundwater basin by 0.5 acre with the new larger boat ramps. The total area of the Sacramento Valley-Solano Sub-Basin is about 354,673 acres. There would be no new net fill with the replacement of the fender systems. The Project would result in minimal interference with groundwater recharge, and therefore, the impact would be less than significant.

c) Less Than Significant Impact

The Project would not substantially alter the existing drainage pattern of the area. The Project would increase the impervious surface area by 0.7 acre with the new, wider and longer boat ramps. The net new impervious surface would be 0.01 acre. An increase in impervious surface area would increase stormwater runoff, which would increase erosion and sedimentation in Cache Slough. Because the uses on the site would remain the same, the new boat ramps would continue enabling pollutants such as oil, grease, and other contaminants to enter Cache Slough as non-point source pollution during storm events.

During construction, the Project's disturbed soil area would be less than 1 acre and would include staging areas and temporary construction easements (TCEs). PF-HYD-1 through PF-HYD-3 would minimize impacts to water quality from an increase in stormwater runoff during construction and operation with the implementation of water quality BMPs. Therefore, impacts to water quality would be less than significant.

d) Less Than Significant Impact

As discussed in Chapter 2.1.4, the Project area is located in a floodplain identified as a special flood hazard area that is subject to flooding during 100-year storm event. The Project would not introduce new transportation or land uses that would increase the potential of pollutant release that would degrade water quality during inundation. The Project area is not in an area subject to a tsunami or seiche zone. Therefore, impacts to water quality from the release of pollutants during a flood would be less than significant.

e) No Impact

The Project would not obstruct the implementation of a water quality plan or sustainable groundwater management plan. There would be no impact.

3.2.11 Land Use and Planning

Would the project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
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?	No Impact

a, b) No Impact

The Project would not physically divide an established community. The Project would incorporate PF-TRA-1 to establish temporary detour routes for traffic and remain accessible and open throughout construction. Access to local collector roads along SR 84 would be maintained. Once construction is complete, the new ramps and fender systems would serve the same use as the existing ferry systems and would maintain the same level of user capacity. There would be no impact on the community.

The Project would not conflict with the Solano County General Plan, Sacramento County General Plan, Plan Bay Area: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area 2020 to 2050, and the Solano Comprehensive Transportation Plan. There would be no impact.

3.2.12 Mineral Resources

Would the project:

Question	CEQA Determination
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	No Impact
b) Result in the loss of availability of a locally- important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	No Impact

a, b) No Impact

The Project does not occur in a known mineral resource zone and no mineral extraction activities exist on or near the site (U.S. Geological Survey 2022). There would be no impact on mineral resources as a result of the proposed Project.

3.2.13 Noise

Would the project result in:

Question	CEQA Determination
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	No Impact
b) Generation of excessive groundborne vibration or groundborne noise levels?	No Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	No Impact

a, b, c) No Impact

The Project does not include the addition of new traffic lanes or increases in traffic capacity on SR 84, or substantially alter the alignments or increase ambient noise levels than its current levels. Caltrans is exempt from local noise ordinances and would comply with the Caltrans Standard Specifications pertaining to noise. Construction noise would be temporary and would be within acceptable levels for construction activity. There are no nearby sensitive receptors (residences) located on either side of Cache Slough where the existing Real McCoy Ferry is in operation. There would be no impact.

This Project is not located within the vicinity of a private airstrip or an airport land use plan. There would be no impact.

Direct effects on delta and longfin smelt and other fisheries resulting from hydroacoustic noise levels resulting from vibratory pile driving are discussed in Section 3.2.4, Biological Resources, item a).

3.2.14 Population and Housing

Would the project:

Question	CEQA Determination
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact

a, b) No Impact

The Project would replace the existing timber fender systems with new steel pile fender systems, replace the boat ramps with new, longer ramps extending further into Cache Slough, and extend the deck of the ferry boat itself to improve vehicle access on and off the ferry. The Project would not induce unplanned population growth and result in any property acquisition or the displacement of residents or businesses. There would be no impact.

3.2.15 Public Services

Question	CEQA Determination
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, theconstruction of which could cause significantenvironmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services	
i) Fire protection?	Less Than Significant Impact
ii) Police protection?	Less Than Significant Impact
iii) Schools?	No Impact
iv) Parks?	No Impact
v) Other public facilities?	No Impact

a(i),(ii) Less Than Significant Impact

During construction, motorists would travel on a temporary detour route on existing pavement, and the Project would implement PF-TRA-1 to provide and maintain access for police, fire, and medical services. As discussed in Section 2.1.2, Traffic and Transportation/Pedestrian and Bicycle Facilities, the ferry has been down 24 percent of the time over the last 11 years. The Project would improve ferry reliability and accessibility across Cache Slough. Impacts on fire and police protection services would be less than significant.

a(iii),(iv),(v) No Impact

The Project would not result in any changes to existing land uses or construct a new facility that would directly or indirectly induce population and employment growth in Solano or Sacramento counties. Therefore, the Project would have no impact on schools, parks, or other public facilities.

3.2.16 Recreation

Question	CEQA Determination
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	No Impact

a, b) No Impact

Within the Project area, various aquatic recreational resources and marina resources are located along the Steamboat and Sacramento rivers, Cache Slough, and other waterbodies. Of these resources, Hidden Harbor Marina, Vieira's Resort, Duck Island Recreational Vehicle Park and Fishing Resort, Fishing Area Park, and Cliff House Fishing Area are located along or near the proposed detour route about 2 miles south of the Real McCoy Ferry. Numerous commercial and community facilities, such as marinas and aquatic resorts, are located along SR 84 and along the detour route on SR 220 and SR 160. Other resources within the Project area would not require access via the Real McCoy Ferry, as these parks are located over 1 mile from the Project site.

During construction, there would be temporary traffic delays and lane closures on SR 84 that could result in temporary effects on public access to recreational resources near the Project. These delays would be temporary, would occur during off-peak hours, and are unlikely to result in indirect or direct adverse impacts to park and recreation access. Under the existing condition of the Project site, the Real McCoy Ferry experiences frequent and unannounced closures. The proposed closures and delays from construction of the Project would be scheduled and announced to the public. Therefore, impacts to the recreational facilities as a result of delays and closures would not significantly change from the existing condition with the implementation of the Project. The Project would not directly or indirectly increase the demand for the use of these existing neighborhood and regional parks or other recreational facilities or increase demand to construct new or expand existing recreational facilities. There would be no impact.

3.2.17 Transportation

Would the project:

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

a, c) No Impact

The Project would not conflict with the Solano County General Plan, Sacramento County General Plan, Solano Comprehensive Transportation Plan, or any ordinance, policy, or congestion management program. The new fender systems would be similar to the existing fender systems and would not incorporate design features that would substantially increase hazards or introduce incompatible uses on SR 84. There would be no impact.

b) Less Than Significant Impact

During construction, worker commutes and equipment hauling vehicles would be traveling to and from the Project site, causing an increase in localized traffic. However, this would be temporary and would cease once construction is complete. Caltrans would divert traffic using the traffic detour routes explained in Section 2.1.2. Construction activities would occur outside of the nighttime hours of 9 p.m. to 6 a.m. Operation of the Project would not result in any changes to vehicle miles traveled (VMT) as the traffic capacity of SR 84 would not increase; therefore, no impact would occur. To minimize potential effects to motorists, bicyclists, and pedestrians using local streets or SR 84 during construction, a Traffic Management PlanTMP) would be incorporated using PF-TRA-1. The TMP would include public information, motorist information, incident management, construction detours to local residents and tourists, as feasible, and would maintain access for police, fire, and medical services in the local area. Prior to construction, Caltrans would notify adjacent

property owners and businesses regarding construction activities and access changes. Therefore, the impact would be less than significant.

d) Less Than Significant Impact

The Project would not result in inadequate emergency access as the Project would implement temporary traffic detour routes and a TMP (PF-TRA-1) to maintain emergency access. Upon Project completion, the Real McCoy Ferry would be more reliable than under existing conditions as it would minimize frequent ferry downtime. Therefore, the impact would be less than significant.

3.2.18 Tribal Cultural Resources

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:

Question	CEQA Determination
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	Less Than Significant Impact
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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	Less Than Significant Impact

a, b) Less Than Significant Impact

As documented in Section 2.1.4, Cultural Resources, a search of the Sacred Lands File did not find any Native American cultural resources. Subsurface construction activities associated with the Project could potentially damage or destroy previously undiscovered unique tribal cultural resources. Caltrans would implement AMM-CUL-1 and AMM-CUL-2 to avoid and minimize potential impacts to CA-SOL-276. If previously undiscovered tribal cultural resources are found in the Project area, the Project would implement PF-CUL-1 and PF-CUL-2 and stop all construction activities within and around the immediate discovery area. If human remains are discovered within the Project site, Caltrans Cultural Resources Studies Office Staff would assess the remains and contact the County Coroner per Public Resources Code Sections 5097.98, 5097.99, and 7050.5 of the California Health and Safety Code. If the Coroner determines the remains to be Native American, the Coroner would contact the Native American Heritage Commission, who will then assign and notify the Most Likely Descendent. Caltrans would consult with the Most Likely Descendent on respectful treatment and reburial of the remains. Further provisions of Public Resources Code Section 5097.98 would be followed as applicable. With the implementation of the avoidance measures, the impact would be less than significant.

3.2.19 Utilities and Service Systems

Would the project:

Question	CEQA Determination
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	No Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	No Impact
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	No Impact
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?	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No Impact

a, b, c, d, and e) No Impact

Construction of the Build Alternative would generate minor amounts of wastewater, but these amounts would not exceed wastewater treatment requirements of the Regional Water Quality Control Board because of the requirements set forth in waste discharge requirements and in the Section 401 Water Quality Certification Permit. Therefore, there would be no impact.

The Project is not growth-inducing and would not result in the demand for additional water or wastewater facilities. Therefore, there would be no impact on water supplies or wastewater facilities.

Waste created from the Project would be disposed of at an appropriate waste facility or recycler. Where possible, materials from the site would be reused or recycled on the Project site or elsewhere. The Project would comply with local management and reduction statutes and regulations related to solid waste. There would be no impact.

3.2.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Question	CEQA Determination
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	No Impact
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?	No Impact

The Project is not located in an area of high wildfire hazard or susceptible to wildfires. Refer to Table 2-1, Resource Topics Dismissed from Analysis, in Chapter 2.

3.2.21 Mandatory Findings of Significance

Question	CEQA Determination
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	Less Than Significant Impact with Mitigation
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	Less Than Significant Impact
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	Less Than Significant Impact

a) Less Than Significant Impact with Mitigation

The Project would not 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, or substantially reduce the number of or restrict the range of a rare or endangered plant or animal. Though this project is located within one of the last remaining areas where the delta smelt is known to occur and mitigation measures are needed to reduce the species' exposure to environmental stressors and minimize the likelihood of fish stranding, injury, or mortality.

The Project would result in temporary construction-related disturbance and environmental impacts on biological resources, including listed species. Caltrans does not anticipate the injury or mortality of listed fish species and other animal species during construction. With the implementation of proposed construction methods (such as vibratory pile driving), project features, AMMs, and mitigation measures to address potential impacts to fisheries during in-water construction, these potentially significant impacts would be reduced to less than significant with mitigation.

b) Less Than Significant Impact

The Project involves the replacement of existing ferry system infrastructure on Cache Slough connecting SR 84 between Rio Vista and Ryer Island. Past, current, and future projects located near SR 84, the Delta and in the Project vicinity, are listed in Table 2-11.

In analyzing the proposed Project's cumulative environmental effects, the analysis proceeds as follows:

1. Determine which resources would be significantly impacted by the Project.
2. Determine whether there is a detrimental condition or deterioration in health of a resource within the context of impacts from past, present, and other reasonably foreseeable future actions.
3. Determine whether, collectively, the Project and the foreseeable condition combine to result in a cumulative impact.

The Project would involve the rehabilitation of existing infrastructure along a transportation corridor. The Project would occur primarily within Caltrans' ROW with the additional use of TCEs during construction for staging, Cache Slough water access for loading and unloading activities, and vibratory pile driving activities. The Project would not convert lands to new or different uses, increase roadway capacity, induce growth, or otherwise change land use patterns. The Project would not result in long-term, adverse environmental effects, and so would not contribute to cumulative environmental impacts. The analysis presented in this document identifies temporary construction-related impacts on aesthetics, air quality, biological resources, energy, geology/soils, GHG emissions, hazards/hazardous materials, hydrology/water quality, noise, transportation/traffic, utilities/service systems, and wildfire.

