

McCormack-Williamson Tract 2026 Levee Erosion Repair Project Sites 1–14

Public Draft

Initial Study/Mitigated Negative Declaration

Reclamation District No. 2110

January 2026

Prepared for:

Reclamation District 2110
P.O. Box 408
Walnut Grove, CA 95690
Contact: Chad Fien

Prepared by:

MBK Engineers
455 University Avenue, Suite 100
Sacramento, CA 95825
Contact: Mike Kynett

and

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
Contact: Nicole Williams, 916-414-5800

TABLE OF CONTENTS

1.	Introduction	1-1
1.1	Background	1-1
1.2	California Environmental Quality Act Context.....	1-3
1.3	Scope of This Document.....	1-4
1.3.1	Resources Dismissed from Further Evaluation.....	1-4
1.4	Conclusions.....	1-7
1.5	References	1-7
2.	Project Description	2-1
2.1	Introduction	2-1
2.2	Location and Existing Conditions	2-1
2.3	Project Design.....	2-5
2.4	General Construction Approach	2-8
2.4.1	Mobilization	2-8
2.4.2	Site Preparation.....	2-8
2.4.3	Construction Process	2-8
2.4.4	Restoration	2-9
2.4.5	Construction Timing and Equipment.....	2-10
2.5	Environmental Commitments	2-10
2.5.1	Water Quality.....	2-12
2.6	Anticipated Regulatory Permits and Approvals	2-14
2.6.1	References	2-15
3.	Initial Study.....	3-1
3.1	Environmental Factors Potentially Affected	3-2
3.2	Environmental Checklist.....	3-4
3.2.1	Air Quality	3.2.1-1
3.2.2	Biological Resources	3.2.2-1
3.2.3	Cultural Resources	3.2.3-1
3.2.4	Geology, Soils, and Paleontology	3.2.4-1
3.2.5	Greenhouse Gas Emissions.....	3.2.5-1
3.2.6	Hazards and Hazardous Materials	3.2.6-1
3.2.7	Hydrology and Water Quality.....	3.2.7-1
3.2.8	Tribal Cultural Resources	3.2.8-1
3.2.9	Mandatory Findings of Significance.....	3.2.9-1

APPENDICES

- Appendix A. Air Quality and Greenhouse Gas Results
- Appendix B. Potential to Occur Table

TABLES

Table 2.3-1	Erosion Repair Site Summary	2-6
Table 2.6-1	Permits and Approvals Potentially Needed to Conduct Permitted Activities	2-15
Table 3.2-1	Environmental Issues and Determinations for Air Quality	3.2.1-1
Table 3.2-2	SMAQMD Criteria Air Pollutant Thresholds of Significance for Construction	3.2.1-3
Table 3.2-3	Summary of Maximum Daily and Annual Project Construction Emissions	3.2.1-5
Table 3.2-4	Environmental Issues and Determinations for Biological Resources	3.2.2-1
Table 3.2-5	Land Cover and Vegetation Communities in the Survey Area	3.2.2-3
Table 3.2-6	Environmental Issues and Determinations for Cultural Resources	3.2.3-1
Table 3.2-7	Summary of Previous Investigations Within the APE	3.2.3-5
Table 3.2-8	Documented Resources within the APE	3.2.3-6
Table 3.2-9	Environmental Issues and Determinations for Geology and Soils	3.2.4-1
Table 3.2-10	Environmental Issues and Determinations for Greenhouse Gas Emissions	3.2.5-1
Table 3.2-11	Environmental Issues and Determinations for Hazards and Hazardous Materials	3.2.6-1
Table 3.2-12	Environmental Issues and Determinations for Hydrology and Water Quality	3.2.7-1
Table 3.2-13	Environmental Issues and Determinations for Tribal Cultural Resources	3.2.8-1
Table 3.2-14	Documented Tribal Cultural Resource/Tribal Cultural Landscape within the Area of Potential Effects	3.2.8-5
Table 3.2-15	Environmental Issues and Determinations for Mandatory Findings of Significance	3.2.9-1

FIGURES

Figure 1.1-1	Project Vicinity	1-2
Figure 2.2-1	Project Vicinity	2-3
Figure 2.2-2	Project Area	2-4
Figure 2.3-1	Conceptual Cross Sections of Repair Type 1 and Repair Type 2	2-7
Figure 3.2-1a	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-4
Figure 3.2-1b	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-5
Figure 3.2-1c	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-6
Figure 3.2-1d	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-7
Figure 3.2-1e	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-8
Figure 3.2-1f	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-9

Figure 3.2-1g	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-10
Figure 3.2-1h	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-11
Figure 3.2-1i	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-12
Figure 3.2-1j	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-13
Figure 3.2-1k	Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area	3.2.2-14

ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AB	Assembly Bill
AGR	Agricultural Supply
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APE	Area of Potential Effects
AST	aboveground storage tank
BERD	Built Environment Resources Directory
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BP	before present
CAAQA	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimated Model
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCR	California Code of Regulations
CCV	California Central Valley
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CH ₄	methane
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalence
COE	U.S. Army Corps of Engineers
COLD	Cold Freshwater Habitat
COMM	Commercial and Sport Fishing
Construction General Permit	General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities
CRPR	California Rare Plant Rank
DBH	diameter at breast height
DDT	dichlorodiphenyltrichloroethane
Delta	North Sacramento San Joaquin Delta
District	Reclamation District 2110
DMP	Deferred Maintenance Program
DPM	diesel particulate matter
DPR	California Department of Parks and Recreation
DPS	distinct population segment
DTSC	California Department of Toxic Substances Control

DWR	California Department of Water Resources
EIR	Environmental Impact Report
EM	Engineering Manual
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FD	Federal Delisted
FE	Federal Endangered
FP	Fully Protected
FPT	Federal Proposed Threatened
FT	Federal Threatened
g	estimated peak horizontal ground acceleration
GHG	greenhouse gas
GM	general avoidance measure
GSP	Groundwater Sustainability Plan
GWP	global warming potential
H:V	horizontal:vertical
HTL	high tide line
HUC	Hydrologic Unit Code
I-5	Interstate 5
IND	Industrial Service Supply
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
LRA	Local Responsibility Area
LUST	leaking underground storage
MHW	mean high water
MIGR-COLD	Migration – Cold Freshwater Habitat
MIGR-WARM	Migration – Warm Freshwater Habitat
MND	Mitigated Negative Declaration
mph	miles per hour
MT	metric tons
MUN	Municipal and Domestic Supply
MWT	McCormack-Williamson Tract
N ₂ O	nitrous oxide
NAAQS	national ambient air quality standard
NAHC	Native American Heritage Commission
NAV	Navigation
NCIC	North Central Information Center
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NTUs	Nephelometric Turbidity Unit
OHP	California Office of Historic Preservation
PFA	Project Funding Agreement

PG&E	Pacific Gas and Electric Company
Phase A	MWT Levee Modification and Habitat Restoration Project Phase A
Phase B	MWT Levee Modification and Habitat Restoration Project Phase B Project
PM	particulate matter
PM ₁₀	PM equal to or less than 10 micrometers in diameter
PM _{2.5}	PM equal to or less than 2.5 micrometers in diameter
PRC	Public Resources Code
PROC	Industrial Process Supply
project/proposed project	McCormack-Williamson Tract 2026 Erosion Repair Project Sites 1–14
REC1	Water Contact Recreation
REC2	Non-Contact Water Recreation
ROG	reactive organic gases
RSP	rock slope protection
RWQCB	Regional Water Quality Control Board
S1	critically imperiled
S2	imperiled
S3	vulnerable
TCL	Sacramento River Tribal Cultural Landscape
SB	Senate Bill
SC	State Candidate
SE	State Endangered
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SPHO	State Historic Preservation Officer
SPRR	Southern Pacific Railroad Company
SPWN-WARM	Spawning – Warm Freshwater Habitat
SR	State Rare
SRA	State Responsibility Area
SSC	Species of Special Concern
SSHCP	South Sacramento Habitat Conservation Plan
ST	State Threatened
SVAB	Sacramento Valley Air Basin
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCL	Tribal Cultural Landscape
TCR	Tribal Cultural Resource
UAIC	United Auburn Indian Community
USACE	U.S. Army Corps of Engineers

USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
WARM	Warm Freshwater Habitat
WILD	Wildlife Habitat
WQM	water quality measure
WQO	water quality objective

1. INTRODUCTION

1.1 Background

Reclamation District 2110 (the District) is a local maintaining agency responsible for maintenance of the levee system around McCormack-Williamson Tract (MWT). MWT is a 1,654-acre leveed, formerly agricultural tract in the North Sacramento San Joaquin Delta (Delta) immediately downstream from the confluence of the Cosumnes and Mokelumne Rivers, just east of the Delta Cross Channel, approximately 0.5 mile west of Interstate 5 (I-5) in unincorporated Sacramento County (Figure 1.1-1). In July 2023, the California Department of Water Resources (DWR) and the District entered into Project Funding Agreement (PFA) MW-23, as part of the Deferred Maintenance Program (DMP), to identify and address critical erosion sites along MWT. This agreement would fund levee erosion repairs at 14 outboard¹ locations (proposed project).

Over several decades, an ecosystem and floodplain restoration program has been implemented in multiple phases as part of multiple State or federally lead initiatives to restore tidal and fluvial hydrology and add significant acreage of tidal marsh and riparian habitats at MWT. DWR implemented the MWT Levee Modification and Habitat Restoration Project Phase A (Phase A) components in 2018 and 2019, which included interior levee slope grading and construction of the Ring Levee. A regional communication tower, a staging area for District operations, and mitigation areas with managed plantings and blue elderberry (*Sambucus mexicana*) transplants are within the Ring Levee area. During flooding in 2023, the Mokelumne River Levee and Southwest Levee breached at locations proposed for a tidal connection as part of the MWT Levee Modification and Habitat Restoration Project Phase B (Phase B). Rock slope protection (RSP) was installed to stabilize the Mokelumne breach, and a tidal weir was constructed. Phase B was completed in 2025 and included expansion of the Southwest Levee breach and creation of a flood weir along the East Levee. The proposed project would be independent and separately funded from Phase A and Phase B activities.

Because of the rural nature and evolving ecosystem and hydrology of MWT, the perimeter levees have become heavily vegetated and significantly eroded along much of their length, increasing the risk of uncontrolled breaches. The District conducts periodic erosion surveys, typically on an annual basis, along the perimeter levees. The erosion surveys are conducted via boat along the surrounding waterways, documenting visually observable levee and bank degradation. These surveys have identified several critical erosion sites requiring repair. The proposed project is needed to repair the existing erosion, protect existing infrastructure, maintain MWT access, and protect investments that DWR and the District have made on MWT. By repairing MWT's levee system, the proposed project also would protect critical infrastructure and mitigation sites installed as part of Phase A and Phase B.

¹ The outboard of the levee is the waterside or channel side of the levee.

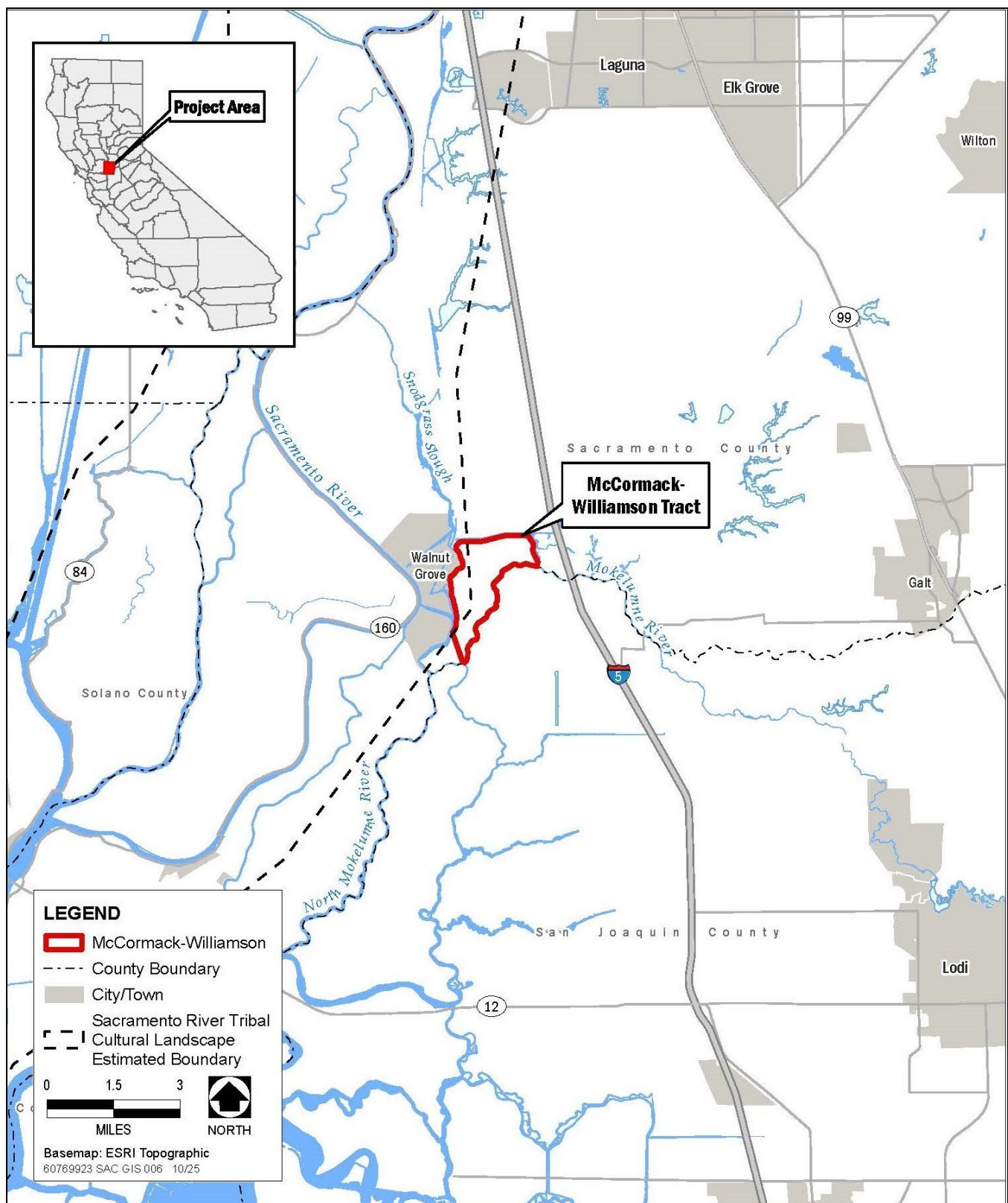


Figure 1.1-1 Project Vicinity

1.2 California Environmental Quality Act Context

The California Environmental Quality Act (CEQA) requires that all State and local government agencies consider the environmental consequences of projects which they propose to carry out or over which they have discretionary authority, before implementing or approving those projects. The public agency that has the principal responsibility for carrying out or approving a project is the lead agency for CEQA compliance (CEQA Guidelines Section 15367). The District has principal responsibility for carrying out the proposed project, and therefore is the CEQA lead agency for this Initial Study (IS)/Mitigated Negative Declaration (MND).

After the required public review of this document is completed, the District will consider adopting the proposed MND and a Mitigation Monitoring and Reporting Program and will decide whether to proceed with the proposed project.

This IS/MND has been prepared in accordance with CEQA (Public Resources Code [PRC] Section 21000 et seq.) and the CEQA Guidelines (California Code of Regulations [CCR] Title 14, Section 15000 et seq.). The purpose of this IS/MND is to (1) determine whether project implementation would result in potentially significant or significant effects on the environment; and (2) incorporate mitigation measures into the project design, as necessary, to avoid the proposed project's potentially significant or significant effects or reduce them to a less-than-significant level.

If substantial evidence (e.g., the findings of an IS) exists that a project, either individually or cumulatively, may have a significant effect on the physical environment, the lead agency must prepare an Environmental Impact Report (EIR) (CEQA Guidelines Section 15064[a]). If the IS concludes that project impacts would be less than significant or that implementation of mitigation measures by the applicant would reduce the impacts to a less-than-significant level, a negative declaration or MND can be prepared.

A negative declaration or MND is a written statement, prepared by the lead agency to describe why the proposed project would not have a significant impact on the environment, and therefore, would not require preparation of an EIR (CEQA Guidelines Section 15371). According to Section 15070 of the CEQA Guidelines, a negative declaration or MND for a project subject to CEQA should be prepared when either:

- the IS shows that no substantial evidence exists, in light of the whole record before the lead agency, that the project may have a significant impact on the environment; or
- the IS identifies potentially significant impacts, but:
 - revisions made to the project plans or proposal before the proposed MND is released for public review would avoid the impacts or mitigate the impacts to a point where clearly no significant impacts would occur; and
 - no substantial evidence exists, in light of the whole record before the agency, that the project as revised may have a significant impact on the environment.

The District has prepared an IS for the proposed project and analyzed its potential environmental impacts. Based on this analysis, the District has determined that the proposed project's impacts would be less than significant or could be reduced to a less-than-significant level with implementation of mitigation measures, and therefore has prepared this IS/MND.

1.3 Scope of This Document

Chapter 2, Project Description, provides a current description of the proposed project.

Chapter 3, Initial Study, evaluates the proposed project as related to the following environmental resource topics:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gases
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Tribal Cultural Resources
- Mandatory Findings of Significance

1.3.1 Resources Dismissed from Further Evaluation

The following resources were dismissed from further evaluation in this IS/MND because of the location of the proposed project, the types of construction activities to occur, or the lack of sensitive receptors/resources:

- Aesthetics
- Agriculture and Forestry Resources
- Energy
- Land Use and Land Use Planning
- Population and Housing
- Mineral Resources
- Noise
- Public Services and Utilities
- Recreation
- Transportation and Traffic
- Wildfire

These resources and the rationale for their dismissal from further evaluation are discussed next.

Aesthetics

The proposed project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources within a state scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of light and glare. The project site is not within or near state scenic highways, nor does it contain state or locally recognized scenic resources (Caltrans 2019 and 2025). The proposed project would not introduce any new sources of light and glare, and generally would restore the site to its prior condition through visually nonintrusive erosion repairs. The proposed project would result in rock placement on the waterside levee that may be seen by boaters, which would provide different visual character when compared to the existing vegetation along the levee. However, the levees in the Delta area are comprised of multiple materials, including rock, vegetation, soil, and concrete, and these different materials contribute to the overall visual character and quality of the levees. Boaters, depending on where they travel and how far they travel, are accustomed to seeing different waterside levee materials. Furthermore, the proposed project would include plantings that eventually would obscure some of the rock and further contribute to the variety of the visual character and quality of levee materials. Therefore, no impact would occur, and this resource topic is not discussed further.

Agriculture and Forestry Resources

No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is within MWT. The MWT levees, including the proposed erosion repair sites, no longer provide access to agricultural resources. Under existing conditions, MWT does not contain land with active agricultural uses, land under Williamson Act contracts, or land zoned as forest land, timber land, or timberland production. No permanent loss or conversion of forest land to non-forest land, or any other changes to the existing environment would convert farmland to non-agricultural use or forest land to non-forest use. Therefore, no impact would occur, and these resource topics are not discussed further.

Energy

The proposed project is not anticipated to result in wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation. Direct energy usage for construction is a one-time, necessary commitment for this type of erosion repair project. Project implementation would not alter energy use during routine levee maintenance activities. Therefore, no impact would occur, and this resource topic is not discussed further.

Land Use and Land Use Planning, and Population and Housing

The proposed project would not physically divide an established community or conflict with any land use plan, policy, or regulation adopted for avoiding or mitigating an environmental effect. The project site is uninhabited and no longer used for agricultural purposes and contains no housing. The proposed project would repair sites affected by erosion and would not introduce land uses that would introduce unplanned population growth. Therefore, no impact would occur, and these resource topics are not discussed further.

Mineral Resources

The Sacramento Basin, where MWT is situated, contains extensive natural gas resources—more than 120 gas fields have been discovered within sandstone deposits that extend thousands of feet below the ground surface. Oil also is present deep underground within the Sacramento Basin. Natural gas exploration and production in the Sacramento Basin began in the 1930s and continues today. MWT is situated within the Thornton-West Walnut Grove Gas Field. Most of the gas wells in the Thornton-West Walnut Grove Gas Field are inactive and have been plugged, but a few wells in the vicinity of Walnut Grove (southwest of MWT) still are active. Most of the 19 natural gas wells on MWT were submerged when the tract flooded in 2023. All of the wells were inactive and were plugged. None of the wells are in the vicinity of the proposed erosion repair sites or staging area. The proposed erosion repairs would not affect the ability to drill new gas wells in the future on MWT. Therefore, no impact would occur, and this resource topic is not discussed further.

Noise

The project site is uninhabited, and no sensitive receptors are near the site. Furthermore, no permanent increase in ambient noise would result from the project. Therefore, no impact would occur, and this resource topic is not discussed further.

Public Services and Utilities

No public facilities, including schools, fire protection facilities, or police protection facilities are on MWT. Utilities on MWT, including Sacramento Municipal Utility District (SMUD) transmission lines and poles, a KCRA communications tower, and inactive gas pipelines and wells, would not be impacted during project construction or operation, and access to these utilities would be maintained throughout project activities. Therefore, no impact would occur, and these resource topics are not discussed further.

Recreation

No active recreational uses occur within the project site. In addition, the proposed project would not impede future recreational opportunities within or near the project site. Activities associated with repairing the levee erosion sites would not impede boaters because the repairs would be immediately adjacent to the levees or on the levees, and boaters could continue to use the existing waterways. Therefore, no impact would occur, and this resource topic is not discussed further.

Transportation and Traffic

Project construction would result in temporary trips associated with haul trucks and construction workers for a limited duration, and would have no influence on vehicle miles traveled, as it would be focused solely on the levee erosion repairs. There would be no detours or road closures during project construction. After the project is operational, the levee repairs would generate no change in vehicle miles traveled. Therefore, no impact would occur, and this resource topic is not discussed further.

Wildfire

State Responsibility Areas (SRAs) are areas where the California Department of Forestry and Fire Protection (CAL FIRE) is the primary emergency response agency that is responsible for fire suppression and prevention. The project site is not within or near any SRAs or Local Responsibility Areas (LRAs; where the primary responsibility for firefighting falls within the purview of a local agency) that are classified as Very High Fire Hazard Severity Zones (CAL FIRE 2025).

MWT is within an LRA (i.e., the Walnut Grove Fire Protection District). The north and northeast sides of MWT, including levee erosion repair Sites 5–14, are classified as being in a Moderate Fire Hazard Severity Zone, along with the north side of Snodgrass Slough and the vegetated area to the east, between MWT and I-5. Most of MWT including levee erosion repair Sites 1–4 are not classified by CAL FIRE because they do not represent a wildland fire hazard. The nearest SRA is east of Herald, approximately 14 miles east of MWT (CAL FIRE 2025). Based on the project location, the lack of structures and people on MWT, and lack of SRAs or Very High Fire Hazard Severity Zones, no impact would occur, and this resource topic is not discussed further.

1.4 Conclusions

Chapter 3 of this document contains the analysis and discussion of the potential environmental impacts of the proposed project. The analysis in this IS concludes that the proposed project, with implementation of mitigation measures, would have no significant impacts. Therefore, further environmental review is not required by CEQA. The District would adopt a Mitigation Monitoring and Reporting Program so that all required mitigation measures would be implemented.

1.5 References

California Department of Forestry and Fire Protection (CAL FIRE). 2025. *Fire Hazard Severity Zone Viewer*. Available: <https://fire-hazard-severity-zones-rollout-calfire-forestry.hub.arcgis.com/pages/access-map>. Accessed November 5, 2025.

California Department of Transportation (Caltrans). 2019. *List of Officially Designated County Scenic Highways*. Available: <https://dot.ca.gov/-/media/dot-media/programs/design/documents/od-county-scenic-hwys-2015-a11y.pdf>. Accessed October 31, 2025.

———. 2025. *List of Eligible and Officially Designated State Scenic Highways*. Available: <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>. Accessed October 31, 2025.

2. PROJECT DESCRIPTION

2.1 Introduction

Reclamation District 2110 (the District) has introduced the McCormack-Williamson Tract 2026 Levee Erosion Repair Project Sites 1–14 (proposed project) to repair 14 outboard² levee sites that have been subject to erosion within the McCormack-Williamson Tract (MWT). Repairs are proposed to address existing erosion, protect existing infrastructure, maintain MWT access, reduce the risk of uncontrolled breaches, and protect investments that DWR and the District have made on MWT. This section provides a detailed overview of the project, including a description of the project site, the project design, the general construction approach, environmental commitments, and anticipated permits and approvals.

2.2 Location and Existing Conditions

The project site is within MWT, which is a North Delta island immediately downstream from the confluence of the Cosumnes and Mokelumne rivers, just east of the Delta Cross Channel. MWT is approximately 0.5 mile west of I-5 in unincorporated Sacramento County (Figure 2.2-1). The project footprint includes 14 critical erosion sites on the outboard levee of MWT, the staging area in the area protected by the Ring Levee, and the haul routes. Each levee erosion repair site includes a 200-foot buffer Figure 2.2-2.

Before the inundation of MWT in 2023, the former agricultural areas in the interior of the tract had shifted to grassland and ruderal vegetation, with a fringe of riparian scrub and woodland species. The perimeter levees generally were maintained to a rural agricultural standard of practice at the time. Relatively little levee maintenance occurred, thereby allowing substantial woody riparian vegetation to establish on the levee slopes and allow waterside erosion to develop. Since inundation of MWT, natural recruitment of tidal marsh vegetation and dieback of some riparian tree species has occurred in the interior of the tract, primarily along the levee toes in the northern portion of the tract. A regional communication tower, a staging area for District operations and project implementation, and the primary mitigation area for prior MWT projects with managed plantings along with elderberry transplants are within the Ring Levee area.

MWT is encircled by a levee system that is maintained and operated by the District. This levee system consists of 9.7 miles of non-project levees, including 3.41 miles of levees along the right bank of the Mokelumne River, 0.72 mile along Deadhorse Cut, 2.12 miles along Snodgrass Slough, 1.8 miles along Lost Slough, 0.69 mile of the East Levee along Lost Slough, and 0.96 mile of the Ring Levee. No as-built construction drawings are available for

² The outboard of the levee is the waterside or channel side of the levee. Waterside and outboard are used interchangeably in this document.

the levee system beyond the original early 1900s levee profiles that established the top of levee elevation around MWT. To infer the levee template versus channel bank, existing laser imaging, detection and ranging-based elevation contours were compared to projected 2:1 (horizontal [H]:vertical [V]) levee slopes, demonstrating the eroded levee.

The District conducts periodic erosion surveys, typically on an annual basis, along its perimeter levees. These surveys have identified several critical erosion sites that need repair. The erosion surveys are conducted via boat along the river and sloughs, documenting visually observable levee and bank degradation. Because of the rural nature and evolving ecosystem/floodplain use of MWT, the levees have become heavily vegetated and significantly eroded along much of their length, increasing the risk of uncontrolled breaches.

The proposed project would repair 14 critical erosion sites along Lost and Snodgrass Sloughs that pose an immediate and direct threat to Ring Levee access, existing infrastructure, and investments that DWR and the District have made on MWT, such as mitigation areas. Erosion at the sites typically consists of toe scour within the channel, causing erosion and slope instability that progresses into the bank and waterside levee toe. A site was classified as critical if it met both of the following criteria:

1. The erosion has encroached into the levee template and exhibits a vertical or near-vertical bank/levee slope over at least half the slope height.
2. The site is situated along a levee segment that either provides access to or directly protects critical infrastructure and features on MWT.

These critical location components include:

- Maintaining access and proximity to the mitigation areas and other critical infrastructure and features (i.e., KCRA communication tower, pump and drainages features, emergency stockpile) within the Ring Levee
- Access to key MWT features (i.e., Dead Horse Breach, Mokelumne Breach, or East Weir)
- Segments forming the perimeter of the Ring Levee

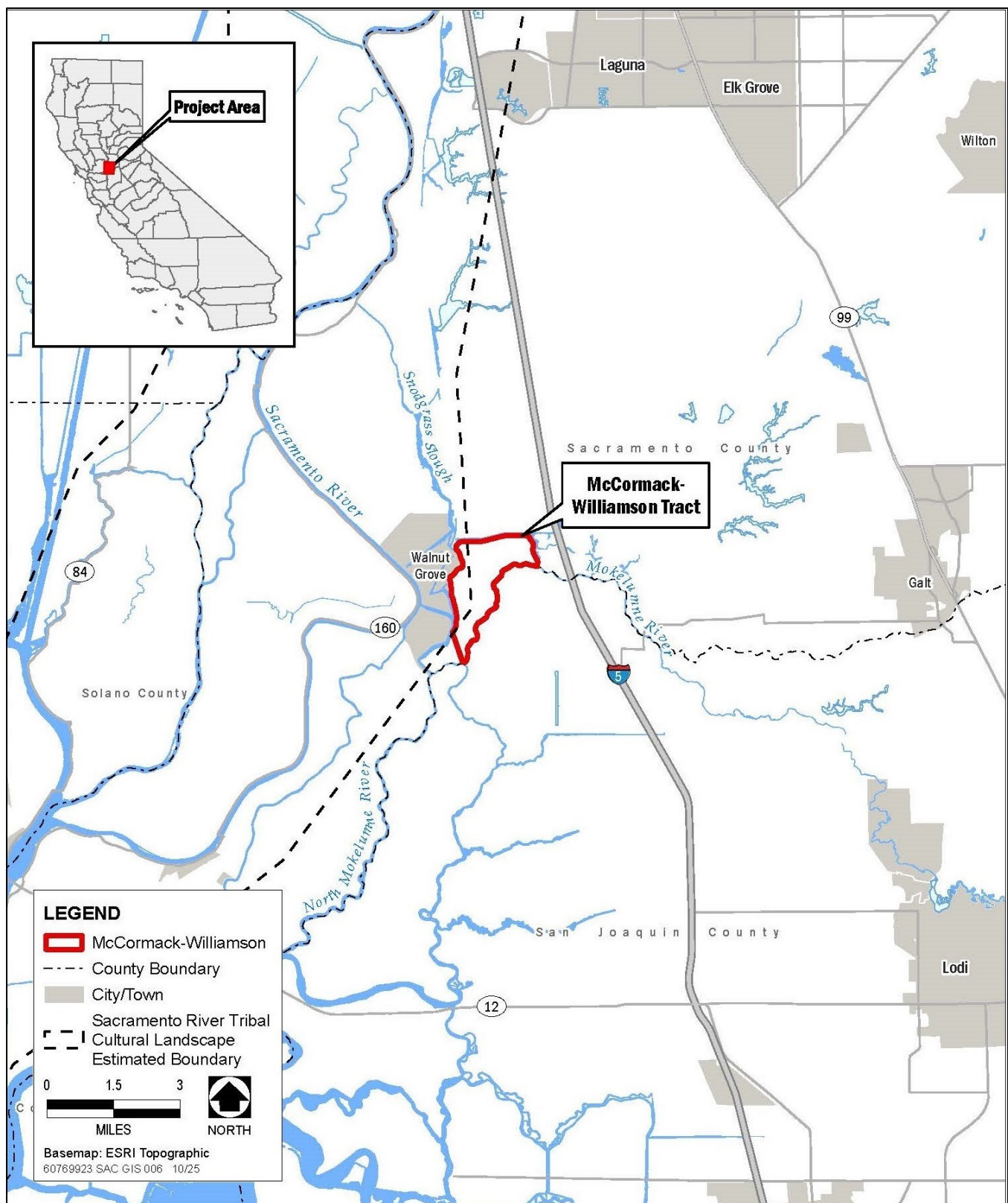


Figure 2.2-1 Project Vicinity

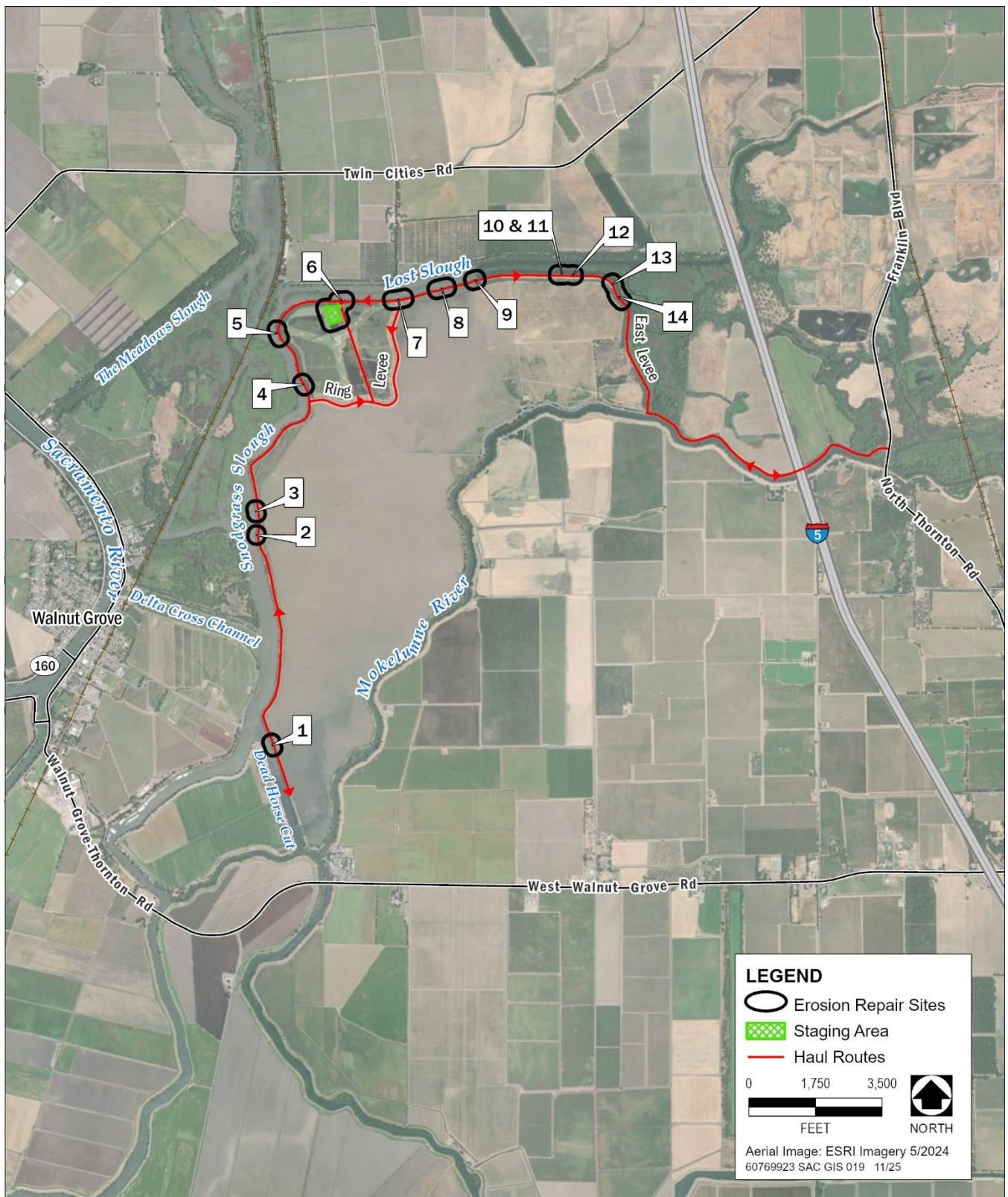


Figure 2.2-2 Project Area

2.3 Project Design

The proposed project would address 14 critical erosion repair sites along the outboard perimeter of MWT at Dead Horse Cut, Snodgrass Slough, Lost Slough, and the East Levee, ranging from 50 to 250 feet in length. The sites would be repaired to address bank loss, toe scour, and erosion. The repairs would entail flattening the waterside levee slope, placing imported riprap to re-establish the bank slope and channel, and constructing a toe berm, following the current standard of practice for rural levee erosion repairs, which generally relates to rock sizing, placement methods, and slope angles. The local standard of practice for rural levee erosion repairs generally follows the U.S. Army Corps of Engineers (USACE) Engineering Manuals (EM) 1110-2-1913, Design and Construction of Levees, and EM 1110-2-1601, Hydraulic Design of Flood Control Channels, as well as under Title 23 of the CCR. The repairs would entail placing material within the original configuration of the levees before erosion. To address the vegetation effects from erosion repairs and result in no net loss of sensitive or protected riparian habitat, the repairs would include on-site planting. Based on individual erosion repair site characteristics, the proposed project would be designed with two possible repair types: Repair Type 1 or Repair Type 2. Site details for the 14 critical erosion repair sites are provided in Table 2.3-1.