Other highway improvement projects near SR 84, such as the Miner Slough Replacement Bridge, are anticipated to occur within a similar timeframe; therefore, cumulative effects may occur (such as traffic detours and temporary community impacts). However, Caltrans routinely coordinates with regional transportation managers and local agencies to minimize impacts in the region resulting from construction of multiple planned projects. The short duration and limited scope of this Project would not contribute considerably to cumulative environmental impacts, and Project-related impacts to resources would be reduced with the proper

implementation of project features, AMMs, and mitigation measures. Therefore, the Project would have less than significant impacts.

Past, current, and reasonably foreseeable future projects along the SR 84 corridor or adjacent to the Delta will all undergo (or have undergone) separate environmental review and require separate environmental permitting from regulatory agencies. Although these and similar projects could result in impacts to habitat for protected special-status species, most current and future projects that affect species and their habitats are expected to be required to mitigate these impacts through CEQA, Section 1600 of the California Fish and Game Code, Section 2081(b) Incidental Take Permit, or Sections 401/404 Clean Water Act (CWA) permitting processes. As a result, most projects in the region will mitigate their impacts, minimizing cumulative impacts to protected special-status species. With implementation of project features, AMMs, and mitigation measures, the Project would not make a considerable contribution to cumulative effects on federal- or state-listed species, and the impact would be less than significant.

c) Less Than Significant Impact

Intermittent service closures of the Real McCoy Ferry would occur during construction and replacement of the ferry system infrastructure. Construction would have the potential to impact vehicles traveling between Rio Vista and Ryer Island in the Project area; however, implementation of project features and AMMs would address dust-, noise-, and traffic-related detour impacts. Therefore, temporary construction-related activities would result in a less than significant environmental impact.

3.3 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. The Intergovernmental Panel on Climate Change, established by the United Nations and World Meteorological Organization in 1988, is devoted to GHG emissions reduction and climate change research and policy. Climate change in the past has generally occurred gradually over millennia, or more suddenly in response to cataclysmic natural disruptions. The research of the Intergovernmental Panel on Climate Change and other scientists over recent decades, however, has unequivocally attributed an accelerated rate of climatological changes over the past 150 years to GHG emissions generated from the production and use of fossil fuels.

Human activities generate GHGs consisting primarily of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), and various hydrofluorocarbons. CO_2 is the most abundant GHG; while it is a naturally occurring and necessary component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2 that is the main driver of climate change. In the U.S. and in California, transportation is the largest source of GHG emissions, mostly CO_2.

The impacts of climate change are already being observed in the form of sea-level rise, drought, extended and severe fire seasons, and historic flooding from changing storm patterns. The most important strategies are necessary to mitigation and adapt to these impacts. In the context of climate change, "mitigation" involves actions to reduce GHG emissions to lessen adverse impacts that are likely to occur. "Adaptation" is planning for and responding to impacts to reduce vulnerability to harm, such as by adjusting transportation design standards to withstand more intense storms, heat, and higher sea levels. This analysis will include a discussion of both in the context of this transportation project.

3.3.1 Regulatory Setting

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

FEDERAL

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted

specifically to address climate change and GHG emissions reduction at the project level.

NEPA (42 United States Code Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

FHWA recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2019). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values— "the triple bottom line of sustainability" (FHWA n.d.). Program and Project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

The federal government has taken steps to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 United States Code Section 6201) as amended by the Energy Independence and Security Act of 2007, and the Corporate Average Fuel Economy (CAFE) Standards. This act established fuel economy standards for on-road motor vehicles sold in the United States. The U.S. Department of Transportation's (USDOT) National Highway Traffic and Safety Administration sets and enforces the CAFE standards based on each manufacturer's average fuel economy for the portion of its vehicles produces for sale in the United States. The U.S. Environmental Protection Agency (EPA) calculates average fuel economy levels for manufacturers, and also sets related GHG emissions standards under the Clean Air Act. Raising CAFE standards leads automakers to create a more fuel-efficient fleet, which improves our nation's energy security, saves consumers money at the pump, and reduces GHG emissions (USDOT 2014).

EPA published a final rulemaking on December 30, 2021, that raised federal GHG emissions standards for passenger cars and light trucks for model years 2023 through 2026, increasing in stringency each year. This rulemaking revised lower emissions standards that had been previously established for model years 2021 through 2026 in

the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part Two in June 2020. The updated standards will result in avoiding more than 3 billion tons of GHG emissions through 2050 (EPA 2021a).

STATE

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and executive orders (EOs) including, but not limited to, the following:

- **EO S-3-05 (June 1, 2005):** The goal of this EO is to reduce California's GHG emissions to (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill (AB) 32 in 2006 and SB 32 in 2016.

- **AB 32, Chapter 488, 2006, Núñez and Pavley, The Global Warming Solutions Act of 2006:** AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3-05, while further mandating that the California Air Resource Board (CARB) create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

- **EO S-01-07 (January 18, 2007):** This order sets forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020. CARB re-adopted the low carbon fuel standard regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low carbon fuel adoption necessary to achieve the governor's 2030 and 2050 GHG reduction goals.

- **SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection:** This bill requires CARB to set regional emissions reduction targets for passenger vehicles. The metropolitan planning organization (MPO) for each region must then develop a Sustainable Communities Strategy (SCS) that integrates transportation, land use, and housing policies to plan how it will achieve the emissions target for its region.

- **SB 391, Chapter 585, 2009, California Transportation Plan:** This bill requires the state's long-range transportation plan to identify strategies to address California's climate change goals under AB 32.

- **EO B-16-12 (March 2012):** This EO orders state entities under the direction of the governor, including CARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

- **EO B-30-15 (April 2015):** This EO establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reduction targets. It also directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$).[1] Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, *Safeguarding California*, every 3 years, and to ensure that its provisions are fully implemented.

- **SB 32, Chapter 249 (2016):** This SB codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

- **SB 1386, Chapter 545 (2016):** This SB declared "it to be the policy of the state that the protection and management of natural and working lands … is an important strategy in meeting the state's greenhouse gas reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands."

[1] GHGs differ in how much heat each traps in the atmosphere (i.e., its global warming potential). CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent" (CO_2e). The global warming potential of CO_2 is assigned a value of 1, and that of other gases is assessed as multiples of CO_2.

- **SB 743, Chapter 386 (September 2013):** This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on VMT, to promote the state's goals of reducing GHG emissions and traffic-related air pollution and promoting multimodal transportation while balancing the needs of congestion management and safety.

- **SB 150, Chapter 150, 2017, Regional Transportation Plans:** This bill requires CARB to prepare a report that assesses progress made by each MPO in meeting their established regional GHG emission reduction targets.

- **EO B-55-18 (September 2018):** This EO sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

- **EO N-19-19 (September 2019):** This EO advances California's climate goals in part by directing the California State Transportation Agency to leverage annual transportation spending to reverse the trend of increased fuel consumption and reduce GHG emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This EO also directs CARB to encourage automakers to produce more clean vehicles, formulate ways to help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

3.3.2 Environmental Setting

The Project is located on SR 84 in eastern unincorporated Solano County. SR 84 is a state highway that consists of two unconnected segments, one in the San Francisco Bay Area and the other in the Sacramento-San Joaquin Delta area. The latter section, a north-south arterial road begins at SR 12 in Rio Vista, passes through Ryer Island where it connects to SR 220, and ends in West Sacramento. The Project provides access across Cache Slough from Rio Vista to Ryer Island and surrounding areas. Within the Project area, SR 84 is considered a "route of regional significance" for Solano County and is a two-lane south-north highway that connects Rio Vista to the Real McCoy Ferry along the west side of the Sacramento River (Solano Transportation Authority 2020). Because the Real McCoy Ferry is classified as an extension of SR 84 (Caltrans n.d.), the highway continues north from the east side of the Sacramento River crossing through Miner Slough until it terminates in Sacramento County (Solano Transportation Authority 2020). SR 84 does not

experience significant congestion (Solano Transportation Authority 2020). SR 84 links agricultural areas, community facilities, aquatic recreational and marina resources, and the City of Rio Vista with other regional rural portions of the county. The portion of the route within the Project limits is a conventional, two-lane highway with no high-occupancy vehicle lanes.

Existing bike lanes within the region are predominantly on the west side of Solano County and in the central to northern portions of Sacramento County. The Project area does not have existing bike facilities or shoulders for bikes, who must share the road with vehicles.

GHG INVENTORIES

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. EPA is responsible for documenting GHG emissions nationwide, and CARB does so for the state, as required by Health and Safety Code Section 39607.4. Cities and other local jurisdictions may also conduct local GHG inventories to inform their GHG reduction or climate action plans.

NATIONAL GHG INVENTORY

The annual GHG inventory submitted by EPA to the United Nations provides a comprehensive accounting of all human-produced sources of GHGs in the United States. The 1990-2019 inventory found that overall GHG emissions were 6,558 million metric tons in 2019, down 1.7 percent from 2018 but up 1.8 percent from 1990 levels. Of these, 80 percent were CO_2, 10 percent were CH_4 and 7 percent were N_2O; the balance consisted of fluorinated gases. CO_2 emissions in 2019 were 2.2 percent less than in 2018, but 2.8 percent more than in 1990. As shown in Figure 3-1, the transportation sector accounted for 29 percent of U.S. GHG emissions in 2019 (EPA 2021b, 2021c).

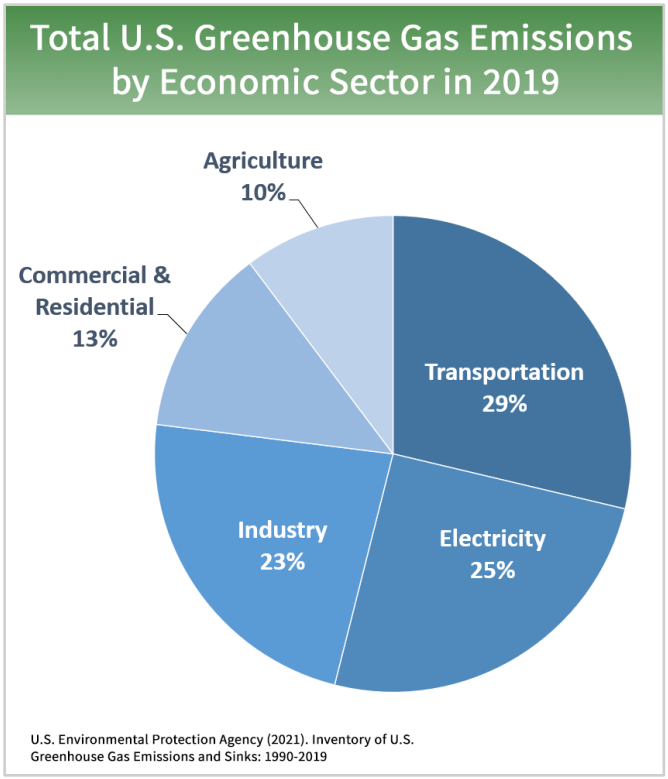


Figure 3-1 U.S. 2019 Greenhouse Gas Emissions

Source: EPA 2021d

STATE GHG INVENTORY

CARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2021 edition of the GHG emissions inventory reported emissions trends from 2000 to 2019. It found total California emissions were 418.2 $MMTCO_2e$ in 2019, a reduction of 7.2 $MMTCO_2e$ since 2018 and almost 13 $MMTCO_2e$ below the statewide 2020 limit of 431 $MMTCO_2e$. The transportation sector (including interstate aviation and off-road sources) was responsible for about 40 percent of direct GHG emissions, a 3.5 $MMTCO_2e$ decrease from 2018 (Figure 3-2). Overall statewide GHG emissions declined from 2000 to 2019 despite growth in population and state economic output (Figure 3-3) (CARB 2021a).

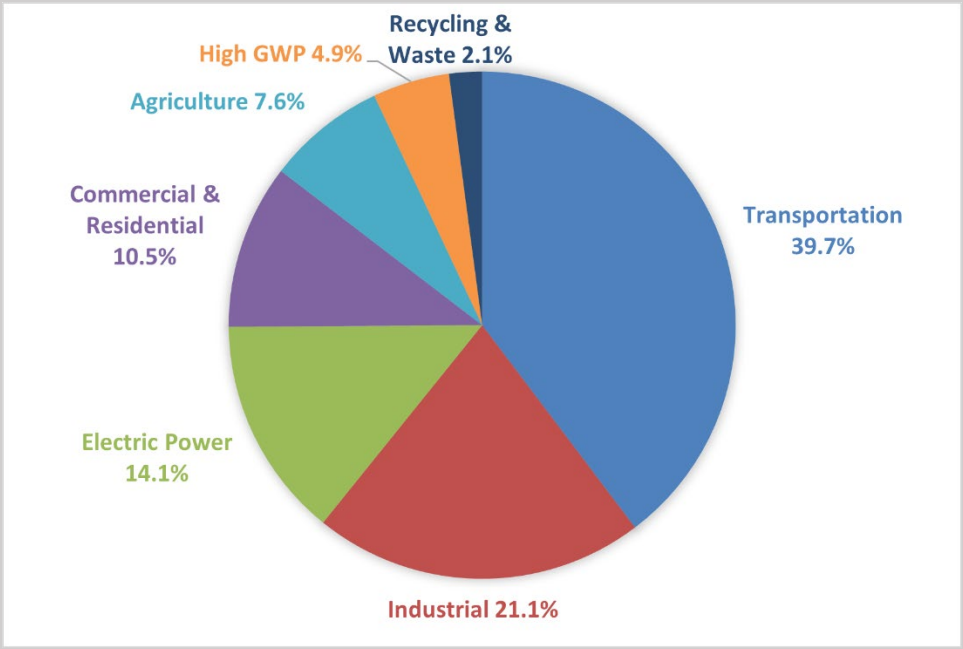


Figure 3-2 California 2019 Greenhouse Gas Emissions by Economic Sector

Source: CARB 2021a

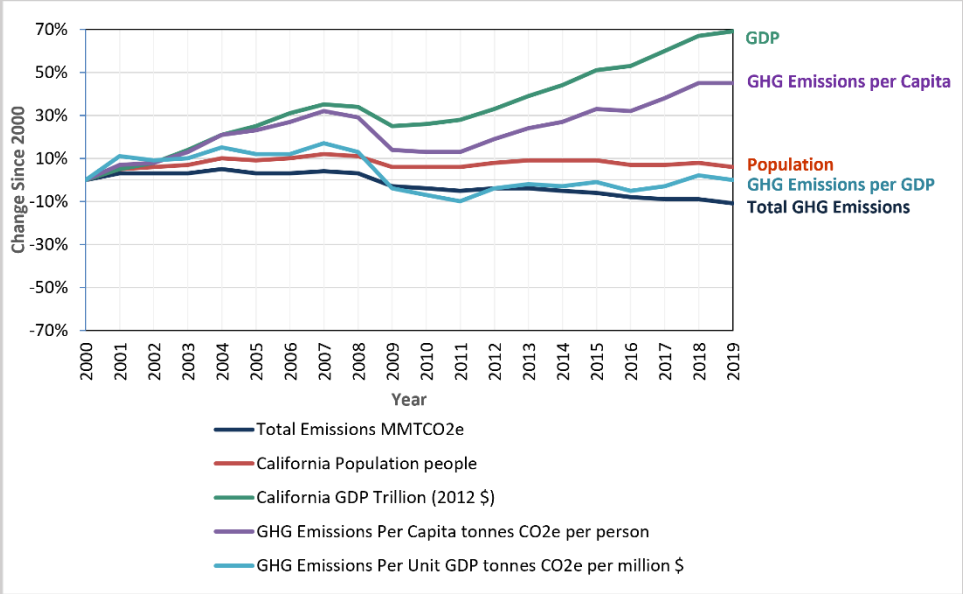


Figure 3-3 Change In California Gross Domestic Product, Population, and GHG Emissions Since 2000

Source: CARB 2021a

AB 32 required CARB to develop a scoping plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by

2020, and to update it every 5 years. CARB adopted the first scoping plan in 2008. The second updated plan, *California's 2017 Climate Change Scoping Plan*, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The AB 32 scoping plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions.

REGIONAL PLANS

CARB sets regional GHG reduction targets for California's 18 MPOs to achieve through planning future projects that will cumulatively achieve those goals, and reporting how they will be met in the Regional Transportation Plan (RTP)/SCS. Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The Project is captured in the Plan Bay Area 2050 Draft Transportation Project List (RTPID 21-TO-11-115), the RTP/SCS for the Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG and MTC); this program includes funding to implement other programmatic investments to expand and modernize regional rail network. The program implements county, transit agency and other local programs and initiatives to make rail and ferry travel faster and more reliable. Improvements include fleet and facilities expansion; tack and structures; train control; traction power; and stations or terminal (ABAG/MTC 2021). The regional reduction target for ABAG and MTC is 10 percent by 2020 and 19 percent by 2035 percent (CARB 2021b). The RTP/SCS aims to reduce per-capita delay and CO_2 emissions.

In 2011, Solano County adopted a Climate Action Plan to address climate change, with the following objectives:

- Reduce total GHG emissions within the County to 20 percent below 2005 levels by 2020 (20 percent below state law requirements)
- Create adaptation strategies to address impacts of climate change on the county

The Climate Action Plan recommends 31 measures and 94 implementing actions the community can take to reduce emissions and countywide contributions to global climate change (Solano County 2011).

3.3.3 Project Analysis

GHG emissions from transportation projects can be divided into those produced during operation of the State Highway System (operational emissions) and those produced during construction. The primary GHGs produced by the transportation

sector are CO_2, CH_4, N_2O, and hydrofluorocarbons. CO_2 emissions are a product of burning gasoline or diesel fuel in internal combustion engines, along with relatively small amounts of CH_4 and N_2O. A small amount of hydrofluorocarbon emissions related to refrigeration is also included in the transportation sector.

The CEQA Guidelines generally address GHG emissions as a cumulative impact due to the global nature of climate change (Public Resources Code Section 21083(b)(2)). As the California Supreme Court explained, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself." (Cleveland National Forest Foundation *v.* San Diego Assn. of Governments [2017] 3 Cal. 5th 497, 512.) In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the Project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment.

OPERATIONAL EMISSIONS

The Project would improve operation of the Real McCoy Ferry. While construction emissions are unavoidable, the Project would result in long-term benefits to GHG emission. As discussed in Section 2.1.2, Traffic and Transportation/Pedestrian and Bicycle Facilities, the yearly average downtime between 2011 and 2021 was 24 percent of the year (Caltrans 2022a). The improvements to the fender systems and ramps would improve operation of the Real McCoy Ferry by minimizing the downtime and improve ferry boat accessibility and reliability across Cache Slough. In addition, the improvements would minimize the detour to access Ryer Island. Therefore, this Project would reduce GHG emissions.

CONSTRUCTION EMISSIONS

Construction GHG emissions would result from material processing and transportation, onsite construction equipment, and traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

Use of long-life pavement, improved traffic management plans, and changes in materials can also help offset emissions produced during construction by allowing longer intervals between maintenance and rehabilitation activities.

In addition, the Project would minimize ferry downtime, which would reduce the number of cars using the alternate routes. The GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities. Based on the construction-related GHG emissions calculated by the Caltrans Office of Environmental Engineering (Caltrans 2021e) using the Road Construction Emissions Model, version 9.0.0 provided by the Sacramento Metropolitan Air Quality Management District, it was estimated that for a projected construction duration of 6 months, the total amount of CO_2 produced due to construction would be 382 tons (Table 3-1).

Table 3-1. Construction-related Greenhouse Gas Emissions (tons)

Alternative	CO_2 (Tons)	CH_4 (Tons)	N_2O (Tons)	CO_2e(MT)
Build Alternative	382	0.07	0.01	350.49

Notes:
Gases are converted to CO2e by multiplying by their global warming potential. Specifically, global warming potential is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide.
CO_2e(MT) = carbon dioxide equivalent (metric tons)

All construction contracts include Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, which require contractors to comply with all laws applicable to the Project and to certify they are aware of and will comply with all CARB emission reduction regulations; and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

3.3.4 CEQA Conclusion

While the Project would result in GHG emissions during construction, it is anticipated that the Project would not result in any increase in operational GHG emissions. The Project does not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. With implementation of construction PF-GHG-1 and GHG-2 energy reduction measures, the impact would be less than significant.

Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

3.3.5 Greenhouse Gas Reduction Strategies

STATEWIDE EFFORTS

In response to AB 32, California is implementing measures to achieve emission reductions of GHGs that cause climate change. Climate change programs in California are effectively reducing GHG emissions from all sectors of the economy. These programs include regulations, market programs, and incentives that will transform transportation, industry, fuels, and other sectors to take California into a sustainable, low carbon and cleaner future, while maintaining a robust economy (CARB 2022).

Major sectors of the California economy, including transportation, will need to reduce emissions to meet the 2030 and 2050 GHG emissions targets. The Governor's Office of Planning and Research (OPR) identified five sustainability pillars in a 2015 report: (1) increasing the share of renewable energy in the state's energy mix to at least 50 percent by 2030, (2) reducing petroleum use by up to 50 percent by 2030, (3) increasing the energy efficiency of existing buildings by 50 percent by 2030, (4) reducing emissions of short-lived climate pollutants, and (5) stewarding natural resources, including forests, working lands, and wetlands, to ensure that they store carbon, are resilient, and enhance other environmental benefits (OPR 2015).The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of VMT. Reducing today's petroleum use in cars and trucks is a key state goal for reducing GHG emissions by 2030 (California Environmental Protection Agency 2015).

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove CO_2 from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

Subsequently, Governor Gavin Newsom issues EO N-82-20 to combat the crises in climate change and biodiversity. It instructs state agencies to use existing authorities and resources to identify and implement near- and long-term actions to accelerate

natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities and in particular low-income, disadvantaged, and vulnerable communities. To support this order, the California Natural Resources Agency released *Natural and Working Lands Climate Smart Strategy Draft* for public comment in October 2021 (California Natural Resources Agency 2021).

CALTRANS ACTIVITIES

Caltrans continues to be involved on the Governor's Climate Action Team as CARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set an interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

Climate Action Plan for Transportation Investments

The *Climate Action Plan for Transportation Infrastructure* (CAPTI) builds on EOs signed by Governor Newsom in 2019 and 2020 targeted at reducing GHG emissions in transportation, which account for more than 40 percent of all polluting emissions, to reach the state's climate goals. Under CAPTI, where feasible and within existing funding program structures, the state will invest discretionary transportation funds in sustainable infrastructure projects that align with its climate, health, and social equity goals (California State Transportation Agency 2021).

California Transportation Plan

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. It serves as an umbrella document for all other statewide transportation planning documents. The CTP 2050 presents a vision of a safe, resilient, and universally accessible transportation system that supports vibrant communities, advances racial and economic justice, and improves public and environmental health. The plan's climate goal is to achieve statewide GHG emissions reduction targets and increase resilience to climate change. It demonstrates how GHG emissions from the transportation sector can be reduced through advancements in clean fuel technologies; continued shifts toward active travel, transit, and shared mobility; more efficient land use and development practices; and continued shifts to telework (Caltrans 2021g).

Caltrans Strategic Plan

The *Caltrans 2020-2024 Strategic Plan* includes goals of stewardship, climate action, and equity. Climate action strategies include developing and implementing a Caltrans

Climate Action Plan; a robust program of climate action education, training, and outreach; partnership and collaboration; a VMT monitoring and reduction program; and engaging with the most vulnerable communities in developing and implementing Caltrans climate action activities (Caltrans 2021h).

Caltrans Policy Directives and Other Initiatives

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) established a Department policy to ensure coordinated efforts to incorporate climate change into Caltrans decisions and activities. *Caltrans Greenhouse Gas Emissions and Mitigation Report* (Caltrans 2020) provides a comprehensive overview of Caltrans' emissions. The report documents and evaluates current Caltrans procedures and activities that track and reduce GHG emissions and identifies additional opportunities for further reducing GHG emissions from Department-controlled emission sources, in support of Departmental and State goals.

PROJECT-LEVEL GHG REDUCTION STRATEGIES

The following measures would also be implemented in the Project to reduce GHG emissions and potential climate change impacts from the Project.

- Construction contractors would comply with Caltrans Standard Specifications 7-1.02A and 7-1.02C, Emissions Reduction, and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes.
- As outlined in Appendix A, the Project would implement PF-GHG-1 and PF-GHG-2, which would require, respectively, nonhazardous waste and excess material to be recycled or disposed of appropriately and the use of solar sign boards when necessary.
- PF-TRA-1 would require Caltrans to maintain areas for bicycle and pedestrians throughout construction. A temporary detour route would maintain traffic flow and avoid delays and idling emissions.
- PF-AES-1 commits Caltrans or its subcontractors to replace removed trees and minimize vegetation removal.