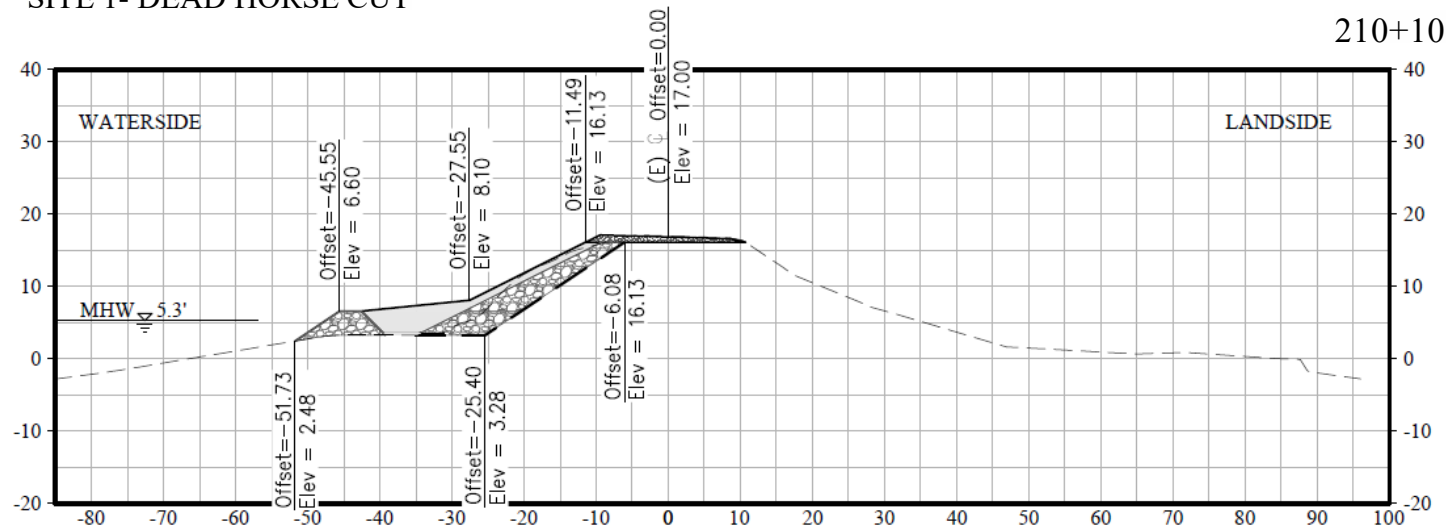
Repair Type 1 would be applied to Sites 1–3 and Sites 7–14 along Dead Horse Cut, Snodgrass Slough, Lost Slough, and the East Levee because of the nature of the erosion on the lower bank slope projecting up into the levee crest. Repair Type 1 would consist of excavating the near vertical levee slope to a back cut of between 1.5–2H:1V, placing soil-filled RSP on the flattened back cut, installing a soil bench behind a rock toe near MHW, and then placing soils back on the soil-filled rock face above MHW. The buried RSP and RSP toe would serve as long-term levee protection, and the flatter slope and soil fill, bench, and facing would enable re-establishing the riparian vegetation. The levee crest would be resurfaced with an aggregate base, and excess excavated soils would be stockpiled in the staging area inside the Ring Levee.

Repair Type 2 would be applied to Sites 4–6 along Snodgrass Slough and Lost Slough, where the erosion is only on the lower bank slope, while the upper slope of the levee would remain intact, negating the need for the larger Repair Type 1. Repair Type 2 would strip the lower outboard levee slope of underlying vegetation, install a RSP toe from the channel bed/bank elevation to just above MHW, and then place excavated soil from the RSP toe to the mid-levee slope or levee crest, depending on the site. The RSP toe would serve as long-term levee protection, and the flatter slope and soil fill would enable re-establishment of the riparian vegetation. It is anticipated that the design of Repair Type 2 would result in no net fill related to the original levee configuration. Figure 2.3-1 shows conceptual cross sections for Repair Type 1 and Repair Type 2.

Table 2.3-1 Erosion Repair Site Summary

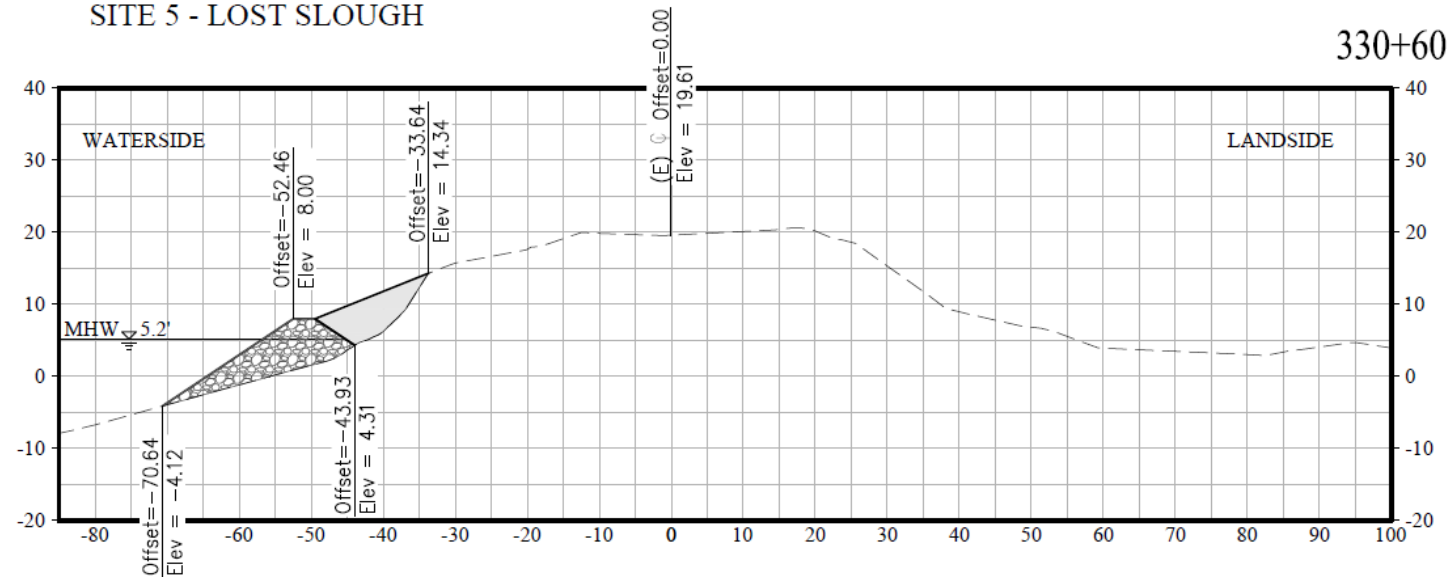
Site Number	Location	Begin Station	End Station	Latitude	Longitude	Length (linear feet)	Repair Type
1	Dead Horse Cut	209+95	210+45	38.23552	-121.49687	50	Type 1
2	Snodgrass Slough	266+90	267+40	38.25002	-121.49797	50	Type 1
3	Snodgrass Slough	273+40	274+00	38.25252	-121.49805	60	Type 1
4	Snodgrass Slough	314+30	314+80	38.26131	-121.49353	50	Type 2
5	Snodgrass Slough	330+30	331+80	38.26559	-121.49608	150	Type 2
6	Lost Slough	351+00	353+00	38.26774	-121.48950	200	Type 2
7	Lost Slough	365+50	368+00	38.26785	-121.48420	250	Type 1
8	Lost Slough	377+50	379+00	38.26864	-121.48057	150	Type 1
9	Lost Slough	387+70	388+20	38.26920	-121.47748	50	Type 1
10	Lost Slough	409+55	410+05	38.26953	-121.46999	50	Type 1
11	Lost Slough	410+40	410+90	38.26949	-121.46965	50	Type 1
12	Lost Slough	412+90	413+40	38.26958	-121.46878	50	Type 1
13	East Levee	424+00	424+80	38.26846	-121.46464	80	Type 1
14	East Levee	428+90	429+40	38.26778	-121.46435	50	Type 1

SITE 1- DEAD HORSE CUT



Conceptual Repair Type 1 Example

SITE 5 - LOST SLOUGH



Conceptual Repair Type 2 Example

Figure 2.3-1 Conceptual Cross Sections of Repair Type 1 and Repair Type 2

2.4 General Construction Approach

Project construction would take place over approximately 59 working days (from 7 a.m. to 6 p.m., Monday through Saturday) during a single construction season, likely from July 2026 to October 2026. As stated above, construction would consist of levee erosion repairs at 14 sites along Dead Horse Cut, Snodgrass Slough, Lost Slough, and the East Levee (along Lost Slough), using two different repair approaches. Hydroseeding would occur shortly after construction, in October or November, with restoration planting occurring during the wet season, likely between November 2026 and March 2027.

2.4.1 Mobilization

Mobilization would include delivery of construction equipment and establishment of temporary facilities, implementing appropriate best management practices (BMPs). Construction equipment first would be delivered to the Ring Levee staging area by lowbed transport. The staging area would be south of the confluence of Lost Slough and Snodgrass Slough on approximately 3 acres of disturbed land. Temporary construction facilities would be established and include on-site refueling tanks, a small tow-behind trailer, portable toilets, a J-stand for construction water, and stockpiling various other supplies.

2.4.2 Site Preparation

Site preparation would include stripping and clearing understory vegetation, clearing debris, and removing or trimming trees. Removal of mature trees such as oaks (*Quercus* spp.) would be avoided or minimized to the maximum extent feasible, although low branches may need to be trimmed to allow equipment access during construction. Design details may be adjusted in the field to avoid tree removal. Stripped and cleared material would be hauled from the erosion sites to the staging area and stockpiled in existing borrow cells for future habitat development. Existing aggregate base roadway surface would be removed and stockpiled on site for re-incorporation into the levee crest fill.

2.4.3 Construction Process

Repairs

Repairs at each site would begin with embankment excavation. Where required in the design, the existing bank slope would be cut back, using an excavator on the levee crest, from an unstable near-vertical slope to a more stable slope between 1.5–2H:1V. The embankment soils would be stockpiled on site for re-use, either in the soil-filled rock section or for placement over or behind rock in establishing a more sustainable embankment slope. Excess soil would be hauled to the staging area.

RSP consisting of Caltrans Class III or IV or equivalent commercially available rock would be used to stabilize the erosion sites. The RSP is anticipated to be sourced from the Jackson/Ione quarries and then hauled to the MWT.

For the Repair Type 1 sites, excavators on the levee crest would place soil-filled RSP along the waterside toe of the levee, forming a shelf from the bank bed to a few feet above MHW. Excavators then would work from this shelf to place RSP along its waterside toe to form a toe berm. Soil then would be placed behind the toe berm to create a planting bench just above MHW. Excavators on the levee crest would place additional soil-filled RSP from the initial soil-filled RSP shelf up the excavated levee slope to the crest. Then, stockpiled soil, excavated from the embankment slope, would be placed and compacted over the soil-filled RSP.

For the Repair Type 2 sites, excavators on the levee crest would place RSP at the waterside toe of the levee, creating a toe berm from the bank bed to a few feet above MHW. Then, stockpiled soil, excavated from the embankment slope, would be placed at a shallower slope and compacted from the RSP toe berm up the excavated levee slope to the crest.

Following RSP placement and completion of the erosion repairs at each site, the levee crest would be resurfaced with a new aggregate base, imported from the Stockton area.

Materials

Imported materials would be hauled from nearby quarries or manufacturers. RSP likely would be obtained from the Jackson Valley Plant in Ione. Current RSP estimates are approximately 10,800 cubic yards, which would require approximately 432 truck trips. Aggregate base likely would be obtained from plants in the Stockton area, and current estimates are approximately 571 cubic yards and 36 truck trips. The soil to be used for the repairs would be primarily re-used excavated soil from MWT. To augment use of on-site soils, fill may be imported from commercial sources in the Stockton area, and current estimates are for 1,400 cubic yards.

Demobilization

Following completion of construction of the repairs, demobilization would occur. It would consist of site cleanup, removal of BMPs, and removal of equipment and materials. All temporary facilities to be used during construction would be removed from the MWT.

2.4.4 Restoration

Disturbed areas above MHW would be revegetated for site stabilization, by hydroseeding with native grasses. This would include the waterside slopes of the erosion repair sites, permanent stockpiles within the Ring Levee area, and any other incidentally disturbed areas during construction. Hydroseeding would occur in October or November, before the start of the rainy season. The seed mix that would be used for hydroseeding would prioritize native species that previously have been used successfully on MWT.

Locally sourced riparian trees and shrubs would be installed at the repaired sites for no net loss of riparian habitat. The planting benches at elevations just above MHW and shallow levee slopes would support vegetation growth and establishment, and re-use of excavated soil over soil-filled RSP or the excavated levee slope would maintain the hydraulic connectivity necessary for the long-term survival of the plantings. Plant species composition, spacing, and elevation relative to the water surface would reflect the native vegetation communities in and adjacent to the project footprint prior to project construction. Installation of new plantings would

occur between November and the following March. Restoration plantings would be maintained and irrigated for a 3-year establishment period. A qualified biologist would monitor and document the survival and vigor of each installed plant and the cover of non-native invasive weeds with a California Invasive Plant Council (Cal-IPC) rating of high³ annually throughout the establishment period. Irrigation and maintenance methods and frequency would be adjusted to improve the performance of plantings or reduce the presence of noxious weeds or pests as needed based on annual monitoring results and field observations during maintenance activities. If 75% of restoration plantings do not survive the first and second years of the establishment period, replacement plantings would be installed; replacement plant species would be determined by a qualified biologist in consideration of the site's physical characteristics, surrounding vegetation, and the overall survival and vigor of each species since planting.

2.4.5 Construction Timing and Equipment

Project construction is anticipated to begin in July 2026 and end in October 2026, for a total construction period of approximately 3 to 4 months, with an estimated 59 days of active construction. The following equipment would be used during construction:

- Foreman's Pickup F250
- Water Truck
- Smooth Drum Roller – CAT CS7
- Motor Grader – CAT 140
- Long-Reach Excavator – CAT 335
- Medium Excavator – CAT 315
- Tractor Loader – CASE 570N
- Front-End Loader – CAT 950
- Haul Trucks (two, on site) – 13 cy 10-wheeler

2.5 Environmental Commitments

The following summarizes the applicable environmental commitments that the District has incorporated into the proposed project. These environmental commitments include standard conservation measures and BMPs to avoid and minimize effects on environmental resources.

The District will implement these environmental commitments as part of the proposed project construction activities at each erosion repair site. These commitments will be satisfied even if not separately imposed by permitting agencies, and if permitting agencies impose additional measures or modifications, these will also be adhered to as part of the permitting conditions. The environmental analysis considered these commitments as elements of the proposed project when determining the significance of potential impacts. The District will include the

³ Cal-IPC categorizes non-native invasive plants in California and non-native plants that are at risk of becoming invasive in the future. Species rated as high have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure and moderate to high rates of dispersal and establishment (Cal-IPC 2026).

environmental commitments in the Mitigation Monitoring and Reporting Program for approval and implementation.

The District will minimize disturbance to environmental resources at or near the erosion repair sites by implementing the following general avoidance measures (GMs).

GM-1 Worker Environmental Awareness Training. The District will provide environmental awareness training by a qualified biologist to the construction lead, construction foreman, crew leader, and any contractor personnel working on the construction site. The environmental awareness training will include descriptions of all special-status species known from or potentially occurring in the project area, their habitats, and methods of identification, including visual aids as appropriate. The training will also describe activity-specific measures that will be followed to avoid impacts on sensitive species and habitats. Hard copies of environmental permits and training materials will be provided to the construction lead, construction foreman, crew leader, and any contractors participating in the repair work.

GM-2 Staging and Access. The previously established staging area within the Ring Levee and levee crown roads will be used for staging and access, to avoid affecting previously undisturbed areas. The number of access routes and the size of the staging and work areas will be limited to the minimum necessary to conduct the repair activities.

GM-3 Equipment Inspection. Inspections for wildlife will be conducted under all vehicles and heavy equipment before their use when staged overnight.

GM-4 Construction Site Best Management. All project-related trash items, such as wrappers, cans, bottles, and food scraps, will be collected in closed containers that are removed from the project site each day and disposed at an appropriate off-site location, to minimize attracting wildlife to work areas.

GM-5 Vegetation Removal. Vegetation clearing will be kept to the minimum necessary.

GM-6 Erosion Control Materials. If erosion control fabrics are used, products will not be used with plastic monofilament or cross-joints in the netting that are bound/stitched (e.g., straw wattles, fiber rolls, or erosion control blankets), which could trap wildlife.

GM-7 Site Restoration. Temporary fill, construction debris, and refuse will be removed and properly disposed, following completion of project activities.

GM-8 Invasive Plant Species Control. The District will implement measures to minimize the potential for invasive plants to be introduced or spread during repair work. Visible soil and plant materials will be removed from equipment before entering the project site and between use in different water bodies.

GM-9 Speed Limits. Drivers of project vehicles will observe a 15-mile-per-hour speed limit on unpaved roads.

2.5.1 Water Quality

The District would minimize impacts on water quality at or near the erosion repair sites by implementing the following water quality measures (WQMs).

WQM-1 Erosion and Sediment Control Plan. The District will prepare and implement an erosion and sediment control plan to control short-term and long-term erosion and sedimentation effects, and to restore soils and vegetation in areas affected by construction activities. The purpose of the erosion and sediment control plan would be to 1) identify erosion and sedimentation sources associated with project construction and operation that may affect the quality of stormwater; and (2) identify, construct, and implement stormwater pollution prevention measures to reduce erosion and sediment in stormwater discharges during and after construction. The plan will include appropriate local jurisdiction requirements, as required, regarding erosion control, and will implement BMPs for erosion and sediment control, as required. The erosion and sediment control plan would be completed before vegetation clearing begins and a copy of the plan would be kept on site during construction and operation. The erosion and sediment control plan would include, but not be limited to, the following items:

- Management of excavated or dredged sediments present on site during construction
- A description of potential erosion and sediment to stormwater resulting from construction and operation

WQM-2 Stormwater Pollution Prevention Plan (SWPPP). A SWPPP will be developed for the project by a qualified engineer or erosion control specialist and implemented before the start of construction, if 1 acre or more of ground is disturbed. The objectives of the SWPPP would be to (1) identify pollutant sources associated with project construction and operation that may affect the quality of stormwater; and (2) identify, construct, and implement stormwater pollution prevention measures to reduce pollutants in stormwater discharges during and after construction. The District and/or its contractors will develop and implement a Spill Prevention and Control Plan as part of the SWPPP, to minimize the effects from spills of hazardous, toxic, or petroleum substances during project construction, and it will be a component of the SWPPP and completed before any construction activities begin. Implementation of this WQM-2 would comply with State and federal water quality regulations. A copy of the SWPPP will be kept on site during project construction and operation, and will be made available on request to representatives of the Central Valley Regional Water Quality Control Board (RWQCB). The SWPPP will include, but will not be limited to the following items:

- A description of potential pollutants to stormwater from erosion
- Management of excavated or dredged sediments and hazardous materials present on site during construction (including vehicle and equipment fuels)
- Details of how the sediment and erosion control practices would comply with State and federal water quality regulations
- A description of potential pollutants to stormwater resulting from project operation

In areas where soil disturbance would be less than 1 acre, the Erosion and Sediment Control Plan (WQM-1) will be implemented.

WQM-3 Hazardous Materials Management and Handling Plan. Before the start of construction, the District will prepare a Hazardous Materials Management and Handling Plan, to be implemented during construction. This plan can be prepared and implemented either as part of the SWPPP under WQM-2 or separately and apart from WQM-2 and in conjunction with implementation of WQM-1.

The Hazardous Materials Management and Handling Plan will include, but not be limited to, the following elements to avoid and minimize potential impacts from hazards and hazardous materials:

- Requirements to store hazardous materials with the original manufacturer's label and in accordance with local, State, and federal regulations
- Procedures for storage of hazardous materials in locations and manners that minimize their potential to enter a waterway and/or contaminate aquatic resources
- Methods regarding use and disposal of potentially hazardous materials stored on site
- Procedures for on-site storage of machinery with the potential to leak hazardous substances

In addition, the plan will include, but not be limited to, the following measures to prevent, control, and minimize impacts from a spill of hazardous, toxic, or petroleum substance during project construction:

- Methods for handling and storing vehicles, equipment, diesel fuel, oil, gasoline, lubricants, and other petroleum products, to minimize potential spills and effects on stormwater
- Procedures for containment, clean-up, and reporting of any minor spills:
 - Minor spills will be contained and cleaned up immediately after discovery.
 - Manufacturer's methods for spill cleanup of a material will be followed as described on the material safety data sheets (kept with product containers).
- Requirements for reporting major spills to the proper emergency response agencies to avoid fines and penalties. For example:
 - If a major spill occurs, the Governor's Office of Emergency Services Warning Center will be notified at 1-800-852-7550, in addition to local authorities.
 - For spills of federal reportable quantities, the National Response Center also will be notified at 1-800-424-8802. The federal reportable spill quantity for petroleum products is any oil spill that: (1) violates applicable water quality standards, (2) causes a film or sheen on or discoloration of a water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

- Additional specific spill control, clean-up, and reporting requirements, including on-site storage of spill response materials and training in spill response for all on-site personnel, may include the following:
 - Materials and equipment needed for cleanup procedures will be kept readily available on site, either at an equipment storage facility or on the contractor's trucks.
 - Equipment to be kept on site will include, but not be limited to, brooms, dust pans, shovels, granular absorbents, sand, sawdust, absorbent pads and booms, plastic and metal trash containers, gloves, and goggles.
 - On-site personnel will be trained in cleanup procedures, the location of spill cleanup equipment, and proper disposal procedures.
 - Toxic, hazardous, or petroleum product spills that are required to be reported by regulations will be documented, and a record of the spills will be kept with project documents.
 - If a spill occurs that is reportable to the federal, State, or local agencies, the contractor will be responsible for making and recording the reports.
- Diesel fuel, oil, gasoline, and lubricants are considered petroleum products. These materials will be handled carefully to minimize their exposure to waterways. The risks in using petroleum products will be reduced by implementing the following steps:
 - Waste oil and other petroleum products will not be discharged into the ground or other water bodies.
 - On-site vehicles will be monitored for fluid leaks and receive regular preventative maintenance, to reduce the chance of leakage (e.g., checking for and fixing fuel oil leaks in construction vehicles on a regular basis).
 - Bulk storage tanks having a capacity of more than 55 gallons will be provided with a secondary containment measure. Containment could be provided by a prefabricated temporary containment mat, a temporary earthen berm, or another equally effective containment measure.
 - Bulk fuel or lubricating oil dispensers will have a valve that must be held open to allow the flow of fuel into construction vehicles. During fueling operations, the contractor will have personnel present to detect and contain spills.
 - Fueling of vehicles and equipment will not occur adjacent to existing waterways and will occur on the landside of the levees.

2.6 Anticipated Regulatory Permits and Approvals

Table 2.6-1 lists the federal, State, and regional/local permits and regulatory approvals that are expected to be necessary to conduct the proposed activities at MWT.

Table 2.6-1 Permits and Approvals Potentially Needed to Conduct Permitted Activities

Federal Permits/Approvals	Permitting Authority	Affected Elements
U.S. Army Corps of Engineers Section 404	U.S. Army Corps of Engineers	Any jurisdictionally delineated wetlands/ water bodies identified in the project area
State Permits/Approvals	Permitting Authority	Affected Elements
Section 1600 Streambed Alteration Agreement	California Department of Fish and Wildlife	Permitted activities that may divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of any river stream, or lake, or deposit or dispose of debris, waste, or other material where it may pass into protected water bodies
Water Quality Certification Section 401	Central Valley Regional Water Quality Control Board (Region 5)	Permitted activities in the project area that may lead to discharge into federally protected bodies of water.
Consistency with Delta Plan	Delta Stewardship Council	Covered activity; file certification of consistency (RR P1, 23 CCR Section 5012: this policy covers all proposed actions that involve discretionary State investments in Delta flood risk management, including levee operations, maintenance, and improvements).

2.6.1 References

Cal-IPC (California Invasive Plant Council). 2026. The Cal-IPC Inventory. Available online at: <https://www.cal-ipc.org/inventory/>. Accessed January 7, 2026.

3. INITIAL STUDY

1. Project Title: McCormack-Williamson Tract 2026 Levee Erosion Repair Project Sites 1–14
2. Lead Agency: Reclamation District 2110
3. Contact Person and Phone Number: Mike Kynett, MBK, 1-916-456-4400
4. Project Location: South of the confluence of the Cosumnes and Mokelumne Rivers
5. Project Sponsor: Reclamation District 2110
6. General Plan Designation: Agricultural Cropland and Natural Preserve
7. Zoning: Delta waterways and Recreation
8. Description of Project: The proposed project would repair 14 outboard (waterside) erosion sites on MWT. The repairs are proposed to address existing erosion, protect existing infrastructure, maintain MWT access, reduce the risk of uncontrolled breaches, and protect investments that DWR and the District have made on MWT. The erosion repair sites are along the outboard perimeter of MWT at Dead Horse Cut, Snodgrass Slough, Lost Slough, and the East Levee, ranging from 50 to 250 feet in length. These erosion repair sites would be repaired to address bank loss, toe scour, and erosion. The repairs would entail flattening the waterside levee slope, placing imported riprap to re-establish the bank slope and channel, and constructing a toe berm. To address vegetation effects from erosion repairs and result in no net loss of sensitive or protected habitat, in-water benches and planting benches would be constructed onsite as part of the proposed project at each erosion repair site. The repairs would entail placing material within the original configuration of the levees before erosion and following the current standard of practice for rural levee erosion repairs that generally relate to rock sizing, placement methods, and slope angles.
9. Surrounding Land Uses and Setting: rural and agricultural land uses.
10. Other Public Agencies Whose Approval May Be Required: refer to Table 2.6-1, Permits and Approvals Potentially Needed to Conduct Permitted Activities
11. Coordinates: 38 15'12.6"N 121 29'2.5"W

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a potentially significant impact. As indicated by the environmental checklist on the following pages impacts on environmental factors determined to be less-than-significant with mitigation measures incorporated, less than significant, or no impact are not checked below.

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

Determination (To be completed by the Lead Agency). On the basis of this initial evaluation:

- ☐ I find that the proposed project could not have a significant effect on the environment, and a negative declaration will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A mitigated negative declaration will be prepared.
- ☐ I find that the proposed project may have a significant effect on the environment, and an environmental impact report is required.
- ☐ I find that the proposed project may have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An environmental impact report is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or negative declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or negative declaration, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

1/22/2026

Date

Chad Fien

Printed Name

President

Title

Reclamation District 2110

Agency

3.2 Environmental Checklist

3.2.1 Air Quality

Table 3.2-1 Environmental Issues and Determinations for Air Quality

Issues	Determination
a) Conflict with or obstruct implementation of the applicable air quality plan?	LTS/M
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?	LTS/M
c) Expose sensitive receptors to substantial pollutant concentrations?	LTS
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	LTS

Note:

LTS = Less-than-Significant Impact

LTS/M = Less-than-Significant Impact with Mitigation Incorporated

Environmental Setting

The proposed project is in unincorporated Sacramento County, within the Sacramento Valley Air Basin (SVAB). The SVAB is a federally and State recognized geographic area that includes all of Tehama, Glenn, Butte, Colusa, Yolo, Sutter, Yuba, Sacramento, and Shasta counties, as well as portions of Solano and Placer counties (17 CCR Section 60106). The California Air Resources Board (CARB) delegates air quality management responsibilities to local air quality management districts. Primary responsibilities of local air quality districts include overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents as required by CEQA. The air quality districts also are responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and State air quality laws, and for ensuring that federal and State ambient air quality standards are met, as further described below. The Sacramento Metropolitan Air Quality Management District (SMAQMD) has local air quality jurisdiction in Sacramento County.

Individual air pollutants at certain concentrations may adversely affect human health and the environment, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation. Six air pollutants have been identified by the U.S. Environmental Protection Agency (EPA) and CARB as being of concern, both on a nationwide and statewide level, respectively: ozone; carbon monoxide; nitrogen dioxide; sulfur dioxide; lead; and particulate matter (PM), which is subdivided into two classes based on particle size – PM equal to or less than 10 micrometers in diameter (PM₁₀) and PM equal to or less than 2.5 micrometers in diameter (PM_{2.5}). Ozone is not emitted directly into the air but is formed through a series of reactions involving reactive organic gases (ROG) and nitrogen oxides (NO_x) in the presence of sunlight. These pollutants are referred to as “ozone precursors,” because their reaction leads to the formation of ozone.

Health-based air quality standards have been established for these pollutants by EPA at the national level and by CARB at the State level. These standards are referred to as the national ambient air quality standards (NAAQS) and the California ambient air quality standards (CAAQS), respectively. The NAAQS and CAAQS were established to protect the public with a margin of safety from adverse health impacts caused by exposure to air pollution. Because the air quality standards for these air pollutants are regulated using human and environment health-based criteria, they commonly are referred to as “criteria air pollutants.” Both EPA and CARB designate areas of California as “attainment,” “nonattainment,” “maintenance,” or “unclassified” for the various pollutant standards, according to the federal Clean Air Act and the California Clean Air Act, respectively. With respect to regional air quality, Sacramento County currently is designated as nonattainment for the CAAQS for ozone and PM₁₀ and as nonattainment for the NAAQS for ozone and PM_{2.5}. Sacramento County is designated as attainment or unclassified for all other NAAQS and CAAQS (SMAQMD 2025).

Naturally occurring asbestos also can be an air toxic of concern that can be released as a result of earth disturbance during construction. The erosion repair sites are not within an area likely to contain naturally occurring asbestos (USGS 2011). Furthermore, the proposed project would include ground-disturbing activity within an area previously disturbed and constructed for the currently existing levee.

As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air quality management district may be relied on to inform evaluation of a project’s impacts on air quality. The SMAQMD prepared the Guide to Air Quality Assessment in Sacramento County (CEQA Guide) to assist lead agencies and project applicants in evaluating the potential air quality impacts of projects in the SVAB (SMAQMD 2021).

Discussion

- a) **Less-than-Significant Impact with Mitigation Incorporated.** The Clean Air Act requires states to develop a statewide plan to attain and maintain the standards in all areas of the country and a region-specific plan to attain the standards for each area designated nonattainment or maintenance. These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies for areas not meeting the ambient air quality standards, and they are submitted to EPA for approval. As noted above, the project region (i.e., Sacramento County) is nonattainment for CAAQS for ozone and PM₁₀ and for the NAAQS for ozone and PM_{2.5}. The SMAQMD has adopted several air quality attainment plans over the years that identify measures needed to attain the applicable air quality standards. As documented in the SMAQMD’s CEQA Guide (SMAQMD 2021), the recommended construction and operational mass emissions thresholds for ozone precursors correlate with the NO_x and ROG reductions from heavy-duty vehicles and land use project emission reduction requirements, as committed in the regional air quality attainment plans. Similarly, the construction and operational mass emissions thresholds for PM correlate with SMAQMD’s permitting offset trigger levels, which prevent deterioration of ambient air quality and ensure projects do not worsen the region’s attainment status for PM (SMAQMD 2015). Therefore, projects with emissions less than the recommended

thresholds of significance for criteria air pollutants would not conflict with or obstruct implementation of the applicable air quality plans for the attainment and maintenance of ozone and PM standards.

Table 3.2-2 presents the most current significance thresholds that have been established by the SMAQMD, including maximum daily and annual thresholds for short-term construction. As noted above, a project with emission rates below these thresholds generally is considered to have a less-than-significant effect on air quality (SMAQMD 2021).

Table 3.2-2 SMAQMD Criteria Air Pollutant Thresholds of Significance for Construction

Pollutant	Daily Threshold (pounds per day)	Annual Thresholds (tons per year)
ROG (VOC)	None	None
NO _x	85	None
PM ₁₀	80 ¹	14.6 ¹
PM _{2.5}	82 ¹	15 ¹

Notes:

NO_x = nitrogen oxides; PM₁₀ = respirable particulate matter with a diameter of 10 microns or less; PM_{2.5} = fine particulate matter with a diameter of 2.5 microns or less; ROG = reactive organic gases; VOC = volatile organic compound

¹ PM thresholds are zero unless all feasible best available control practices/best management practices are applied.

Source: SMAQMD 2020

To allow for the use of non-zero PM₁₀ and PM_{2.5} thresholds of significance, the SMAQMD recommends for lead agencies to require implementation of a set of Basic Construction Emissions Control Practices that serve as construction BMPs for all land use development projects. The SMAQMD recommends for lead agencies to implement these emissions control practices as Conditions of Approval or include in a mitigation measure (SMAQMD 2021).

As indicated below, in the analysis of environmental issue area b), emissions that would result from the proposed project would not exceed the SMAQMD recommended daily and annual thresholds of significance for construction activities. However, because project construction would generate PM emissions, implementation of construction BMPs would be required to apply SMAQMD's non-zero thresholds of significance for PM. Therefore, without implementation of applicable SMAQMD construction BMPs for PM emissions, the proposed project's construction activities potentially could conflict with or obstruct implementation of the applicable air quality plans. Mitigation Measure AQ-1 would require implementation of the SMAQMD's recommended construction BMPs.

Furthermore, the proposed project would not induce or otherwise increase the potential for growth in the areas adjacent to or served by the erosion repair sites because the repairs would return the levee to previous flood protection standards. Because the proposed project would not result in growth-inducing effects and mitigated project emissions would not exceed the SMAQMD-recommended thresholds of significance, the proposed project with implementation of Mitigation Measure AQ-1 would not conflict with or obstruct implementation of an applicable air quality plan, and this impact would be less than significant with mitigation incorporated.

- b) **Less-than-Significant Impact with Mitigation Incorporated.** The proposed project would generate emissions from construction activities, including exhaust emissions from the use of construction equipment and construction-related vehicles, such as worker and vendor truck trips to and from the project site, and fugitive dust emissions from disturbing activities and travel on unpaved roadways. Emissions were modeled using the California Emissions Estimated Model (CalEEMod) version 2022.1.1.33. As detailed in Chapter 2, “Project Description,” project construction activities involving the use of heavy-duty construction equipment would occur over approximately 59 days in a single construction season, could require equipment use for up to 11 hours per day, and would result in up to 25 worker one-way trips and 17 material delivery truck one-way trips per day (a one-way trip would be a trip to *or* from the project site). Aggregate and RPS material are anticipated to be sourced from Stockton (25 miles from the project site) and Jackson Valley Quarry in Lone (31 miles from the project site), respectively. Delivery routes from these locations to the project site would result in project truck trips occurring in San Joaquin County, which is within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). This analysis conservatively assumed a 31-mile, one-way trip distance for material delivery trucks. Travel on unpaved roadways in the project area would occur for a portion of each haul truck trip (Figure 2.2-2), which was accounted in the emissions modeling. For the purposes of emissions modeling, each material delivery truck conservatively was assumed to travel up to 4 miles (one-way) on an unpaved roadway in the project area (i.e., from the start of the haul route off North Thornton Road to the staging area). Any excavated material would be re-used on site and would not result in haul trips to export material away from the project area. Maximum daily heavy-duty construction equipment use was modeled based on project-specific equipment needs for the most intensive phase of construction and any additional unique equipment pieces required for other construction phases not otherwise covered by the most intensive phase; equipment for the most intensive phase was modeled for all 59 days of construction, conservatively estimating total equipment emissions (refer to Appendix A, Air Quality and Greenhouse Gas Results, for emissions modeling details and output files).

As noted above, SMAQMD has established recommended thresholds of significance for the purposes of evaluating project impacts under CEQA. Thresholds that have been established by the air district represent a cumulatively considerable contribution to the regional air quality. Therefore, comparison to these thresholds serve as a metric for the purposes of identifying a potential cumulative air quality impact with respect to regional

emission of criteria air pollutants. Table 3.2-3 presents the proposed project's estimated daily and annual emissions and the applicable SMAQMD daily and annual thresholds of significance for construction activities. As discussed above and summarized in Table 3.2-2, the SMAQMD-recommended thresholds of significance for PM after implementation of BMPs are 80 pounds per day or 14.6 tons per year of PM₁₀, and 82 pounds per day or 15 tons per year of PM_{2.5}. The SMAQMD-recommended BMPs are feasible Basic Construction Emission Control Practices for controlling fugitive dust from a construction site, and projects that implement these feasible practices can use the non-zero PM significance thresholds. Table 3.2-3 presents the proposed project's construction emissions with implementation of SMAQMD-recommended BMPs for fugitive dust control. The quantified BMPs that are presented in Table 3.2-3 include watering exposed surfaces and on-site unpaved construction roads two times per day, and limiting vehicle speeds on unpaved roadways to 15 miles per hour.

Table 3.2-3 Summary of Maximum Daily and Annual Project Construction Emissions

Pollutant	ROG (lb/day)	NO _x (lb/day)	PM ₁₀ ¹ (lb/day)	PM _{2.5} ¹ (lb/day)	PM ₁₀ (ton/year)	PM _{2.5} (ton/year)
Off-Road Equipment	4.65	32.71	1.55	1.43	0.05	0.04
Dust from On-Site Material Movement	-	-	0.74	0.08	0.02	0.00
On-Site Trucks	0.01	0.65	14.07	1.41	0.38	0.04
Worker Vehicles	0.10	0.08	0.25	0.06	0.01	0.002
Material Delivery Trucks	0.04	2.62	0.48	0.15	0.01	0.002
Total Proposed Project²	4.81	35.92	16.61	3.07	0.45	0.09
<i>SMAQMD Threshold of Significance³</i>	-	85	80	82	14.6	15

Notes:

lb = pounds; NO_x = nitrogen oxides; PM₁₀ = respirable particulate matter with a diameter of 10 microns or less; PM_{2.5} = fine particulate matter with a diameter of 2.5 microns or less;

ROG = reactive organic gases

1. PM emissions include implementation of fugitive dust control measures that are identified by the SMAQMD as BMPs, including watering exposed surfaces and unpaved construction roads two times per day, and limiting vehicle speeds on unpaved roadways to 15 miles per hour.

2. Some totals do not sum because of rounding.

3. PM thresholds are zero unless all feasible best management practices are applied; the proposed project would include all feasible best management practices identified by SMAQMD.

Threshold Source: SMAQMD 2020

Modeled by AECOM in 2025

As shown in Table 3.2-3, emissions of criteria air pollutants and precursors would not exceed the SMAQMD significance thresholds for construction. Nevertheless, as noted above under impact discussion a), SMAQMD recommends that lead agencies implement the Basic Construction Emissions Control Practices as Conditions of Approval or include in a mitigation measure (SMAQMD 2021). Without implementation of the Basic Construction Emissions Control Practices, construction emissions of PM₁₀ and PM_{2.5} could be potentially significant. Mitigation Measure AQ-1 would require implementation of the SMAQMD's recommended BMPs for construction, thus reducing

the impact to a less-than-significant level. Furthermore, as shown in Table 3.2-3, emissions generated by material delivery trucks traveling through the SJVAPCD would contribute a minimal level of emissions to the overall proposed project emissions and would not contribute a cumulatively considerable net increase in any criteria pollutant within the SJVAPCD. The impact would be less than significant with mitigation incorporated.

Following construction, routine levee maintenance activities would continue, similar to existing conditions, and the proposed project would not generate any new operational emissions.

Mitigation Measure AQ-1. Implement Basic Construction Emissions Control Practices

The following Basic Construction Emissions Control Practices are considered feasible for controlling fugitive dust from a construction site. Control of fugitive dust is required by the Sacramento Metropolitan Air Quality Management District (SMAQMD) Rule 403 and enforced by SMAQMD staff. The District will require the following measures to be identified in construction bid documents and construction specifications for implementation by construction contractor(s).

Basic Construction Emissions Control Practices

- All exposed surfaces will be watered two times daily. Exposed surfaces include, but are not limited to, soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- At least 2 feet of free board space will be covered or contained on haul trucks that are transporting soil, sand, or other loose material on site. Any haul trucks that will be traveling along freeways or major roadways will be covered.
- Wet power vacuum street sweepers will be used to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping will be prohibited.
- Project vehicle speeds on unpaved roads will be limited to 15 miles per hour (mph).
- Idling time will be minimized, either by shutting equipment off when not in use or by reducing idling time to 5 minutes. Clear signage will be provided that posts this requirement for workers at the entrances to the site.
- Current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation will be provided.
- All construction equipment will be maintained in proper working condition, according to manufacturer's specifications. The equipment will be checked by a certified mechanic and determine to be running in proper condition before it is operated.

- c) **Less-than-Significant Impact.** Some land uses are considered more sensitive to air pollution than others, because of the types of population groups or activities involved.

Children, pregnant women, the elderly, those with existing health conditions, and athletes or others who engage in frequent exercise are especially vulnerable to the effects of air pollution. Accordingly, land uses that typically are considered sensitive receptors include schools, daycare centers, parks and playgrounds, and medical facilities. Residential areas are considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to pollutants present. The project area is surrounded by agricultural land use. No sensitive receptors are within 0.5 mile of any erosion repair site. The nearest sensitive receptor is a residence approximately 0.6 mile (approximately 3,000 feet) west of the project area. Although a residence is approximately 0.1 mile south of Levee Road (just west of I-5 and south of the Mokelumne River), activity on this route would be limited to vehicle travel and would not contribute substantially to localized emissions.

The primary localized pollutant of concern that would result from the proposed project is diesel particulate matter (DPM). According to the California Almanac of Emissions and Air Quality, most of the estimated health risk from toxic air contaminants can be attributed to relatively few compounds, the most important being DPM (CARB 2013).

Project construction would generate toxic air contaminant emissions from the use of heavy-duty construction equipment, vendor trucks, and construction worker vehicles. These activities could expose nearby receptors to toxic air contaminants, primarily in the form of DPM generated by the diesel-fueled trucks and equipment. More than 90 percent of DPM is less than 1 micrometer in diameter, and thus is a subset of PM_{2.5} (CARB 2025). Therefore, exhaust PM_{2.5} is used as the upper limit for DPM emissions associated with project construction. Although the proposed project would generate DPM from on-site equipment and trucks as well as from vehicle trips to and from the individual erosion repair sites, those emissions generated from trips to and from the site would be distributed along those travel routes and not concentrated in any one location. Because of the limited number of daily truck trips (approximately nine daily one-way truck trips) over a broad geographical region (i.e., emissions would be dispersed over the approximately 31-mile route), these offsite emissions would not contribute to substantial pollutant concentrations at surrounding sensitive receptors. On-site emissions from equipment and on-site trucks would result in more concentrated emissions. However, as detailed in Appendix A, maximum daily PM_{2.5} exhaust emissions from on-site trucks and on-site equipment would be approximately 1.4 pounds per day.

Health risk is a function of the concentration of contaminants in the environment and the duration of exposure to those contaminants. Even in intensive phases of project construction, no substantial pollutant concentrations would be generated from an individual erosion repair site outside the immediate vicinity. Concentrations of mobile-source DPM emissions typically are reduced by 60 percent at a distance of 300 feet from the source (Zhu and Hinds 2002), and by 70 percent at approximately 500 feet (CARB 2005). As noted above, no sensitive receptors are within 0.5 mile (2,640 feet) of the project area. Furthermore, the majority of construction activities would be even

further, occurring along the extent of the linear levee repair area and not concentrated in any one given location for the entirety of the construction duration. In addition, proposed project emissions would be temporary and would cease after levee repair activities are completed.

Because of the temporary nature of construction activity, limited on-site PM_{2.5} exhaust, and distance from sensitive receptors, the proposed project would not expose sensitive receptors to substantial pollutant concentrations. Therefore, the impact would be less than significant.

- d) **Less-than-Significant Impact.** Odors associated with diesel exhaust from the use of off-road equipment and heavy-duty trucks would be emitted during project construction and may be considered offensive to some individuals. However, such odorous emissions would disperse rapidly with distance from the source, and no receptors are within 0.5 mile of the project area in any direction. Therefore, project construction would not result in other emissions, such as those leading to odors, adversely affecting a substantial number of people. The impact would be less than significant.

References

- California Air Resources Board (CARB). 2005 (April). *Air Quality and Land Use Handbook: A Community Health Perspective*. Available:
https://ww2.arb.ca.gov/sites/default/files/2023-05/Land%20Use%20Handbook_0.pdf. Accessed November 20, 2025.
- . 2013. *California Almanac of Emissions and Air Quality*. Available:
<https://ww2.arb.ca.gov/our-work/programs/resource-center/technical-assistance/air-quality-and-emissions-data/almanac>. Accessed November 20, 2025.
- . 2025. *Overview: Diesel Exhaust and Health*. Available:
<https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>. Accessed November 20, 2025.
- Sacramento Metropolitan Air Quality Management District (SMAQMD). 2015 (March). *California Environmental Quality Act Guidelines Update: Proposed Particulate Matter CEQA Thresholds of Significance*. Available:
<https://www.airquality.org/LandUseTransportation/Documents/ParticulateMatterThresholdsUpdateMay2015AgendaItemAttachment.pdf>. Accessed December 18, 2025.
- . 2020 (April). *SMAQMD Thresholds of Significance Table*. Available:
<https://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf>. Accessed November 20, 2025.
- . 2021. *Guide to Air Quality Assessment in Sacramento County*. Available:
<https://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools>. Accessed November 20, 2025.

- . 2025. Air Quality Pollutants and Standards. Available: <https://www.airquality.org/Air-Quality-Health/Air-Quality-Pollutants-and-Standards>. Accessed December 18, 2025.
- U.S. Geological Survey (USGS). 2011. *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California*. Available: https://www.conservation.ca.gov/cgs/Documents/Publications/Map-Sheets/MS_059_Plate.pdf. Accessed November 20, 2025.
- Zhu, Y., W. C. Hinds, S. Kim, and C. Sioutas. 2002. Concentration and Size Distribution of Ultrafine Particles near a Major Highway. *Journal of the Air and Waste Management Association* 52:9, 1032–1042. DOI: 10.1080/10473289.2002.10470842. Available: <http://dx.doi.org/10.1080/10473289.2002.10470842>. Accessed November 20, 2025.

3.2.2 Biological Resources

Table 3.2-4 Environmental Issues and Determinations for Biological Resources

Issues	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 Game or U.S. Fish and Wildlife Service?	LTS/M
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 U.S. Fish and Wildlife Service?	LTS
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?	LTS
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	LTS
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	LTS
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?	NI

Notes:

LTS = Less-than-Significant Impact

LTS/M = Less-than-Significant Impact with Mitigation Incorporated

NI = No Impact

Environmental Setting

The information in this section is based on data collected during field surveys which were conducted on October 20–22, 2025, by AECOM biologists. The surveys included land cover mapping, identification of sensitive natural communities, blue elderberry mapping, delineation of aquatic resources, a tree inventory, and a habitat assessment for all special-status wildlife and plant species. All aquatic resources and trees with a diameter at breast height (DBH) greater than 4 inches were mapped within the project footprint, and all blue elderberry and land cover types were mapped within the survey area, which included the project footprint and a 200-foot buffer. Furthermore, habitat for special-status species was evaluated within the survey area and in areas approximate to the survey area.

This section also includes information that was collected during a review of the following data sources:

- California Native Plant Society Rare Plant Inventory (CNPS 2025) for the following USGS 7.5-minute quadrangles that include and surround the project area: Bruceville, Thornton, Courtland, Isleton, Galt, Lodi North, Elk Grove, Florin, and Clarksburg
- California Natural Diversity Database (CNDDDB) (CDFW 2025a) records of special-status species previously documented within 5 miles of the project area
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation project planning tool (USFWS 2025a)
- Critical Habitat Mapper (USFWS 2025b)
- eBird online database for bird distribution and abundance (eBird 2025)
- iNaturalist online database for wildlife and plant distribution and abundance (iNaturalist 2025)

Land Cover and Vegetation Communities

The survey area includes a mosaic of riparian forest, scrub-shrub, freshwater marsh, grassland, and aquatic habitats, as well as existing developed infrastructure, including a levee gravel road and riprap. Land surrounding MWT consists of heavily farmed areas and low-density residential use.

All land cover types (including aquatic resources) within the survey area were mapped during the field survey on October 20–22, 2025, and aerial imagery and hydrological data were used to review and refine the mapping, particularly along shorelines that were inaccessible for safety reasons. Vegetation communities were mapped and classified according to *A Manual of California Vegetation Online* (CNPS 2025).

Furthermore, each vegetation community was assessed for conservation status. Vegetation communities identified as critically imperiled (S1), imperiled (S2), or vulnerable (S3) on the most recent California Natural Community List are considered Sensitive Natural Communities (CDFW 2025b). Where applicable, communities were assigned to corresponding Delta Levee Habitat Types, which are protected under State Assembly Bill (AB) 360 and include riparian forest habitat, scrub-shrub habitat, and freshwater marsh habitat (DWR 2014). These habitat types may provide shaded riverine aquatic habitat, which also is protected by AB 360, where they overhang adjacent waterways.

All land cover types and vegetation communities are shown on Figure 3.2-1a-k, and detailed further in Table 3.2-5. Each vegetation community is described in the text that follows.

Table 3.2-5 Land Cover and Vegetation Communities in the Survey Area

Land Cover Type	MCV Vegetation Alliance/ Vegetation Community	State Rarity Rank	Delta Levees Habitat Type
Developed	N/A	N/A	N/A
Developed – Gravel Road	N/A	N/A	N/A
Developed - Riprap	N/A	N/A	N/A
Developed - Disturbed	N/A	N/A	N/A
Woodlands and forests	Valley oak riparian forest and woodland	S3*	Riparian forest
Woodlands and forests	Goodding's willow – red willow riparian woodland and forest	S3*	Riparian forest
Woodlands and forests	White alder groves	S4	Riparian forest
Woodlands and forests	Fremont cottonwood forest and woodland	S3*	Riparian forest
Woodlands and forests	Shining willow groves	S3*	Scrub-shrub
Shrublands and scrub	Arroyo willow thickets	S4	Scrub-shrub
Shrublands and scrub	Sandbar willow thickets	S4	Scrub-shrub
Shrublands and scrub	Himalayan blackberry – rattlebox – edible fig riparian scrub	N/A	Scrub-shrub
Shrublands and scrub	California rose briar patches	S3*	Scrub-shrub
Shrublands and scrub	Coyote brush scrub	S5	Scrub-shrub
Shrublands and scrub	Basket bush – river hawthorn – desert olive patches	S3?*	Scrub-shrub
Shrublands and scrub	Button willow thickets	S2*	Scrub-shrub
Shrublands and scrub	Wild grape shrubland	S3*	Scrub-shrub
Grasslands and herbaceous	Ashy ryegrass – creeping wildrye turfs	S3*	N/A
Grasslands and herbaceous	Poison hemlock or fennel patches	N/A	N/A
Grasslands and herbaceous	Perennial pepper weed – prickly lettuce patches	N/A	N/A
Emergent wetland	Cattail marshes	S5	Freshwater marsh
Emergent wetland	Hardstem and California bulrush marshes	S3S4*	Freshwater marsh
Emergent wetland	Water primrose – water hyacinth wetlands	N/A	Freshwater marsh
Water – Lacustrine (lake/pond)	N/A	N/A	N/A
Water – Riverine (stream)	N/A	N/A	N/A

Notes:

MCV = Manual of California Vegetation (CNPS 2025)