3.3.6 Adaptation

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage.

Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

FEDERAL EFFORTS

Under NEPA assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The *Fourth National Climate Assessment*, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elemental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways (USGCRP 2018).

The *Policy Statement on Climate Adaptation* in June 2011 committed the USDOT to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of USDOT to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions" (USDOT 2011).

In 2014, FHWA Order 5520 (*Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events*) established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

State Efforts

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. A number of state policies and tools have been developed to guide adaptation efforts.

California's Fourth Climate Change Assessment (Fourth Assessment) (State of California 2018) is the state's effort to "translate the state of climate science into useful information for action". It provides information that will help decision makers across sectors and at state, regional, and local scales protect and build the resilience of the state's people, infrastructure, natural systems, working lands, and waters. The State's approach recognizes that the consequences of climate change occur at the intersections of people, natural, and infrastructure. The fourth assessment reports that if no measures are taken to reduce GHG emissions by 2021 or sooner, the state is projected to experience a 2.7- to 8.8-degree-Fahrenheit increase in average annual maximum daily temperatures, with impacts on agriculture, energy demand, natural systems, and public health; a two-thirds decline in water supply from snowpack and water shortages that will impact agricultural production; a 77 percent increase in average area burned by wildfire, with consequences for forest health and communities; and large-scale erosion of up to 67 percent of Southern California beaches and inundation of billions of dollars' worth of residential and commercial buildings due to sea level rise (State of California 2018).

Sea-level rise is a particular concern for transportation infrastructure in the coastal zone. Major urban airports will be at risk of flooding from sea level rise combined with storm surge as early as 2040; San Francisco airport is already at risk. Miles of coastal highways vulnerable to flooding in a 100-year storm event will triple to 370 by 2100, and 3,750 miles will be exposed to temporary flooding. The Fourth Assessment's findings highlight the need for proactive action to address these current and future impacts of climate change.

In 2008, then-governor Arnold Schwarzenegger recognized the need when he issued EO S-13-08, focused on sea-level rise. Technical reports on the latest sea-level-rise science were first published in 2010 and updated in 2013 and 2017. The 2017 projections of sea-level rise and new understanding of processes and potential impacts in California were incorporated into the *State of California Sea-Level Rise Guidance Update* in 2018. This EO also gave rise to the *California Climate Adaptation Strategy* (2009), updated in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan), which addressed the full range of

climate change impacts and recommended adaptation strategies. The Safeguarding California Plan was updated in 2018 and again in 2021 as the *California Climate Adaptation Strategy*, incorporating key elements of the latest sector-specific plans such as the *Natural and Working Lands Climate Smart Strategy* (California Natural Resources Agency 2021)*, Wildfire and Forest Resilience Action Plan* (State of California 2021)*, Water Resilience Portfolio* (State of California 2020)*,* and the CAPTI described above. Priorities in the 2021 California Climate Adaptation Strategy include acting in partnership with California Native American tribes, strengthening protections for climate-vulnerable communities that lack capacity and resources, nature-based climate solutions, use of best available climate science, and partnering and collaboration to best leverage resources (California Natural Resources Agency 2021).

EO B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change in addition to sea-level rise also threaten California's infrastructure. At the direction of EO B-30-15, OPR published *Planning and Investing for a Resilient California: A Guidebook for State Agencies* in 2018 to encourage a uniform and systematic approach.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group to help actors throughout the state address the findings of California's Fourth Climate Change Assessment. It released its report, *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California*, in 2018. The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts (Climate Change Infrastructure Working Group 2018).

CALTRANS ADAPTATION EFFORTS

Caltrans Vulnerability Assessments

Caltrans completed climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects of precipitation, temperature, wildfire, storm surge, and sea-level rise.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments guide

analysis of at-risk assets and development of Adaptation Priority Reports as a method to make capital programming decisions to address identified risks.

PROJECT ADAPTATION ANALYSIS

Sea Level Rise

The Project is outside the coastal zone and not in an area subject to sea level rise. Figure 3-4 depicts the Project area being outside the predicted sea level rise for mean higher high water under current, 3 feet sea level rise and 10 feet sea level rise. Accordingly, direct impacts to transportation facilities due to projected sea level rise are not expected.

Precipitation and Floodplains

As noted in Section 2.1.5, the Project site is within Federal Emergency Management Agency Flood Insurance Rate Map Number 06095C0541E, effective date May 4, 2009, and it is located within a base floodplain. As shown on Map 06095C0541E, on SR 84 at PM 2.49, the floodplain is identified as Zone AE, a special flood hazard area, with a base floodplain with elevations determined (Figure 2-3). The base flood elevation is 12 feet.

The District 4 Climate Change Vulnerability Assessment indicates the potential for a 0 to 4.9 percent increase in 100-year storm precipitation depth in the Project vicinity by 2025, 2055, and 2085 (Caltrans 2017, 2022). A number of local geomorphic variables affect how a given precipitation event would affect streamflow, making it difficult to assess potential impacts at a particular location. However, as discussed in Section 2.1.5.2, the water surface elevation during a 100-year flood event would not change existing land uses in the surrounding area. The Project would increase the total impervious surface in the floodplain by replacing the existing boat ramps with new wider and longer boat ramps. This increase in fill from the new impervious surface is negligible compared to the size of the floodplain. Therefore, the Project is not likely to be affected by future changes in storm precipitation, and risk of interrupting traffic flow or emergency vehicles or access on SR 84 is low.

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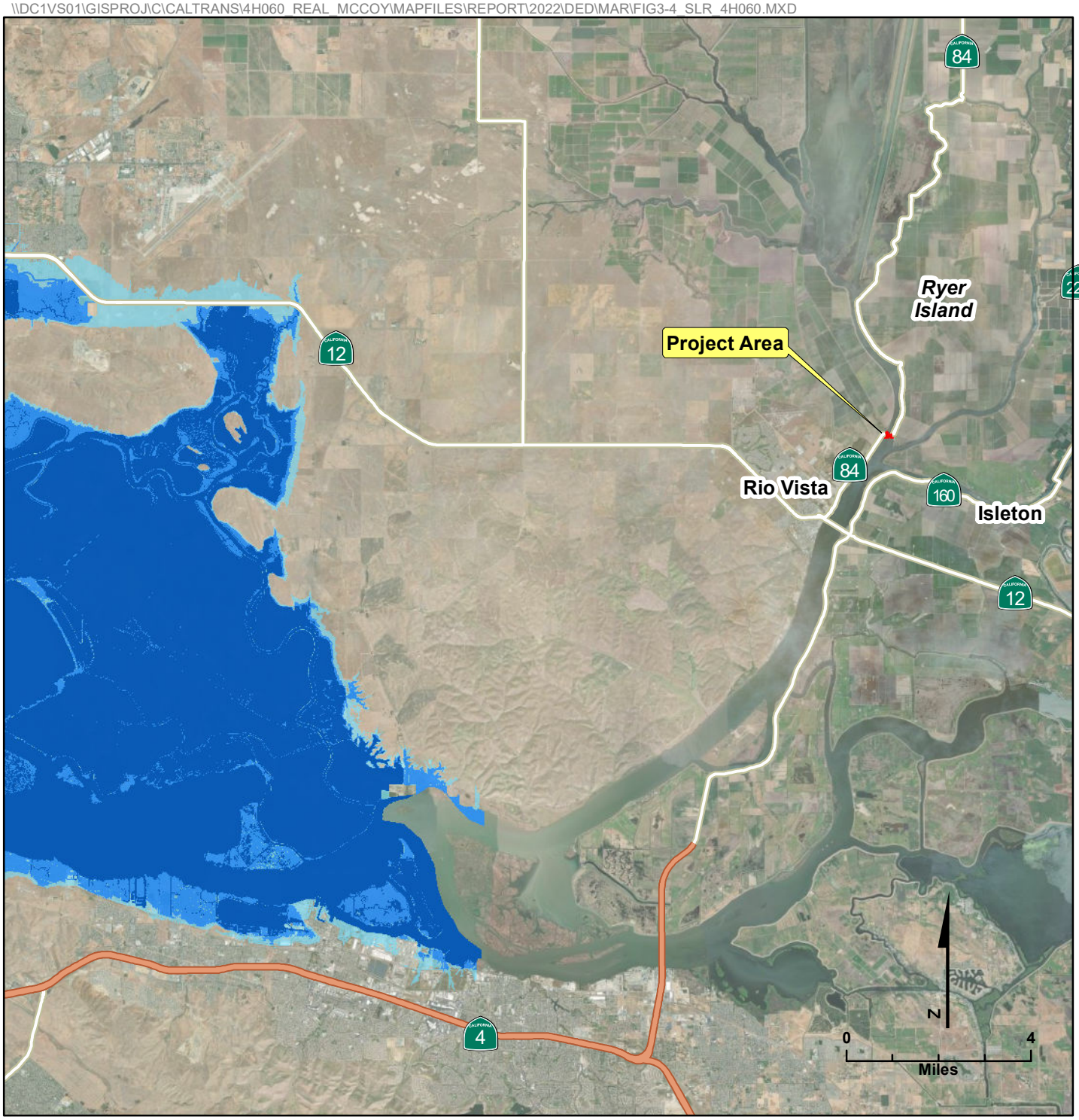

Legend

- Project Area
- Mean Higher High Water (Current)
- Mean Higher High Water (3 ft Sea Level Rise)
- Mean Higher High Water (10 ft Sea Level Rise)

Sources:
NOAA Office for Coastal Management, Sea Level Rise Viewer

FIGURE 3-4
Predicted Sea Level Rise
State Route 84
Real McCoy Fenders and Ramps Replacement Project
EA 04-4H060, SOL-84-2.49
Solano County, California

Wildfire

The Project is located in a rural area and consists of agricultural lands and open space; a few commercial and residential uses are located in the City of Rio Vista. The Project is located within a Local Responsibility Area and not located within a very high fire hazard severity zone (CAL FIRE 2008); there is low potential for wildfire to occur in the Project area. The Caltrans Climate Change Vulnerability Assessment for District 4 evaluated roads at risk for future wildfire and determined that the Project is not in an area of wildfire risk nor characterized as within or along exposed roadway (Caltrans 2017). The Project would serve the same use and vehicular capacity as the existing ferry and would not exacerbate wildfire risks. Fender materials would be replaced with steel, which is more fire resistant than wood. Accordingly, the Project is not likely to be subject to effects of wildfire that could occur under climate change.

Chapter 4 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for the proposed Real McCoy Fenders and Ramps Replacement Project (Project) have been accomplished through a variety of formal and informal methods, including project development team meetings, interagency coordination meetings, and correspondence with interested parties. This chapter summarizes the results of the California Department of Transportation's (Caltrans') efforts to fully identify, address, and resolve Project-related issues through early and continuing coordination.

4.1 Consultation with Resource Agencies

4.1.1 Section 106

Caltrans determined that consultation was not required for architectural history because there are no built historical resources in the project vicinity.

4.1.2 Native American Tribal Consultation

Refer to Section 2.1.4, Cultural Resources, for a summary of consultation with Native American Tribes.

4.1.3 Informal Consultation with Biological Regulatory Agencies

4.1.3.1 U.S. Fish and Wildlife Service

On October 8, 2021, Caltrans requested technical assistance from the U.S. Fish and Wildlife Service (USFWS). Brian Hansen, a USFWS Senior Biologist, responded on November 4, 2021. Mr. Hansen provided guidance on the potential to encounter delta smelt, longfin smelt, and giant garter snake in the Project footprint, and he stated that he will be drafting the biological opinion for USFWS. In coordination with USFWS, Caltrans has determined the project may affect, and is likely to adversely affect, delta smelt and longfin smelt, and that the project may affect, and is not likely to adversely affect, giant garter snake. Formal consultation is required for delta smelt and longfin smelt. Mr. Hansen also provided additional input on the delta smelt and noted that Cache Slough is likely one of the last remaining refugia for the species concerns on the project, and that the species is near extinction. The Project Development Team will continue coordination with USFWS to further refine the Project and its design to avoid the likelihood of taking delta smelt and longfin smelt. Caltrans discussed

project updates, as well as the significance of the experimental delta smelt releases on the Real McCoy Fenders and Ramps Replacement Project, with Mr. Hansen on February 22, 2022.