N/A = Not applicable

* = Sensitive Natural Community

S1 = critically imperiled

S2 = imperiled

S3 = vulnerable

S4 = apparently secure

? = status uncertain

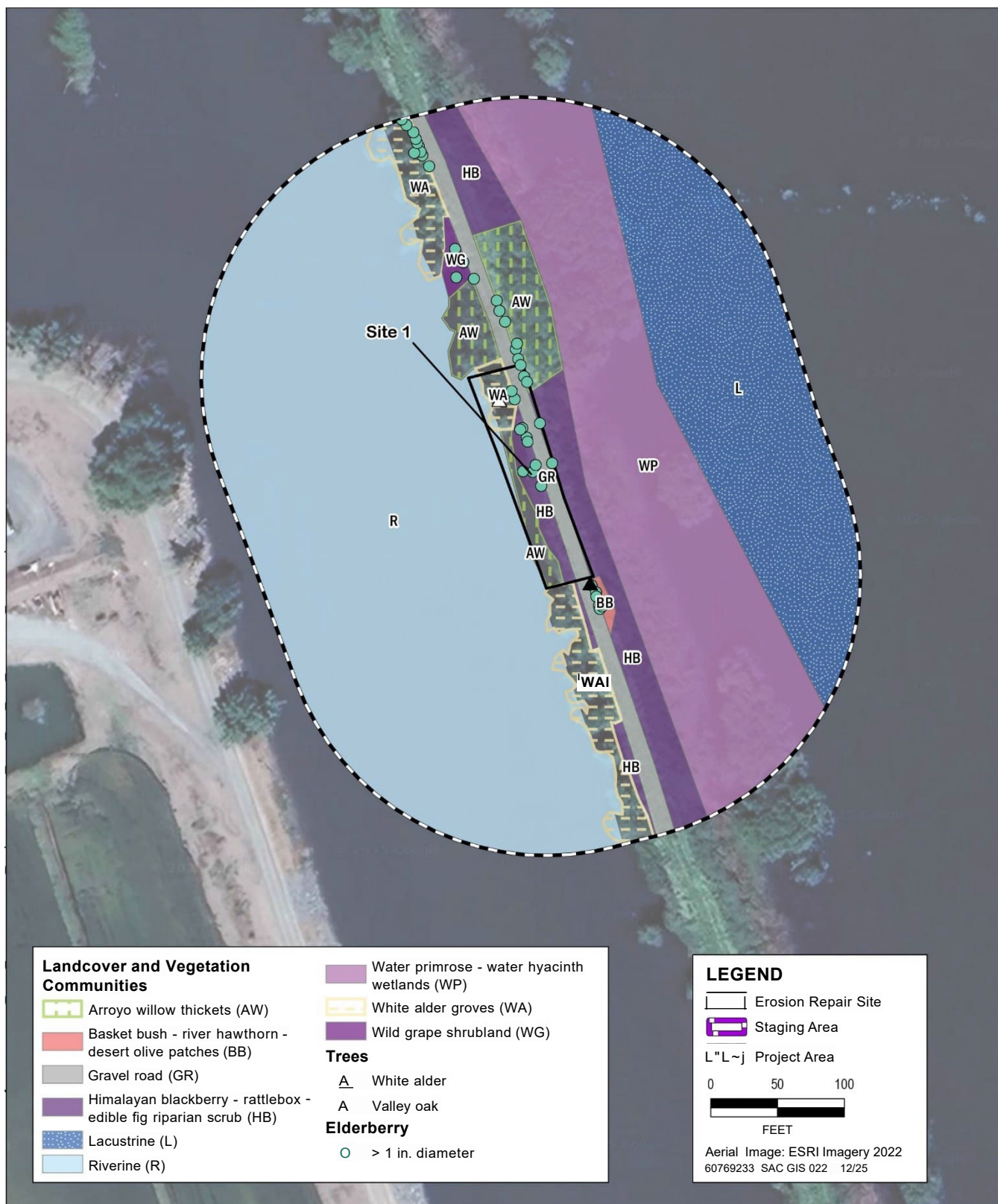


Figure 3.2-1a Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

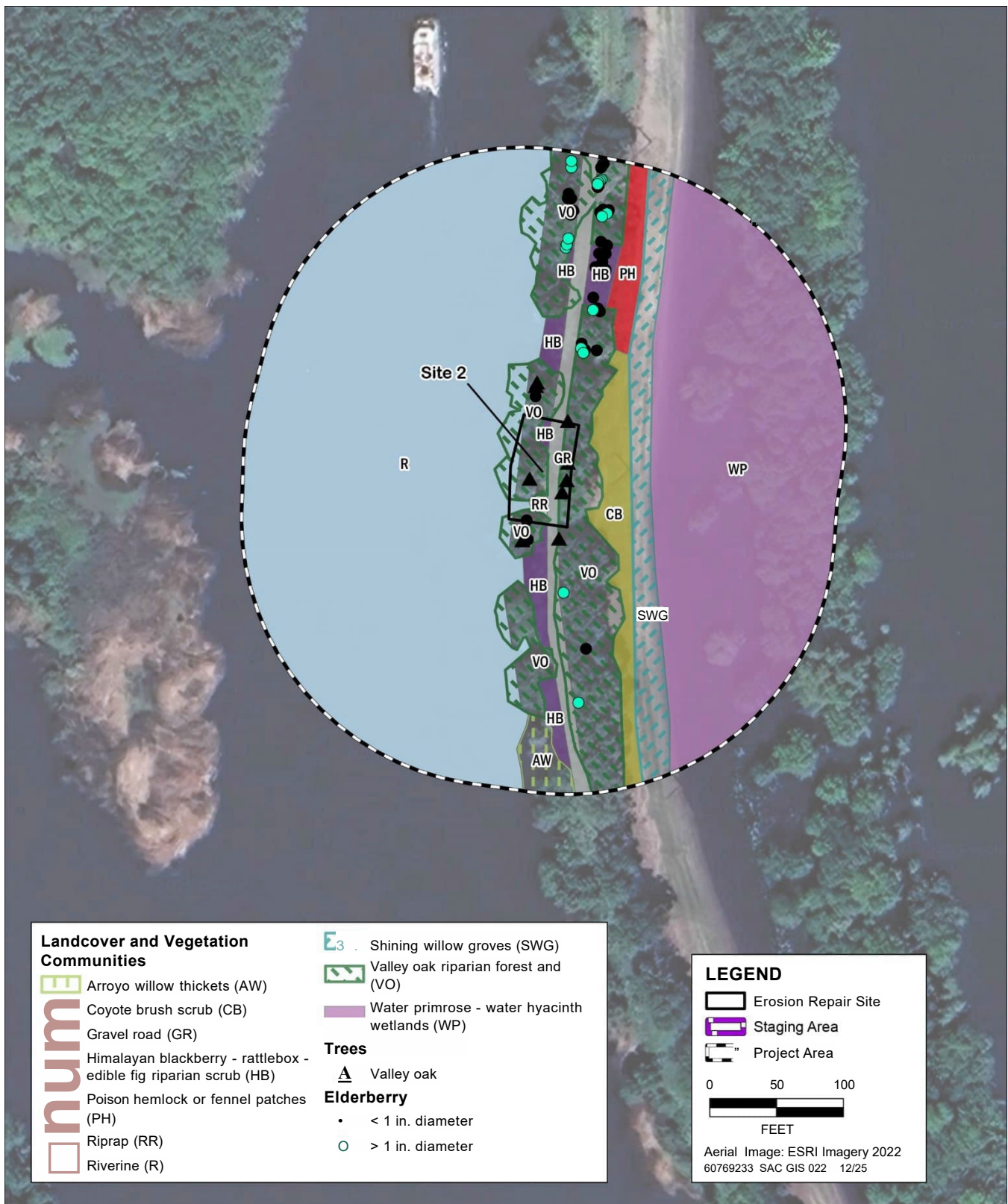


Figure 3.2-1b Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

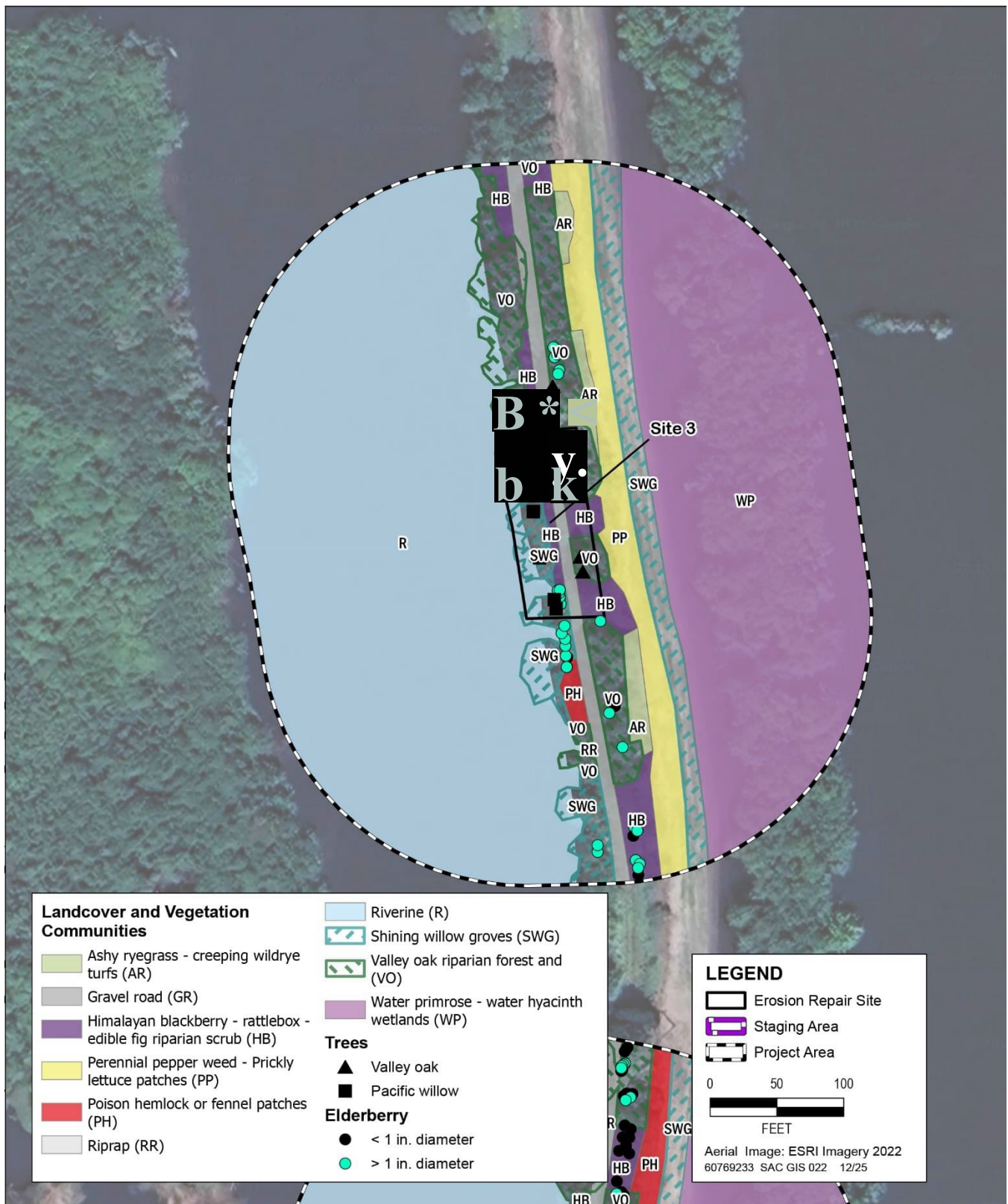


Figure 3.2-1c Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

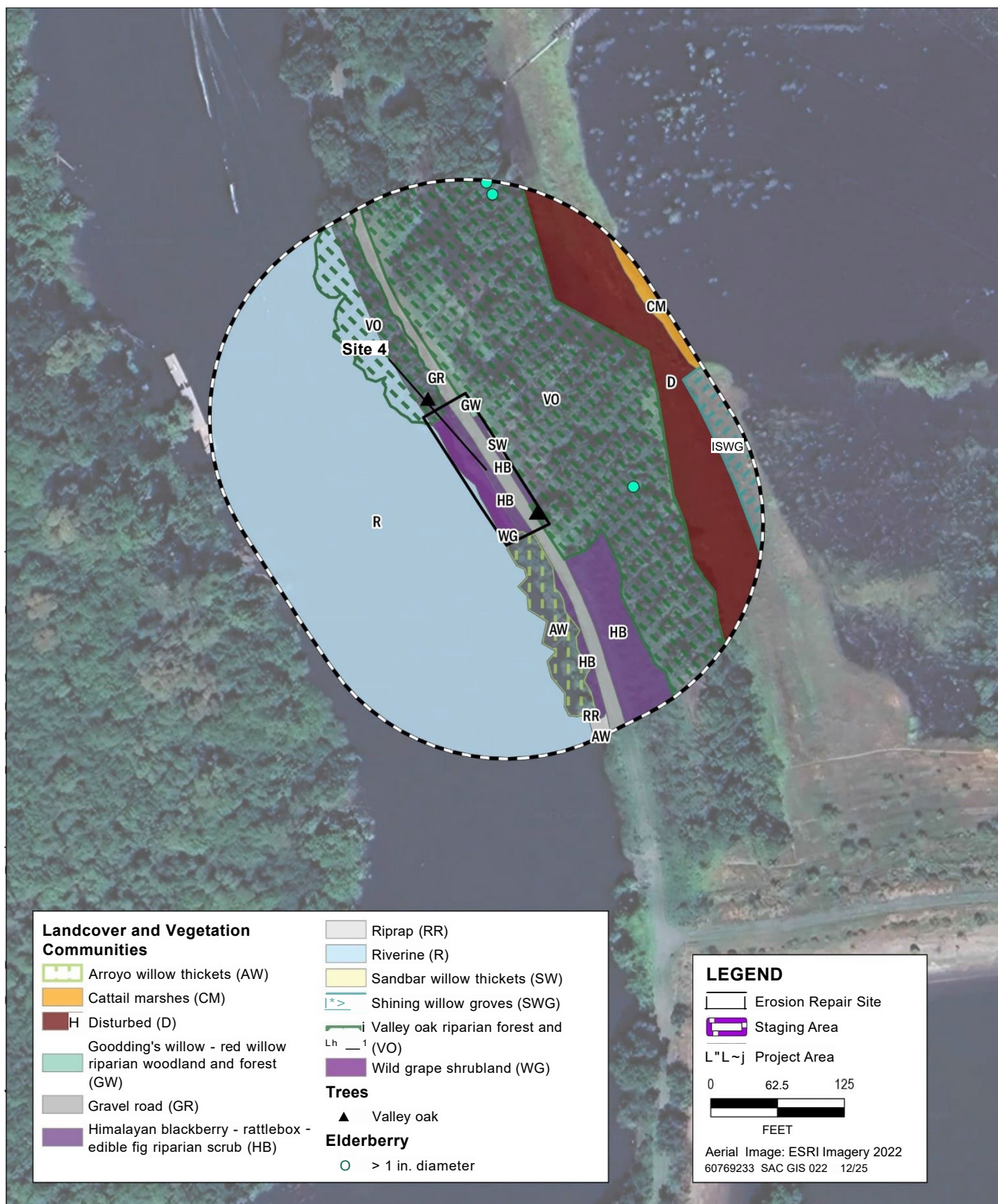


Figure 3.2-1d Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

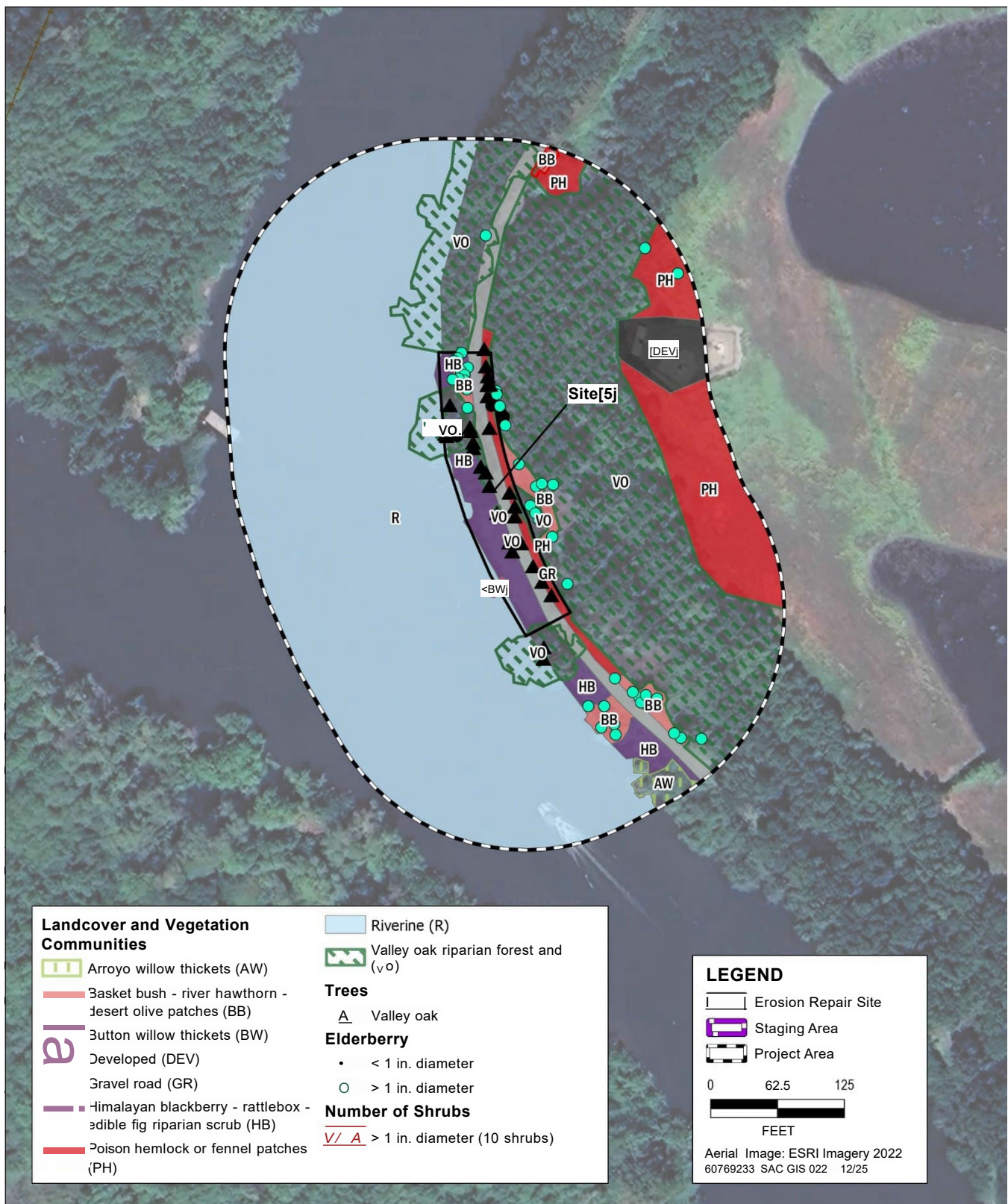


Figure 3.2-1e Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

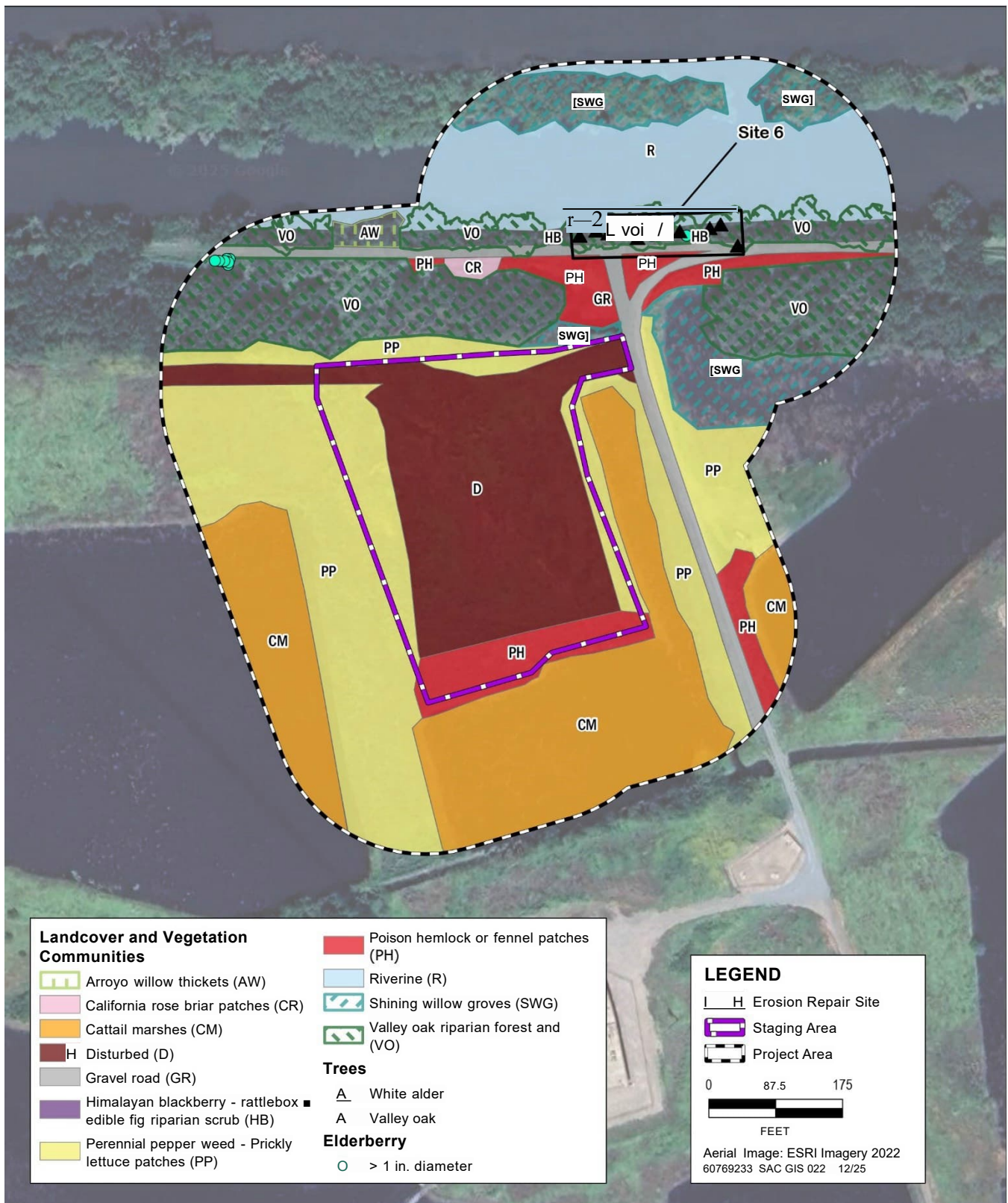


Figure 3.2-1f Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

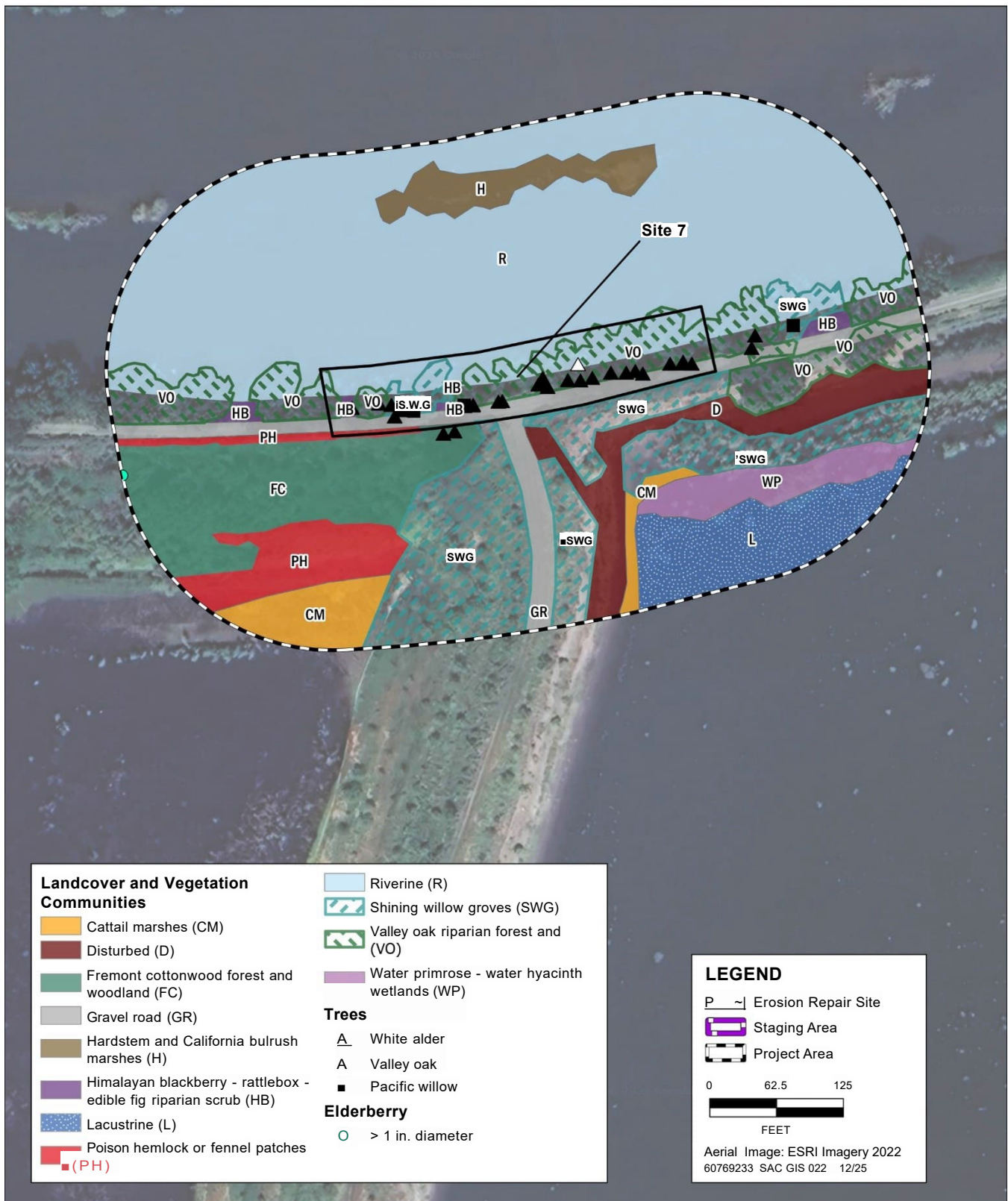


Figure 3.2-1g Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

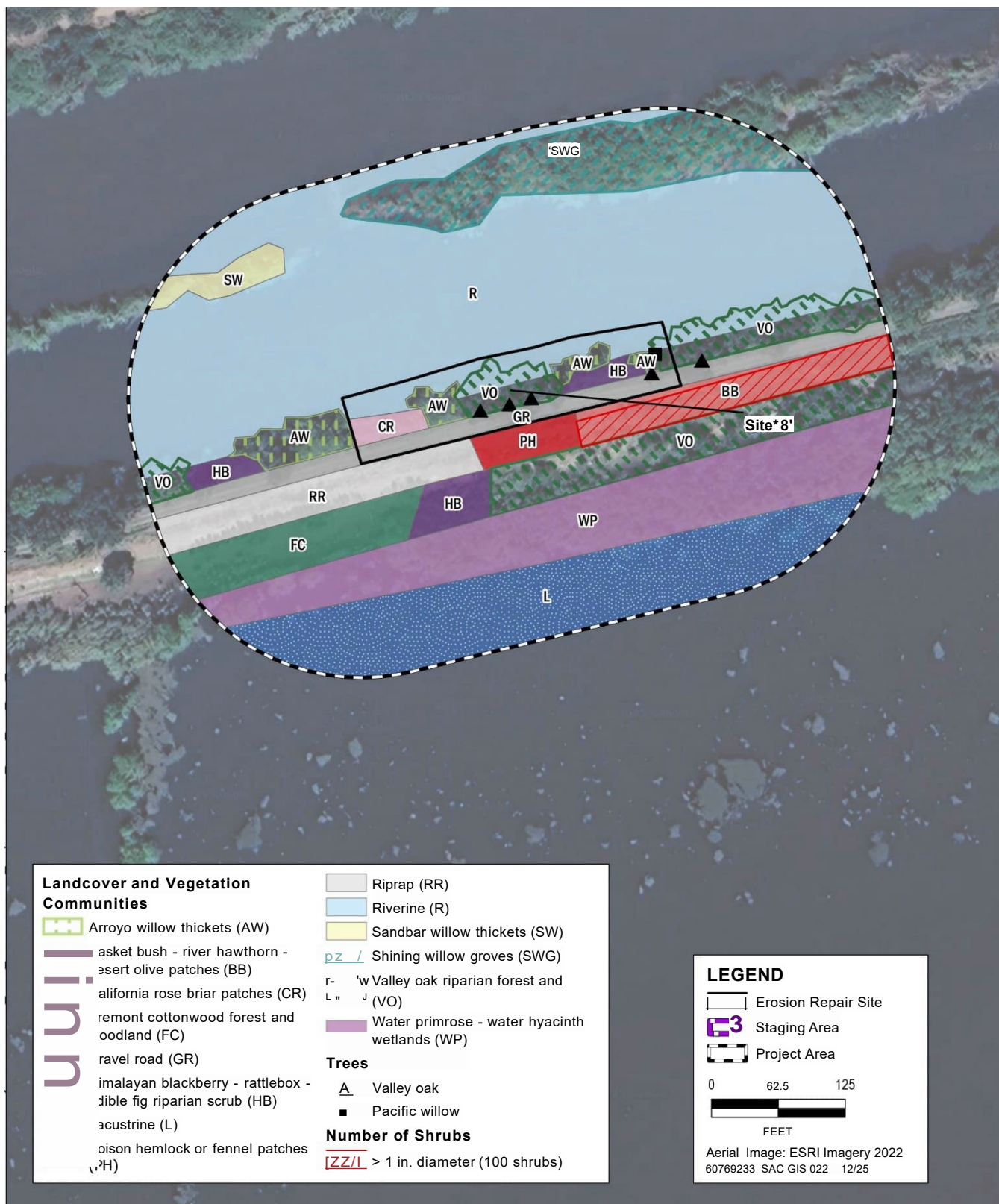


Figure 3.2-1h Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

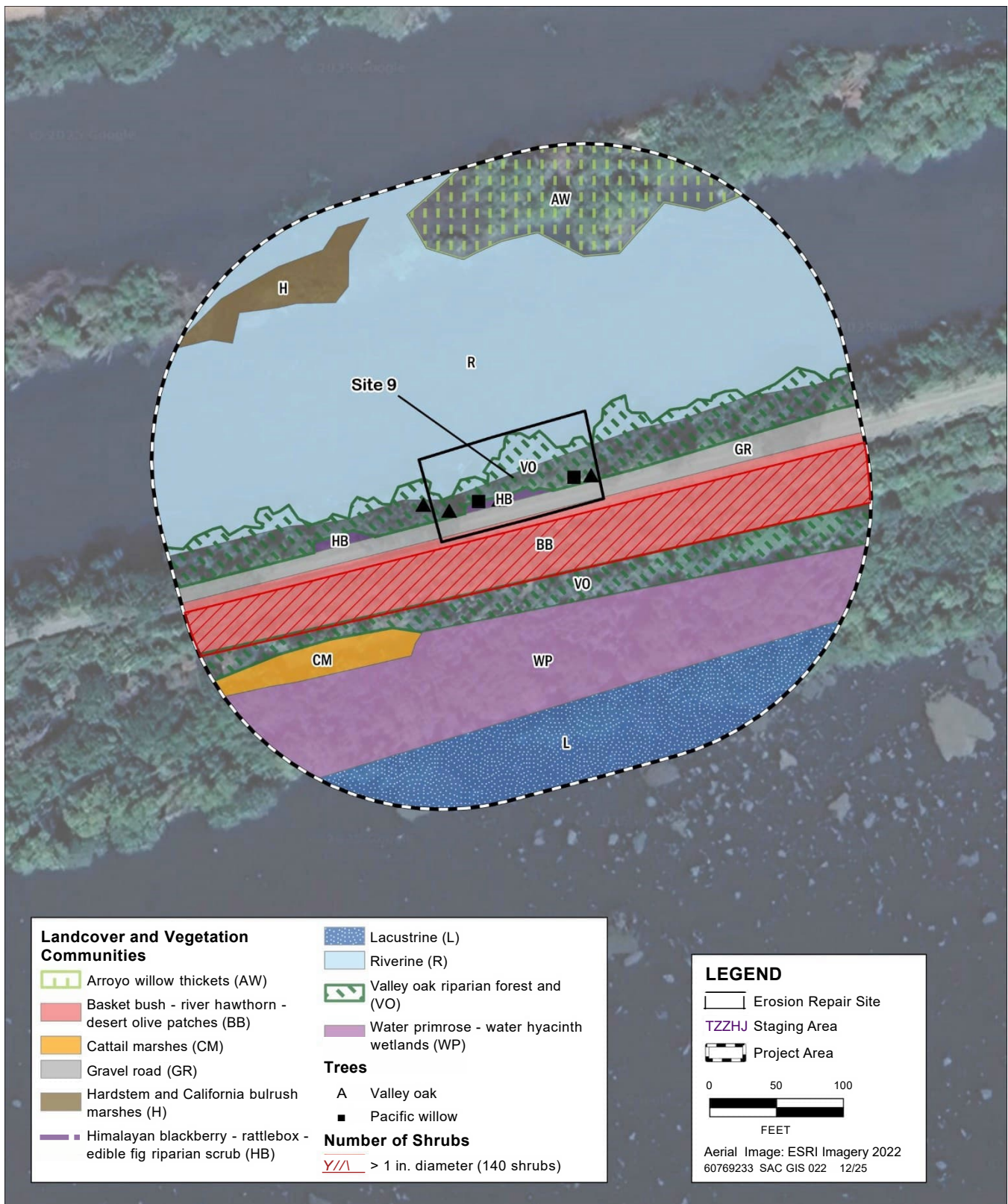


Figure 3.2-1i Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

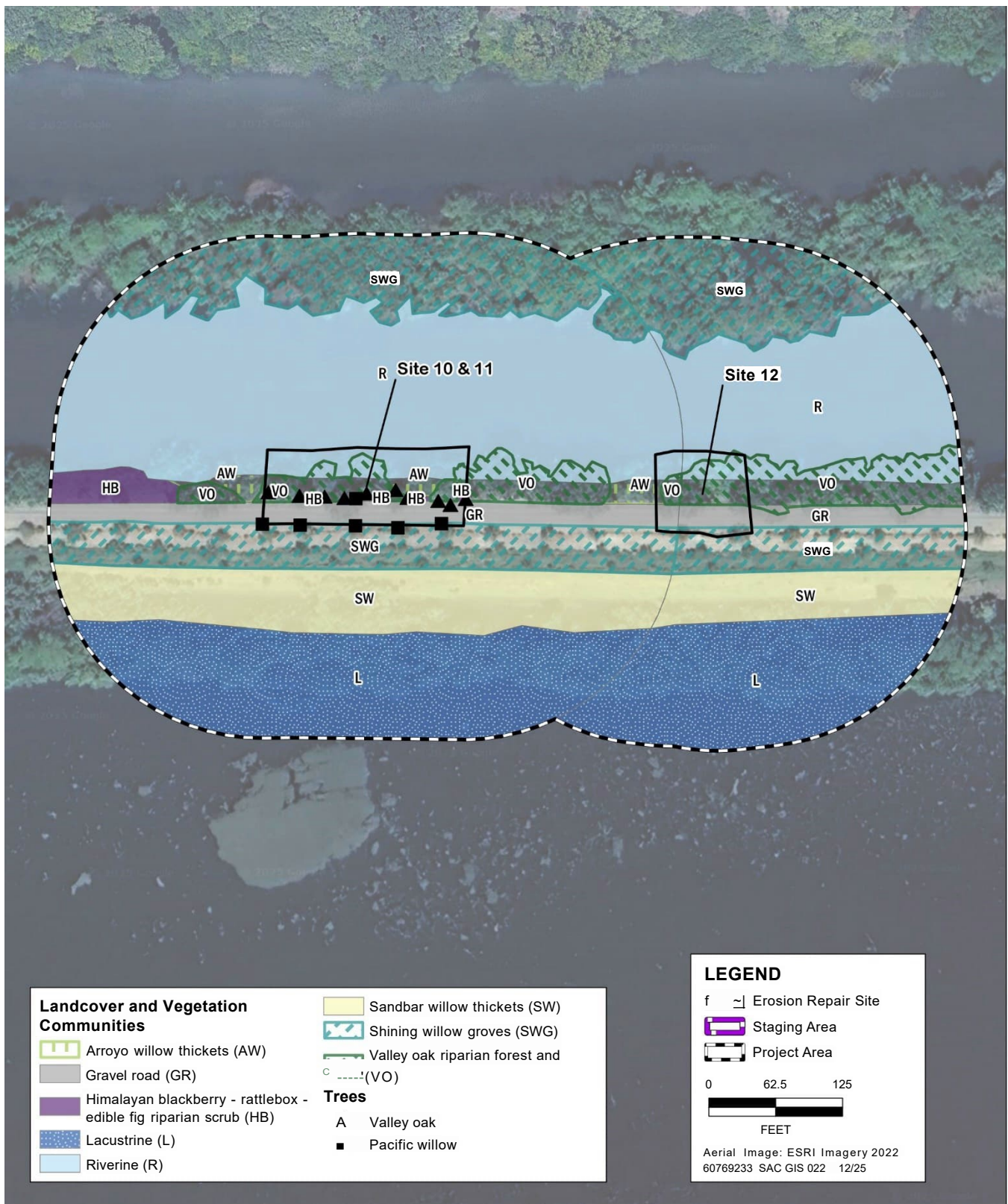


Figure 3.2-1j Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

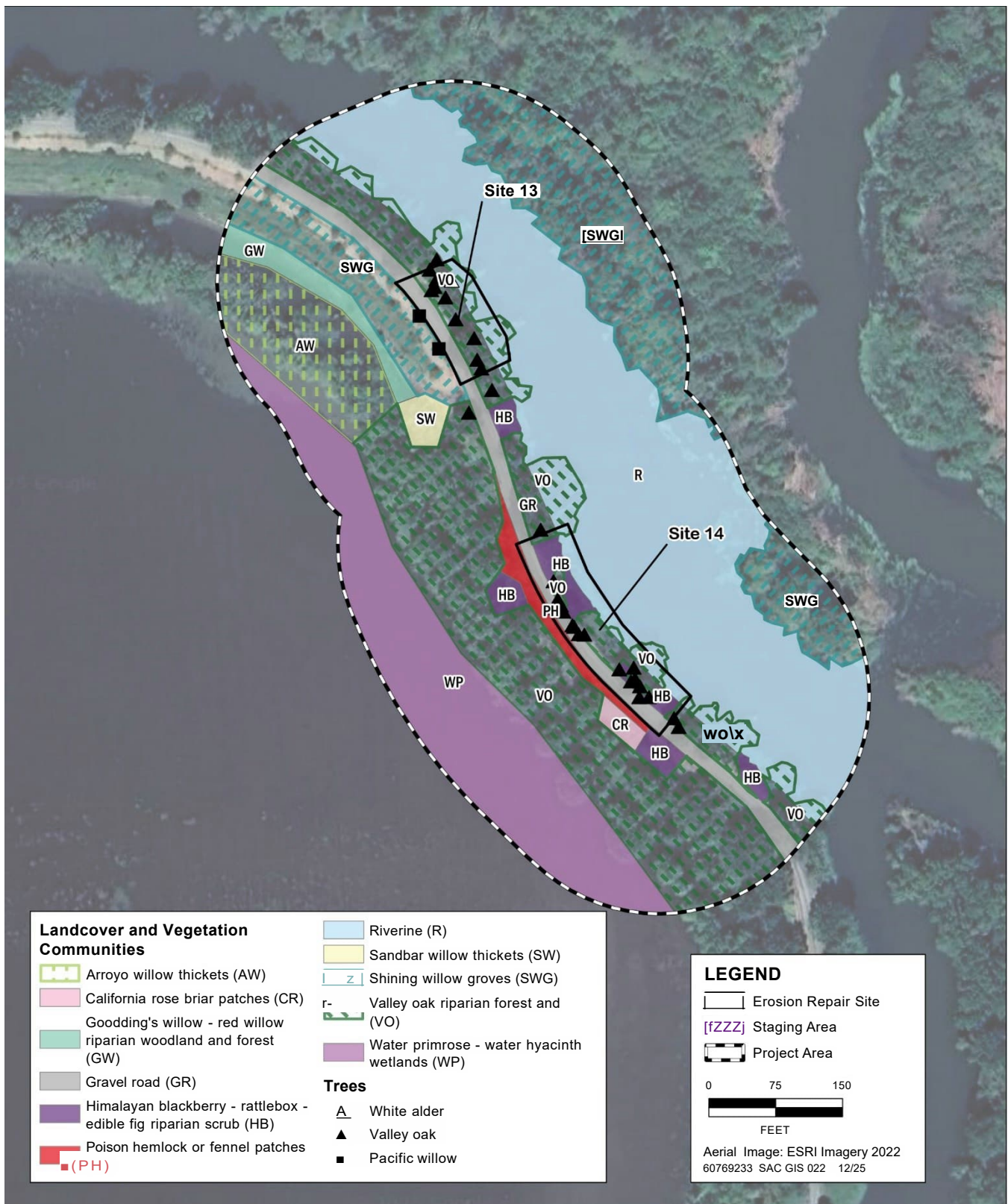


Figure 3.2-1k Landcover and Vegetation Communities, Trees, and Blue Elderberry within the Survey Area

Developed. Developed land cover types are areas that are highly altered by human development. The following four developed land cover types occur in the survey area:

- **Developed.** The developed area is comprised of the cement footing of a KCRA communications tower and associated guy lines, surrounded by gravel and a fence.
- **Gravel Road.** A gravel road is atop the levee crest throughout the survey area. This area receives routine disturbance from vehicles and is unvegetated.
- **Riprap.** Large boulders are installed to harden and protect the levee in some locations. These areas have low vegetation cover, with infrequent plants such as Himalayan blackberry (*Rubus armeniacus*), valley oak (*Quercus lobata*), and arroyo willow (*Salix lasiolepis*).
- **Disturbed.** Disturbed areas have unvegetated dirt substrates and include dirt roads, recently graded areas, and areas used for staging and laydown.

Woodlands and Forests. Woodlands and forests are land covers that are dominated by trees (often greater than 20 feet in height) that may or may not hang over the water's edge. In the survey area, woodlands and forests correspond to the riparian forest Delta Levee Habitat Type. The following five woodland and forest vegetation communities occur in the survey area:

- **Valley Oak Riparian Forest and Woodland.** Valley oak is dominant or codominant in the valley oak riparian forest and woodland community. White alder (*Alnus rhombifolia*) is common along shorelines above MHW, and other scattered trees include box elder (*Acer negundo*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), coast live oak (*Quercus agrifolia* var. *agrifolia*), northern California black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), and red willow (*Salix laevigata*). Common shrubs include Himalayan blackberry, poison oak (*Toxicodendron diversilobum*), California wild grape (*Vitis californica*), blue elderberry, button willow (*Cephalanthus occidentalis*), and arroyo willow. The herbaceous understory is variable, with infrequent patches of a variety of species, such as Santa Barbara sedge (*Carex barbarae*) and poison hemlock (*Conium maculatum*). Infrequent small patches of freshwater marsh vegetation, such as common tule (*Schoenoplectus acutus* var. *occidentalis*) and lamp rush (*Juncus effusus*), occur along the margin of the waterway, typically below MHW.
- **Shining Willow Groves.** Shining willow (also known as Pacific willow, *Salix lasiandra* var. *lasiandra*) is dominant or codominant as a tree or shrub in shining willow groves. Occasional trees include box elder, Fremont cottonwood, and western sycamore (*Platanus racemosa*), and common shrubs include narrow-leaved willow (*S. exigua*), America dogwood (*Cornus sericea*), California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), and mule fat (*Baccharis salicifolia* ssp. *salicifolia*). The understory is variable, with species such as western golden rod (*Euthamia occidentalis*), common lippia (*Phyla nodiflora*), pokeweed (*Phytolacca americana* var. *americana*), creeping wild rye (*Elymus triticoides*), and infrequent ruderal species such as bristly ox-tongue (*Helminthotheca echinoides*). Occasional patches of freshwater marsh vegetation occur along the margin of the waterway in this habitat. This habitat is known to occur along waterways that are tidally influenced (CNPS 2025). In the survey area,

this habitat is common in mitigation areas on the interior terrace of MWT and along the levee slopes. It is anticipated to occupy narrow islands in the sloughs, where the vegetation community type was assessed from the adjacent MWT shoreline. Mitigation areas support establishing shrubs and are subject to vegetation management activities (e.g., irrigation, mowing).

- **Goodding's Willow – Red Willow Riparian Woodland and Forest.** In the survey area, red willow is dominant or codominant in the canopy. Other common tree species include Oregon ash, box elder, and western sycamore. The understory is variable. This habitat is infrequent in the recently established mitigation areas in the survey area.
- **White Alder Groves.** White alder dominates the canopy of white alder groves, with valley oak, northern California black walnut, and arroyo willow also present. The understory can be sparse, with occasional patches of Himalayan blackberry and infrequent small patches of freshwater marsh habitat as a fringe of an adjacent waterway. This community occurs infrequently in the survey area on the waterside levee slope in Site 6.
- **Fremont Cottonwood Forest and Woodland.** In the survey area, infrequent dense patches of establishing Fremont cottonwood trees occur in mitigation areas with Pacific willow as a common associate. Other riparian trees and shrubs also are present. Poison hemlock is common in the understory. This community is infrequent in the relatively recently established mitigation areas in the survey area.

Shrublands and Scrub. Shrublands and scrub are land covers that are dominated by woody vegetation that is often less than 20 feet in height. In the survey area, shrublands and scrub correspond to the scrub-shrub Delta Levee habitat type. The following eight scrub-shrub vegetation communities occur in the survey area:

- **Arroyo Willow Thickets.** Arroyo willow shrubs dominate this community, and emergent trees such as Pacific willow and valley oak may be present. Other common shrubs include blue elderberry, Himalayan blackberry, California wild grape, and California rose. Infrequent small patches of freshwater marsh habitat occur along the stream edge in this habitat. This community occurs occasionally in the survey area, especially on the waterside levee slopes.
- **Sandbar Willow Thickets.** Narrow-leaved willow (also referred to as sandbar willow) dominates the sandbar willow thickets community with other riparian trees or shrubs, such as Pacific willow and Arroyo willow. This community occurs infrequently in the survey area.
- **California Rose Briar Patches.** Occasional California rose briar patches occur in the survey area on the levee slope, where little or no canopy cover occurs. California rose is dominant or codominant with Himalayan blackberry. Other infrequent shrubs include California wild grape and blue elderberry. Emergent trees may be present.
- **Coyote Brush Scrub.** Coyote brush (*Baccharis pilularis*) shrubs are dominant in coyote brush scrub. The understory is variable, including patches of creeping wild rye and

ruderal species, such as poison hemlock, bristly ox-tongue, and horseweed (*Erigeron canadensis*). This community only occurs at Site 8 in the survey area.

- **Basket Bush – River Hawthorn – Desert Olive Patches.** Blue elderberry stands occur along the levee slopes and in mitigation areas in Sites 14, 18, and 19 in the survey area. Himalayan blackberry may be codominant or a common associate, and poison hemlock is common in the understory. Other emergent trees and shrubs also may be present. Although blue elderberry is not listed in the naming convention of this community, it is specified as a shrub that can be dominant in this community, which is known to occur along streams, terraces, and uplands on silty clay to sandy soils (CNPS 2025).
- **Button Willow Thickets.** One small, dense patch of California button willow (*Cephalanthus occidentalis*) occurs in Site 14 in the survey area, along the margin of Snodgrass Slough.
- **Wild Grape Shrubland.** Dense thickets of California wild grape shrubland occur infrequently on the levee slopes in the survey area, in Sites 6 and 12. Himalayan blackberry is common in this community, and emergent valley oak may be present.
- **Himalayan Blackberry – Rattlebox – Edible Fig Riparian Scrub.** Himalayan blackberry is a non-native vining shrub that forms thickets and is a common invader of disturbed areas and riparian habitat in the region. Himalayan blackberry dominates the Himalayan blackberry – rattlebox – edible fig riparian scrub community in the survey area. This community is very common on the levee slopes and typically occurs in areas that lack canopy cover. Emergent trees and other shrubs, such as blue elderberry, California wild grape, arroyo willow, and California rose, occasionally are present, and infrequent small patches of freshwater marsh habitat occur along the stream edge.

Grasslands and Herbaceous. Grasslands and herbaceous areas are dominated by annual or perennial grasses, or ruderal and weedy vegetation. The following three grassland and herbaceous vegetation communities occur in the survey area:

- **Ashy Ryegrass – Creeping Wildrye Turfs.** Creeping wild rye dominates the ashy ryegrass – creeping wildrye turfs community in the project area. This habitat is infrequent in the survey area and only occurs at Site 9. Common associates include coyote brush, bristly ox-tongue, Himalayan blackberry, and horseweed.
- **Poison Hemlock or Fennel Patches.** Dense poison hemlock dominates the poison hemlock or fennel patches community in the survey area. Poison hemlock is a ruderal non-native species that is common in disturbed riparian areas. This community occurs occasionally along the road in the survey area. Common associates include other non-native species, such as milk thistle (*Silybum marianum*), bristly ox-tongue, and radish (*Raphanus sativus*).
- **Perennial Pepper Weed – Prickly Lettuce Patches.** In the survey area, dense patches of the non-native bristly ox-tongue occur adjacent to disturbed areas and in one mitigation area that receives vegetation maintenance (e.g., mowing). The dense patches of bristly ox-tongue are best characterized as the perennial pepper weed –

prickly lettuce patches community, which can include other non-native forbs in a mesic environment, such as riparian corridors. This community likely persists in areas that receive routine disturbance. Other common species include poison hemlock, horseweed, and velvet-leaf (*Abutilon theophrasti*).

Emergent Wetlands. Emergent wetlands are shallow aquatic areas that may be dry during different parts of the year, with an abundance of emergent growing plants and vegetation. In the survey area, emergent wetlands correspond to the freshwater marsh Delta Levee habitat type. These habitats occur both in tidal and non-tidal areas, and include the following three vegetation communities in the survey area:

- **Cattail Marshes.** Dense patches of broad-leaved cattails (*Typha latifolia*) occur in the survey area in moist, depressional areas and along the margin of lacustrine habitat. Emergent riparian trees and shrubs, such as Fremont cottonwood and Pacific willow, may be present. Other hydrophytic herbs and graminoids, such as common tule, common cocklebur (*Xanthium orientale*), tall cyperus (*Cyperus eragrostis*), and water primrose (*Ludwigia* sp.) are common.
- **Hardstem and California Bulrush Marshes.** Common tule (also referred to as hardstem bulrush) occurs in dense patches on vegetated islands or in shallow mid-channel areas in Lost Slough in the northern portion of the survey area, in Sites 17 and 19. Emergent riparian trees and shrubs may be present. These areas are likely below MHW of Lost Slough.
- **Water Primrose – Water Hyacinth Wetlands.** Areas on the margins of the lacustrine habitat support emergent water primrose – water hyacinth wetlands. These areas are dominated or co-dominated by mats of water primrose and water hyacinth (*Eichhornia crassipes*). Scattered standing dead trees are common in this habitat, as well as infrequent Pacific willow trees that appear to be in poor health, likely because of the change in hydrology following inundation of MWT in 2023.

Water – Lacustrine (Lake/Pond). The interior of MWT supports a lake-like (i.e., lacustrine) water body that formed following inundation of MWT during winter 2023 storms and subsequent emergency repairs and implementation of the MWT Phase B Project in 2024 and 2025. This shallow water body is nearly surrounded by levees but is connected hydrologically to tidal flows via a breach in the perimeter levee along Dead Horse Cut. The interior of MWT is connected hydrologically to Lost Slough and the Mokelumne River at the degraded portion of the East Levee and the Mokelumne River breach site when water levels surpass an elevation of approximately 11 feet and 7 feet, respectively.

Water – Riverine (Stream). Riverine habitat, or streams, are confined to a channel. Riverine channels are characterized by the presence of a bed and bank that form through the process of conveying water. The flow of water can result in the movement of sediment, potentially leading to aggradation and formation of bars or degradation and incision of stream channels. Many riverine systems, including those in the survey area, have been channelized or otherwise altered by human activity, such as the installation of levees. The northern and western boundaries of the survey area overlap with perennial riverine features; specifically, Lost

Slough, Snodgrass Slough, and Dead Horse Cut. Infrequent patches of freshwater marsh habitat can occur in this habitat.

Special-Status Species

Special-status plant and wildlife species are defined as those:

- Listed, proposed, or under review (e.g., candidate) for listing as endangered or threatened under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA)
- Designated by CDFW as a Species of Special Concern (SSC)
- Designated by CDFW as Fully Protected (FP) under the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515)
- Protected under the federal Bald and Golden Eagle Protection Act (BGEPA)
- Designated as rare under the California Native Plant Protection Act (NPPA) (SR)
- Included on CDFW's most recent *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2021a) with a California Rare Plant Rank (CRPR) of 1A, 1B, 2A, or 2B

The habitat assessment for the special-status plant and wildlife species that were identified by the database queries applied one of the following categories of likelihood of occurrence for each species, based on current known range, past occurrence records, habitat requirements, and habitat present within or near the project area: No Potential, Low Potential (not expected to occur), Moderate Potential (may occur), or High Potential (likely to occur).

Special-Status Plant Species

Of the 12 special-status plant species that were identified by the database queries (Appendix B, Potential to Occur Table), 8 were identified as having a moderate to high potential to occur in the project area. Despite no special-status plants being found during the reconnaissance surveys, protocol-level rare plant surveys have not been completed for this project. The following special-status plant species have been identified as having a moderate to high potential to occur in the project area:

- bristly sedge (*Carex comosa*), CRPR 2B.1
- woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*), CRPR 1B.2
- Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), CRPR 1B.2
- Mason's lilaeopsis (*Lilaeopsis masonii*), SR, CRPR 1B.1
- Delta mudwort (*Limosella australis*), CRPR 2B.1
- Sanford's arrowhead (*Sagittaria sanfordii*), CRPR 1B.2
- Side-flowering skullcap (*Scutellaria lateriflora*), CRPR 2B.2
- Suisun marsh aster (*Symphyotrichum lentum*), CRPR 1B.2

These species are discussed in detail below, including habitat associations and notable life history requirements.

Bristly sedge. Bristly sedge is a perennial, wetland plant with long, narrow leaves and bristly, bottlebrush-like seed heads. It occurs in swamps, bogs, marshes, wet meadows, and on lacustrine or riverine edges. This species blooms between June and September. Twelve CNDDDB records of this species are within 5 miles of the project area.

Woolly rose-mallow. Woolly rose-mallow is a perennial herb that typically is found in wet habitats, like ditches, pond edges, and marshes. It is known for its large, white or pink flowers with crimson centers, and blooms from June to September. Thirteen CNDDDB records of this species are within 5 miles of the project area.

Delta tule pea. Delta tule pea is a perennial herb that occurs in freshwater or brackish wetlands, marshes, and sloughs in the Delta. This species prefers cyclical flooded and dry periods, and blooms from May to September. Seven CNDDDB records of this species are within 5 miles of the project area.

Mason's lilaeopsis. Mason's lilaeopsis is a small perennial herb that lives in freshwater and brackish marshes in the Delta and the San Francisco Bay Area. It is endemic to California and blooms from approximately April to November. Five CNDDDB records of this species are within 5 miles of the project area.

Delta mudwort. Delta mudwort is an annual plant, found in fresh to brackish muddy or sandy shorelines and mudflats. This species is found throughout the Central Valley and Delta, and blooms from July to October. Six CNDDDB records of this species are within 5 miles of the project area.

Sanford's arrowhead. Sanford's arrowhead is a perennial aquatic plant that grows in shallow freshwater habitats, like marshes, swamps, ditches, and ponds. This species also may occur on the sides of levees. This species blooms from May to October and is present in the Central Valley and along the coast. Twelve CNDDDB records of this species are within 5 miles of the project area.

Side-flowering skullcap. Side-flowering skullcap is a perennial plant found in freshwater wetlands and swamps, marshes, and alongside streams and ponds. This species also often is found alongside levees. This species typically blooms from July to October and is found only in the Delta. Ten CNDDDB records of this species are within 5 miles of the project area.

Suisun Marsh aster. Suisun Marsh aster is a perennial rhizomatous herb that is endemic to California, occurring below 10 feet in elevation within the southern Sacramento Valley, Delta, and San Francisco Bay. Suisun Marsh aster typically occurs in brackish and freshwater marshes and swamps and blooms from May to November. Three CNDDDB records of this species are within 5 miles of the project area.

Special-Status Wildlife Species

Twenty-nine special-status wildlife species were identified from database queries as potentially occurring in the project area (Appendix B). Of the 29 species considered, the following 15 species were found to have moderate to high potential to occur in the project area because of the presence of suitable habitat, the extant range being in the project area, and/or previous records in the project area:

- Crotch's bumble bee (*Bombus crotchii*), state candidate for listing as endangered under CESA (SC)
- valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), federally listed as threatened under the ESA (FT)
- green sturgeon – southern distinct population segment (sDPS) (*Acipenser medirostris* pop. 1), federally listed as endangered under the ESA (FE)
- steelhead – California Central Valley (CCV) DPS (*Oncorhynchus mykiss irideus* pop. 11), FT/SSC
- northwestern pond turtle (*Actinemys marmorata*), federally proposed for listing as threatened under the ESA (FPT)/SSC
- giant garter snake (*Thamnophis gigas*), FT/state listed as threatened under CESA (ST)
- western burrowing owl (*Athene cunicularia hypugaea*), SC, SSC
- Swainson's hawk (*Buteo swainsoni*), ST
- northern harrier (*Circus hudsonius*), SSC
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), FT/state listed as endangered under CESA (SE)
- white-tailed kite (*Elanus leucurus*), FP
- bald eagle (*Haliaeetus leucocephalus*), BGEPA, federally delisted under the ESA (FD)/SE, FP
- song sparrow (Modesto population; *Melospiza melodia* pop. 1), SSC
- pallid bat (*Antrozous pallidus*), SSC
- western red bat (*Lasiurus frantzii*), SSC

These species are discussed in detail below, including habitat associations, notable life history requirements, and a detailed description of their habitats in the project area. Unless otherwise noted, these species were not observed during the reconnaissance surveys in 2025. In addition to these species, other common and special-status wildlife may use the project area for foraging, cover, dispersal, and/or breeding.

Crotch's bumble bee. Crotch's bumble bee is found primarily in California across a diversity of habitats, including open grasslands, shrublands, chaparral, and desert margins. Crotch's bumble bees use abandoned rodent burrows or sometimes debris piles, rock piles, old bird nests, or tree cavities to roost and nest (Xerxes 2025). Worker bees are active from April through August, with queens being active from March until May. Queens overwinter in the nests. These bees feed off nectar from a wide variety of native and non-native flowering plants. With some herbaceous flowering plants and nesting habitats, such as riprap and tree hollows, available in the project area, this species has the potential to occur. Furthermore, six CNDDB records of this species are within 5 miles of the project area.