4.1.3.2 National Oceanic and Atmospheric Administration National Marine Fisheries Service

On October 8, 2021, Caltrans requested technical assistance from the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). Lyla Pirkola responded on October 29, 2021, and stated that she will be drafting the biological opinion for NMFS. On November 15, 2021, Caltrans requested technical assistance from NMFS regarding impacts on marine mammals from pile driving activities. On November 19, 2021, Caltrans attended a meeting with Dan Lawson of NMFS regarding potential impacts on marine mammals. Caltrans discussed project updates with Ms. Pirkola and Mr. Lawson on February 22, 2022.

4.1.3.3 California Department of Fish and Wildlife

On February 15, 2022, Caltrans requested technical assistance from the California Department of Fish and Wildlife (CDFW). Mr. Robert Stanley responded on February 22, 2022, and on March 15, 2022, Caltrans attended a meeting with Mr. Stanley regarding potential impacts on CDFW-jurisdictional species. Caltrans will continue consultation with CDFW leading up to the applications for the necessary Project permits.

4.2 Public Involvement Process for the Draft Environmental Document

Prior to initiating the public review period, Caltrans will publish a notice of the draft environmental document's availability in the local newspaper and on Caltrans' website (https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs). In addition, the notice will be distributed to the local community and businesses within the immediate project area. A 30-day public circulation of the environmental document will occur between April 29 and May 28, 2022. A virtual public meeting will be held in May 17, 2022. You are invited to participate in the virtual public meeting via WebEx. The comments received during the public review period will be considered and responded to in the final version of this document.

Chapter 5 List of Preparers

The primary persons responsible for contributing to, preparing, and reviewing this report are listed in Table 5-1.

Table 5-1. List of Preparers and Reviewers

Name	Role
California Department of Transportation (Caltrans)	
John E. Petersen	Project Manager
Skylar Nguyen	Associate Environmental Planner, Environmental Analysis
Maxwell Lammert	Branch Chief, Environmental Analysis
Lindsay Vivian	Office Chief, Environmental Analysis
Matthew Rechs	Branch Chief, Biology
Britt Schlosshardt	Associate Environmental Planner, Archeology
Charles Palmer	Associate Environmental Planner, Architectural History
Kathryn Rose	Senior Environmental Planner, Cultural Resources
Jawad Marji	Air Quality and Noise Specialist
Shilpa Mareddy	Branch Chief, Air Quality and Noise
Diana Pink	Landscape Associate, Landscape Architecture
Melvin Dumlao	Water Quality Engineer
Mojgan Osooli	Branch Chief, Storm Water Design
Khai Leong	Office Chief, Hydraulics Engineering
Chris McMahon	Engineering Geologist
Chris Wilson	Senior Transportation Engineer, Hazardous Waste
Marcus Chan	Project Engineer
Marc Friedheim	Senior Engineer, Structural Design
Stewart Lee	Senior Transportation Engineer
Shella Orson	Acting District Branch Chief, Right of Way
Juliane Smith	Associate Environmental Planner
Thomas Rosevear	Senior Environmental Planner
Jacobs Engineering Group (Jacobs)	
Scott Lindermann	Biologist
Yassaman Sarvian	Associate Environmental Planner
Jasmin Mejia	Project Manager
Loretta Meyer	Senior Environmental Planner/Project Manager
Stephanie Owens	Biologist
Morgan Angulo	Environmental Planner
Chelsea Marcell	Environmental Planner

Name	Role
Dave Rasmussen	Senior Biologist
Leslie O'Connor	Editor
Clarice Ericsson	Publications Technician

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U.S. Army Corps of Engineers,
Sacramento District
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1325 J Street, Room 1480
Sacramento, CA 95825

National Marine Fisheries Services
777 Sonoma Avenue, Room 325
Santa Rose, CA 95404

U.S. Environmental Protection Agency, Region IX
Federal Activities Office, CMD-2
75 Hathorne Street
San Francisco, CA 94105-3901

U.S. Geological Survey
3020 State University Drive
Sacramento, CA 95819

STATE AGENCIES

State Clearinghouse, Executive Officer
1400 Tenth Street, Room 156
P.O. Box 3044
Sacramento, CA 95812-3044

California Department of Fish and Wildlife
Region 3
5329 Silverado Trail
Napa, CA 94558

California Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691

Central Valley Regional Water Quality Control Board
11020 Sun Center, #200
Rancho Cordova, CA 95670

Bay Area Air Quality Management District
1947 Galileo Ct. Suite 103
Davis, CA 95616

State Lands Commission
100 Howe Ave, #100S
Sacramento, CA 95825

California Department of Water Resources
1416 9th Street
Sacramento, CA 95814

California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

Sacramento-San Joaquin Delta Conservancy
1450 Halyard Drive #6
West Sacramento, CA 95691

Delta Protection Commission
2101 Stone Blvd #240
West Sacramento, CA 95691

REGIONAL AND LOCAL AGENCIES

Association of Bay Area Governments
375 Beale St #700
San Francisco, CA 94105

Metropolitan Transportation Commission
375 Beale St #800
San Francisco, CA 94105

Solano Transportation Authority
1 Harbor Center, Suite 130
Suisun City, CA 94585

FEDERAL AND STATEWIDE ELECTED OFFICIALS

The Honorable Dianne Feinstein
United States Senate
One Post Street, Suite 2450
San Francisco, CA 94104

The Honorable Alex Padilla
United States Senate
333 Bush Street, Suite 3225
San Francisco, CA 94101

The Honorable John Garamendi
United States House of Representatives (CA-3)
1261 Travis Blvd., Suite 130
Fairfield, CA 94533

The Honorable Mike Thompson
United States House of Representatives (CA-5)
2721 Napa Valley Corporate Drive
Napa, CA 94558

The Honorable Bill Dodd
California State Senate, District 3
555 Mason Street, Suite 275
Vacaville, CA 95688

The Honorable Cecilia Aguiar-Curry
California State Assembly, District 4
2721 Napa Valley Corporate Drive
Napa, CA 94558

SOLANO COUNTY BOARD OF SUPERVISORS

The Honorable Mitch Mashburn
Solano County Board of Supervisor, District 5
675 Texas Street, Suite 6500
Fairfield, CA 94533

CITY OF CLARKSBURG

Arrowhead Harbor Marinas
4396 Holland Rd
Clarksburg, CA 95612

CITY OF ISLETON

Vieira's Resort
15476 State Route 160
Isleton, CA 95641

CITY OF RIO VISTA

Mayor Ronald Kott
City of Rio Vista
Rio Vista City Hall
One Main Street
Rio Vista, CA 94571

Mr. Rick Dolk
Council Member City of Rio Vista
Rio Vista City Hall
1 Main Street
Rio Vista, CA 94571

Mr. Walt Stanish
Council Member, City of Rio Vista
Rio Vista City Hall
1 Main Street
Rio Vista, CA 94571

Mr. Edwin Okamura
Council Member, City of Rio Vista
Rio Vista City Hall
1 Main Street
Rio Vista, CA 94571

Mr. Robie Williams
Council Member, City of Rio Vista
Rio Vista City Hall
1 Main Street
Rio Vista, CA 94571

Sherman Lake Marina
5140 W Sherman Island Rd
Rio Vista, CA 94751

Delta Marina Yacht Harbor
100 Marina Dr
Rio Vista, CA 94571

Solano County Library – Rio Vista Library
44 S 2nd Street
Rio Vista, CA 94571

CITY OF WALNUT GROVE

Hidden Harbor Marina
3100 E Ryer Rd
Walnut Grove, CA 95690

Snug Harbor Resort
3356 Snug Harbor Dr
Walnut Grove, CA 95690

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Appendix A Project Features

Appendix A Project Features

Resource Area	Project Feature ID	Project Feature Title and Description
Aesthetics	**PF-AES-1**	**Vegetation Protection.** Existing trees, vegetation and associated root systems would be preserved to the extent feasible. Trees and vegetation outside of the clearing and grubbing limits would be protected with a temporary fencing from the contractor's operations, equipment, and materials storage. Tree trimming and pruning, where required, would be under the supervision of a certified arborist. Tree trimming would occur to accommodate construction access where feasible, prior to considering tree removal. Removed trees would be replaced as required by Caltrans policies.
Aesthetics	**PF-AES-2**	**Erosion Control.** After construction, all areas cleared within the Project limits for uses such as contractor access, staging, and trenching operations would be treated with appropriate erosion control measures where required.
Aesthetics	**PF-AES-3**	**Construction Staging.** Except as detailed in the Contract Plans, staging areas would not affect existing landscaped areas resulting in death and/or removal of trees and shrubs, or disruption and destruction of existing irrigation facilities. Minimize appearance of construction equipment and staging areas.
Aesthetics	**PF-AES-4**	**Construction Waste.** During construction operations, unsightly material and equipment in staging areas would be placed where they are less visible and/or covered where possible.
Aesthetics	**PF-AES-5**	**Construction Lighting.** Construction lighting would be directed toward the immediate vicinity of active work to avoid light trespass through directional lighting, shielding, and other measures as needed. Construction personnel would turn portable tower lights on no more than 30 minutes before the beginning of civil twilight, and off no more than 30 minutes after the end of civil sunrise. Portable tower lights would have directional shields attached to them, and personnel would only direct lights downward and toward active construction and staging areas. Lighting per portable tower light would not exceed 2,000 lumens. To the extent practicable, personnel would only use enough coverage to light the travel way, median, and staging areas. If onsite staging areas require security lighting, that lighting installation would be in accordance with this measure to the extent practicable.
Aesthetics	**PF-AES-6**	**Trash Management.** All food-related trash items such as wrappers, cans, bottles, and food scraps would be disposed of in closed containers and removed at least once daily from the Project limits.

Resource Area	Project Feature ID	Project Feature Title and Description
Air Quality	**PF-AIR-1**	**Dust Control**. Dust control measures would be included in the Storm Water Pollution Prevention Plan (SWPPP) and implemented to minimize construction impacts to existing communities. The plan would incorporate measures such as sprinkling, speed limits, transport of materials, and timely revegetation of disturbed areas as needed, as well as posting a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints and at the Bay Area Air Quality Management District regarding compliance with applicable regulations. Water or dust palliative would be applied to the site, including unvegetated areas, and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally must meet a “no visible dust” criterion either at the point of emissions or at the ROW line, depending on air pollution control district and air quality management district regulations and local ordinances.
Air Quality	**PF-AIR-2**	**Idling and Access Points.** Idling times would be minimized either by shutting off equipment when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage would be provided for construction workers at all access points. Construction activities involving the extended idling of diesel equipment or vehicles would be prohibited, to the extent feasible.
Air Quality	**PF-AIR-3**	**Maintaining Construction Equipment and Vehicles.** All construction equipment and vehicles would be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment would be checked by a certified mechanic and determined to be running in proper condition prior to operation.
Air Quality	**PF-AIR-4**	**Contractor Air Quality Compliance.** The construction contractor must comply with the Caltrans Standard Specifications in Section 14-9, which require contractor compliance with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
Biological Resources	**PF-BIO-1**	**Documentation at Project Site.** A Permit Compliance Binder would be maintained at the construction site at all times and presented to resource agency (e.g., USACE, NOAA Fisheries, USFWS, RWQCB, State Lands Commission, and/or CDFW) personnel upon request. The Permit Compliance Binder would include a copy of all original permits and agreements and any extensions and amendments to the permits and agreements.
Biological Resources	**PF-BIO-2**	**Work According to Documents.** Except as they are contradicted by measures within the permits and agreements, all work would be conducted in conformance with the project description in the permits and agreements and the AMMs provided in the permits and agreements.