Valley elderberry longhorn beetle. Valley elderberry longhorn beetle is a medium-sized, wood-boring beetle that is endemic to California. It currently ranges from Shasta County in the

north to Madera County in the south and typically is found below an elevation of 500 feet (USFWS 2023). Blue elderberry shrubs are the obligate larval host plants for valley elderberry longhorn beetle, on which adults lay eggs individually on leaves or at junctions of the leaf stalk and main stem. Once hatched, the larvae bore into the stem to feed and exit the hole before pupation. After approximately 1 month, the adult beetle emerges, mates, and then lays eggs in spring and summer (March to July), typically when the elderberry shrubs are flowering (USFWS 2017). Healthy riparian areas with dense elderberry shrub stands that are found commonly along stream banks and in forest openings are the primary habitat for valley elderberry longhorn beetle. Within the range of the beetle, including the project area, all elderberry shrubs in riparian habitats are considered suitable habitat and are assumed to be occupied. During surveys for blue elderberry, AECOM biologists documented approximately 450 blue elderberry shrubs in the survey area (i.e., the project footprint and 200-foot buffer) at Sites 1–9, of which approximately 400 were mature shrubs with stems greater than 1 inch in diameter. An estimated 17 of these shrubs are within the project footprint at Sites 1 and 5 and are anticipated to be removed during construction. All blue elderberry are shown on Figure 3.2-1a-k. Furthermore, one CNDDDB record of valley elderberry longhorn beetle is within 5 miles of the project area.

Green sturgeon sDPS. Green sturgeon sDPS are anadromous, long-lived, and late-maturing fish that spawn in the Sacramento, Yuba, and Feather rivers in California. Adults enter the San Francisco Bay Estuary between mid-February and early May, to migrate to spawning habitat where spawning occurs from April through early July. Spawning habitat is characterized by deep, turbulent flows, with gravel, cobble, or boulder substrates that are ideal for egg deposition (NMFS 2018). Juvenile green sturgeon spend several months in freshwater habitats near adult spawning habitat before migrating downstream to rear in estuarine environments, typically migrating outward toward the San Francisco Bay Estuary in fall or winter. Some out-migrating juveniles from the estuary reach the ocean in a matter of days, while others remain in the estuary to rear for months or years before dispersing into marine waters. The San Francisco Bay Estuary serves as year-round rearing and foraging habitat for juveniles and as summer foraging habitat for adults and subadults. Non-spawning adults and subadults are found in marine and estuarine waters from Alaska to Baja California (NMFS 2018). The Delta Cross Channel diversion gate, between the Sacramento River and Snodgrass Slough, is open from June through November (Bureau of Reclamation 2023). This period overlaps the juvenile rearing and out-migration life stages of this sDPS, and therefore creates an opportunity for green sturgeon to enter Snodgrass Slough. Critical habitat for this sDPS is designated in Snodgrass Slough. This habitat is not suitable for spawning but likely contains suitable prey to support rearing and foraging. Two CNDDDB occurrences of this species are within 5 miles of the project area.

Steelhead – CCV DPS. The CCV DPS of steelhead (CCV steelhead) include all naturally spawned populations of steelhead in the Sacramento and San Joaquin rivers and their tributaries, excluding steelhead from the San Francisco and San Pablo bays and their tributaries and two artificial propagation programs: the Coleman National Fish Hatchery and Feather River Fish Hatchery (NMFS 2006b). Adult CCV steelhead migrate into Central Valley streams from August until March. Spawning occurs downstream from dams on every tributary

of the Sacramento and San Joaquin River systems and extends from late December through April, peaking from January through March. Steelhead require cool, clean, well-oxygenated water and appropriate gravel for spawning. Juvenile CCV steelhead rear in cool, clear, fast-flowing freshwater streams and rivers, where riffles predominate over pools and sufficient cover exists from riparian vegetation or undercut banks, usually remaining for 1 to 3 years. Because juvenile steelhead remain in the creeks year-round, adequate flows, suitable water temperatures, and an abundant food supply are necessary throughout the year, to sustain steelhead populations. In the Sacramento River, juveniles out-migrate to the ocean in spring and early summer. They then reside in marine waters for two or three growing seasons before returning to their natal stream to spawn as 4- or 5-year-olds (NMFS 2014). Furthermore, the Mokelumne River Fish Hatchery releases hatchery-born steelhead into the Mokelumne River alongside naturally occurring individuals. The potential exists for CCV steelhead, including hatchery-born individuals from the Mokelumne River, to occur in Snodgrass Slough following the opening of the channel diversion gate. Three CNDDDB occurrences are within 5 miles of the project area; two in 2012 and one in 2013.

Northwestern pond turtle. Northwestern pond turtle inhabits fresh or brackish water characterized by areas of deep water, low flow velocities, moderate amounts of riparian vegetation, warm water and/or ample basking sites, and underwater cover elements, such as large woody debris and rocks (Jennings and Hayes 1994). Hatchlings spend much of their time feeding in shallow water with dense submerged or short emergent vegetation (Jennings and Hayes 1994). This species also requires upland habitats for basking, overwintering, aestivation, and nesting, typically within 0.6 mile of aquatic habitats (Holland 1994). They typically use cool, moist areas, often under dense leaf litter, for aestivation and overwintering, and south- or west-facing areas with sparse vegetation and ample sunlight for basking and nesting (Holland 1994). Northwestern pond turtle likely is present in aquatic habitat along the waterside of the project area and in the interior of MWT, and potentially is present in the adjacent upland habitats. Logs, shallow riprap, and emergent vegetation along Lost Slough and Snodgrass Slough may serve as refugia, basking, or foraging habitat for this species. It may use the upland habitat for dispersal or basking; however, it is not likely to nest within the project footprint because of the steep slopes, high vegetative cover (i.e., low solar exposure), and riprap on the waterside of the levees, and the frequent disturbance in the staging area. Open areas or south- or west-facing slopes with higher potential for nesting are present within 200 feet of Site 6 and the staging area; regular mowing in the south-facing mitigation areas on the landside levee slope near Sites 7–8 and 10–13 likely precludes nesting. Six CNDDDB records of this species are within 5 miles of the project area, and numerous iNaturalist observations are within 0.3 mile of the project area.

Giant garter snake. Giant garter snake is highly aquatic, inhabiting marshes, sloughs, ponds, low-gradient streams, agricultural wetlands (predominantly rice fields), and associated waterways (e.g., irrigation canals) and adjacent uplands. The three main habitat components required by giant garter snake are: (1) adequate water and emergent, herbaceous wetland vegetation—such as bulrush (*Schoenoplectus* spp.) or cattails (*Typha* spp.)—for foraging and escape cover during its active season; (2) grassy banks and openings in waterside vegetation for basking; and (3) higher elevation uplands with terrestrial burrows or crevices for cover,

hibernation, and refugia from seasonal floods (USFWS 1999, Fisher et al. 1994). The active season for giant garter snake generally is May through early October (USFWS 1999). Three CNDDDB records of this species are within 5 miles of the project area, including at Snodgrass Slough, which has emergent vegetation, slow waters, and marginally suitable aquatic habitat. The project area, being connected hydrologically to Snodgrass Slough, likely provides dispersal and foraging habitat in limited amounts for this species. Patches of common tule are present on mid-channel islands in Lost Slough, adjacent to Sites 6–12, and cattails, water primrose, and water hyacinth frequently are present along the levee toe on the interior of the tract; however, minimal emergent vegetation occurs along the outboard levee toe within the project footprint. Throughout most of the project area, the outboard levee slopes are undercut and densely vegetated with valley oak, willow, and Himalayan blackberry, and therefore would not provide suitable upland or basking habitat. The levee roads could be used for basking, but regular traffic likely deters their use. Sites 1–4 along Snodgrass Slough provide pockets of exposed riprap that could support basking. Because the riprap at Sites 1 and 4 occurs below MHW, only the riprap at Sites 2 and 3 has the potential to provide suitable refugia. No other small mammal burrows, cracks, or fissures, which could act as suitable upland refugia for giant garter snake were observed in the survey area during the 2025 field surveys.

Western burrowing owl. Western burrowing owl is a year-round resident throughout much of California. Western burrowing owls are found primarily in sparse, open grasslands or shrublands, characterized by low-growing vegetation but also may be found in areas highly altered by human activity (Haug et al. 1993). Burrows are essential habitat and are used for nesting and roosting during both breeding and wintering months. Individuals primarily use burrows made by ground squirrels (*Spermophilus beecheyi*) but also may use those excavated by other fossorial (ground-denning) mammals (Gervais et al. 2008), or may excavate their own (Haug et al. 1993, Gervais et al. 2008). Western burrowing owls occupy human-made structures, such as levees, culverts, pipes, or debris piles (California Burrowing Owl Consortium 1993, Gervais et al. 2008). Two CNDDDB records of this species are within 5 miles of the project area. The existing open areas and grassland habitat available in the vicinity of Site 6 and the staging area and the riprap at Sites 2 and 3 are potentially suitable for this species to use for wintering or nesting.

Swainson's hawk. Swainson's hawk is a migratory raptor that is a spring and summer resident in California's Central Valley, from March through October. Swainson's hawk typically nests in oaks, cottonwoods, sycamores, or willows near large, sparsely vegetated flatlands suitable for foraging grounds, which may include crop fields or open pasture (Bloom 1980; CDFG 1992, 1994). A total of 55 CNDDDB records of this species are within 5 miles of the project area, and both suitable foraging and nesting habitat are plentiful both in and adjacent to the project area. Furthermore, this species previously has been observed nesting and foraging in the project area.

Northern harrier. Northern harrier is a fairly common raptor in California that breeds in meadows, marshes, wetlands, grasslands, ungrazed or lightly grazed pastures, and grain fields (Davis and Niemela 2008). Northern harrier nests on the ground in shrubby vegetation, usually along the edge of marshes. Northern harrier was observed foraging during the 2025 surveys, but limited grassland and marsh habitat is in and surrounding the project area for

breeding. Northern harrier may be found foraging throughout all the erosion repair sites but likely would have the potential for breeding only adjacent to Sites 6 and 7 and the staging area.

Western yellow-billed cuckoo. Western yellow-billed cuckoo is a migratory bird species that uses riparian corridors as travel routes between its wintering grounds in Central and South America and its breeding grounds in North America. The species arrives in California around mid-June and nests in large areas of riparian habitat, with a preference toward old-growth cottonwood forests greater than 200 acres. During migration and dispersal, it occupies dense woody vegetation near water. Its current breeding range is highly restricted and does not encompass the project area; however, western yellow-billed cuckoo may be present during migration or dispersal. A single CNDDDB record exists for this species within 5 miles of the project area, which includes two unique detections in 2009 and 2010 along Snodgrass Slough adjacent to the project area and at Delta Meadows northwest of MWT, which likely were migrating or dispersing individuals.

White-tailed kite. White-tailed kite is a resident (breeding and wintering) species throughout central and coastal California (Zeiner et al. 1990). White-tailed kite breeds in lowland grasslands, oak woodlands or savannah, and wetlands with open areas. Riparian corridors represent a preferred landscape characteristic for the species, in both the breeding and non-breeding seasons (Erichsen 1995). Preferred foraging locations include open and ungrazed grasslands, agricultural fields, wetlands, and meadows that support large populations of small mammals. Suitable foraging habitat for white-tailed kite is in the vegetation along the landside of the levee, and kites may nest in isolated trees or groups of trees in the project area and vicinity. No CNDDDB record of this species is within 5 miles of the project area; however, this species has been documented extensively in habitats surrounding the project area as well as within MWT in winter (eBird 2025).

Bald eagle. Bald eagle is a year-round resident and uncommon winter migrant in California (Zeiner et al. 1990). Bald eagles breed along coastal areas, rivers, lakes, and reservoirs with forested shorelines or cliffs. Wintering bald eagles are associated with aquatic areas containing some open water for foraging. Bald eagles forage and scavenge within large water bodies containing abundant fish. High snags, trees, and open rocky slopes provide hunting perches (Call 1978); open, easily approached feeding areas are preferred. Suitable foraging and nesting habitat is in and adjacent to the project area, as the newly inundated area and the lacustrine environment provides optimal conditions for this species. Despite no CNDDDB records of this species being within 5 miles of the project area, records exist of this species wintering within MWT (iNaturalist 2025).

Song sparrow (Modesto population). The Modesto song sparrow is a year-round resident of California, endemic to the north-central portion of the Central Valley and locally abundant in the Delta and Butte Sink areas. The Modesto song sparrow occupies freshwater marsh, riparian woodland, and riparian scrub habitats, as well as vegetated irrigation canals and levees (Gardali 2008). Emergent marsh and riparian scrub may provide the primary nesting habitat. Modesto song sparrow breeds from mid-March to early August (Gardali 2008). Nineteen CNDDDB records of this species are within 5 miles of the project area, and song sparrows were observed during the field survey that was conducted by AECOM in 2025.

Pallid bat. Pallid bat is predominantly insectivorous. This bat is common in California, occurring everywhere except the high Sierra Nevada and the northwestern corner of the state. This species occupies a wide variety of habitats, including grasslands, shrublands, woodlands, and forests, with a preference toward open, dry habitats with rocky areas for roosting. Maternal colonies form in early April and last until August, and it often hibernates over winter near its summer roost. The species is most active within 30–60 minutes of sundown and forages throughout the night until sunrise (Zeiner et al. 1990). It may roost in rocky habitats (riprap) or hollowed trees and snags in the project area and may forage in surrounding habitats.

Western red bat. Western red bat is a migratory species of bat that is predominantly insectivorous. In California, this species is found from Shasta County south to the Mexican border, west of the Sierra Nevada crest (Zeiner et al. 1990), but may expand its range during migration. This species forms day, night, and maternal roosts on trees within forests and woodlands often adjacent to streams, fields, or urban areas between 2 and 40 feet off of the ground. This species begins foraging 1–2 hours following sunset until sunrise and is most active above ambient temperatures of 44 degrees Fahrenheit (°F). This species migrates between March and May, forms maternal roosts and rears pups between May and September, and migrates again between September and October before hibernation throughout winter. With abundant trees available adjacent to streams and agricultural areas, suitable habitat for this species is present throughout the project area. Two CNDDDB records of this species are within 5 miles of the project area.

Aquatic Resources

Waterways surrounding MWT are tidally influenced and include Lost Slough, Snodgrass Slough, Dead Horse Cut, and the Mokelumne River (Figure 2.2-2). The Mokelumne River is regulated over 20 miles upstream at Comanche Dam, and its confluence with the unregulated Cosumnes River is approximately 1.5 miles east of MWT. The Cosumnes and Mokelumne rivers flow into the San Joaquin River. Snodgrass Slough and Dead Horse Cut connect the Sacramento River with the Mokelumne River via the Delta Cross Channel, which typically is open between mid-June and the end of November, and periodically is open between mid-May and mid-June (Bureau of Reclamation 2023; NMFS 2024). Although tidally influenced, these waterways contain freshwater throughout the year (RMA 2020). Snodgrass Slough and its many adjoining sloughs, including Lost Slough, form an extensive complex of marshes and wetlands that border much of the northern and western perimeter of MWT.

The field delineation on October 20–22, 2025, identified three perennial riverine tidal features within the project footprint: Dead Horse Cut, Snodgrass Slough, and Lost Slough. Site 1 includes a portion of Dead Horse Cut, Sites 2–5 include portions of Snodgrass Slough, and Sites 6–14 include portions of Lost Slough.

Discussion

a) Less-than-Significant Impact with Mitigation Incorporated.

Special-Status Plant Species. Of the eight special-status plant species discussed previously, all are associated with marsh or wetland habitat and have the potential to occur along the waterside toe of the levees in the project area. If special-status plants

are present within the project footprint, direct impacts could occur during construction if plants are removed or damaged. Indirect impacts could occur if construction activities affect habitat quality (e.g., through fugitive dust emissions or hazardous material spills).

In accordance with Mitigation Measure BIO-1, special-status plants, if present within or adjacent to the project footprint, will be flagged or otherwise marked for avoidance, where possible, before construction, and mitigated, as appropriate, if avoidance is not possible. Furthermore, construction workers will be informed of any special-status plants in the project area and the avoidance measures required to protect them (GM-1). With the minimization of vegetation removal (GM-5), use of a previously established staging area (GM-2), and protection against the introduction and spread of invasive plants (GM-8), the impacts on plants during project construction will be minimized. Over the long term, following construction, habitat conditions will meet or exceed preconstruction conditions through the creation of planting benches and on-site restoration of riparian habitat. Therefore, potentially significant impacts on special-status plant species, if present, would be mitigated to a less-than-significant level with implementation of Mitigation Measure BIO-1, and the impacts would be reduced further with implementation of the environmental commitments described in Section 2.5.

Mitigation Measure BIO-1. Special-Status Plant Surveys and Avoidance

Before project construction, a qualified biologist⁴ will conduct a preconstruction survey for special-status plant species with potential to occur in suitable habitat within the project footprint. The survey will occur during the appropriate blooming periods and will follow the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 2000) and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). Areas with special-status plants will be flagged or otherwise marked (e.g., staked, fenced) for avoidance before construction. If avoidance is not possible, the need for mitigation will be determined in consultation with CDFW, as appropriate, before construction.

Special-Status Wildlife Species: Crotch's bumble bee. Crotch's bumble bees have the potential to forage on flowering plants or nest in bare soil, riprap, or tree cavities in the project area. Vegetation removal and ground disturbance during project construction may disturb or crush nests. Project construction also could reduce habitat availability or suitability through removal of flowering plants or release of fugitive dust or hazardous materials.

Mitigation Measure BIO-2, which includes preconstruction surveys and protocols for avoidance of Crotch's bumble bee nests, if present, will be implemented to minimize the potential for the species to be directly affected by the proposed project. Furthermore, implementation of environmental commitment WQM-3 and Mitigation Measure AQ-1

⁴ For this document and implementation of mitigation measures, a qualified biologist has relevant experience with the species of interest, including knowledge of species' identification, life history, behavior, habitat associations, and proper handling techniques.

would minimize or avoid potential indirect impacts on adjacent habitat because of hazardous material spills or fugitive dust emissions. The impacts on suitable foraging habitat for Crotch's bumble bee would be temporary; following construction, disturbed areas would be hydroseeded with a native seed mix, and riparian plantings would be installed for no net loss of habitat. With implementation of Mitigation Measures BIO-2 and AQ-1, the impacts on Crotch's bumble bee would be reduced to a less-than-significant level. The impacts would be reduced further with implementation of environmental commitment WQM-3.

Mitigation Measure BIO-2. Crotch's Bumble Bee Surveys and Avoidance

A qualified biologist will conduct two surveys for Crotch's bumble bee and their nest sites within 14 days before the start of project construction, with the final survey conducted within 48 hours before the start of construction. The surveys will include all suitable nesting (from approximately February through October), overwintering (from approximately November through January), and foraging habitats in the project area, as appropriate. If active nests are located during the surveys, the qualified biologist will establish and clearly mark an appropriate avoidance buffer around each nest.

Special-Status Wildlife Species: Valley Elderberry Longhorn Beetle. Valley elderberry longhorn beetle in the project area may be affected predominantly by impacts on its host plant, blue elderberry. Approximately 450 blue elderberry in the survey area (Figure 3.2-1a–k) would have the potential to be affected by project construction. An estimated 17 blue elderberry within the project footprint at Sites 1 and 5 are anticipated to be removed during construction. The remaining blue elderberry surrounding the project footprint would not be removed by project construction, but these blue elderberry or the valley elderberry longhorn beetle occupying them may be affected by dust, hazardous material spills, noise, or vibrations generated by construction activities. Project implementation would not include herbicide or insecticide application that could impact blue elderberry shrubs or valley elderberry longhorn beetle.

Implementation of Mitigation Measure BIO-3 would avoid and minimize the potential impacts on valley elderberry longhorn beetle in the blue elderberry surrounding the construction footprint through avoidance buffers, construction monitoring, and seasonal work restrictions. Furthermore, implementation of environmental commitments WQM-1 through WQM-3 and Mitigation Measure AQ-1 would minimize the potential impacts on blue elderberry habitat quality associated with potential hazardous material spills, soil erosion, stormwater runoff, or fugitive dust emissions during construction, and environmental commitment GM-1 would train all construction workers on the measures required to protect valley elderberry longhorn beetle habitat during construction. The estimated 17 blue elderberry that are anticipated to be removed at Sites 1 and 5 during project construction will be transplanted as close as possible to their original locations, in accordance with the recommended transplantation methods and timing described in Mitigation Measure BIO-3. Blue elderberry transplants will be monitored to confirm establishment, and new blue elderberries will be planted, if transplants do not survive

the first year following planting, to maintain habitat availability and connectivity following project construction. With the implementation of Mitigation Measures BIO-3 and AQ-1, the impacts on valley elderberry longhorn beetle would be reduced to a less-than-significant level. The impacts would be reduced further with implementation of the environmental commitments included in Section 2.5, including GM-1.

Mitigation Measure BIO-3. Avoidance and Minimization Measures for Valley Elderberry Longhorn Beetle

- a) **Blue Elderberry Avoidance:** Before the start of construction, all blue elderberry within 165 feet of the project footprint to be avoided during construction will be flagged or otherwise marked for avoidance (e.g., staked, fenced). Construction activity will have an avoidance area of at least 20 feet from the dripline of existing blue elderberry where feasible.
- b) **Construction Monitoring:** When feasible, a qualified biologist will monitor vegetation removal and excavation within the 20-foot avoidance buffer at Sites 1, 5, and 6 so that no blue elderberry is inadvertently damaged during construction activities.
- c) **Seasonal Work Restrictions:** To the extent feasible and in consideration of seasonal work restrictions in place to protect other special-status species, construction activities within 165 feet of blue elderberry will be conducted outside the valley elderberry longhorn beetle flight season (March–July), and necessary trimming of blue elderberry shrubs will occur between November 1 and February 14.
- d) **Blue Elderberry Transplantation:** All blue elderberry shrubs with stems greater than 1 inch in diameter that will be removed during project construction will be transplanted as close as possible to their original locations following final soil placement and grading at each site. Transplantation will occur when the blue elderberry shrubs are dormant (November 1–February 14) to the extent feasible and in consideration of seasonal work restrictions for special-status fish and giant garter snake. Blue elderberry shrubs will be transplanted consistent with the most current version of the American National Standards Institute A300 guidelines. Blue elderberry transplants will receive supplemental irrigation as needed during establishment.
- e) **Transplantation and Surveys:** A qualified biologist will conduct exit hole surveys of blue elderberry before their transplantation and will be present to monitor all transplantation activities. The survey results will be submitted to USFWS and the CNDDB.
- f) **Blue Elderberry Transplant Monitoring or Compensatory Mitigation:** Blue elderberry transplants will be monitored for 3 consecutive years or for 5 non-consecutive years over a 7-year period following

transplantation. If significant dieback occurs within the first year of a 3-year monitoring period or the first 4 years of a 7-year monitoring period, replacement plantings may be installed. If less than 60% of blue elderberry transplants or replacement plantings survive the monitoring period, compensatory mitigation will be determined at the shrub level (USFWS 2017) and satisfied by purchasing mitigation credits at a USFWS-approved mitigation bank or installing additional replacement plantings in consultation with USFWS.

Special-status fish. Direct impacts on special-status fish species in the form of injury or mortality could occur in the unlikely event that individuals become crushed or trapped during construction of waterside benches below MHW and during placement of RSP. However, because the waterside benches and RSP would be installed on the margins of the aquatic habitat and not in the main water column where individuals would be most likely to occur, direct impacts would be unlikely to occur. Furthermore, individuals would be likely to move away and out of harm's way once disturbance of the water is initiated. Direct injury and mortality would be minimized by implementing the in-water work window of August 1 through October 31, described in Mitigation Measure BIO-4, which schedules in-water construction activities outside the seasons that special-status fish would be most likely to occur in the project area.

Indirect impacts could occur from in-water work disturbing the water column through substantial decreases in water quality or the generation of noise and vibration, which may displace individuals or alter their behaviors. Special-status fish species are unlikely to be present within the waterways adjacent to the erosion repair locations because of the absence of spawning and rearing habitat and the work window that avoids in-water activities when special-status species would be most likely to occur (Mitigation Measure BIO-4). The lack of presence would reduce exposure of these species to potential indirect impacts, so that indirect impacts from changes in water quality, noise, or vibration would be minimal. Implementation of Mitigation Measure BIO-4 also requires benign disturbance of the water surface, to allow individuals to passively and safely move out of the nearby environment, further minimizing potential indirect impacts on special-status fish. Furthermore, localized and short-term increases in turbidity may occur, but turbidity is not expected to be substantially greater when compared to existing turbid conditions within the slow-moving waterways around MWT and would likely return to pre-existing conditions within hours of work completion (refer to Section 3.2.7, Hydrology and Water Quality, for more information regarding turbidity). Therefore, localized short-term increases in turbidity would be unlikely to cause adverse effects on these species. Potential indirect impacts associated with aquatic habitat from hazardous materials spills, soil erosion, and/or stormwater runoff during construction would be avoided or minimized through implementation of environmental commitments WQM-1, WQM-2, and WQM-3, as described in Section 3.2.4, Geology, Soils, and Paleontology and Section 3.2.7, Hydrology and Water Quality. With implementation of Mitigation Measures BIO-4, the impacts associated with water quality or the generation of noise and vibration would be reduced to a less-than-significant level. The impacts

would be reduced further with implementation of environmental commitments WQM-1, WQM-2, and WQM-3.

Impacts on the habitat for special-status fish species may occur, including permanent loss of small portions of aquatic habitat because of fill below MHW, associated with the placement of RSP and creation of waterside benches. RSP placement below MHW would modify habitat by replacing areas of soft, fine-sediment substrate with hard substrate, which could reduce prey availability; however, RSP placement predominantly would increase habitat complexity and provide additional refuge for aquatic species. Because no spawning habitat is present for special-status fish species, the modification of bottom substrate would have minimal impact on fish species. Furthermore, temporary loss of shaded riverine aquatic habitat would not have substantial effects on habitat suitability (increases in temperature and decreases in shaded refugia habitat) for aquatic species because of the general lack of special-status species expected in the area. Overall, shaded riverine aquatic habitat is expected to be restored to meet or exceed existing conditions with the establishment of restoration plantings at the erosion repair sites. Therefore, the impact would be less than significant with mitigation measure BIO-4 incorporated.

Mitigation Measure BIO-4. Avoidance and Minimization Measures for Fish and Aquatic Species

In-water work will be limited to August 1 through October 31, a time frame when federally listed fish are least likely to be present in the project area. During in-water work, construction workers will lightly disturb the water (e.g., agitate the water surface with an excavator bucket) before removing or placing material. Equipment will be used in a manner to avoid disturbing logs and vegetation outside the construction footprint.

Special-Status Aquatic Reptiles. Northwestern pond turtles and giant garter snakes have the potential to be present in the project area while dispersing, foraging, or basking. Northwestern pond turtles also have the potential to use the outboard levee slopes for refugia and to nest in the vicinity of Site 6 and the staging area. Giant garter snakes may use riprap for refugia within the project footprint at Site 2 and adjacent to the project footprint at Site 3. If present in the project area, northwestern pond turtles and giant garter snakes could be injured or killed by vehicles or construction equipment. In addition, construction activities could cause aquatic reptiles to alter their behavior or leave refugia, potentially exposing them to predators or other risks. Project implementation also could impact habitat quality, either through temporary impacts on water quality (e.g., from increased turbidity or accidental discharges of pollutants) or removal of vegetation and ground cover during construction.

Implementation of environmental commitment GM-1 includes training construction workers about northwestern pond turtles and giant garter snake, and actions to take in the event one is encountered. Implementation of environmental commitments GM-2, GM-3, GM-5, and GM-9 include the use of previously disturbed staging areas, equipment inspection, avoidance of monofilament netting, and speed limits to avoid

accidental direct impacts on wildlife. Implementation of environmental commitments WQM-1 through WQM-3 would reduce or avoid impacts on adjacent aquatic habitat associated with hazardous material spills, soil erosion, or stormwater runoff during construction. Implementation of Mitigation Measures BIO-5 and BIO-6, which include preconstruction surveys, construction monitoring, and guidelines for avoidance of northwestern pond turtles and giant garter snake, if present, will minimize the potential for special-status aquatic reptiles to be adversely affected by project construction activities. Over the long term, following construction, habitat quality for aquatic reptiles would meet or exceed preconstruction conditions through creation of shallower levee slopes and planting benches suitable for dispersal and cover, installation of riprap suitable for basking, and on-site restoration of riparian habitat and associated shaded riverine aquatic habitat. The impacts on northwestern pond turtle and giant garter snake would be reduced to a less-than-significant level with implementation of Mitigation Measures BIO-5 and BIO-6. The impacts would be reduced further with implementation of the environmental commitments described in Section 2.5.

Mitigation Measure BIO-5. Avoidance and Minimization Measures for Northwestern Pond Turtle

- a) **Preconstruction Surveys:** A qualified biologist will survey the work site and a 100-foot buffer for northwestern pond turtles and, if construction is initiated during the nesting season (roughly May through July), a qualified biologist will survey for northwestern pond turtle nesting activity (i.e., recently excavated nests, nest plugs, or nest depredation) no more than 48 hours before the start of construction activities. The qualified biologist will walk along all suitable habitat and focus on basking habitat, such as logs and riprap as well as the shoreline and adjacent shallow waters or emergent vegetation where turtles may be present. Preconstruction surveys to detect northwestern pond turtle nesting activity will be concentrated in suitable nesting habitat (i.e., adjacent to Site 6 and the staging area) and will focus on areas with bare, hard-packed soils or sparse, low-statured vegetation.
- b) **Nest Avoidance:** If an active northwestern pond turtle nest is discovered, a no-disturbance buffer will be established by the qualified biologist in consideration of environmental conditions and project activities; typical no-disturbance buffers are 100 feet. The biologist will flag or otherwise mark (e.g., stake, fence) the buffer for avoidance, and no project activities will occur within the no-disturbance buffer until the biologist has determined that the nest no longer is active.
- c) **Equipment Operation:** Construction equipment will operate from the levee crest or a constructed berm at an elevation higher than the water surface. During in-water work, construction workers will lightly disturb the water (e.g., agitate the water surface with an excavator bucket) before

removing or placing material. Equipment will avoid disturbing logs and vegetation outside the construction footprint.

- d) **Northwestern Pond Turtle Encounters:** If a northwestern pond turtle is encountered during construction, all activities within a 50-foot radius of the animal will stop, and the qualified biologist will be notified. The animal will be allowed to move out of the area of its own volition. If the animal does not move out of the area of its own volition, it may be relocated by an approved biologist.

Mitigation Measure BIO-6. Avoidance and Minimization Measures for Giant Garter Snake

- a) **Preconstruction Surveys:** A qualified biologist will survey areas of planned ground disturbance and the staging area and a 100-foot buffer of these areas for giant garter snake and burrows, soil cracks, and crevices that may be suitable for use as refugia by giant garter snake. The surveys will be completed no more than 48 hours before conducting any ground-disturbing activities in terrestrial habitat potentially supporting giant garter snake. Any identified burrows, soil cracks, crevices, or other habitat features will be flagged or otherwise marked (e.g., staked, fenced) by the qualified biologist.
- b) **Seasonal Work Restrictions:** At Sites 2 and 3 and any sites where suitable refugia are identified during preconstruction surveys, the District will restrict construction activities in terrestrial habitats to May 1 through October 1. This is the active period for giant garter snake, when they are expected to actively move to avoid danger. Use of heavy equipment may continue between October 1 and November 1 in areas where construction was initiated during the giant garter snake active season and remained continuous thereafter. A qualified biologist will be present to monitor any ground-disturbing activities in suitable terrestrial habitat that continue after October 1.
- c) **Small Burrow Excavation and Construction Monitoring:** All natural burrows or cracks flagged or marked as potentially suitable refugia during preconstruction surveys will be hand-excavated before ground disturbance. All hand-excavation of burrows will be monitored or performed by a qualified biologist. A qualified biologist also will monitor removal of riprap at Site 2. The biologist will have the authority to stop work with the potential to impact special-status species.
- d) **Equipment Operation:** Construction equipment will operate from the levee crest or a constructed berm at an elevation higher than the water surface. During in-water work, construction workers will lightly disturb the water (e.g., agitate the water surface with an excavator bucket) before removing or placing material. Equipment will avoid disturbing logs and vegetation outside the construction footprint.

- e) **Snake Encounters:** If snakes of any species are observed in the project area, including the erosion repair sites, the staging area, or the haul route, all work within 50 feet of the animal will stop until the snake leaves the area of its own volition. The qualified biologist will be notified. If the animal does not move out of the area of its own volition and is identified by the qualified biologist as a non-special-status species, the biologist may relocate it to appropriate habitat outside the work area. Any giant garter snake observations will be reported to USFWS and the CNDDDB.
- f) **Spoil Placement:** Spoils will be placed in regularly disturbed areas (e.g., the staging area, levee roads) or areas that have previously been surveyed and hand excavated, if necessary, to confirm absence of giant garter snakes.

Special-status and migratory birds. Mature riparian trees in or near the project area potentially could support nesting white-tailed kite, Swainson's hawk, or bald eagle. In addition, grassland and open habitat (including riprap) potentially could support western burrowing owl, marshy and open habitat potentially could support nesting northern harrier, and scrub-shrub and riparian forest habitats potentially could support nesting Modesto song sparrows. Other protected migratory bird species also could nest on or near the ground, in trees, or within dense vegetation in or near the project area. Project construction activities may affect special-status or migratory birds if disturbance occurs at or near active nests during the breeding season. Direct impacts on nests could occur with vegetation removal. Increases in noise, human activity, and equipment use associated with project construction also could disturb nesting birds, potentially causing nest abandonment or failure. Vegetation removal during project implementation also would result in a short-term loss of breeding and foraging habitat for special-status and migratory birds.

Preconstruction nesting bird surveys (Mitigation Measure BIO-7) will be conducted before removal of vegetation, any ground-disturbing activities, or any activities that could produce a large amount of disturbance or noise, to identify nesting special-status and migratory bird species with the potential to be affected by project construction. Buffers will be established around any active nests that are documented during the surveys, in accordance with Mitigation Measure BIO-7, to avoid adverse direct impacts on or disturbance to nesting birds. Ample nesting habitat would remain available surrounding the project area and in large trees that are preserved in the erosion repair sites. Impacts on riparian habitats will be temporary; over the long term, following construction, the availability and quality of nesting habitat would meet or exceed preconstruction conditions through the on-site restoration of riparian vegetation on the levee slopes and planting benches. The impacts on nesting special-status and migratory birds would be reduced to a less-than-significant level with implementation of Mitigation Measure BIO-7.

Furthermore, several special-status and migratory bird species (e.g., the aforementioned nesting birds, western yellow-billed cuckoo) may forage or disperse in

or near the project area. Foraging birds easily can disperse away from temporary project construction noise and disturbances; therefore, direct project-related adverse effects on these bird species are not anticipated.

Mitigation Measure BIO-7. Nesting Bird Surveys and Avoidance

- a) If project activities occur during the nesting period for birds (February 1 to September 15), the District will complete two pre-activity surveys for nesting birds, including, but not limited to, Swainson's hawk, western burrowing owl, northern harrier, white-tailed kite, bald eagle, song sparrow, other raptors and passerines, and heron and egret rookeries. One survey, focused on nesting raptors, will be conducted by a qualified biologist within the Swainson's hawk survey period immediately preceding the commencement of construction activities (SHTAC 2000), and a second survey for all nesting birds will be conducted no more than 15 days before the start of construction activities. The surveys will be conducted in suitable nesting habitat that may be affected by project construction activities (e.g., staging area, erosion repair sites) and will include a 0.25 mile buffer surrounding these areas, where accessible and visible from MWT. Where appropriate, pre-activity surveys will follow established survey protocols or guidelines (i.e., *Staff Report on Burrowing Owl Mitigation* [CDFG 2012], *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* [SHTAC 2000], *Protocol for Evaluating Bald Eagle Habitat and Populations in California* [Jackman and Jenkins 2004]).
- b) If active nests are found, the District will establish an avoidance buffer as indicated below for activities that would potentially affect the nesting birds:
- Passerines: 50-foot buffer
 - Herons/Egrets: 200-foot buffer
 - Raptors: 300-foot buffer, unless otherwise defined below
 - Bald eagle: 2,640-foot buffer
 - Swainson's hawk: 1,320-foot buffer
 - Western burrowing owl: 1,600-foot buffer
 - Northern harrier: 300-foot buffer
 - Western yellow-billed cuckoo: 500-foot buffer
 - White-tailed kite: 300-foot buffer
 - Song sparrow: 50-foot buffer

A qualified biologist may determine that a reduced buffer will be sufficient to avoid adverse effects on nesting birds, based on the specific activities to be conducted, species present, and environmental conditions (e.g., line of sight). If project activities are required within the buffer, a designated biologist will monitor construction activities within the buffer and will have the authority to stop work if nesting birds exhibit agitation. The avoidance buffer will be established until the young have fledged, no longer are being

fed by the parents, have left the nest, and no longer will be affected by project activities.

Special-status bats. Special-status bats, including western red bat and pallid bat, have the potential to roost in the project area. Special-status bats have the potential to be directly affected in the form of injury or mortality during ground disturbance and vegetation removal, particularly removal of trees or snags. In addition, increased noise or vibration during construction may impact roosting bats by causing them to leave roosts prematurely. The impacts on bats would be more critical during the maternity season, when young may be present but not able to fly yet, or during winter hibernation, when the metabolic costs of disturbance would be high to the bats. Vegetation removal during project implementation also would result in a short-term loss of roosting habitat for special-status bats.