Resource Area	Project Feature ID	Project Feature Title and Description
Biological Resources	**PF-BIO-3**	**Work Period in Dry Weather Only.** Work in the bed, bank, or channel of a slough, and in any associated riparian habitat, would only be conducted during periods of dry weather. Forecasted precipitation would be monitored. When 0.25 inch or more of precipitation is forecasted to occur, work would stop before precipitation commences. No Project activities would be started if their associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, all sites currently under construction and all sites scheduled to begin construction within the next 72 hours would be inspected for erosion and sediment problems, and corrective action would be taken as needed; 72-hour weather forecasts from the National Weather Service would be consulted, and work would not start back up until runoff ceases, and there is less than a 50 percent forecast for precipitation for the following 24-hour period.
Biological Resources	**PF-BIO-4**	**Environmental Training.** Prior to the start of construction, a biologist would provide a training session for all work personnel to identify any sensitive species that may be in the area, their basic habits, how they may be encountered in their work area, and procedures to follow when they are encountered. Any personnel joining the work crew later would receive the same training before beginning work. Upon completion of the education program, employees would sign a form stating they attended the program and understand all protection measures. A pamphlet that contains images of sensitive species that may occur within the Project area, environmentally sensitive areas within the Project area, key avoidance measures, and employee guidance would be given to each person who completes the training program. These forms would be made available to the resource agencies upon request.
Biological Resources	**PF-BIO-5**	**Environmentally Sensitive Areas.** Before construction begins, ESAs would be clearly delineated using high-visibility orange fencing, flagging, or similar marking to delineate sensitive habitats, including rare plants. The ESA marking would remain in place throughout construction. It may be removed during the wet season (and subsequently reinstalled) if needed to prevent materials from being washed away. The final Project plans would depict all locations where ESA markings would be installed and the manner of installation. The bid solicitation package special provisions would clearly describe acceptable marking material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within ESAs. ESA markings would be maintained in good condition throughout the Project as needed.
Biological Resources	**PF-BIO-6**	**Nesting Bird Surveys.** If Project activities occur between February 1 and September 30, then a pre-construction survey would be conducted for nesting birds no more than 3 days before construction. If active nests are found, then an appropriate buffer would be established, and the nest would be monitored for compliance with the Migratory Bird Treaty Act and California Fish Game Code Section 3503.

Resource Area	Project Feature ID	Project Feature Title and Description
Biological Resources	**PF-BIO-7**	**Active Nest Buffers.** If an active bird nest is found during construction activities, then the following ESA buffers would be established: If an active raptor nest is observed, a 300-foot ESA buffer would be implemented to avoid affecting the young until they have fledged; if an active nest of nonraptor migratory birds is observed, a 50-foot ESA buffer would be implemented to protect the young until they have fledged, or as otherwise determined by consultation with USFWS and CDFW regarding appropriate action to comply with the Migratory Bird Treaty Act and California Fish and Game Code Section 3503.
Biological Resources	**PF-BIO-8**	**Stormwater Best Management Practices.** Water pollution control and erosion control BMPs would be developed and implemented to minimize wind- or water-related erosion. They would follow the requirements of the RWQCB and standards outlined in *Construction Site Best Management Practices Manual* (Caltrans 2017). At a minimum, protective measures would include the following: a. Prohibiting discharge of pollutants from vehicle and equipment cleaning into storm drains or watercourses. b. Maintaining equipment to prevent the leakage of vehicle fluids, such as gasoline, oils, or solvents. Hazardous materials such as fuels, oils, solvents, etc. would be stored in sealable containers in a designated location that is at least 50 feet from aquatic habitats. c. Servicing vehicles and construction equipment, including fueling, cleaning, and maintenance, at least 50 feet from aquatic habitat unless separated by a topographic or engineered drainage barrier. d. Collecting and disposing of concrete wastes and water from curing operations in appropriate washouts, located at least 50 feet from watercourses. e. Maintaining spill containment kits onsite at all times during construction operations, staging, and fueling of equipment. f. Using water trucks and dust palliatives to control dust in unvegetated areas and covering of temporary stockpiles when weather conditions require. g. Protecting graded areas from erosion using a combination of silt fences, fiber rolls, or straw wattles along toes of slopes or along edges of designated staging areas; erosion control netting (jute or coir); hydraulic mulch; temporary cover; drainage inlet protection; or other appropriate sediment control methods. To prevent wildlife from becoming entangled or trapped in erosion control materials, plastic monofilament netting (i.e., erosion control matting) or similar material would not be used. Acceptable substitutes include coconut coir matting or tackifying hydroseeding compounds.

Resource Area	Project Feature ID	Project Feature Title and Description
Biological Resources	**PF-BIO-9**	**Construction Site Management Practice.** The following site restrictions would be implemented to avoid or minimize potential impacts on sensitive biological resources: a. Enforcing a speed limit of 15 miles per hour for project vehicles in unpaved portions of the site to reduce dust and excessive soil disturbance. b. Locating construction access, staging, storage, and parking areas within the Caltrans ROW and outside of any designated ESA to the extent practicable. Access routes, staging and storage areas, and contractor parking would be limited to the minimum necessary to construct the proposed Project. Routes and boundaries of roadwork would be clearly marked before initiating construction. c. Certifying that borrow material is nontoxic and weed free. d. Enclosing food and food-related trash items in sealed trash containers and removing them from the site at the end of each day. e. Prohibiting pets from entering the Project area during construction. f. Prohibiting firearms within the Project site, except for those carried by authorized security personnel or local, state, or federal law enforcement officials.
Biological Resources	**PF-BIO-10**	**Invasive Weed Control.** To reduce the spread of invasive, non-native plant species and minimize the potential decrease of palatable vegetation for wildlife species, Caltrans would comply with Executive Order 13112. This order is provided to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health effects. If noxious weeds are disturbed or removed during construction-related activities, the contractor would be required to contain the noxious weed plant material and dispose of it in a manner that would not promote the spread of the species. The contractor would be responsible for obtaining all permits, licenses, and environmental clearances for properly disposing of materials. Areas subject to noxious weed removal or disturbance would be replanted with fast growing native grasses or a native erosion control seed mixture. Where seeding is not practical, the target areas within the Project area would be covered to the extent practicable with heavy black plastic solarization material until the end of the Project. If work occurs in sensitive habitat, vehicles and equipment would be thoroughly cleaned before arriving on the site to prevent the spread of noxious weeds from other locations.
Biological Resources	**PF-BIO-11**	**Vegetation and Tree Removal.** Vegetation would be cleared only where necessary and would be cut above soil level, except in areas that would be permanently affected or excavated. This would allow plants that reproduce vegetatively to resprout after construction.

Resource Area	Project Feature ID	Project Feature Title and Description
Biological Resources	**PF-BIO-12**	**Restore Disturbed Areas.** Temporarily disturbed areas would be restored. Exposed slopes and bare ground would be reseeded with native grasses to stabilize and prevent erosion. Where disturbance includes the removal of trees and woody shrubs, native species would be replanted, based on the local species composition.
Biological Resources	**PF-BIO-13**	**Bat Protection.** A habitat assessment would be conducted for potentially suitable bat roosting habitat prior to construction activities. If the habitat assessment reveals that any structures are suitable roosting habitat for bats, then the appropriate exclusionary measures would be implemented prior to construction during the period from March 1 to April 15 or August 31 to October 15. Potential avoidance may include exclusionary blocking or filling potential cavities with foam, visual monitoring, and/or staging Project work to avoid bats. If bats are known to use the structures, then exclusion netting would not be used. If the habitat assessment reveals suitable bat habitat in trees, and tree removal is scheduled from April 16 through August 30 and/or October 16 through February 28, then presence/absence surveys would be conducted 2 to 3 days prior to any tree removal or trimming. If presence/absence surveys are negative, then tree removal would proceed following a two-phase tree removal system. If presence/absence surveys indicate bat occupancy, then the occupied trees would only be removed from March 1 through April 15 and/or August 31 through October 15 by following the two-phase tree removal system. The two-phase system would be conducted over 2 consecutive days. On the first day (in the afternoon), limbs and branches are removed by a tree cutter using chainsaws or other hand tools. Limbs with cavities, crevices, or deep bark fissures are avoided and only branches or limbs without those features are removed. On the second day, the entire tree would be removed. Bats would not be disturbed without specific notice to, and consultation with, CDFW.
Biological Resources	**PF-BIO-14**	**Prevent Inadvertent Entrapment.** To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1 foot deep would be covered at the close of each workday by plywood or similar materials or provided with one or more escape ramps constructed of earthen fill or wooden planks at an angle no greater than 30 degrees. Before such holes or trenches are filled, they would be thoroughly inspected for trapped animals. Pipes, culverts, or similar structures stored in the Project area overnight would be inspected before they are subsequently moved, capped, or buried.
Biological Resources	**PF-BIO-15**	**Night Lighting**. Nighttime work would be avoided . For unavoidable nighttime work, all lighting would be shielded and directed downward toward the active construction area to avoid exposing nocturnal wildlife to excessive glare.

Resource Area	Project Feature ID	Project Feature Title and Description
Cultural Resources	**PF-CUL-1**	**Discovery of Cultural Resources.** If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area would be diverted until a Caltrans qualified archaeologist can assess the nature and significance of the find.
Cultural Resources	**PF-CUL-2**	**Discovery of Human Remains.** If remains are discovered during excavation, all work within 60 feet of the discovery would halt and Caltrans' Cultural Resource Studies office would be called. Caltrans' Cultural Resources Studies Office Staff would assess the remains and, if determined human, would contact the County Coroner as per Public Resources Code Sections 5097.98, 5097.99, and 7050.5 of the California Health and Safety Code. If the Coroner determines the remains to be Native American, the Coroner would contact the Native American Heritage Commission who would then assign and notify a Most Likely Descendant. Caltrans would consult with the Most Likely Descendant on respectful treatment and reburial of the remains. Further provisions of Public Resources Code 5097.98 are to be followed as applicable.
Greenhouse gas emissions	**PF-GHG-1**	**Waste Reduction**. If practicable, nonhazardous waste and excess material would be recycled. If recycling is not practicable, the material would be disposed of appropriately.
Greenhouse gas emissions	**PF-GHG-2**	**Energy Reduction.** Solar sign boards would be used.
Hazards and Hazardous Materials	**PF-HAZ-1**	**Asbestos and Lead-Based Paint Survey.** Existing structures that would be removed by the Project would be tested for asbestos and lead-based paint by a qualified and licensed inspector prior to demolition. All asbestos-containing material or lead-based paint, if found, would be removed by a certified contractor in accordance with local, state, and federal requirements.
Hazards and Hazardous Materials	**PF-HAZ-2**	**Aerially Deposited Lead Work Plan.** Caltrans would prepare a work plan for aerially deposited lead if required during the design (Plans, Specifications and Estimate [PS&E]) phase. Soil samples collected to evaluate aerially-deposited lead would be analyzed for total lead and soluble lead in accordance with Department of Toxic Substances Control’s requirements to determine appropriate actions that would ensure the protection of construction workers, future site users, and the environment,
Hazards and Hazardous Materials	**PF-HAZ-3**	**Hazardous Materials Incident Contingency Plan.** Prior to construction, a hazardous materials incident contingency plan would be prepared to report, contain, and mitigate roadway spills. The plan would designate a chain of command for notification, evacuation, response, and cleanup of roadway spills.

Resource Area	Project Feature ID	Project Feature Title and Description
Hydrology and Water Quality	**PF-HYD-1**	**Stormwater Pollution Prevention Plan.** A SWPPP would be developed and temporary construction BMPs would be implemented in compliance with the requirements of the State Water Resources Control Board as outlined in the Construction General Permit. The SWPPP must be prepared by the contractor and approved by Caltrans, pursuant to Caltrans 2018 Standard Specification 13-3 and Special Provisions. Protective measures would include, at a minimum: a. Disallowing any discharging of pollutants from vehicle and equipment cleaning into any storm drains or watercourses. b. All grindings, asphalt waste, and concrete waste would be hauled offsite by the end of shift, or if stored in upslope areas, would be a minimum of 150 feet, if feasible, from any aquatic resources, would be stored within previously disturbed areas absent of habitat, and would be protected by secondary containment measures consistent with proposed Caltrans BMPs designed specifically to contain spills or discharges of deleterious materials. c. Dedicated fueling and refueling practices would be designated as part of the approved SWPPP. Dedicated fueling areas would be protected from stormwater run-off and would be located at a minimum of 50 feet from downslope drainage facilities and water courses. d. Fueling must be performed on level-grade areas. Onsite fueling would only be used when and where it is impractical to send vehicles and equipment offsite for fueling. When fueling must occur onsite, the contractor would designate an area to be used subject to the approval of the Caltrans Resident Engineer. Drip pans or absorbent pads would be used during onsite vehicle and equipment fueling. e. Spill containment kits would be maintained onsite at all times during construction operations and/or staging or fueling of equipment. f. Dust control measures consistent with Air Quality project features would be implemented. Dust control would be addressed during the environmental education session. g. Coir logs or straw wattles would be installed in accordance with the Caltrans BMP Guidance Handbook, to capture sediment. h. Graded areas would be protected from erosion using a combination of silt fences, erosion control netting (such as jute or coir), and fiber rolls in accordance with the Caltrans BMP Guidance Handbook.
Hydrology and Water Quality	**PF-HYD-2**	**Water Quality Best Management Practices.** To address the temporary water quality impacts resulting from the construction activities in the Project limits, BMPs would include the measures of sediment control, pH control, material and job site management, and erosion control.