With implementation of Mitigation Measure BIO-8, any roosting bats or maternity colonies will be identified so that impacts could be avoided during project construction activities through a no-disturbance buffer and timing to avoid sensitive life stages. Suitable roosting habitat would remain available surrounding the project area and in large trees preserved within the erosion repair sites. Over the long term, following construction, the availability and quality of roosting habitat would meet or exceed preconstruction conditions through the on-site restoration of riparian habitat. The impacts on special-status bats would be reduced to a less-than-significant level with implementation of Mitigation Measure BIO-8.

Mitigation Measure BIO-8. Avoidance and Minimization Measures for Special-Status Bats

Preconstruction surveys for bats or bat signs (e.g., guano, staining, vocalizations) will be conducted by a qualified biologist in all areas that provide suitable bat roosting habitat, including snags, rotten stumps, mature trees with broken limbs, exfoliating bark, and dense foliage. Sensitive habitat areas and active roost sites will be avoided to the maximum extent practicable.

If active roost sites are identified by the qualified biologist in any trees, snags, stumps, or other areas planned for removal or significant trimming, a biological monitor will be present during tree removal or trimming activities. Work affecting potential roosts will be conducted between late morning and early afternoon on days with no precipitation and maximum temperatures of at least 50°F when any bats present are likely to be warm. Limbs less than 3 inches in diameter will be cut, and the tree will be left overnight to allow any bats that are using the tree for roosting time to leave and find another roost. Potential crevices and cavities will be opened and inspected carefully by a qualified biologist for the presence of bats. If bats are suspected within tree trunk or limb cavities, attempts will be made to expose any bats to allow escape by successively cutting sections above the cavity to open it and pausing 10 minutes between cuts to inspect and determine whether bats are present. If bats may occur in branches that can be removed from the tree intact and

set aside, the removed branches will be removed carefully and set upright to allow the bats to escape passively.

If an active bat nursery or maternity colony is present, disturbance will be avoided by establishing an appropriate buffer (approximately 100 to 200 feet), until breeding is determined to be complete and the young are mature and flight-capable.

- b) **Less-than-Significant Impact.** Project construction would result in removal of riparian forest and scrub-shrub vegetation and associated shaded riverine aquatic habitat. In addition, vegetation in four sensitive natural communities (i.e., valley oak riparian forest and woodland; shining willow groves; basket bush–river hawthorn–desert olive patches [i.e., blue elderberry stands]; and California rose briar patches) within the project footprint could be removed during project construction. However, to the extent feasible, large trees, particularly valley oaks, would be preserved in place, thereby preserving much of the structure and function of these habitats (e.g., shade, nesting and roosting sites) in the project area. Furthermore, project construction is anticipated to remove less than 1 acre of riparian habitat, and hundreds of acres of riparian habitat would remain undisturbed on MWT. Project implementation would repair critical erosion sites and protect surrounding riparian habitat on MWT from potentially greater impacts associated with levee failure and flooding. Following project construction, the repaired levee slopes and the new soil benches at sites with Repair Type 1 would be planted with native riparian vegetation to restore native habitats, replace habitats dominated by non-native vegetation (e.g., Himalayan blackberry–rattlebox–edible fig riparian scrub), and create new riparian habitat. Plant species composition, spacing, and elevation relative to the water surface would reflect the native vegetation communities in and adjacent to the project footprint prior to project construction. Restoration plantings would be irrigated and maintained for a 3-year establishment period, and replacement plantings would be installed if less than 75% of plantings survive this period. Therefore, over the long term, the availability and quality of on-site riparian habitat would meet or exceed preconstruction conditions. Impacts to riparian habitats would be less than significant.
- c) **Less-than-Significant Impact.** The project footprint includes portions of Dead Horse Cut, Snodgrass Slough, and Lost Slough, all of which are potential waters of the U.S. and waters of the state. Project construction would include placement of fill below the high tide line (HTL) and MHW of these waterways to create planting benches and shallow levee slopes in support of the long-term levee stabilization and restoration of riparian forest, scrub-shrub, and shaded riverine habitat on a no-net-loss basis. Habitat restoration, rehabilitation, and/or replacement for impacts on waters that fall under the regulatory purview of USACE and the RWQCB would be performed in accordance with guidelines from the respective agencies through the Clean Water Act Section 404 permit and Section 401 Water Quality Certification processes. Impacts would be less than significant.
- d) **Less-than-Significant Impact.** The proposed project is not expected to substantially alter habitats or impede wildlife use of or movement between habitats within and adjacent to the project area. The habitat in the project area currently does not serve as

a significant migratory corridor or nursery site for any listed species, and for those that do use it for migration, breeding, or dispersal, abundant and often higher quality habitat is available directly adjacent to the project area. In addition, the design of the proposed project minimizes habitat impacts through the preservation of large trees within the project footprint, where possible, and through the long-term restoration of riparian habitats following construction for no net loss of habitat over the long term.

Modifications to existing levee infrastructure would not include construction of any features that would block wildlife movement. Planting benches would not impede movement of aquatic species through the waterways surrounding MWT and would improve habitat quality over the long term through creation of shaded riverine aquatic habitat. Long-term impacts on terrestrial habitat connectivity would not occur from the restoration of riparian vegetation communities.

Therefore, the proposed project would not interfere substantially with the movement of any native resident wildlife species, nor impede the use of any wildlife nursery sites. The impact would be less than significant.

- e) **Less-than-Significant Impact.** Sacramento County has a tree preservation and protection ordinance to protect native oak trees with a DBH of 6 inches or greater (Code of Ordinances Section 19.12). Under the ordinance, “no person shall trench, grade, or fill within the dripline of any tree or destroy, kill, or remove any protected native oak in the designated urban area of the unincorporated area of Sacramento County without a tree permit, or unless authorized as a condition of a discretionary project approval by the Board of Supervisors, Sacramento County Planning Commission, Zoning Board of Appeals, the Zoning Administrator or the Subdivision Review Committee.”

The project area is outside the designated urban area of Sacramento County, and therefore it does not require a tree permit and would not conflict with the ordinance. Nevertheless, large oaks within the project footprint would be avoided where possible, and riparian habitat and valley oak woodland removed during project construction would be restored on site, as described in environmental issue area (b) above. Therefore, the project would not conflict with any local ordinances, and project implementation would be consistent with the goals of protecting native oak trees and restoring native habitat. The impact would be less than significant.

- f) **No Impact.** The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. MWT is within the South Sacramento Habitat Conservation Plan (SSHCP) area, within Preserve Planning Unit 6. Although the proposed project would not be a covered activity, the proposed project’s long-term stabilization of the levees and habitat restoration would be consistent with the goals of the SSHCP. Furthermore, implementation of Mitigation Measures BIO-1 through BIO-8 would avoid, minimize, or reduce potential impacts on the special-status species covered by the SSHCP. The proposed project would not conflict with the provisions of the SSHCP and impacts would not occur.

References

- Bloom, P. H. 1980. *The Status of the Swainson's Hawk in California*. California Department of Fish and Game and U.S. Bureau of Land Management, Sacramento, CA.
- California Burrowing Owl Consortium. 1993. *Burrowing Owl Survey Protocol and Mitigation Guidelines*. Technical Report. Alviso, CA.
- California Department of Fish and Game (CDFG). 1992. *Annual Report on the Status of California State-Listed Threatened and Endangered Animals and Plants*. Fish and Game Commission, Sacramento.
- . 1994. *Staff Report Regarding Mitigation for Impacts on Swainson's Hawks (Buteo swainsoni) in the Central Valley of California*.
- . 2012 (March 7). *Staff Report on Burrowing Owl Mitigation*.
- California Department of Fish and Wildlife (CDFW). 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. Available: https://www.cnps.org/wp-content/uploads/2019/10/Bot-Cert_2018-CDFW-Plant-and-Vegetation-Survey-Protocols-LR.pdf. Accessed November 2, 2025.
- . 2025a. California Natural Diversity Database (CNDDDB) Maps and Data, 9-Quad Species List. RareFind5 (Internet). Accessed November 7, 2025.
- . 2025b. California Natural Communities List. Available: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline>. Accessed November 27, 2025.
- California Department of Water Resources (DWR). 2014. *Delta Levees Special Flood Control Projects 2014 Guidelines for Providing Funding to Local Agencies*. Available: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Work-With-Us/Grants-And-Loans/Delta-Levees-Special-Flood-Control-Projects/Files/2014-Guidelines.pdf>. Accessed November 2, 2025.
- California Native Plant Society (CNPS). 2025. *A Manual of California Vegetation*. Available: <http://www.cnps.org/cnps/vegetation/>.
- Call, M. W. 1978. *Nesting Habits and Survey Techniques for Common Western Raptors*. Technical Note No. 316. U.S. Bureau of Land Management, Portland, OR.
- Davis, J. N., and C. A. Niemala. 2008. Northern Harrier (*Circus cyaneus*). In *California Bird Species of Special Concern: a Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California, Studies of Western Birds No. 1*, W. D. Shuford and T. Gardali, editors, pages 149–155. Western

Field Ornithologists, Camarilla, and California Department of Fish and Game, Sacramento.

eBird. 2025. eBird: An Online Database of Bird Distribution and Abundance. Cornell Lab of Ornithology, Ithaca, NY. Available: <http://www.ebird.org>. Accessed November 2, 2025.

Erichsen, A. L. 1995. *The White-Tailed Kite (Elanus leucurus): Nesting Success and Seasonal Habitat Selection in an Agricultural Landscape*. Master's thesis. University of California, Davis.

Fisher, R., G. Hansen, R. W. Hansen, and G. Stewart. 1994. Giant Garter Snake. In *Life on the Edge: a Guide to California's Endangered Natural Resources: Wildlife*, C. G. Thelander and M. Crabtree, editors, pages 284–287. Biosystems Books, Santa Cruz, CA.

Gardali, T. 2008. Modesto Song Sparrow (*Melospiza melodia*). In *California Bird Species of Special Concern: a Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California, Studies of Western Birds No. 1*, W. D. Shuford and T. Gardali, editors, pages 400–404. Western Field Ornithologists, Camarillo, and California Department of Fish and Game, Sacramento.

Gervais, J. A., D. K. Rosenberg., and L. A. Comrack. 2008. Burrowing Owl (*Athene cunicularia*). In *California Bird Species of Special Concern: a Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California, Studies of Western Birds No. 1*, W. D. Shuford and T. Gardali, editors, pages 218–226. Western Field Ornithologists, Camarillo, and California Department of Fish and Game, Sacramento.

Haug, E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing Owl (*Athene cunicularia*) In *The Birds of North America*, No. 149. The Academy of Natural Sciences, Philadelphia, PA, and American Ornithologists Union, Washington, DC.

Holland, D. C. 1994. *The Western Pond Turtle: Habitat and History*. Oregon Department of Fish and Wildlife, Final Report. Prepared for the U.S. Department of Energy, Bonneville Power Administration, Environment, Fish and Wildlife, Portland, OR.

iNaturalist. 2025. *iNaturalist Website*. Available: <https://www.inaturalist.org>. Accessed November 26, 2025.

Jackman, R. E., and J. M. Jenkins. 2004. *Protocol for Evaluating Bald Eagle Habitat and Populations in California*. Prepared for the U.S. Fish and Wildlife Service, Sacramento.

Jennings, M. R., and M. P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Final Report. Prepared by the California Academy of Sciences, Department of Herpetology, San Francisco, and Portland State University, Department of Biology, Portland, for the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova.

National Marine Fisheries Service (NMFS). 2006 (January 5). *Endangered and Threatened Species: Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead*. 71 FR 834.

———. 2014 (July). *Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead*. California Central Valley Area Office.

———. 2018. *Recovery Plan for the Southern Distinct Population Segment of North American Green Sturgeon (Acipenser medirostris)*. Sacramento, CA.

———. 2024. *San Joaquin River Basin*. Available: <https://www.fisheries.noaa.gov/west-coast/habitat-conservation/san-joaquin-river-basin>.

Resource Management Associates (RMA). 2020. *Modeling Evaluation for Project Salinity Changes, McCormack-Williamson Tract Flood Protection and Habitat Development Project*. Technical memorandum.

Swainson's Hawk Technical Advisory Committee (SHTAC). 2000. *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*.

U.S. Bureau of Reclamation. 2023. *Delta Cross Channel*. Available: <https://www.usbr.gov/mp/mpr-news/docs/factsheets/delta-cross-channel.pdf>. Accessed November 10, 2025.

U.S. Department of Fish and Wildlife Service (USFWS). 2017. *Framework for Assessing Impacts on the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)*. Sacramento, CA.

———. 1999. *Draft Recovery Plan for the Giant Garter Snake (Thamnophis gigas)*. Portland, OR.

———. 2000. *The Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants*. Sacramento, CA.

———. 2023 (October). *Endangered and Threatened Wildlife and Plants: Threatened Species Status with Section 4(d) Rule for the Northwestern Pond Turtle and Southwestern Pond Turtle*. Federal Register.

———. 2025a. *Information for Planning and Consultation, IPaC Resource List for Levee Repair Site 77 Sacramento Fish and Wildlife Office. List of Threatened and Endangered Species that May Occur in Your Proposed Project Location, and/or May Be Affected by Your Proposed Project*. Accessed November 7, 2025.

———. 2025b. *Critical Habitat for Threatened and Endangered Species, ArcGIS critical habitat mapper*. Available: <https://www.ecos.fws.gov>.

Xerxes Society. 2025. *Crotch's Bumble Bee*. Available: <https://xerces.org/endangered-species/species-profiles/bumble-bees/crotchs-bumble-bee>. Accessed November 15, 2025.

Zeiner, D. C., W. F. Laudenslayer Jr., K. E. Mayer, and M. White, editors. 1990. *California's Wildlife. Volume II. Birds*. California Statewide Habitat Relationships System, California Department of Fish and Game.

3.2.3 Cultural Resources

Table 3.2-6 Environmental Issues and Determinations for Cultural Resources

Issues	Determination
a). Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	NI
b). Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	LTS/M
c). Disturb any human remains, including those interred outside of formal cemeteries?	LTS/M

Notes:

LTS/M = Less-than-Significant Impact with Mitigation Incorporated

NI = No Impact

Environmental Setting

This section discusses the existing conditions as well as the relevant geomorphic, precontact, and historic-era conditions related to cultural resources in the project area. Cultural resources include architectural resources, archaeological resources, and human remains. Information in this section is summarized from the *Geoarchaeological Investigation Report McCormack Williamson Tract Levee Modification and Habitat Development Project* (AECOM 2015b), *Cultural Resources Inventory and Evaluation Report, McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project* (AECOM 2015a), the *Updated Cultural Resources Assessment for Reclamation District No. 2110 – McCormack-Williamson Tract 2023 Emergency Repairs and Future Phase B Restoration Project* (AECOM 2023), and the *McCormack-Williamson Tract Levee Erosion Repair Project Cultural Resources and Tribal Cultural Resources Technical Report* (AECOM 2025). The Area of Potential Effects (APE) for cultural resources is the entire McCormack-Williamson tract, including the staging area and levee roads used to access the erosion repair sites.

Geomorphic Setting

The eastern side of the Delta is underpinned by Pleistocene-age alluvial fans, built from rivers rising in the Sierra Nevada. The Mokelumne and the Cosumnes fans are among the northernmost of these large features, which are interbedded by silts, sand, and glacial rock. Because of changing hydrologic and sediment regimes associated with an inter-glacial phase, these rivers incised into their fans, as much as 10 to 15 meters along the Mokelumne. During the Holocene, elevated sea levels led to the formation of natural levees along the Sacramento and the Mokelumne Rivers around 2,500 before present (BP) [or earlier]. The levees reflected the rivers' high magnitude and sediment-laden flood flows, building up in elevation as sand and silts settled out along the river during high energy flows. The levees themselves supported dense riparian forests. The low-lying basins behind the natural levees and parallel to the Sacramento River accumulated finer sediments, to produce clays and peaty soils from vegetation, and were occupied by perennial wetlands.

Most likely because of rising base levels, tidal wetlands of the central Delta transgressed over the large alluvial fans, and at a certain point the site of the MWT became an alluvial floodplain underlying a tidal freshwater marsh, part of a trough at the southernmost end of the North

Delta flood basins. The zone was pinched by the older alluvial fan of the Cosumnes and Mokelumne rivers, bounded by the natural levees of the Mokelumne and the Sacramento (AECOM 2015b).

The majority of the MWT historically was tidal freshwater wetlands. Although such an environment probably was used by pre-contact Native American inhabitants of the region for resource extraction (e.g., tule and sedge plant material, waterfowl), it is not considered conducive to the formation of archaeological sites because it more-or-less constantly was wet and not viable for human settlement. The exception to this was the area of natural levee development along the north bank of the Mokelumne River, which may have been conducive to human settlement. Therefore, it has a higher potential for harboring archaeological resources. The levee along the Mokelumne River likely built up over time, in response to rising base level (sea levels) in the middle and late Holocene. This gradual accretion of the levee is evidenced by two possible crevasse splays, extending north and west into the MWT. These likely represent flood events where the natural levee was breached and subsequently built up again by entrained sediment. This gradual evolution of the Mokelumne levee suggests a potential for burial of middle and late Holocene archaeological sites that may have been deposited on the levee (AECOM 2015b).

Although the vast majority of the MWT historically was wetland or tidally influenced, and therefore not conducive to the accumulation of archaeological sites, the landform has undergone significant changes over the course of human history in California (approximately the past 13,500 years), and historical conditions should not be used as the sole basis for determining geoarchaeological sensitivity (AECOM 2015b).

Pre-Contact Setting

This section describes, in general terms, broad patterns in the prehistory of the Central Valley, focusing on major environmental, technological, and adaptive changes evident in the archaeological record of this region. The discussion of pre-contact occupation has been studied extensively by archaeologists for more than a century and has a well-defined cultural chronology. From these investigative efforts, three distinct patterns have been established to describe the Central Valley's prehistory: the Windmill, the Berkeley and the Augustine Patterns.

The Early Period, identified at eastern Delta, Camanche Reservoir, and adjacent lower valley archaeological sites, dominated the region from approximately 5,000 to 2,500 years ago (West 1991:12). Relative to subsequent periods, Early Period subsistence appears to have focused largely on hunting, as evidenced by large quantities of faunal remains and projectile points in the archaeological record. However, fishing and seed procurement also are evident. With regard to tool technology, both flaked and ground stone industries are well represented. Facilitating the acquisition of materials for tool and ornament production was a vast trade network, where obsidian was obtained from North Coast Range and eastern Sierran sources, shell beads from the coast, and quartz and alabaster from the Sierra foothills. The Windmill Pattern is associated with the Early Period in this region and is characterized by distinctive burial patterns, with bodies typically buried fully extended, face down, oriented toward the west, and specific placement of funerary objects (Moratto 2004).

The Middle Period in the Central Valley extended from approximately 3,600 to 1,000 years ago. This period is represented by an increase in pestles and mortar technologies, which is thought indicative of an intensified reliance on acorns as a principal dietary staple. Equally characteristic is the emergence of a well-developed bone tool industry and distinctive diagonal flaking of large, concave base points, both technologies associated with fishing technologies (West 1991:12). Diagnostic artifacts also include shell beads and ornaments. The Berkeley Pattern is associated with the Middle Period in this region and is characterized by burials found in a flexed position, with variable orientation and few funerary artifacts (Moratto 2004).

The Late Period occurred in the Central Valley from approximately 2,000 years ago to the Historic era. This pattern is distinguished by small projectile points, indicative of bow and arrow technology, as well as by shaped pestles and mortars and bone awls (West 1991:13). Considerable variation occurred in mortuary practices, including flexed burials, cremation, and funerary object differentiation, suggesting social stratification (Moratto 2004). The Late Period is associated with the Augustine Pattern in this region, and archaeological assemblages of this period have been correlated with ethnohistoric linguistic boundaries (Bennyhoff 1961).

Historic-era Setting

The following overview is focused primarily on the historic-era land use of the APE as related to early settlement, irrigation and development, reclamation, and agriculture. These principal themes can provide historical context for cultural resources that may be present in the project area.

The Early American Period

Early explorers of the North Delta region, including Pedro Fages, Juan Bautista de Anza, and Gabriel Moraga, visited the Delta relatively frequently throughout the eighteenth century. The first American to travel in the area likely was Jedediah Strong Smith, who opened the Sacramento Trail in the late 1820s. Smith reported to the Hudson's Bay Company on the quantity and quality of the furs available in California. Initially, trapping in the Sacramento and San Joaquin Valleys proved very profitable but saw less success by 1834. By 1842, the Hudson's Bay Company terminated its California operations altogether (Jones & Stokes 2007:5.7-6).

Only a handful of ranchos existed in the Delta, and they were situated mainly south of the project area, in the vicinity of Roberts and Union islands. Lands in the project area remained essentially unsettled until the well-publicized discovery of gold in 1848 (Jones & Stokes 2007:5.7-6).

Following the Gold Rush, settlement in the Delta region increased dramatically, largely because of the passage of the Swamp and Overflow Act of 1850. The law transferred swamplands from the U.S. government to the control of California. Following the passage of the legislation, private citizens purchased approximately 500,000 acres of newly acquired California swampland in the Delta (Jones & Stokes 2007:5.7-6).

Reclamation in the North Delta Region and the McCormack-Williamson Tract

MWT was not reclaimed until the early twentieth century, and a portion of the tract remained swampland for many years. During the early 1900s, families including the Glenns, McLanahans, and Earhardts became associated with the MWT. In addition, Southern Pacific Railroad Company (SPRR) owned a large strip of unreclaimed land directly adjacent to Snodgrass Slough on the western edge of the tract (Jones & Stokes 2007:5.7-7).

Fertile agricultural soil and the miles of navigable channels attracted land speculators and individual farmers to the Delta region. Efforts to reclaim the land began immediately (largely through the efforts of Chinese laborers), although the process was time-consuming and costly. Because of the expenses involved, larger corporations such as Tideland Reclamation Company and Staten Island Land Company commonly formed to supply the substantial capital that was needed to reclaim vast areas of swampland. Overall, dredging efforts during this period remained unsuccessful until the advent of improved dredging machinery in the late nineteenth century. Repeated levee failures in the latter part of the nineteenth century, with extensive flooding and crop damage, resulted in continuous efforts to rebuild and reinforce the earthen levees (Jones & Stokes 2007:5.7-7).

Half of the MWT levee system was constructed by 1910. According to a thesis at UC Davis, the natural levees around what would become the McCormack-Williamson Tract were raised in 1919, to create agricultural land and reduce flooding (Hammersmark 2002:6). Like other levees, the MWT levee system “were raised, improved, accidentally breached and repaired a number of times” (Hammersmark 2002:6).

By the early twentieth century, reclamation had benefited from technological advances that included the clamshell, hydraulic, and steam-driven dredges, in addition to the mechanical ditch digger that took the place of the horsedrawn scrapers and dredges of the early period of reclamation. Steam-powered and electrical pumps also helped to drain the land (Jones & Stokes 2007:5.7-7).

The twentieth century also ushered in improved transportation to the Delta region. Changes included construction of bridges and roadways on the tops of levees and gasoline-powered (rather than steam) riverboats that plied the waterways. Before the transportation improvements, roadways were virtually non-existent, with most local travel being accomplished by schooners or barges. Independent operators from Stockton and Sacramento (rather than the large corporations of the past) operated most of these smaller workboats (Jones & Stokes 2007:5.7-7).

Methodology

This section describes the various methods and results used to identify and document cultural resources within the APE.

Records Search and Literature Review

A records search was conducted at the North Central Information Center (NCIC) of the California Historical Resources Information System (CHRIS) on October 14, 2025 (NCIC File No. SAC-25-168). The search area included the APE and a 0.25-mile radius buffer. Archival and literature review also included the following documents, maps, and listings:

- National Register of Historic Places listings
- California Register of Historical Resources listings
- California State Historical Landmarks (OHP 1996)
- California Inventory of Historic Resources (California Department of Parks and Recreation 1976)
- California Points of Historical Interest (OHP 1992)
- California Place Names (Gudde 1998)
- Historic Spots in California (Kyle et al. 2002)
- Historical Atlas of California (Beck and Haase 1974)

The archival records search consisted of an archaeological and historical records and literature review and a review of previous research and documented sites on file at the NCIC (NCIC File No. SAC-25-168). This research provides a background of cultural resources investigations that have been conducted and the types of cultural resources that have been identified. Table 3.2-7 summarizes the four previous investigations that included the APE.

Table 3.2-7 Summary of Previous Investigations Within the APE

NCIC Report No.	Report Title	Author/Date	Documented Resources
NCIC-03128	Site where KCRA plans to build a new transmission tower*	Gerry, R./1983	none
NCIC-07157	Class II Archaeological Survey North Delta Program Sacramento–San Joaquin, California*	West, G.J./1991	within the APE: P-34-001665
NCIC-08240	Cultural Resources Inventory and Assessment Report, Walnut Grove Sewer Project, Sacramento County, California *	Deis, R. (AECOM)/2007	none in the APE
NCIC-11959	Addendum: Cougar Wetland Restoration Project (CA-018-S-SV-14/01)*	BLM/2013	none in the APE
none	Cultural Resources Inventory and Evaluation Report: McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project ^	Ambacher, P. (AECOM)/2015	within the APE: McCormack-Williamson Tract Levee Segments; Dead Horse Island Levee; P-34-001665 (updated)
none	Updated Cultural Resources Assessment for Reclamation District No. 2100 – McCormack-Williamson Tract 2023 Emergency Repairs and Future Phase B Restoration Project ^	Deis, R. (AECOM)/2023	within the APE, not updated: McCormack-Williamson Tract Levee Segments; P-34-001665 (mentioned demolition); Sacramento River Tribal Cultural Landscape (P-34-005225)

Notes:

* Report on file at the NCIC

^ Report on file at AECOM

APE = Area of Potential Effects

BLM = Bureau of Land Management

NCIC = North Central Information Center

The records search identified two cultural resources that were documented within the APE (Table 3.2-8), a farm house complex that since has been demolished (P-34-001665), and a cement water conveyance that now is inundated (P-34-005643). Recordation of the cement water conveyance was not associated with any of the reports in Table 3.2-7. The records search also identified the Sacramento River Tribal Cultural Landscape (TCL) (P-34-005225), which is discussed in Section 3.2.8, Tribal Cultural Resources.

Table 3.2-8 Documented Resources within the APE

Primary Number	Description	CRHR Significance/NRHP Eligibility
P-34-005643	Cement water conveyance (now inundated) *	n/a, 7R
P-34-001665	Farm house complex *^	n/a, 6Y
none	McCormack-Williamson Tract levee segments ^	n/a, 6Y
P-34-005225	Sacramento River Tribal Cultural Landscape *^	CRHR 1/NRHP A; 3S/3CS

Notes:

* Site documentation on file at the NCIC

^ Site documentation on file at AECOM

3S = appears eligible for NR as an individual property through survey evaluation

3CS = appears eligible for CR as an individual property through survey evaluation

6Y = determined ineligible for NR by consensus through Section 106 process; not evaluated for CR or local listing

7R = identified in a reconnaissance level survey; not evaluated

CRHR = California Register of Historical Resources

NRHP = National Register of Historic Places

Records search documents for P-34-001665 included a signed Concurrence of Eligibility letter (letter reference COE_2016_0425_001) dated May 26, 2016, which provided State Historic Preservation Officer (SPHO) concurrence of ineligibility for listing in the NRHP of the previously recorded farm house complex (P-34-001665), the McCormick *[sic]* Williamson Tract (MWT) levee segments, and the eastern levee of Dead Horse Island (outside the APE). These resources were recorded and evaluated as part of the *Cultural Resources Inventory and Evaluation Report: McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project*, prepared by AECOM in 2016. However, a note within the digital copy of the letter states: “(As of 4/10/2024 NCIC and OHP do not have this report).” Because a copy of the report and the associated Department of Parks and Recreation (DPR) 523 Series forms were not submitted to the NCIC, the MWT levee segments have not received a Primary Number from the NCIC, and a copy of the report and recordation were not included in the NCIC Records Search No. SAC-25-168, conducted on October 14, 2025.

A copy of the report and the associated DPR 523 Series forms also were not submitted to the OHP. The May 26, 2016 COE letter was used to inform the Built Environment Resources Directory (BERD) database, hosted by the OHP, but resulted in entry errors. A misspelled “The McCormick Williamson Tract” was entered into the database twice (OTIS ID 673921 and 673922), both entries were erroneously assigned the P-34-001665 Primary Number (belonging to the farm house complex), and only the entry for OTIS ID 673921 was shown as having a 6Y status code, based on the May 26, 2016 COE letter. Because P-34-001665 was erroneously assigned to the MWT, it does not have a separate entry in the BERD. However, this former

farm complex with five buildings on the eastern side of MWT on the Mokelumne River were all demolished in 2018.

Other Sources of Information

A copy of the 2015 *Cultural Resources Inventory and Evaluation Report McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project* and the associated DPR 523 forms for P-34-001665, MWT Levee Segments, and the updated Farm House Complex DPR (P-34-001665), prepared by AECOM for the Nature Conservancy, were located in AECOM's records (refer to Table 3.2-7 and Table 3.2-8). The previous DPR 523 form for the MWT levee segments, prepared by AECOM in 2015, is attached to the 2025 update DPR 523 form, prepared by AECOM as part of this project effort.

Likewise, a copy of the 2023 *Updated Cultural Resources Assessment for Reclamation District No. 2100 – McCormack-Williamson Tract 2023 Emergency Repairs and Future Phase B Restoration Project* and copies of the same DPR 523 forms prepared by AECOM in 2015 also were located in AECOM's records (refer to Table 3.2-7).

Previous Geoarchaeological Assessment

A *Geoarchaeological Investigation Report McCormack Williamson Tract Levee Modification and Habitat Development Project* (AECOM 2015b) was prepared in 2015 for the District as part of the *Cultural Resources Inventory and Evaluation McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project* (AECOM 2015a). AECOM excavated thirteen geoarchaeological backhoe test pits within the northern half of the MWT. No archaeological resources were encountered because of this geoarchaeological investigation. The 2015 project was found to have little or no potential to impact buried archaeological resources, and no additional subsurface testing or archaeological monitoring was recommended.

Surveys

The APE has little to no potential for buried archaeological resources, based on the information presented in the 2023 and 2015 technical memos, including negative survey results for archaeological resources during pedestrian surveys and geoarchaeological testing. Therefore, no pedestrian survey for archaeological resources was deemed necessary as part of the proposed project.

AECOM was provided with photographs and other data for the erosion repair sites, collected by MBK in February 2025 from a boat survey that was conducted along the waterside of the levee.

Tribal Consultation

Tribal consultation was carried out for the proposed project under AB 52. The details and results of this consultation are discussed in Section 3.2.8, Tribal Cultural Resources. The impact analysis and proposed mitigation measures associated with Tribal Cultural Resources also are presented in Section 3.2.8.

Discussion

- a) **No Impact.** Section 15064.5 of the CEQA Guidelines requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as any building, structure, site, or object that is listed in or determined to be eligible for listing in the California Register, or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. This impact discussion evaluates potential impacts on built environment resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed under environmental issue area b), below. The proposed project would involve levee repair activities on the MWT, to restore the levee to the original contours. The MWT was determined ineligible for listing in the NRHP in May 2016, and therefore is not a historical resource. No impact would occur.
- b) **Less-than-Significant Impact with Mitigation Incorporated.** This section discusses archaeological resources, both as historical resources according to Section 15064.5 of the CEQA Guidelines, as well as unique archaeological resources as defined in Section 21083.2(g) of the Public Resources Code. A significant impact would occur if the proposed project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource. Because no known precontact or historic-era archaeological sites have been recorded previously within the APE, the previous surveys failed to identify any new cultural resources, and no archaeological resources were encountered as a result of the geoarchaeological investigation in 2015, no damage to or destruction of known precontact or historic-age archaeological resources would occur during project construction. However, currently unknown and undiscovered archaeological features potentially could be discovered during construction of the erosion repair sites and could result in potentially significant impacts.

Potentially significant impacts on unknown archeological resources during construction would be mitigated to a less-than-significant level through implementation of Mitigation Measure CUL-1 in the unlikely instance of an inadvertent discovery. This mitigation measure would allow for appropriate monitoring and stop work authority during construction if unknown archaeological resources are discovered. It also would allow appropriate handling of such resources and, for pre-contact resources, consultation and coordination with the appropriate Native American representative. The impact would be less than significant with mitigation incorporated.

Mitigation Measure CUL-1. Unanticipated Cultural Resources

In the event of an inadvertent discovery of cultural resources (excluding human remains) during construction, all work will halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, will be retained by the District to evaluate the significance of the find. If it is determined due to the types of deposits discovered a Native American monitor is

required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites (as established by the Native American Heritage Commission [NAHC]) will be followed, and the monitor will be retained at the District's expense.

- a. Work will not continue within the 100-foot radius of the discovery site until the archaeologist and/or tribal monitor conducts sufficient research and data collection to make a determination that the resource is either (1) not cultural in origin; or (2) not potentially eligible for listing on the NRHP or CRHR.
- b. If a potentially eligible resource is encountered, then the archaeologist and the District staff will arrange for either (1) total avoidance of the resource, if possible; or (2) test excavations or total data recovery as mitigation. The determination will be formally documented in writing and submitted to the District for verification that the provisions of CEQA for managing unanticipated discoveries have been met.

- c) **Less-than-Significant Impact with Mitigation Incorporated.** No formal recordation exists that the project site has been used for human burials. However, as discussed in Section 3.2.8, Tribal Cultural Resources, the United Auburn Indian Community (UAIC) previously stated during consultation for another project that the potential exists for evidence of Native American occupation and burials beneath the MWT levees. Likewise, because of the historical nature of levee construction, the potential exists to encounter previously unidentified remains in subsurface context when conducting ground disturbance. The inadvertent unearthing, exposure, or disturbance of buried human remains would be a potentially significant impact. Implementation of Mitigation Measure CUL-2, which includes provisions compliant with the Public Resources Code and Health and Safety Code would reduce this potentially significant impact to a less-than-significant level by notifying the proper authorities and implementing the proper handling and care of unknown human remains inadvertently discovered. The impact would be less than significant with mitigation incorporated.

Mitigation Measure CUL-2. Inadvertent Discovery of Human Remains

Pursuant to Sections 5097.97 and 5097.98 of the State Public Resources Code, and Section 7050.5 of the State Health and Safety Code, if a human bone or bone of unknown origin is found during construction, all work is to stop, and the County Coroner and the District will be notified immediately. If the remains are determined to be Native American, the coroner will notify the NAHC within 24 hours, and the NAHC will identify the person or persons that it believes to be the most likely descendent from the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposition of, with appropriate dignity, the human remains and any associated grave goods.

References

- AECOM. 2015a. *Cultural Resources Inventory and Evaluation Report, McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project*. Prepared for The Nature Conservancy.
- . 2015b. *Geoarchaeological Investigation Report McCormack Williamson Tract Levee Modification and Habitat Development Project, Reclamation District 2110, Sacramento County, California*. Prepared for Reclamation District 2110.
- . 2023. *Updated Cultural Resources Assessment for Reclamation District No. 2110—McCormack-Williamson Tract 2023 Emergency Repairs and Future Phase B Restoration Project*. Prepared for MBK Engineers.
- . 2025. *McCormack-Williamson Tract Levee Erosion Repair Project Cultural Resources and Tribal Cultural Resources Technical Report*. Prepared for Reclamation District 2110.
- Beck, W. A., and Y. D. Haase. 1974. *Historical Atlas of California*. Norman and London: University of Oklahoma Press.
- Bennyhoff, J. A. 1977. *Ethnogeography of the Plains Miwok*. Publication No. 5. Center for Archaeological Research, University of California, Davis.
- California Department of Parks and Recreation. 1976. *California Inventory of Historic Resources*. On file at the NCIC, Sacramento.
- California Office of Historic Preservation (OHP). 1992. *California Points of Historical Interest*. On file at the NCIC, Sacramento.
- . 1996. *California State Historical Landmarks*. On file at the NCIC, Sacramento.
- Gudde, E. G. 1998. *California Place Names*. Berkeley: University of California Press.
- Hammersmark, C. T. 2002. *Hydrodynamic Modeling and GIS Analysis of the Habitat Potential and Flood Control Benefits of the Restoration of a Leveed Delta Island*. UC Davis Master thesis.
- Jones & Stokes. 2007. *Draft Environmental Impact Report North Delta Flood Control and Ecosystem Restoration Project, Volume 1 – EIR Analysis*. Prepared for the California Department of Water Resources.
- Kyle, D. E., H. E. Rensch, E. G. Rensch, M. B. Hoover, and W. N. Abeloe. 2002. *Historic Spots in California*. Fifth edition. Stanford University Press.
- Moratto, M. 2004. *California Archaeology*. Salinas, CA: Coyote Press.
- West, G. J. 1991. *Class II Archaeological Survey, North Delta Program, Sacramento-San Joaquin Delta, California*. Report No. 7157, on file at the NCIC, Sacramento.

3.2.4 Geology, Soils, and Paleontology

Table 3.2-9 Environmental Issues and Determinations for Geology and Soils

Issues	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.	NI
ii) Strong seismic ground shaking?	LTS
iii) Seismic-related ground failure, including liquefaction?	LTS
iv) Landslides?	NI
b) Result in substantial soil erosion or the loss of topsoil?	LTS
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?	LTS
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?	NI
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?	NI
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	NI

Notes:

LTS = Less-than-Significant Impact

NI = No Impact

Environmental Setting

Regional and Local Geology

MWT is in the North Delta immediately downstream from the confluence of the Cosumnes and Mokelumne Rivers. Surficial and near-surface deposits in the Delta consist of a layer of peat and peaty sediments as much as 20 feet thick that are interbedded with fluvial and tidal deposits of marine clay, silt, and sand. These sediments form the modern Delta and decrease in thickness with distance toward the Delta margins. The modern Delta is the most recent of several deltas that have formed during a sequence of depositional and erosional cycles during the Quaternary Period (the last 2.58 million years). These cycles resulted from fluctuations in climate and sea level related to the advance and retreat of glacial ice. The modern Delta formed as rising sea levels intruded upstream and flooded a pre-Holocene valley, creating a broad tidal marsh. Rising sea levels gradually submerged the marsh, creating anaerobic conditions that substantially reduced the rate of plant decomposition, resulting in the formation of thick peat deposits.

The northern portion of MWT is mapped as Holocene-age (the last 11,700 years) Alluvial Basin Deposits, and the southern portion of the tract is mapped as Holocene Intertidal Deposits (Wagner et al. 1981). Recent historic age (the last 200 years) levee deposits are present along the perimeter of MWT and in the northwest corner of the tract.

Seismicity

The nearest active fault zones to the project area are the Cordelia and Green Valley fault zones, in the Coast Ranges approximately 34.5 and 36 miles to the west, respectively (Jennings and Bryant 2010). Both of them are zoned under the Alquist-Priolo Earthquake Fault Zoning Act (California Geological Survey 2025a). The Vaca Fault, which is not considered active but has shown evidence of movement in the middle to late Quaternary period (the last 700,000 years), is approximately 23 miles west of MWT (Jennings and Bryant 2010).

MWT is in an area that is classified with a moderate potential for strong seismic ground shaking, based on the estimated peak horizontal ground acceleration (California Geological Survey 2025b), and is in a flat area that is not subject to landslide hazards.

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and become fluid, similar to quicksand. The liquefaction potential depends on the type of soil, the level and duration of seismic ground motions, and the depth-to-groundwater. The locations that are most susceptible to liquefaction-induced damage have loose, water-saturated, granular sediment that is within 40 feet of the ground surface. Liquefaction poses a hazard to levees because the loss of soil strength can result in seismic deformations that destabilize the levee.

Soil Types and Characteristics

The results of soil boring logs from several sites along MWT perimeter levees indicated that the levees consist of fill material composed of aggregate base (used as road surfacing material along the levee crowns), to depths ranging from 5 to 9 inches beneath the ground surface, underlain by low plasticity clay to a depth of approximately 15 feet. Beneath the fill material, native organic soils are present, composed of layers of silt and peat (Hultgren-Tillis Engineers 2022).

Based on a review of soil survey data provided by the Natural Resources Conservation Service (NRCS 2025), native soil in the project vicinity and within the Ring Levee consists primarily of Egbert clay; areas of Cosumnes silt loam, Dierssen clay loam, and Columbia sandy loam are mapped along the northeast levee perimeter. A small area of Cosumnes silt loam is present in the southeast corner, within the Ring Levee.

Discussion

- a) i) **No Impact.** Surface rupture is an actual cracking or breaking of the ground along a fault during an earthquake. Facilities built over a fault can be torn apart, and levees can be destabilized if the ground ruptures. The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) was created to prohibit the location of structures designed for human occupancy across the traces of active faults, thereby reducing the loss of life and property from an earthquake. MWT is not within or near an Alquist-Priolo Earthquake Fault Zone (California Geological Survey 2025a). No impact would occur.

- a) ii) **Less-than-Significant Impact.** Geologists have determined that the greatest potential for surface fault rupture and strong seismic ground shaking is from active faults; that is, faults with evidence of activity during the Holocene epoch. MWT is in an area that historically has not experienced large magnitude earthquakes (U.S. Geological Survey 2025). The nearest active faults are approximately 34.5 and 36 miles west of MWT in the Coast Ranges. MWT is in an area of moderately low potential shaking hazard intensities (i.e., estimated peak horizontal ground acceleration of 0.41g) (California Geological Survey 2025b). Strong seismic ground shaking could destabilize the levee, resulting in subsequent failure during a flood event. However, the local standard of practice for rural levee erosion repairs generally follows USACE EM 1110-2-1913 (Design and Construction of Levees), which addresses seismic design issues, as well as under Title 23 of the CCR. The impact would be less than significant.
- a) iii) **Less-than-Significant Impact.** Although shallow groundwater historically was encountered in some test pits and soil borings at MWT, the active seismic sources are a relatively long distance away, and the levee is composed of engineered fill material. Furthermore, the local standard of practice for rural levee erosion repairs generally follows USACE EM 1110-2-1913 (Design and Construction of Levees), which addresses seismic design issues, as well as under Title 23 of the CCR. The impact would be less than significant.
- a) iv) **No Impact.** MWT, which is surrounded by and partially inundated with water, is flat. Thus, no potential exists for landslides because of terrain hazards. No impact would occur.
- b) **Less-than-Significant Impact.** The erosion repair sites consist of a top layer of aggregate base underlain by low plasticity clay fill material, to a depth of approximately 15 feet (Hultgren-Tillis Engineers 2022). With regards to native soils present within the Ring Levee, at potential staging areas, and adjacent to the erosion repair sites, the Egbert clay and Cosumnes silt loam soils are rated with a moderate shrink-swell potential. The Columbia sandy loam is rated with a moderately high wind erosion potential, and the Cosumnes silt loam has a high water erosion potential. The Egbert, Cosumnes, and Dierssen soils all have a moderate stormwater runoff potential (NRCS 2025). Construction activities (e.g., vegetation removal, grading, excavating, backfilling) could result in disturbed soils being exposed temporarily to the erosive forces of wind, rain, and stormwater runoff, causing the release of construction-generated sediment to Delta waterways. Stormwater runoff could be contaminated with chemicals typically used during construction (e.g., fuels, oils, solvents) through the daily use, transport, and storage of these materials if they are not controlled properly. Construction activities, such as grading and excavating, also would have the potential to change existing drainage patterns, which could affect erosion and sedimentation in new areas if unconsolidated sediments are exposed to new flow paths or if the total amount of flow is greater than historical norms.

Project-related construction is anticipated to occur between July and October, when the potential for erosion from stormwater runoff would be lowest because of lack of rainfall. Stripped and cleared material from the levee would be hauled from the erosion sites to the staging area and stockpiled within existing borrow cells (which are protected by levees). The excavated embankment soils would be stockpiled on site for re-use, either in the soil-filled rock section or for placement over rock in establishing a more sustainable embankment slope. Excess soil would be stockpiled in the Ring Levee area.

During project construction, the District would implement environmental commitment measures WQM-1 or WQM-2, which would include preparing and implementing an Erosion and Sediment Control Plan or a Stormwater Pollution Prevention Plan (SWPPP), if required. The District would comply with the provisions of the State Water Resources Control Board's (SWRCB) National Pollutant Discharge Elimination System (NPDES) *General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities* (Construction General Permit, Order WQ 2022-0057-DWQ, NPDES Permit No. CAS000002), if required, if the acreage of soil disturbance would be more than 1 acre. The Construction General Permit requires preparation of an SWPPP and implementation of associated BMPs, specifically designed to reduce construction-related erosion.

Furthermore, following RSP placement and completion of repairs at each site, the levee crest would be resurfaced with a new aggregate base, imported from the Stockton area. Disturbed areas above the MHW would be revegetated by hydroseeding with native grasses for site stabilization. This includes the waterside slopes of the erosion repair sites, permanent stockpiles in the Ring Levee area, and any other incidentally disturbed areas during construction. Hydroseeding would occur in October or November, before the start of the rainy season. Therefore, the proposed project would not result in substantial soil erosion or loss of topsoil. The impact would be less than significant.

- c) **Less-than-Significant Impact.** The purpose of the proposed project is to address bank loss, toe scour, and erosion at 14 critical erosion repair sites along the waterside perimeter of MWT at Deadhorse Cut, Snodgrass Slough, Lost Slough, and the East Levee. As described in detail in Chapter 2, Project Description, repairs would entail flattening the waterside levee slope, placing imported riprap to reestablish the bank slope and channel, and constructing a toe berm. The levee crest would be resurfaced with an aggregate base, and excess excavated soils would be stockpiled in the staging area inside the Ring Levee. The repairs would restore the original contours of the levee. To address vegetation impacts from erosion repairs, planting benches would be constructed. Repair types would follow the current standard of practice for rural levee erosion repairs, which generally relate to rock sizing, placement methods, and slope angles. The local standard of practice for rural levee erosion repairs generally follows USACE EM 1110-2-1913 (Design and Construction of Levees) and EM 1110-2-1601 (Hydraulic Design of Flood Control Channels), as well as under Title 23 of the CCR. The proposed project has been designed and engineered to provide stability; therefore, the proposed project would result in an improvement as compared to existing conditions. The impact would be less than significant and would be considered beneficial.

- d) **No Impact.** Based on the results of site-specific soil borings, clay sediments that are present within the existing MWT levee and within borrow areas on MWT (where soil was obtained to construct and perform previous levee repairs) are not expansive (Hultgren-Tillis Engineers 2001, 2015, 2022). The existing levee materials at the erosion repair sites would be re-used, to the extent appropriate, during the proposed levee repairs as soil fill material. Therefore, the proposed project would not result in hazards from expansive soil. No impact would occur.
- e) **No Impact.** The proposed project involves repair of an existing levee and would not involve wastewater treatment systems. Temporary, portable restrooms would be provided for construction workers during the construction phase. Thus, no impact would occur.
- f) **No Impact.**

Unique Geologic Features

A unique geologic feature consists of a major natural element that stands out in the landscape, such as a large and scenic river or lake, gorge, major waterfall, volcanic cinder cone, lava field, or glacier. Unique geologic features are considered to be “outstanding examples” that are the “best of their kind.” MWT is a low-lying flat island in the Delta, which is now partially submerged under water because of flooding in 2023. The island is flat, as with the other landforms in the project vicinity, and consists of low perimeter levees with scattered deciduous trees and shrubs just above the water line, similar to the surrounding lands. MWT does not comprise a unique geologic feature itself, and it is not part of the viewshed of a unique geologic feature. No impact would occur.

Paleontological Resources

Sediments at the erosion repair sites consist of Historic-age (i.e., the last 200 years) levee deposits, which consist of reworked, engineered, and compacted materials derived from native soil deposits in the area. Based on a review of the geologic mapping (Wagner et al. 1981), the native sediments at MWT consist of Holocene Alluvial Basin Deposits (fine-grained sediments with horizontal stratification, deposited by standing or slow-moving water in topographic lows), and Holocene Intertidal Deposits (soft mud and peaty mud in marshes, swamps, and waterways). To be considered a unique paleontological resource, a fossil must be more than 11,700 years old. Holocene deposits contain only the remains of extant, modern taxa (if any fossil resources are present), which are not considered “unique” paleontological resources. Therefore, no impact would occur.

References

- California Geological Survey. 2025a. Earthquake Zones of Required Investigation. Available: <https://maps.conservation.ca.gov/cgs/informationwarehouse/eqzapp/>. Accessed November 4, 2025.
- . 2025b. Map Sheet 48: Earthquake Shaking Potential for California—Ground Motion Hazard Maps. Available: <https://maps.conservation.ca.gov/cgs/ms48/groundmotion/>. Accessed November 4, 2025.
- Hultgren-Tillis Engineers. 2001. *Borrow Site Investigation, McCormack-Williamson Tract, Sacramento County, California*. Project No. 431.01. Concord, CA.
- . 2015. *Preliminary Borrow Site Investigation, McCormack Williamson Tract, Sacramento County, California*. Project No. 431.04. Concord, CA.
- . 2022. *Geotechnical Data Report, Phase B Borrow Site, McCormack-Williamson Tract, Sacramento County, California*. Project No. 431.06. Concord, CA.
- Jennings, C. W., and W. A. Bryant. 2010. 2010 Fault Activity Map of California. Available: <http://maps.conservation.ca.gov/cgs/fam/>. Accessed November 4, 2025.
- Natural Resources Conservation Service. 2025. *Web Soil Survey*. Available: <https://websoilsurvey.nrcs.usda.gov/app/>. Accessed November 5, 2025.
- U.S. Geological Survey (USGS). 2025. *Earthquake Hazards Program: Search Earthquake Catalog*. Available: <https://earthquake.usgs.gov/earthquakes/search/>. Accessed November 5, 2025.
- Wagner, D. L., C. W. Jennings, T. L. Bedrossian, and E. J. Bortugno. 1981. Geologic Map of the Sacramento Quadrangle, California. Regional Geologic Map Series, Map No. 1A. California Division of Mines and Geology. Sacramento, CA.

3.2.5 Greenhouse Gas Emissions

Table 3.2-10 Environmental Issues and Determinations for Greenhouse Gas Emissions

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

Notes:

LTS = Less-than-Significant Impact

Environmental Setting

Certain gases in Earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining Earth's surface temperature. Solar radiation enters Earth's atmosphere from space. A portion of the radiation is absorbed by Earth's surface, and a smaller portion of this radiation is reflected back toward space through the atmosphere. However, infrared radiation is selectively absorbed by GHGs in the atmosphere. Thus, infrared radiation released from Earth that otherwise would have escaped back into space instead is trapped, resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. The principal GHGs contributing to climate change are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated compounds. GHGs are emitted by natural processes and because of human (anthropogenic) activities. Anthropogenic GHG emissions primarily are associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, and manufacturing; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition. Anthropogenic emissions of GHGs in excess of natural ambient concentrations generally are considered responsible for intensifying the greenhouse effect and having led to a trend of unnatural warming of Earth's climate, known as global climate change (IPCC 2021).

GHG emissions are not monitored at local air pollution monitoring stations and do not represent a direct impact on human health. Rather, GHG emissions generated locally contribute to global concentrations of GHGs, which changes the climate and environment. Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology. The GWP of GHGs compares the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time the gas remains in the atmosphere (its "atmospheric lifetime"). The GWP of each gas is measured relative to CO₂. Therefore, CO₂ has a GWP of 1. GHGs with lower emissions rates than CO₂ still may contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO₂ (i.e., have a higher GWP). For example, N₂O has a GWP of 298, meaning that 1 ton of N₂O has the same contribution to the greenhouse effect as approximately 298 tons of CO₂ (CARB 2025a). The concept of CO₂ equivalence (CO₂e) is used to account for the different GWP potentials of GHGs. GHG emissions typically are measured in terms of pounds or tons of CO₂e and often are expressed in metric tons (MT) CO₂e.

The temperature record shows a decades-long trend of warming, with the newest release in long-term warming trends announcing 2024 ranked as the warmest year on record, having an increase of 2.3°F compared to the 1951–1980 average (NASA 2025). The IPCC concluded that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the warming of Earth from pre-industrial times to 1950, while some variations in natural phenomena also had a small cooling effect, as opposed to more recent decades in which scientific consensus concludes that warming generally is attributable to anthropogenic activities.

To better understand the sources and magnitudes of GHG emissions, public and private entities at the federal, state, and local levels are developing GHG inventories. At the State level, California GHG source emissions totaled 360.4 million MT CO₂e in 2023 (CARB 2025b). The transportation sector represented the single largest source of California's GHG emissions in 2023, accounting for 38 percent of total GHG emissions. Transportation was followed by industrial sources, which accounted for 22 percent, and then by the electricity sector (in-state sources and imported electricity), which accounted for 16 percent of the total GHG emissions (CARB 2025b).

Based on the relatively small levels of GHG emissions generated by a typical project in relationship to the total amount of GHG emissions generated on a national or global basis, individual projects are unlikely to contribute to climate change significantly by themselves. However, cumulative GHG emissions from many projects and plans all contribute to global GHG concentrations and the climate system. Because of the magnitude of the impact of GHG emissions on the global climate, GHG emissions from individual projects along with other past, present, and future projects, could cause significant cumulative impacts with respect to climate change. Therefore, this impact is assessed within the cumulative context of the project's potential contribution to the cumulative impact of global climate change.

Approach to Analysis

Addressing the potential impacts from GHG emissions that would be generated from a project requires an agency to make a determination as to what constitutes a significant impact. As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air quality management district may be relied on to support determinations of significance. In October 2014, the SMAQMD Board of Directors adopted a threshold of significance for construction-related GHG emissions of 1,100 MT CO₂e per year. As noted in the *Justification for Greenhouse Gas Emissions Thresholds of Significance* (SMAQMD 2014), the recommended threshold of 1,100 MT CO₂e per year was found to capture 75 percent of construction-related emissions for infrastructure projects (i.e., levees, pipelines, roadways) that were reviewed during the threshold development process. As part of the updated GHG thresholds for land use development projects that were adopted by the SMAQMD Board of Directors in April 2020, the construction threshold of 1,100 MT CO₂e per year was maintained (SMAQMD 2020). The SMAQMD CEQA Guide states that if a project would result in GHG emissions in excess of the construction threshold of significance, then the project's emissions may have a cumulatively considerable contribution to the cumulative impact of global climate change (SMAQMD 2021). Therefore, for the purposes of analysis, the proposed project

impacts related to GHG emissions are evaluated in the context of consistency with the SMAQMD construction-related GHG emissions threshold of significance.

Discussion

- a) **Less-than-Significant Impact.** The proposed project would generate GHG emissions during short-term construction. Exhaust GHG emissions would be generated from use of heavy-duty construction equipment, haul trucks, material delivery trucks, and construction worker vehicles. Project construction would be temporary, anticipated to last approximately 59 days, and the generation of construction-related GHG emissions would cease at the end of construction.

The proposed project construction-generated GHG emissions were modeled using the same methods and assumptions as those described in Section 3.2.1, Air Quality. In addition to criteria air pollutants, CalEEMod also estimates GHG emissions associated with construction activities. Construction-related GHG emissions were estimated for off-road construction equipment, material delivery trucks, and construction worker vehicles. Project-specific inputs were used in conjunction with default model settings to estimate reasonably conservative conditions. Additional details of construction activity, selection of construction equipment, and other input parameters, are included in the CalEEMod output, provided in Appendix A. After construction is completed, routine levee maintenance activities would continue similar to existing conditions, and the proposed project would not generate any new operational GHG emissions.

Project construction would generate approximately 373 MT CO₂e, which is below the SMAQMD threshold of 1,100 MT CO₂e per year. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The impact would be less than significant and would not be cumulatively considerable.

- b) **Less-than-Significant Impact.** The State has adopted plans or policies to reduce GHG emissions. In September 2006, California passed AB 32, which established regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and established a cap on statewide GHG emissions. It required that statewide GHG emissions be reduced to 1990 levels by 2020, which it met in 2016. In 2016, the State Legislature also passed Senate Bill (SB) 32, which established a 2030 GHG emissions reduction target of 40 percent below 1990 levels.

In 2008 and 2014, CARB approved the Scoping Plan and the first update to the Scoping Plan, respectively. In response to SB 32 and the companion legislation of AB 197, CARB approved the 2017 Scoping Plan Update. The Final 2022 Scoping Plan further included targets for carbon neutrality and reducing GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279 (CARB 2022). The 2022 Scoping Plan is the applicable GHG emissions reduction plan because it is the only relevant plan that considers the relatively recently adopted legislation of AB 1279, which calls for accelerated GHG emissions reduction targets and statewide carbon neutrality. It provides the framework, based on extensive modeling and scenario evaluation, of

what will be required to achieve the State's 2045 carbon neutrality target, and what specifically will be required of new development to contribute to the achievement of the target.

The 2022 Scoping Plan identifies transportation electrification, vehicle miles traveled reduction, and building decarbonization as the priority strategies for local government climate action. Table 2-1 of the 2022 Scoping Plan outlines actions by sector that were identified to meet the State's GHG emissions reduction goals. Although many actions would indirectly address GHG emissions associated with construction activities, including the phasing in of cleaner technology for diesel engine fleets (including construction equipment) and a Low Carbon Fuel Standard, successful implementation of these measures predominantly will depend on development of laws and policies at the State level. Therefore, this discussion of consistency focuses on those actions as identified in the 2022 Scoping Plan that are applicable to the proposed project.

The 2022 Scoping Plan includes an action for 25 percent of construction equipment energy demand to be electrified by 2030, and 75 percent by 2045. The electrification of construction equipment to reduce demand for fossil fuel energy and GHG emissions would be achieved at a fleetwide level and not as a percentage applied to individual projects. Project construction would be completed before the 2022 Scoping Plan's timeline for construction equipment electrification. Implementation of construction BMPs related to equipment exhaust emissions, as detailed in Section 3.2.1, Air Quality under Mitigation Measure AQ-1, would further reduce GHG emissions from construction activities.

Successful implementation of the 2022 Scoping Plan measures predominantly depends on long-term emissions reductions associated with land use operations and other reductions, achieved through development of laws and policies at the State level; therefore, the 2022 Scoping Plan measures are not directly applicable to the proposed project. The proposed project would comply with any applicable rules and regulations for the purposes of reducing construction-related GHG emissions. Furthermore, as detailed above, project construction would be temporary and short in duration (approximately 59 days) and would generate limited GHG emissions, at a level that would not exceed the SMAQMD threshold of significance. Therefore, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The impact would be less than significant.

References

- California Air Resources Board (CARB). 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Available: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>. Accessed December 18, 2025.
- . 2025a. *GHG Global Warming Potentials*. Available: <https://ww2.arb.ca.gov/ghg-gwps>. Accessed November 21, 2025.
- . 2025b. *Current California GHG Emission Inventory Data*. Available: <https://ww2.arb.ca.gov/ghg-inventory-data>. Accessed November 21, 2025.
- Intergovernmental Panel on Climate Change (IPCC). 2021. *AR6 Climate Change 2021: The Physical Science Basis*. Available: <https://www.ipcc.ch/report/ar6/wg1/>. Accessed November 21, 2025.
- National Aeronautics and Space Administration, Goddard Institute for Space Studies (NASA). 2025. *Global Temperature*. Available: <https://climate.nasa.gov/vital-signs/global-temperature/?intent=121>. Accessed November 21, 2025.
- Sacramento Metropolitan Air Quality Management District (SMAQMD). 2014. *Justification for Greenhouse Gas Emissions Thresholds of Significance*. Available: <https://www.airquality.org/LandUseTransportation/Documents/GHGThresholdsJustificationSept2014.pdf>. Accessed November 20, 2025.
- . 2020 (April). *SMAQMD Thresholds of Significance Table*. Available: <https://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf>. Accessed November 20, 2025.
- . 2021. *Guide to Air Quality Assessment in Sacramento County*. Available: <https://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools>. Accessed November 20, 2025.

3.2.6 Hazards and Hazardous Materials

Table 3.2-11 Environmental Issues and Determinations for Hazards and Hazardous Materials

Issues	Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	LTS
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?	LTS
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	NI
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?	NI
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?	NI
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	NI
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	NI

Notes:

LTS = Less-than-Significant Impact

NI = No Impact

Environmental Setting

Hazardous Materials Sites

In 2025, AECOM performed a search of the GeoTracker and EnviroStor databases for open and closed hazardous materials sites within 0.5 mile of the project's erosion repair sites and staging area. The GeoTracker database is maintained by the SWRCB and provides a listing of leaking underground storage (LUST) sites and other known cleanup sites in California (SWRCB 2025). The EnviroStor database is maintained by the California Department of Toxic Substances Control (DTSC) and provides a listing of hazardous waste facility cleanup sites in California (DTSC 2025). Also, a search of EPA's Superfund database was performed in 2025. Together, these three databases cover most known hazardous material sites in California.

A review of the GeoTracker database (SWRCB 2025) indicates that two closed sites are within 0.5 mile of the erosion repair sites and staging area. These two closed sites are briefly described as follows:

- **UPN31 Transmission Tower, within the Ring Levee in the northwest portion of MWT:** In 2005, a release occurred of approximately 1,680 gallons of diesel that was stored in an aboveground storage tank (AST) at the communication tower. The release was caused by an act of vandalism. The AST was replaced with a new tank that includes secondary containment, and contaminated soil was excavated and properly disposed at an off-site landfill. Groundwater monitoring wells were installed in 2006, and the concentration of groundwater contaminants declined steadily over time, indicating that natural attenuation was occurring. By 2009, the groundwater sampling results indicated that contaminant concentrations were barely above laboratory detection limits. Therefore, the monitoring wells were destroyed, and the case was closed in December 2009.
- **KEBR radio transmitter and associated building north of the Delta Cross Channel, approximately 1,800 feet southwest of erosion repair Sites 2 and 3:** In November 1998, a 1,000-gallon diesel underground storage tank (UST) was removed from this site, and diesel was detected in soil and groundwater samples. The concentrations of soil and groundwater contaminated with total petroleum hydrocarbons as diesel were very low and were limited to an area 4 feet deep and less than 10 feet wide. Therefore, no remedial actions were necessary. Case closure documents were filed in 2023.

A review of the EnviroStor database (DTSC 2025) indicates that no known open or closed hazardous materials sites are within 0.5 mile of MWT.

The nearest Superfund sites are approximately 25 miles north in Sacramento and approximately 20 miles south in Stockton (EPA 2025).

Gas Pipelines and Wells

Underground natural gas lines that are owned by Pacific Gas and Electric Company (PG&E) have been abandoned on MWT (GEI 2022). These lines still may contain natural gas; however, the only gas line in proximity to the erosion repair sites is approximately 300 feet south of Site 1 (at the southwest end of MWT).

MWT is part of the Thornton-West Walnut Grove Gas Field. Nineteen inactive natural gas wells and eight California Department of Water Resources (DWR) monitoring wells were on the MWT (CalGEM 2025; GEI 2022), most of which were submerged when the tract flooded in 2023. All of the inactive gas wells were plugged previously, as required by State regulations (14 CCR Division 2, Chapter 4, Article 3, Section 1723), which are administered by the California Geologic Energy Management Division. Two of the inactive, plugged gas wells are within the Ring Levee in the northwestern corner of MWT. None of the natural gas or DWR monitoring wells are within or near the erosion repair sites or the proposed staging area.

Schools

No schools are within 0.25 mile of MWT. The nearest K–12 school is Walnut Grove Elementary, approximately 1 mile west of the project area.

Airports

No airports are within 2 miles of MWT. The nearest public use airport is Franklin Field, approximately 2.8 miles northeast of MWT. MWT is not within the Franklin Field Airport influence area (SACOG 1992). The Walnut Grove (Spezia) Airport is a small, private-use airport with one landing strip, primarily used for agricultural operations, and it is approximately 2.8 miles southwest of MWT (AirNav 2025). An airport land use compatibility plan has not been prepared for the Walnut Grove (Spezia) Airport.

Emergency Response and Evacuation

Sacramento County Department of Water Resources, in cooperation with the respective local reclamation districts (in this case, the District), has prepared maps showing flood hazard evacuation routes throughout the county. Evacuation routes in the project area consist of Levee Road, Twin Cities Road, West Walnut Grove Road, I-5, and SR 160 (Sacramento County Department of Water Resources 2025).

Wildland Fire Hazards

Section 1.3.1, Resources Dismissed from Further Evaluation, of this IS/MND discusses wildland fire hazards.

Discussion

- a) **Less-than-Significant Impact.** Project construction would involve the use and transport of small amounts of hazardous materials, such as fuels, oils, and grease. Transportation of hazardous materials on area roadways is regulated by the California Highway Patrol and the California Department of Transportation (Caltrans), and use of these materials is regulated by DTSC, as outlined under Title 22 of the CCR. The District and its construction contractors would be required to use, store, and transport hazardous materials in compliance with applicable federal and State regulations during project construction and operation. No hazardous materials would be used, stored, or transported during project operation. The proposed project would be required to implement and comply with existing hazardous material regulations, and each of these regulations is specifically designed to protect public health through improved procedures for the handling of hazardous materials, better technology in the equipment used to transport these materials, and a more coordinated quicker response to emergencies. The impact would be less than significant.
- b) **Less-than-Significant Impact.** The project would involve earthwork associated with erosion repairs to approximately 1,290 linear feet at 14 sites along the waterside of the MWT perimeter levee. A staging area within the Ring Levee (in the northwestern corner of MWT) would be used to store equipment and materials and also for construction worker parking. Project construction would involve the use of small amounts of hazardous materials, such as fuel, oils, and grease. None of these materials would be acutely hazardous. No hazardous materials would be used or stored during project operation. The use of these materials is heavily regulated at the federal, State, and local levels, and the District and its construction contractor would be required to follow all applicable laws and regulations. Furthermore, as discussed in Section 2.5, the District would implement environmental commitment WQM-2, requiring preparation of an

SWPPP if ground disturbance of 1 acre or more occurs. WQM-2 requires the construction contractor to implement appropriate BMPs to reduce the potential release of water quality pollutants, including hazardous materials, to receiving waters and the environment (e.g., the District and its construction contractor will prepare and implement a Hazardous Materials Management and Spill Response Plan). WQM-2 also requires compliance with the terms and conditions contained in any applicable permits. If 1 acre or less of ground disturbance occurs during construction, the District would instead implement environmental commitment WQM-3, to reduce, avoid, and minimize potential impacts from the use of hazards and hazardous materials, such as fuel. Because of the small amounts of hazardous materials that would be used during construction; the required compliance with the federal, State, and local laws and regulations for these materials; and the implementation of environmental commitments WQM-2 or WQM-3, the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The impact would be less than significant.

- c) **No Impact.** The erosion repair sites and staging area are not within 0.25 mile of a school. Thus, there would be no impact from hazardous emissions (i.e., toxic air contaminants from construction equipment or haul trucks) or handling of hazardous or acutely hazardous materials, substances, or waste, within 0.25 mile of a school.
- d) **No Impact.** The erosion repair sites and staging area would not be within a hazardous waste site. As described in the Environmental Setting above, two closed hazardous materials sites are within 0.5 mile of the erosion repair sites and staging area. Closed hazardous materials sites are not part of the Cortese List; however, depending on the nature and extent of contamination, closed sites still could represent a hazard. MWT includes a closed hazardous materials site associated with an accidental release of diesel fuel from an AST at the communications tower within the Ring Levee. However, the old AST was replaced with a new double-walled AST, and the contaminated soil was excavated and removed. Furthermore, natural attenuation of groundwater resulted in constituent levels that were barely above laboratory detection thresholds in 2009, and therefore the case was closed that same year. Continued natural attenuation over the last 16 years would have long since reduced the small amount of groundwater constituents to levels below human health, environmental, and laboratory detection thresholds. Furthermore, the former AST with associated contamination was approximately 450 feet south of the proposed staging area and approximately 0.25 mile from the nearest erosion repair sites. The other closed hazardous materials site at the KEBR radio transmitter is downgradient from and on the west side of Snodgrass Slough, approximately 0.25 mile west of the closest erosion repair site. Both of the closed hazardous material sites have been fully remediated, no groundwater plumes are associated with these sites, and no land use controls are in place. Therefore, these hazardous materials sites would not represent a hazard to construction workers or the environment from project-related work. No impact would occur.

Two remaining inactive gas wells are above the water line on MWT, within the Ring Levee in the northwestern corner. These wells are approximately 450 feet and approximately 0.5 mile, respectively, south of the proposed staging area, and are even further from the erosion repair sites. Both inactive wells were plugged previously. Thus, no potential would exist for project-related work activities to encounter the closed gas wells. No impact would occur.

There are existing, abandoned PG&E underground natural gas lines on MWT. Although these lines still may contain natural gas, the only underground gas line in proximity to the erosion repair sites is approximately 300 feet south of repair Site 1 in the southwestern corner of MWT. Before the start of construction, the District's construction contractor would follow the standard construction practice of contacting USA North (Digalert), to obtain the locations of any underground pipelines in the vicinity of the erosion repair sites, to avoid them. Thus, no impact would occur.

- e) **No Impact.** MWT is not within the boundaries of an airport land use plan or within 2 miles of a public airport or public use airport. Furthermore, MWT is more than 2 miles from the nearest private use airport. Thus, no impact would occur.
- f) **No Impact.** Project-related construction equipment and materials would be staged and stored in the northeastern corner of the Ring Levee on MWT. All of the erosion repair sites are on the waterside of the MWT perimeter levee. These areas are accessible only via the perimeter levee crown road on MWT, which is not available for public access. No residences or businesses are located on MWT, and the communications station on MWT within the Ring Levee is unmanned. Furthermore, the project area is in a rural location consisting of farmland where the population is low, and therefore few people in the project vicinity would require public roadway use in the event of an evacuation. Therefore, the small amount of project-related construction traffic would have no impact on emergency access or emergency evacuation. No impact would occur.

Project operation would not alter the existing drainage pattern of Lost Slough or Snodgrass Slough, or any upstream or downstream water bodies, or any high water events that are contained by the District or State Plan of Flood Control levees (refer to Section 3.2.7, Hydrology and Water Quality, environmental issue area c.iv). The proposed project would better accommodate high water events, and therefore would help reduce the need for emergency evacuation in the project vicinity. Thus, project operation would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur.

- g) **No Impact.** Section 1.3.1, Resources Dismissed from Further Evaluation, of this IS/MND discusses the potential wildfire risk.

References

- AirNav. 2025. *9CL9 Spezia Airport, Walnut Grove, CA*. Available: <https://www.airnav.com/airport/9CL9>. Accessed November 5, 2025.
- California Department of Toxic Substances Control (DTSC). 2025. *EnviroStor*. Available: <https://www.envirostor.dtsc.ca.gov/public/>. Accessed November 6, 2025.
- California Geologic Energy Management Division (CalGEM). 2025. *Well Finder*. Available: <https://maps.conservation.ca.gov/doggr/wellfinder/>. Accessed November 6, 2025.
- GEI Consultants, Inc. (GEI). 2022. *McCormack-Williamson Tract Levee Modification and Habitat Restoration Project – Phase B, Draft Environmental Impact Report*. State Clearinghouse No. 2003012112. Sacramento, CA.
- Sacramento Area Council of Governments (SACOG). 1992. *Franklin Field Comprehensive Land Use Plan*. Available: <https://www.sacog.org/planning/land-use/airport-planning/comprehensive-land-use-planning-maps>. Accessed November 5, 2025.
- Sacramento County Department of Water Resources. 2025. Delta Area Flood Map—Reclamation District 2110. Available: <https://waterresources.sacounty.gov/stormready/Pages/Delta-Area-Flood-Map.aspx>. Accessed November 6, 2025.
- State Water Resources Control Board (SWRCB). 2025. *GeoTracker*. Available: <https://geotracker.waterboards.ca.gov/>. Accessed November 6, 2025.
- U.S. Environmental Protection Agency (EPA). 2025. *Search for Superfund Sites Where You Live*. Available: <https://www.epa.gov/superfund/search-superfund-sites-where-you-live>. Accessed November 6, 2025.

3.2.7 Hydrology and Water Quality

Table 3.2-12 Environmental Issues and Determinations for Hydrology and Water Quality

Issues	Determination
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	LTS
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	NI
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:	
i) result in substantial erosion or siltation on- or off- site;	LTS
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	LTS
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	NI
iv) impede or redirect flood flows?	LTS
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	LTS
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	LTS

Notes:

LTS = Less-than-Significant Impact

NI = No Impact

Environmental Setting

Watershed and Hydrology

MWT is in the Lower Mokelumne River watershed (Hydrologic Unit Code [HUC] 180400121102) [Caltrans 2025] and within the jurisdiction of the Central Valley Regional Water Quality Control Board (Central Valley RWQCB 2019). MWT and the erosion repair sites are within the Sacramento River Basin; however, the Mokelumne River immediately east of the MWT lies within the San Joaquin River Basin.

Waterways immediately adjacent to the erosion repair sites include Snodgrass Slough, Lost Slough, and Dead Horse Cut canal (Figure 2.2-2). Snodgrass Slough and its many joining sloughs are an extensive complex of marshes and wetlands that span the Sacramento levee on the west and north to the Cosumnes River on the east, and to the Mokelumne River levee on the south and Stone Lake to the north. The proposed project includes approximately nine repair sites along Lost Slough (including three sites along the East Levee), four sites along Snodgrass Slough, and one site along Dead Horse Cut canal (Figure 2.2-2). The Delta Cross Channel and the Sacramento River are west of the project area, between Sites 2 and 3 on Snodgrass Slough and Site 1 on Dead Horse Cut canal (Figure 2.2-2). Although tidally

influenced, these waterways contain freshwater throughout the year, even under dry conditions when Delta outflow is reduced and saltwater reaches farther upstream.

The project area experiences a Mediterranean climate, characterized by hot, dry summers and cool, wet winters. The mean annual rainfall at the project area between 1981 and 2020 was 17.42 inches (PRISM 2025). Rainfall typically occurs between October and April (PRISM 2025).