Resource Area	Project Feature ID	Project Feature Title and Description
Hydrology and Water Quality	**PF-HYD-3**	**Low-Impact Development Controls**. Potential water quality impacts should be reduced through proper implementation of SWPPP consistent with the Construction General Permit and possible inclusion of Standard Special Provisions for temporary construction site best management practices into the Project. The proposed stormwater treatment BMPs would be required to treat runoff of replaced impervious surface.
Noise	**PF-NOI-1**	**Idling of Internal Combustion Engines.** Unnecessary idling of internal combustion engines would be avoided.
Noise	**PF-NOI-2**	**Maintaining Internal Combustion Engines.** All internal combustion engines would be maintained properly to minimize noise generation. Equip all internal combustion engine driven equipment with manufacturer recommended intake and exhaust mufflers that are in good condition and appropriate for the equipment.
Noise	**PF-NOI-3**	**Quiet Air Compressors.** The Project would use quiet air compressors and other quiet equipment where such technology exists.
Noise	**PF-NOI-4**	**Construction Schedule.** Construction activities would occur during the day, between 6 a.m. and 9 p.m. wherever feasible. Noisy operations would be scheduled to occur within the same time period to the greatest extent possible. The total noise level would not be significantly greater than the level produced if operations are performed separately.
Transportation and Traffic	**PF-TRA-1**	**Traffic Management Plan.** A Traffic Management Plan (TMP) would be developed by Caltrans during the design phase. The TMP would include elements such as haul routes, one-way traffic controls to minimize speeds and congestion, and phasing, to reduce impacts to travelers as feasible and maintain access for police, fire, and medical services in the local area. Prior to construction, Caltrans would notify businesses and residences on Ryer Island regarding construction activities and access changes. In addition, Caltrans would coordinate with the local Fire Department and emergency response services prior to construction to minimize potential disruption to emergency services.

Appendix B Title VI Statement

DEPARTMENT OF TRANSPORTATION
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Making Conservation a California Way of Life.

September 2021

NON-DISCRIMINATION POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964, ensures "*No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance*."

Caltrans will make every effort to ensure nondiscrimination in all of its services, programs and activities, whether they are federally funded or not, and that services and benefits are fairly distributed to all people, regardless of race, color, or national origin. In addition, Caltrans will facilitate meaningful participation in the transportation planning process in a nondiscriminatory manner.

Related federal statutes, remedies, and state law further those protections to include sex, disability, religion, sexual orientation, and age.

For information or guidance on how to file a complaint, or obtain more information regarding Title VI, please contact the Title VI Branch Manager at (916) 324-8379 or visit the following web page: https://dot.ca.gov/programs/civil-rights/title-vi .

To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Civil Rights, at 1823 14th Street, MS-79, Sacramento, CA 95811; PO Box 942874, MS-79, Sacramento, CA 94274-0001; (916) 324-8379 (TTY 711); or at Title.VI@dot.ca.gov.

Toks Omishakin
Director

Appendix C List of Technical Studies

California Department of Transportation (Caltrans). 2021. *Construction Greenhouse Gas Analysis*. October 26, 2021.

California Department of Transportation (Caltrans). 2021. *Floodplain Encroachment Review.* November 15, 2021.

California Department of Transportation (Caltrans). 2021. *Visual Impact Assessment.* October 29, 2021.

California Department of Transportation (Caltrans). 2022. Office of *Cultural Resource Studies (OCRS) Section 106 Summary Memo for Proposed SR 84 Real McCoy Fenders and Ramps Improvement Project, California.* March 4, 2022.

California Department of Transportation (Caltrans). 2020. *Water Quality Study.* September 2021.

California Department of Transportation (Caltrans). 2020. *Geologic, Seismic, and Paleontologic Analysis for Improvements to the Cache Slough Ferry (Real McCoy II) Project.* August 30, 2021.

Jacobs Engineering Group (Jacobs). 2022. *Community Impact Assessment.* April 6, 2022.

Appendix D Avoidance, Minimization and/or Mitigation Measures

Appendix D Avoidance, Minimization, and/or Mitigation Measures

Avoidance, Minimization and/or Mitigation Measure	Title and Description
AMM-BIO-1	**Restore to Pre-Project Conditions.** After construction is complete, any temporary fill or construction debris would be removed, and disturbed areas would be restored to their pre-Project conditions. Temporarily disturbed areas are those impacted during construction but having the potential to be revegetated and restored after construction. After construction activities are complete, any temporary fill or construction debris would be removed, and disturbed areas would be restored to their pre-Project conditions. An area subject to temporary disturbance includes any area that, although disturbed during the Project, would not be disturbed further after Project completion, and has the potential to be revegetated. All habitats subject to temporary ground disturbances, including storage and staging areas and temporary roads, would be restored. These areas would be re-contoured, if appropriate, and revegetated with appropriate locally collected native plant species to promote restoration of the area to pre-Project conditions. Appropriate methods and plant species used to revegetate such areas would be determined on a site-specific basis. Restoration work may include replanting emergent vegetation.
AMM-BIO-2	**Restoration Monitoring.** Caltrans would restore the site to pre-construction conditions and monitor the Project area for 1 year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort would be submitted to USFWS, NMFS, and CDFW immediately after construction and 1 year following restoration activities. Monitoring reports would include details such as photo-documentation and details on plant species used following agency guidelines.
AMM-BIO-3	**Rare Plant Pre-Construction Survey.** During the spring season prior to construction, Caltrans would conduct focused pre-construction surveys for the rare plants identified in the Project area. The extent and abundance of the rare plants would be mapped and flagged in the field for future relocation, salvage, and transplantation. These surveys would be conducted during the season that the rare plants are detectable and in the correct phenological stage of development for correct identification (typically late spring). If a rare plant is identified within the Project area during the pre-construction survey, a rare plant transplantation plan would be prepared. The transplantation plan would be submitted to the regulatory agencies for approval prior to the beginning of construction. The rare plant salvage and transplantation plan would include salvage and replanting methods, success criteria, the establishment of photo points, and monitoring methods. The rare plant salvage and transplantation plan would be prepared and approved by the regulatory agencies prior to the beginning of construction.
AMM-BIO-4	**Seasonal Avoidance.** All in-water work would be conducted by the contractor between August 1 and November 30 to avoid potential impacts to listed fish species, sea lions and seals.

Avoidance, Minimization and/or Mitigation Measure	Title and Description
AMM-BIO-5	**Fish Removal and Relocation Plan**. Prior to construction, the Caltrans biologist would prepare a fish removal and relocation plan for the project. This plan would include measures to relocate fish within cofferdams and other areas to be dewatered. The plan will include reasonable and prudent efforts that will be taken to prevent and minimize injury, stress, or death of captured fish, while ensuring safety of the biologists conducting the fish removal and relocation. A qualified fisheries biologist will act as the lead monitor during implementation of the plan during construction.
AMM-BIO-6	**Agency Notification of Take or Injury.** Caltrans would notify the USFWS, NMFS, or the CDFW within 1 day if any listed species under the respective jurisdiction of those agencies is taken or injured by a Project-related activity, or if any listed species under the respective jurisdiction of those agencies is otherwise found dead or injured within the Project BSA. Caltrans staff or the designated biologists would provide initial notification to the respective agencies by calling the appropriate regional office. The initial notification to the agency would include information regarding the location, species, and number of animals taken or injured. Caltrans would also send a written report to the agency within 3 calendar days. The report would include the date and time of the finding or incident, and the location of the animal or carcass. The report should include a photograph, and if possible, an explanation as to the cause of take or injury.
AMM-BIO-7	**Designated Biologists**. At least 30 days prior to commencing construction activities covered by the biological opinion, Caltrans would submit to USFWS, NMFS, and CDFW, for review and approval, the qualifications for a number of qualified designated biologists and biological monitors who would oversee implementation of the conditions of the Project permits. The designated biologists may be assisted by approved biologists identified as biological monitors that do not meet the qualifications to be a designated biologist. Biological monitors and their activities would be approved in advance and in writing by USFWS, NMFS, and CDFW.
AMM-BIO-8	**Pre-Construction Surveys.** The Project site would be surveyed for giant garter snake, western pond turtle, and other special-status species by a qualified designated biologist or biological monitor within a time window 24 hours prior to the commencement of construction activities. The Project area would be re-inspected by such biologist whenever a lapse in construction activity of 2 weeks or greater occurs.
AMM-BIO-9	**Biological Compliance Monitoring**. A biologist approved by USFWS, NMFS, and CDFW would inspect construction-related activities in the Project area for unauthorized take of special-status species or destruction of their habitat. The biologist would be available for monitoring throughout all construction phases that would result in adverse effects on special-status species.

Avoidance, Minimization and/or Mitigation Measure	Title and Description
AMM-BIO-10	**Designated Biologist/Biological Monitor Authority**. The designated biologists and biological monitors would communicate to the Resident Engineer when any activity is not in compliance with Project permits, and the Resident Engineer would immediately stop the activity that is not in compliance and/or order any reasonable measure to avoid the unauthorized take of a special-status species.
AMM-BIO-11	**Special-status Species Handling.** Where feasible, special-status species discovered in the Project area would be allowed to exit the Project area of their own volition. If there is an immediate and unavoidable threat to the special-status species, the agency-approved designated biologist or biological monitor may capture and move the special-status species outside of the area of danger to avoid the death or injury of the species. If needed, an agency-approved (by USFWS, NMFS, and/or CDFW, depending on the species and agency jurisdiction) biologist would handle special-status species using approved handling techniques respective to the taxa of wildlife in question.
AMM-BIO-12	**Special-status Species Release.** Any captured special-status individuals would be released within appropriate habitat outside of the construction site within the Cache Slough riparian corridor. The release habitat would be determined by the agency-approved designated biologist or biological monitor.
AMM-BIO-13	**Marine Mammal Monitoring.** During in-water and near-water impacts and vibratory pile-driving activities, a marine mammal monitor would be present for the installation of all piles. If a marine mammal is observed within the Level A harassment buffer area identified in IS-ND/EA Table 2-6 for the appropriate pile size, the vibratory pile driving would temporarily cease until the individual has left the buffer area. Vibratory pile driving would not resume until 15 minutes after the animal has left the buffer area. If a marine mammal is observed in proximity to, but not within, the buffer area, the construction crew would be notified of the potential need to stop work if the mammal continues into the buffer area.
AMM-BIO-14	**Protocol-level Swainson's Hawk Pre-construction Surveys**. If the Project takes place within any portion of the Swainson's hawk nesting season (March 15 to September 15), Caltrans would conduct six pre-construction protocol-level Swainson's hawk surveys in March and April during the spring prior to construction, using guidelines set forth in the *Recommended Timing And Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* document (Swainson's Hawk Technical Advisory Committee 2000). If a nest is discovered within 0.25 mile of the Project area, and the nest has the potential to be active during construction, Caltrans would immediately stop any work that has potential to result in take of Swainson's hawk and coordinate with CDFW for further guidance..
MM-BIO-1	**Cofferdam Installation.** During construction, cofferdams will be completed and sealed during low tide to minimize the potential for fish to be present within them. The contractor will be responsible for sealing the cofferdam.

Avoidance, Minimization and/or Mitigation Measure	Title and Description
MM-BIO-2	**Turbidity, Noise, and Vibration Reduction.** During construction, the contractor will use a sound attenuation system to reduce noise generated by vibratory pile driving into the water to minimize potential behavioral effects on fish species and marine mammals. If the attenuation system fails, vibratory pile driving will immediately stop and will not resume at the location until the sound attenuation system is put back into operation. Sound attenuation and potential hydroacoustic impacts on fish and marine mammals will be coordinated with the relevant regulatory agencies.
AMM CUL-1	**Environmentally Sensitive Area Fencing.** Prior to construction, the contractor a qualified cultural professional would install environmentally sensitive area fencing around the boundary of CA-SOL-276 to visibly mark the boundaries of avoidance. Caltrans would maintain the fence in place throughout the construction phase to avoid direct construction activities in this area.
AMM CUL-2	**Post-Review Discovery and Monitoring Plan.** During construction, archaeological monitoring by a professionally qualified archaeologist and Native American representative of all construction-related activities in the proximity to the site boundary would occur to account for the unlikely event of identifying subsurface deposits associated with CA-SOL-276.

Appendix E Species Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Rio Vista (3812126) OR Dozier (3812137) OR Liberty Island (3812136) OR Courtland (3812135) OR Birds Landing (3812127) OR Isleton (3812125) OR Antioch North (3812117) OR Jersey Island (3812116) OR Bouldin Island (3812115))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Anthicus antiochensis Antioch Dunes anthicid beetle	IICOL49020	None	None	G1	S1	
Anthicus sacramento Sacramento anthicid beetle	IICOL49010	None	None	G1	S1	
Apodemia mormo langei Lange's metalmark butterfly	IILEPH7012	Endangered	None	G5T1	S1	
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Atriplex persistens vernal pool smallscale	PDCHE042P0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Brasenia schreberi watershield	PDCAB01010	None	None	G5	S3	2B.3
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Coelus gracilis San Joaquin dune beetle	IICOL4A020	None	None	G1	S1	
Cryptantha hooveri Hoover's cryptantha	PDBOR0A190	None	None	GH	SH	1A
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Efferia antiochi Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Elaphrus viridis Delta green ground beetle	IICOL36010	Threatened	None	G1	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum nudum var. psychicola Antioch Dunes buckwheat	PDPGN0849Q	None	None	G5T1	S1	1B.1
Eriogonum truncatum Mt. Diablo buckwheat	PDPGN085Z0	None	None	G1	S1	1B.1
Erysimum capitatum var. angustatum Contra Costa wallflower	PDBRA16052	Endangered	Endangered	G5T1	S1	1B.1
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
Eucerceris ruficeps redheaded sphecid wasp	IIHYM18010	None	None	G1G3	S1S2	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Hygrotus curvipes curved-foot hygrotus diving beetle	IICOL38030	None	None	G1	S1	
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Idiostatus middlekauffi Middlekauff's shieldback katydid	IIORT31010	None	None	G1G2	S1	
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Lasiurus blossevillii western red bat	AMACC05060	None	None	G4	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lasthenia chrysantha alkali-sink goldfields	PDAST5L030	None	None	G2	S2	1B.1
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G4G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K	None	None	G5T3	S3	SSC
Metapogon hurdi Hurd's metapogon robberfly	IIDIP08010	None	None	G1G2	S1S2	
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Neostapfia colusana Colusa grass	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Oenothera deltoides ssp. howellii Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	G5T1	S1	1B.1
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Perdita scitula antiochensis Antioch andrenid bee	IIHYM01031	None	None	G1T1	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Philanthus nasalis Antioch specid wasp	IIHYM20010	None	None	G1	S1	
Plagiobothrys hystriculus bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Potamogeton zosteriformis eel-grass pondweed	PMPOT03160	None	None	G5	S3	2B.2
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Scutellaria galericulata marsh skullcap	PDLAM1U0J0	None	None	G5	S2	2B.2
Scutellaria lateriflora side-flowering skullcap	PDLAM1U0Q0	None	None	G5	S2	2B.2
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Sphecodogastra antiochensis Antioch Dunes halcitid bee	IIHYM78010	None	None	G1	S1	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Stabilized Interior Dunes Stabilized Interior Dunes	CTT23100CA	None	None	G1	S1.1	
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tuctoria mucronata Crampton's tuctoria or Solano grass	PMPOA6N020	Endangered	Endangered	G1	S1	1B.1
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	

Record Count: 102

Search Results

7 matches found. Click on scientific name for details

Search Criteria: Fed List is one of [**FE:FT**] , Quad is one of [**3812126:3812137:3812136:3812135:3812127:3812125:3812117:3812116:3812115:**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Chloropyon molle ssp.molle	soft salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	FE	CR	G2T1	S1	18.2	No Photo Available
Erisymimum capitatum var. angustatum ustatum	Contra Costa wallflower	8rassicaceae	perennial herb	Mar-Jul	FE	CE	G5T1	S1	18.1	No Photo Available
Lasthenia conjugens gens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	FE	None	G1	51	18.1	No Photo Available
Neostapfia fig colusana	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	18.1	No Photo Available
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	Onagraceae	perennial herb	Mar-Sep	FE	CE	G5T1	51	18.1	No Photo Available
Sidalcea keckii	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE	None	G2	S2	18.1	No Photo Available
Tuctoria mucronata	Crampton's tuctoria or Solano grass	Poaceae	annual herb	Apr-Aug	FE	CE	G1	S1	18.1	No Photo Available

Showing 1 to 7 of 7 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v9-01 1.0). Website https://www.rareplants.cnps.org [accessed 11 October 2021].

From:	Lindemann, Scott
To:	"nmfs.wcrca.specieslist@noaa.gov"
Cc:	"Lyla Pirkola - NOAA Federal"
Subject:	RE: Official Species List Request for State Route (SR) 84 Real McCoy Fenders and Ramps Replacement Project EA 4H060
Date:	Friday, April 1, 2022 1:06:00 PM

Hello,

I am writing to request an updated species list for the below project. It appears that the species for this project have not changed. The project description similarly has not changed from that described below.

Thank you,
Scott

Scott Lindemann, MWC, CWB®
Jacobs
Biologist | Federal & Environmental Solutions
+ 1.425.503.8528 mobile
scott.lindemann@jacobs.com
www.jacobs.com

From: Lindemann, Scott
Sent: Tuesday, October 26, 2021 2:38 PM
To: 'nmfs.wcrca.specieslist@noaa.gov' <nmfs.wcrca.specieslist@noaa.gov>
Cc: Lyla Pirkola - NOAA Federal <lyla.pirkola@noaa.gov>
Subject: Official Species List Request for State Route (SR) 84 Real McCoy Fenders and Ramps Replacement Project

Hello,

I hope this message finds you well. I am writing to request approval on an official NOAA Fisheries special-status species list for a project we are consulting on. This is a project we are working on for Caltrans, the State Route (SR) 84 Real McCoy Fenders and Ramps Replacement Project, Caltrans EA 4H060. The project vicinity figure is attached here.

The California Department of Transportation (Caltrans) is the lead agency under the California Environmental Quality Act (CEQA) for the State Route (SR) 84 Real McCoy Fenders and Ramps Replacement Project at post mile (PM) 2.49 in Solano County, California (the Project). The Real McCoy ferry provides access across Cache Slough between Ryer Island, on the east side of Cache Slough, and the city of Rio Vista, on the west side of Cache Slough. Caltrans proposes to replace the existing timber fender system with a new steel pile fender system covered with rubber facing material, replace the boat ramps with new, longer ramps extending further into Cache Slough, and extend the deck of the ferry boat itself to improve vehicle access on and off the ferry. The proposed improvements would restore the structural integrity of the ferry deck, fender system, and boat ramps to allow for the continued access on SR 84 across Cache Slough.

Previously we used the NMFS WCR CA Species List December 2016 Google Earth .kmz file and emailed the list output to a NOAA Fisheries auto-responding email address. However emails are now undeliverable to the autoresponder email address nmfswcrca.specieslist@noaa.gov. Our understanding is that this is the correct email address to use now.

For this list I used the NOAA Fisheries Protected Resources App

(https://www.webapps.nwfsc.noaa.gov/portal/apps/webappviewer/index.html?id=7514c715b8594944a6e468dd25aaacc9) to find special-status species in the area. I also used the previously existing NMFS WCR CA Species List December 2016 Google Earth .kmz file. I am emailing this list to you now for your records.

Quad Name Rio Vista
Quad Number 38121-B6

Species List:
CVSR Chinook Salmon ESU (T) - X
SRWR Chinook Salmon ESU (E) - X
CCV Steelhead DPS (T) - X
sDPS Green Sturgeon (T) - X
CVSR Chinook Salmon Critical Habitat - X
SRWR Chinook Salmon Critical Habitat - X
CCV Steelhead Critical Habitat - X
sDPS Green Sturgeon Critical Habitat - X
Chinook Salmon EFH - X
Groundfish EFH - X

Thank you,
Scott

Scott Lindemann, M.W.C.
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From: NMFS SpeciesList - NOAA Service Account
To: prvs=6090ae3df2=scott.lindemann@jacobs.com
Subject: [EXTERNAL] Federal ESA - - NOAA Fisheries Species List RE: Official Species List Request for State Route (SR) 84 Real McCoy Fenders and Ramps Replacement Project EA 4H060
Date: Friday, April 1, 2022 1:06:54 PM

Please retain a copy of each email request that you send to NOAA at nmfs.wcrca.specieslist@noaa.gov as proof of your official Endangered Species Act SPECIES LIST. The email you send to NOAA should include the following information: your first and last name; email address; phone number; federal agency name (or delegated state agency such as Caltrans); mailing address; project title; brief description of the project; and a copy of a list of threatened or endangered species identified within specified geographic areas derived from the NOAA Fisheries, West Coast Region, California Species List Tool. You may only receive this instruction once per week. If you have questions, contact your local NOAA Fisheries liaison.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
Phone: (916) 930-5603 Fax: (916) 930-5654
http://kim_squires@fws.gov

In Reply Refer To: April 18, 2022
Project Code: 2022-0033007
Project Name: Real McCoy Fenders and Ramps Replacement

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

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

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

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

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

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

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

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

bats.

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

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

Note: IPaC has provided all available attachments because this project is in multiple field office jurisdictions.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

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

This species list is provided by:

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

This project's location is within the jurisdiction of multiple offices. However, only one species list document will be provided for all offices. The species and critical habitats in this document reflect the aggregation of those that fall in each of the affiliated office's jurisdiction. Other offices affiliated with the project:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Project Code: 2022-0033007
Event Code: None
Project Name: Real McCoy Fenders and Ramps Replacement
Project Type: Boat Ramp - Maintenance/Modification
Project Description: Replace the existing timber fender system with a new steel pile fender system covered with rubber facing material, replace the boat ramps with new, longer ramps extending further into Cache Slough, and extend the deck of the ferry boat itself to improve vehicle access on and off the ferry.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.1866707,-121.66090853802551,14z

Counties: Solano County, California

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/4240

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/4482

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense*	Threatened

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

Fishes

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

Insects

NAME	STATUS
Delta Green Ground Beetle *Elaphrus viridis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2319	Threatened
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* https://ecos.fws.gov/ecp/species/321#crithab	Final

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird *Selasphorus sasin* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

NAME	BREEDING SEASON
Nuttall's Woodpecker *Picoides nuttallii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

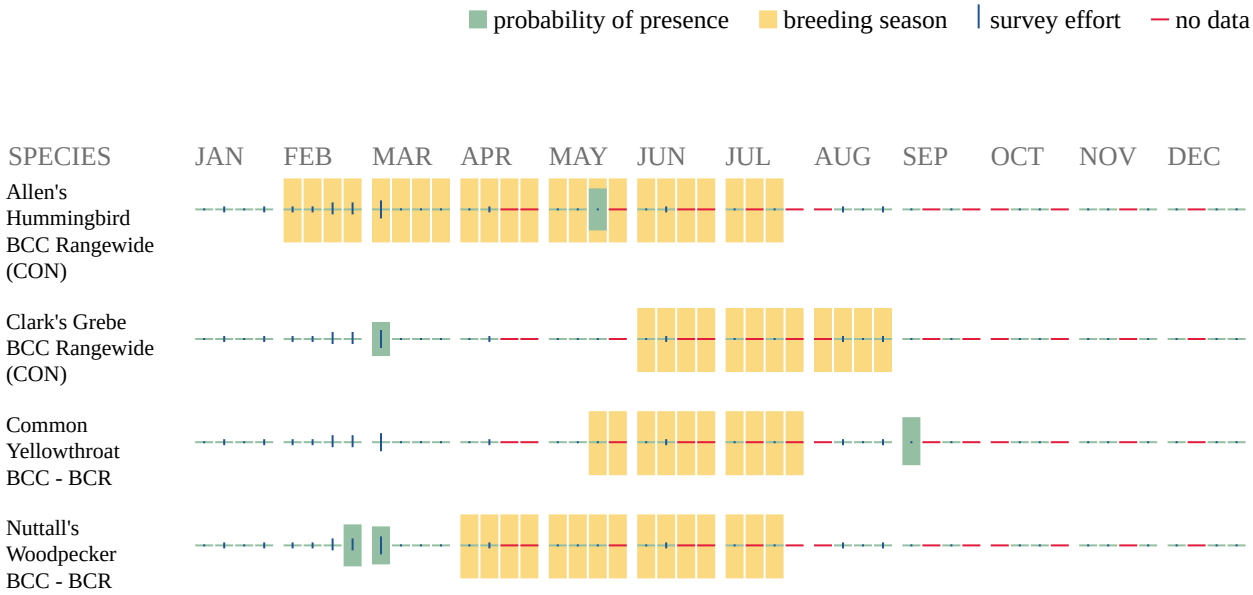
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell

me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

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