The USGS gage nearest to the erosion repair sites is at the Delta Cross Channel near Walnut Grove. Operation of the Delta Cross Channel is described in Section 3.2.2, Biological Resources. The daily mean discharge between September 2001 and September 2025 was 8,700 cubic feet per second (cfs) (USGS 2025a). Rough estimates of drainage areas are available online for USGS stream statistics (USGS 2025b). Selecting the erosion repair site along Dead Horse Cut canal as the most downstream point, the drainage area drained to that point is approximately 2,000 square miles, per the USGS report.

Water Quality

The project area is within the Central Valley Basin Plan for water quality objectives and beneficial uses. The Central Valley Basin Plan contains both the Sacramento and San Joaquin River Basins. Per the California Basin Plan Beneficial Use Viewer (RWQCB 2025), several beneficial uses exist for Lost Slough, Snodgrass Slough, and Dead Horse Cut canal, summarized as follows (RWQCB 2018):

- **Cold Freshwater Habitat (COLD):** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates
- **Commercial and Sport Fishing (COMM):** Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
- **Industrial Service Supply (IND):** Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Municipal and Domestic Supply (MUN):** Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply
- **Navigation (NAV):** Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.
- **Industrial Process Supply (PROC):** Uses of water for industrial activities that depend primarily on water quality
- **Water Contact Recreation (REC1):** Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

- **Non-Contact Water Recreation (REC2):** Uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- **Warm Freshwater Habitat (WARM):** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Wildlife Habitat (WILD):** Uses of water that support terrestrial or wetland ecosystems, including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- **Agricultural Supply (AGR):** Uses of water for farming, horticulture, or ranching especially irrigation and stock watering.
- **Migration – Cold Freshwater Habitat (MIGR-COLD):** Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as Salmon and Steelhead
- **Migration – Warm Freshwater Habitat (MIGR-WARM):** Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as striped bass, sturgeon, and American shad.
- **Spawning – Warm Freshwater Habitat (SPWN-WARM):** Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. Such as striped bass, sturgeon, and American shad.

Snodgrass Slough (to the confluence of the Delta Cross Channel), Lost Slough, and the adjacent Mokelumne River are classified under Delta Waterway, eastern portion, for water quality monitoring and impairments. The entire Delta Waterway, which is much larger than the project area, includes water bodies beyond those in the project area. The waterways in the project area are only a small part of the Delta Waterway eastern portion, which is a total of 2,972 acres (Caltrans 2025). The Delta Waterway is listed as impaired per the Clean Water Act Section 303[d] List/305[b] Report (EPA 2024a). Designated beneficial uses of COMM and WARM are listed impaired, while COLD and MUN have insufficient data. The Delta Waterway eastern portion also is impaired with mercury (multiple sources, such as agricultural return flows, atmospheric deposition, and highway road/bridge runoff), chlorpyrifos, dichlorodiphenyltrichloroethane (DDT), diazinon, group A pesticides, invasive species, and general toxicity. Of these, chlorpyrifos, diazinon, and mercury are being addressed with an EPA-approved Total Maximum Daily Load.

Snodgrass Slough, to the south of the confluence with Delta Cross Canal until its confluence with Dead Horse Cut canal, and Dead Horse Cut canal are classified Delta Waterways, central portion. Per the EPA water body report, this portion was impaired with the same above-

mentioned constituents in the eastern portion as reported in 2022 (EPA 2024a and EPA 2024b). The TMDL requirements are the same as mentioned above for the eastern portion.

Per the Central Valley Basin Plan, the water quality objectives for turbidity list that where natural turbidity is between 5 and 50 Nephelometric Turbidity Unit (NTUs), increases should not exceed 20 percent. For Delta waters, the general objectives for turbidity apply subject to the following: except for periods of storm runoff, the turbidity of Delta waters should not exceed 50 NTUs in the waters of the Central Delta and 150 NTUs in other Delta waters (Blankinship 2024). The project area is in the North Delta; therefore, the waterways adjacent to the project area would be subject to 150 NTU WQO (Blankinship 2024).

The proposed project is in an area that is subject to several factors that result in high turbidity, including but not limited to: tidal influences, recreational and commercial boating activity, and the flooding and draining of MWT through levee breaches. The filling and emptying of MWT, and associated changes in turbidity are not novel or unexpected (Blankinship 2024). Aerial imagery has shown the natural discharge of turbid water from MWT, through breaches in the levee caused by storm events (Blankinship 2024). Per USGS California real-time water quality, instantaneous turbidity recorded from a site 0.9 mile west of the confluence of Snodgrass Slough and Dead Horse Cut canal is 10 NTU (USGS 2015). Recent samples have been collected and analyzed for turbidity upstream and downstream from a previous in-water work location for the Southwest Levee Degrade at Dead Horse Cut over a 2-week period between July and August 2024 to document baseline turbidity (Blankinship 2024). The average upstream and downstream turbidity during baseline monitoring were 12.3 NTU and 13.8 NTU, respectively (Blankinship 2024). The average change in turbidity between upstream and downstream monitoring sites was 24.4 percent. Evaluating these previously recorded baseline measurements in a manner consistent with the Basin Plan WQOs for turbidity would have resulted in five WQO exceedances of the 13 monitoring events (Blankinship 2024). In addition, evaluation of data collected in the field by water quality monitoring personnel and retrieved from the USGS station indicated that the occurrence of turbidity in receiving waters closely correlates with tide stage and height (Blankinship 2025).

Flood Zones and Floodplain

The project area is within two FEMA Flood Insurance Rate Map panels: 06067C0450H and 06067C0580H, with effective dates of August 2012 (FEMA 2012). Panel 06067C0450H includes the northern portion of the project area, with the majority of repair sites along East Levee, Lost Slough, and three along Snodgrass Slough. This portion also contains the Ring Levee staging area, south of the confluence of Lost Slough and Snodgrass Slough. Panel 06067C0580H includes the southern portion of the project area, with the remainder of the repair sites along Snodgrass Slough and the site along Dead Horse Cut canal.

Both panels show the project area within a FEMA-designated Special Flood Hazard Area of Zone AE, with a base flood elevation of 17 feet. The project area would be subject to inundation during a 100-year (1% annual flood) event. The base flood elevation is the water surface elevation of this flood event. Floodways within Zone AE should be kept free of encroachment that could increase flood heights substantially.

Groundwater

The project area is in the Sacramento Valley Groundwater Basin (5-021), within the South American subbasin (5-021.65) [DWR 2025a]. Based on available information from Olmstead and Davis (1961), the DWR-calculated groundwater storage capacity in the South American Subbasin is 4,816,000 acre-feet. Currently, no known locations are within proximity of the project area that are significantly impaired by groundwater contamination (DWR 2003).

A Groundwater Sustainability Plan (GSP) for the South American Subbasin was approved by DWR in July 2023 (DWR 2023). Section 356.2 of the California Water Code requires submission of an annual report to DWR by April 1 of each year, following adoption of the GSP. The most recent report was submitted in March 2025 (DWR 2025b). The sustainability goal of the basin is to protect and ensure the long-term viability of groundwater resources for domestic, urban, agricultural, industrial, and environmental beneficial uses of groundwater. The subbasin has six groundwater sustainability agencies, and the project area is under the jurisdiction of the County of Sacramento Groundwater Sustainability Agency. Groundwater quality sustainable management criteria were established in the GSP for nitrate (as nitrogen) and specific conductance (a measure of salinity). Measured groundwater concentrations during water year 2024 do not indicate the occurrence of undesirable results (DWR 2025b).

Per DWR's Water Data Library Station Map, two groundwater wells in the project area show depths ranging from 20 to 100 feet below ground surface (DWR 2025c). The last reported groundwater elevation in the project area (as of December 2022) was approximately 8 feet below ground surface, with the ground surface elevation at 2 feet.

Discussion

- a) **Less-than-Significant Impact.** Exposed slopes, the placement of soil-filled rock on the waterside of the levee, in-water work during construction, and the use of equipment on the waterside of the levee could cause temporary discharges of sediment or other contaminants into the waterways adjacent to the erosion repair sites. Such discharges could result in degradation of surface water quality.

The construction period would be approximately 59 days, and repair activities during that time could occur at single erosion repair sites or multiple erosion repair sites. The velocity in the waterways adjacent to the erosion repair sites is relatively slow and influenced by tides, and the waterways currently are highly turbid. The high turbidity is influenced by several factors, including but not limited to: tidal influences, recreational and commercial boating activity, and the flooding and draining of MWT through levee breaches. Data collected and reported in 2024 for the Southwest Levee Degrade at Dead Horse Cut (as discussed in the Environmental Setting section above) characterizes the highly turbid existing conditions (Blankinship 2024). Because of the limited duration of construction and the existing velocity and turbidity of the waterways, the areal extent of turbidity that may be generated during placement of materials would be limited to the proximity of the erosion repair sites. In other words, sediment would not be transported downstream and would remain near the erosion repair sites. In addition, with implementation of Mitigation Measure BIO-2, any in-water work would be conducted when special-status fish species generally would not be present (i.e., August

through November for Delta and longfin smelt; July through October for salmon and steelhead). Thus, only a low potential would exist for sensitive species to be present, and therefore it is unlikely they would experience a temporary, limited increases in turbidity in the waterways.

As described in Section 3.2.4, Geology, Soils, and Paleontology, the excavated embankment soils would be stockpiled on site for re-use, either in the soil-filled rock section or for placement over rock in establishing a more sustainable embankment slope. Excess soil would be stockpiled in the Ring Levee area. During project construction, the District would implement environmental commitment measures WQM-1 or WQM-2. WQM-1 would include preparing and implementing an SWPPP if required. As part of WQM-1, the District would comply with the provisions of the SWRCB's *NPDES General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities* (Construction General Permit, Order WQ 2022-0057-DWQ, NPDES Permit No. CAS000002) if required, if acreage of soil disturbance is more than 1 acre. As part of WQM-2, a Erosion and Sediment Control Plan would be implemented if the acreage of soil disturbance is less than 1 acre. These environmental commitments would reduce or prevent soil from entering the adjacent waterways during construction.

Equipment may be used on the constructed shelf above MHW at sites 1–3 and sites 7–14 along Dead Horse Cut, Snodgrass Slough, Lost Slough, and the East Levee, to place RSP along the waterside toe to form a toe berm to construct the habitat benches as part of the design for Repair Type 1. Per environmental commitment WQM-3, a Hazardous Materials Management and Handling Plan would be prepared and implemented either as part of the SWPPP under WQM-2 or separately and apart from WQM-2 and in conjunction with implementation of WQM-1. The Hazardous Materials Management and Handling Plan would require all equipment would be inspected for leaks before use adjacent to waterways. Equipment also would be stored within the staging area, away from waterways. If an unexpected release of fuel occurs, spills would be managed and contained and would be reported to the appropriate authorities. Therefore, project equipment is not expected to release contaminants into the waterways and would not violate any water quality standards or otherwise substantially degrade water quality.

The District would obtain and follow all permit requirements as part of the Water Quality Certification Section 401 permit from the Central Valley RWQCB. These permit requirements would require compliance with the water quality standards and prevent substantial degradation of surface water or groundwater quality.

The proposed project would not use groundwater. The erosion repairs would be conducted on the levee or adjacent to the levee, and they would not have the ability to degrade groundwater quality.

Because of the turbid characteristics of the existing waterways, the short duration and limited extent of the repairs adjacent to the waterways, the implementation of environmental commitments WQM-1 or WQM-2, and WQM-3, and the project's compliance with permit requirements, the proposed project would not violate any water

quality standards or waste discharge requirements, or otherwise substantially degrade surface water or groundwater quality. The impact would be less than significant.

- b) **No impact.** The groundwater elevation in the South American subbasin is 8 feet below ground surface. The proposed project would not use groundwater during construction, and the repairs would occur on existing levees and have no ability to interact with groundwater or reduce groundwater elevation. The proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge. The proposed project would not impede sustainable groundwater management of the basin. No impact would occur.
- ci) **Less-than-Significant Impact.** The proposed project would not involve impervious surfaces, and therefore would not alter the existing drainage pattern through the addition or use of impervious surface areas. No substantial erosion or siltation on or off-site would be associated with impervious surfaces.

As discussed under environmental issue area a) and environmental issue area 3.2.4 b), the levee repair activities would temporarily disturb soils and temporarily alter runoff patterns during construction in small areas adjacent to waterways and within the Ring Levee. Project construction is anticipated to occur from July through October, when the potential for erosion from stormwater runoff would be lowest because of lack of rainfall. During construction, the District would implement the environmental commitment measures described in Section 2.5.1 and under environmental issue area a), which would reduce and minimize erosion during construction. The proposed repairs would entail placement of RSP at the toe of slope of the erosion repair sites, which would prevent erosion on- or off-site from the repaired areas. Disturbed areas above the MHW would be revegetated with native grasses for site stabilization using hydroseeding, which would reduce and avoid erosion after construction. No substantial erosion or siltation on- or off- site would occur. The impact would be less than significant.

- cii) **Less-than-Significant Impact.** The proposed project would not include impervious surfaces, and an increase in surface water runoff would not occur because of impervious surface areas that could cause flooding on- or off-site.

As discussed under environmental issue area a) and under Section 3.2.4 environmental issue area b), the levee repair activities temporarily would disturb soils and temporarily alter runoff patterns in small areas adjacent to waterways and within the Ring Levee. Project construction is anticipated to occur from July through October, when the potential to generate stormwater runoff would be lowest because of lack of rainfall. During construction, the District would implement the environmental commitments described in Section 2.5.1 and under environmental issue area a), which would reduce and minimize stormwater runoff during construction. The project would not substantially increase the rate or amount of surface runoff in a manner that would cause flooding on- or off-site. The impact would be less than significant.

- ciii) **No Impact.** The proposed project would not involve alteration of an existing stormwater drainage system. Impacts associated with runoff during construction and post-

construction on the adjacent waterways are fully addressed in environmental issue areas a, b, c.i, c.ii, c.iv, d, and e. No impact would occur.

- civ) **Less-than-Significant Impact.** Project construction is anticipated to begin in July 2026, and end in October 2026, with an estimated 59 days of active construction. During this time, precipitation in the region and the risk of resulting floods would be extremely low given construction would occur primarily during the summer, which received little to no rain in California. Project implementation would result in no long-term changes to flood flow patterns. A hydraulic impact analysis of the proposed project was prepared by MBK. The methodology used to determine hydraulic impacts consisted of configuring a hydraulic model to simulate the With- and Without-Project conditions. The proposed project was evaluated based on change in maximum water surface elevation and change in velocity between the With- and Without-Project conditions. A HEC-RAS model of the North Delta was used to configure the With- and Without Project Conditions. The HEC-RAS model was simulated for the 100-year flood event, and the results were compared. The results of the model simulations showed that a less-than-significant change would occur in maximum water surface elevation and maximum velocity in Lost Slough, Snodgrass Slough, and Dead Horse Cut. The impact would be less than significant.

- d. **Less-than-Significant Impact.** The project area is not within a tsunami or dam inundation zone. As described in Section 3.2.4, no active faults are in the project vicinity. In addition, MWT is in an area that is classified as having a moderate potential for strong seismic ground-shaking. Little to no potential would exist for seiches.

The project area is in a Special Flood Hazard Area Zone AE, which indicates inundation from the 100-year flood event with a base flood elevation of 17 feet. Project construction is anticipated to occur from July through October, when the potential to generate stormwater runoff or flows that would contribute to flooding would be the lowest because of lack of rainfall. Small volumes of hazardous materials, such as fuels, oils, and grease, would be used temporarily during construction. These materials would be stored at the staging area behind the Ring Levee and would be protected in the event of a flood. Furthermore, as discussed in environmental issue area a) and Section 3.2.6.b), incorporation of environmental commitment WQM-3 would reduce, avoid, and minimize the potential for an accidental release of fuels, oils, or other materials used during construction in the event of a flood. Furthermore, no hazardous materials would be used, stored, or transported after the levee erosion repairs are completed, and therefore no potential or risk of release of pollutants would exist during a flood. Therefore, the proposed project would not release pollutants in a flood hazard area because of inundation. The impact would be less than significant.

- e) **Less-than-Significant Impact.** As discussed in environmental issue areas a), b), and c.i through c.iv), neither project construction or operation would violate water quality standards or otherwise substantially degrade surface or groundwater quality from substantially altering the existing drainage pattern of the erosion repair sites, potentially causing soil erosion, surface water runoff, or impeding or redirecting flood flows, or

otherwise releasing other pollutants into adjacent waterways. The District would implement environmental commitments described in Section 2.5, Environmental Commitments, as applicable, as well as comply with all required permit conditions. Thus, soil erosion, surface water run-off and the potential for release of other pollutants into adjacent waterways would be reduced, avoided, or minimized. Therefore, the proposed project would not conflict with or obstruct implementation of the Central Valley RWQCB Basin Plan or the South American Subbasin Sustainable Groundwater Sustainability Plan. The impact would be less than significant.

References

Blankinship. 2024 (September 11). *401 Water Quality Certification Report, Type 6 Violation of Compliance with Water Quality Standards*. Prepared on behalf of Reclamation District 2110.

California Department of Transportation (Caltrans). 2025. *Water Quality Planning Tool*. Available: <https://svctenvims.dot.ca.gov/wqpt/wqpt.aspx>.

California Department of Water Resources (DWR). 2003. *Groundwater Management*. Bulletin 118. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_021_65_SouthAmericanSubbasin.pdf.

———. 2023. *Sustainable Groundwater Management Office*. Available: <https://sgma.water.ca.gov/portal/gsp/assessments/111>.

———. 2025a. *Groundwater Boundary Basin Assessment Tool*. Available: <https://gis.water.ca.gov/app/bbat/>.

———. 2025b. *County of Sacramento Groundwater Sustainability Plan*. Available: <https://sgma.water.ca.gov/portal/gsa/print/295>.

———. 2025c. *Water Data Library (WDL) Station Map*. Available: <https://wdl.water.ca.gov/>.

Central Valley Regional Water Quality Control Board (RWQCB). 2018. *Beneficial Uses*. Available: https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/180710/BPChapter2BeneficialUses.pdf.

———. 2019. *Central Valley Basin Plan*. Available: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf.

———. 2025. *California Basin Plan Beneficial Use Viewer*. Available: <https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=116f7daa9c4d4103afda1257be82eb16>.

- Federal Emergency Management Agency (FEMA). 2012. *National Flood Hazard Layer (NHFL) Viewer*. Available: <https://www.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd>.
- PRISM Climate Group (PRISM). 2025. *Average Annual Precipitation Data*. 19871–20002019. Oregon State University, Corvallis. Available: <http://prism.oregonstate.edu>. Accessed November 10, 2025.
- U.S. Environmental Protection Agency (EPA). 2024a. *Clean Water Act Section 303[d] List/305[b] Report*
- . 2024b. *How's My Waterway*. Available: https://mywaterway.epa.gov/waterbody-report/CA_SWRCB/CAE5100000020021115112329/2024.
- U.S. Geologic Survey (USGS). 2015. *California Real-Time Water Quality*. Available: https://nrtwq.usgs.gov/explore/datatable?site_no=11447903&pcode=63680ts087&period=2015_q1×tep=uv&modelhistory=.
- . 2025a. *National Water Information System*. Available: https://waterdata.usgs.gov/nwis/inventory/?site_no=11336600&agency_cd=USGS.
- . 2025b. *Streamstats*. Available: <https://www.usgs.gov/streamstats>.

3.2.8 Tribal Cultural Resources

Table 3.2-13 Environmental Issues and Determinations for Tribal Cultural Resources

Issues	Determination
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	LTS/M
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	LTS/M

Notes:

LTS/M = Less-than-Significant Impact with Mitigation Incorporated

Environmental Setting

This section provides a discussion of existing tribal cultural resources (TCRs) in the project area as well as the surrounding area. The information in this section is partially summarized from the *Cultural Resources Inventory and Evaluation Report, McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project* (AECOM 2015) and *McCormack-Williamson Tract Erosion Repair Project Cultural Resources and Tribal Cultural Resources Technical Report* (AECOM 2025). TCRs are resources that have cultural value to a California Native American tribe. TCRs could include any site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object. Such resources must be listed or eligible for listing in the California or National Registers, or can be identified at the discretion of the lead agency. These can include Native American archaeological sites, ethnobotanical resources, Native American ceremonial or sacred areas, and Native American human remains.

Ethnohistoric Context

The ethnographic period in California is defined as the beginning of written descriptions of native life. MWT is in the traditional territory of the ethnographic Plains Miwok, a Miwokan socio-linguistic subgroup belonging to the California Penutian language family (Kroeber 1925; Levy 1978). The territories included riverine fishing, hunting, and resource gathering areas at the lower reaches of the Mokelumne and Cosumnes Rivers and both banks of the Sacramento River from Rio Vista to Freeport. Politically, the Plains Miwok belonged to formal lineages and were organized in small tribes or tribelets, each consisting of a primary village with satellite villages. In the hills, Miwok settled in the small riverine valleys, particularly along the Mokelumne and upper Cosumnes Rivers.

However, the river delta plains were less hospitable, and villages were sparse because of expansive marshlands and seasonal flooding (Levy 1978). No ethnographic village sites have been documented within MWT; however, the western half of MWT is within the boundary of the Sacramento River Tribal Cultural Landscape (TCL) that was identified in 2018 as an area of tribal importance to UAIC, Wilton Rancheria, and the Lone Band because of its association with traditional stories. The Sacramento River TCL is discussed further in this section.

Plains Miwok culture, language, and subsistence and settlement information is presented in historical documents and ethnographic studies (Levy 1978). Subsistence economies were based primarily on the collection of plant foods, the Valley Oak acorn (*Quercus lobata*) being a staple component, while fishing and hunting played a more subsidiary role (Levy 1978). Archaeological and historical evidence indicates the emergence of professional specialization and extensive external trade systems among a scoop-political organization that was focused on large, multi-lineage, patrilineal villages (Bennyhoff 1977). The largest political unit, headed by a chief, was the tribelet, which could consist of a single village or a primary village with up to six smaller settlements. Land was held communally between villages, while individuals could inherit rights to certain seed tracts and fishing stations. Usually extended families lived in a single dome-shaped lodge, covered with tule mats and grass thatch.

Religion was centered in the *Kuksu* religion, with frequent ceremonial dances occurring in the assembly house, and while daily clothing was minimal, ceremonial attire was quite extravagant (Bennyhoff 1977).

The nineteenth century saw precipitous change within the traditional territory of the Plains Miwok. First visited by the Spanish as early as 1806 by Moraga's expedition, Plains Miwok populations experienced rapid effects of Spanish-era Catholic missionization, diseases introduced by non-native settlers, and the incursion of Gold Rush-era settlements (Bennyhoff 1977; Levy 1978).

Although this contact with settlers had a profoundly negative impact on the Native American populations through disease and violent actions, these groups survived and have maintained strong communities and action-oriented organizations to this day. These groups have continued to protect their cultural heritage and identity and maintain their languages and traditions (Heizer 1978).

Contemporary Native American Setting

Today, Tribes are actively involved in defining their roles as stewards of their ancestral sites and homelands, including subject matter expertise on the identification of TCRs. TCRs represent areas of cultural significance that are rooted in or contribute to cultural practices, traditional stories, traditional knowledge, and cultural identity. TCRs provide the backdrop to religious understanding, traditional stories, knowledge of resources such as varying landscapes, water bodies, animals and plants, and self-identity. Knowledge of place is central to the continuation and persistence of culture, even if former Tribal occupants live removed from their traditional homeland. Tribal groups view these interconnected sites and places as living entities; their associations and feelings persist and connect with descendant communities.

Historically, archaeologists focused on traditional Native American culture and ignored the active and vibrant culture. This approach ignored the set of values that is maintained by the current Native American community related to their history and the landscape. Tribes view themselves as contemporary stewards of their culture and the landscape, representing a continuum from time immemorial to the present. They are resilient, vibrant, and active in the community. Tribes maintain their connection to their history and ongoing culture by practicing traditional ceremonies, engaging in traditional practices (e.g., basketry), and contributing to public education and interpretation. California has acknowledged the importance and contributions of Native American history, traditional knowledge, and cultural practices, as well as the persistence of Tribes and the Tribal community via Executive Orders B-10-11 and N-15-19.

The contemporary histories of the following three tribes are based on the tribes who identify the Sacramento River Tribal Cultural Landscape as an area of tribal importance, described in further detail later in this section.

United Auburn Indian Community

The UAIC of the Auburn Rancheria is a federally recognized tribe. The re-establishment of the United Auburn Indian Tribe began when the U.S. Department of Interior documented the existence of a separate, cohesive band of Maidu and Miwok Indians, occupying a village on the outskirts of the city of Auburn in Placer County. In 1917, the U.S. acquired land in trust for the Auburn Band near Auburn and formally established a reservation, known as the Auburn Rancheria. Tribal members continued to live on the reservation as a community, despite great adversity (UAIC 2025).

In 1953, the U.S. Congress enacted the Rancheria Act, authorizing the termination of federal trust responsibilities to a number of California Indian tribes, including the Auburn Band. With the exception of a 2.8-acre parcel containing a tribal church and a park, the government sold the land comprising the Auburn Rancheria. The U.S. terminated federal recognition of the Auburn Band in 1967 (UAIC 2025).

In 1991, surviving members of the Auburn Band reorganized their tribal government as the UAIC and requested the U.S. to formally restore their federal recognition. In 1994, Congress passed the Auburn Indian Restoration Act, which restored the Tribe's federal recognition. The act provided that the Tribe may acquire land in Placer County to establish a new reservation (UAIC 2025). In 2002, UAIC acquired 49.21 acres under a land trust with the Bureau of Indian Affairs to build and operate a casino (BIA 2002). In 2018, UAIC entered into another land trust with the Bureau of Indian Affairs, for 1,100 acres in Placer County, to build 110 single-family homes and other amenities for tribal members (Indian Country Today 2010).

Wilton Rancheria

Members of Wilton Rancheria are descendants of the Penutian linguistic family, identified as speaking the Miwok dialect. The Tribe's indigenous territory encompasses Sacramento County. Between March 1851 and January 1852, three commissioners hastily negotiated 18 treaties with representatives of some of the indigenous population in California. The Treaty of the Forks of the Cosumnes River ceded the lands on which the Wilton Rancheria in

Sacramento County later was established but promised to establish a rancheria on the Cosumnes River (Wilton Rancheria 2024).

The Tribe's ancestors came back from nearly being annihilated only to have their children taken to boarding schools that stripped their indigenous language and culture further. In July 1928, the U.S. acquired land in trust for the Miwok people that were living in Sacramento County. A 38.77-acre tract of land in Wilton was purchased from the Cosumnes Company, which formally established the Wilton Rancheria. However, under the California Rancheria Act of 1958, the federal government terminated federal recognition of the tribe in 1964 (Wilton Rancheria 2024).

In 1991, surviving members of Wilton Rancheria reorganized their tribal government, and in 1999, they requested the U.S. to formally restore their federal status. A U.S. District Court judge restored Wilton Rancheria as a federally recognized tribe in 2009. It is the only federally recognized tribe in Sacramento County, with its administration office in the city of Elk Grove (Wilton Rancheria 2024).

In May 2024, Wilton Rancheria purchased 77 acres of their original Rancheria land that was taken from them by the federal government in 1959, after enactment of the California Rancheria Act of 1958. The land is to be used to establish a community and cultural center, as well as teach non-natives about their history and who they are today (Sacramento Bee 2024).

Lone Band of Miwok Indians

The Lone Band of Miwok Indians is comprised of Northern Sierra Miwok and Nisenan peoples. For thousands of years, their people have lived on the lands that today make up Amador County and the surrounding area. Following restoration to federal recognition in 1994, the Tribe has worked tirelessly to acquire and restore to sovereign status the lands they once called their own. In March 2020, they successfully restored their first trust lands in northwestern Amador County. Restoration of these homelands has ushered in a new era for the Lone Band, as they continue to flourish as a government and a people, and to build a community to support many generations to come (IBMI 2024).

Methodology

This section describes the regulatory requirements related to TCRs and the various methods and results used to identify and document potential TCRs in the project area.

Records Search

A records search was conducted at the NCIC of the CHRIS on October 14, 2025 (NCIC File No. SAC-25-168). The search area includes the entire MWT (the APE) and a 0.25-mile radius buffer. The records search identified the Sacramento River TCL (P-34-005225) that overlaps a portion of the APE (Table 3.2-14).

Table 3.2-14 Documented Tribal Cultural Resource/Tribal Cultural Landscape within the Area of Potential Effects

Primary Number	Description	CRHR Significance/NRHP Eligibility
P-34-005225	Sacramento River Tribal Cultural Resource	CRHR 1/NRHP A; 3S/3CS

Notes:

Site documentation is on file at the North Central Information Center.

3CS = appears eligible for CRHR as an individual property through survey evaluation

3S = appears eligible for NRHP as an individual property through survey evaluation

CRHR = California Register of Historical Resources

NRHP = National Register of Historic Places

The Sacramento River TCL (P-34-005225) was first recorded in 2018 by Tremaine and Associates and is described as an approximately 55-mile-long narrow corridor along the Lower Sacramento River, from the confluence with the Mokelumne River at Collinsville north to the confluence with the Feather River at Verona. This large TCL was identified by the Nisenan as *Hoyo Sayo/Tah Hoyo* (UAIC) and the Plains Miwok as *Waka-ce/Waka-Ly* (Wilton Rancheria). The primary character-defining elements of this landscape are the waterways, tule habitat, fisheries, and other wildlife (Tremaine & Associates 2018).

The TCL was recommended as a culturally significant natural landscape (Tremaine & Associates 2018) under NRHP Criterion A and CRHR Criterion 1 for its association with the cultural practices and beliefs of the Nisenan and Plains Miwok, maintaining the continuing cultural identity of the living descendants, and contributing to the broader patterns of prehistory. The UAIC, Wilton Rancheria, and Lone Band regard this landscape as an area of tribal importance because of its association with events (traditional stories), such as how fire was acquired and how salmon received its color. Furthermore, the UAIC cites the importance of the tule and tule habitat (*yakin*) as materials for creating traditional structures, clothing, and watercraft (Tremaine & Associates 2018).

Several updates of the TCL occurred in 2020, 2021, 2022, and 2023, consisting of recordings of water reclamation resources in, or partially in, the TCL boundary. The 2023 update that was prepared by Helix Environmental Planning, Inc. added that the TCL covered approximately 1,350 kilometers (Helix 2023).

None of these recordations, including the original recordation and evaluation of the TCL as eligible for listing in the NRHP and CRHR, have received SHPO concurrence. Instead, the recordations have been submitted to the SHPO as part of federally funded projects, stating that for purposes of the particular project only, the TCL would be treated as NRHP-eligible (a historic property).

The only map that shows the location and approximate boundaries of the large TCL (P-34-005225) is in the 2018 recordation (Tremaine & Associates 2018). According to that map, the estimated boundary bifurcates the MWT, covering approximately 357 acres of the western portion of the 1,654-acre former agricultural tract. Erosion repair Sites 2–6 and the staging area, including the 200-foot buffer, are within the TCL, and total approximately 28.35 acres.

Native American Correspondence

AECOM contacted the NAHC via email, requesting a search of the Sacred Lands File and Native American Contacts List of traditionally and culturally affiliated Tribes within the geographic area. The NAHC responded via email on October 15, 2025, yielding negative results for the presence of sacred lands on file and attached a contact list of Native American groups who may have knowledge of cultural resources in the project area.

On November 7, 2025, on behalf of the District, AECOM sent an AB 52 notification and invitation to consult letters via email and certified mail to each listed individual and organization on the contact list that was provided by the NAHC.

AECOM and the District's President Chad Fien received an email response on November 12, 2025, from Anna Starkey, Cultural Regulatory Manager in the Tribal Historic Preservation Department of the UAIC. Ms. Starkey responded, stating that:

UAIC has previously consulted with USACE for a project in the McCormack-Williamson Tract and had a paid tribal monitor for the ground disturbing work that occurred there. The cultural sensitivity is based on the historic methods of levee construction of pushing areas of high ground, which often included village mound sites, to make the levees. UAIC is aware of many cultural sites and cemeteries that are within levees, all across the Sacramento Valley. We request to have a paid tribal monitor present for the levee work due to the potential for cultural materials to be present.

In communicating with UAIC, they inquired how Wilton Rancheria was responding to the request for consultation. At the time, Wilton Rancheria had not weighed in, but on December 2, 2025, Wilton Rancheria requested formal consultation. Therefore, on December 8, 2025, AECOM responded to UAIC on behalf of the District, that Wilton Rancheria requested opening consultation under AB 52, and that a meeting would take place on December 15, 2025. Ms. Starkey sent a follow-up email to AECOM on December 10, 2025, stating that she had spoken to UAIC Tribal Historic Preservation Officer (THPO) Josef Fore, and UAIC will officially defer Tribal consultation to Wilton Rancheria because they are actively consulting on this project. Ms. Starkey also offered to provide a tribal monitor if one from Wilton Rancheria was not available.

On December 2, 2025, Mr. Fien received an email from the Department of Cultural Preservation at Wilton Rancheria to open consultation. In an attached letter that constituted the formal request for tribal consultation under CEQA, signed by Michelle St. Clair, Executive Director of Cultural Preservation, the tribe requested consultation on several topics and discretionary topics, and provided a document request list including completed cultural resources assessments, related assessments, maps, and soil diagrams, in or near the project APE, and to select a meeting date. The District scheduled a project meeting between the project team and Wilton Rancheria for December 15, 2025.

On December 15, 2025, the project team and Wilton Rancheria met virtually to discuss the following topics:

- types of repairs to the levees that are proposed
- vegetation removal

- where imported soils would be retrieved from
- levee access during the project construction, and
- archaeological sensitivity of MWT

Wilton Rancheria voiced concern regarding the archaeological sensitivity of some of the land within the Ring Levee that contains material from Grizzly Slough and requested that this area with material from Grizzly Slough be designated as an Environmentally Sensitive Area for the proposed project, and that project work be excluded from that location. Wilton Rancheria also requested that the erosion repair sites be surveyed by an archaeological Tribal representative, following vegetation removal (when the levee slopes are more visible), that cultural awareness training be performed by a tribal member before the start of construction and all personnel involved with ground disturbance should receive the cultural awareness training, and that a tribal monitor be on site during the levee repairs. Wilton Rancheria noted that tribal policy is to retain any archaeological discoveries on site and recommended that a jobsite lockbox be available and designated to secure any finds that may be identified during project construction. In addition, Wilton Rancheria recommended that a location for the possible repatriation of human remains and belongings be identified before the start of construction. The District acknowledged the recommendations and stated that it would have to identify that location in the future, in coordination with the landowner.

The document requests made by Wilton Rancheria in their December 2, 2025 letter were compiled by AECOM and distributed to Wilton Rancheria electronically on December 18, 2025, on behalf of the District.

No other tribes responded or requested to participate in AB 52 consultation during the 30-day formal notification period.

Discussion

- ai) **Less-than-Significant with Mitigation Incorporated.** The TCL is the only TCR identified within the APE. Approximately 357 acres of the APE are within the Sacramento River TCL boundary, which is less than 0.18 percent of the estimated total TCL area. The primary character-defining elements of the TCL are the waterways, tule habitat, fisheries, and other wildlife. The proposed project would make repairs to an existing human-made levee that has been a part of the surrounding landscape since 1919. Thus, the proposed project would not result in a substantial adverse change in the significance of a TCR, defined in Section 21074 of the PRC, and would not result in adverse effects on the assumed eligible historic property. Nonetheless, because excavation of the levees would occur under the proposed project and the potential would exist for unknown TCRs to be uncovered during excavation, the District will implement Mitigation Measures TCR-1, TCR-2 and TCR-3 to reduce the potential

impacts to a less-than-significant level. The impact would be less than significant with mitigation incorporated.

Mitigation Measure TCR-1. Designate the Environmentally Sensitive Area within the Ring Levee, Conduct Cultural Resources Sensitivity Training, and Complete a Tribal Survey of the Erosion Repair Sites

The District will identify the Environmentally Sensitive Area within the Ring Levee associated with the Grizzly Slough relocated materials. This area will be identified to all construction workers before vegetation clearing and the start of construction, so that the materials within the designated area are not disturbed by the proposed project. The Wilton Rancheria Tribe will conduct cultural resources sensitivity training for all construction workers before vegetation clearing and project construction. New crew members who may join during construction activities also will receive this training by a Wilton Rancheria Tribal representative. The District will inform Wilton Rancheria when vegetation clearing at the erosion repair sites will occur, and will provide a 2-week prior notice. A Wilton Rancheria Tribal representative will survey the erosion repair sites vegetation has been cleared, to have better visibility and potential access to these locations.

Mitigation Measure TCR-2. Compensated Construction Monitoring by a Tribal Monitor

The project will retain a Tribal Monitor from the Wilton Rancheria Tribe, to observe and monitor all ground disturbance activities that occur during project construction, and specifically:

1. **Communication Protocols for Monitoring:** The District will develop a set of communication protocols, in coordination with Wilton Rancheria Tribe, to identify points of contact and to verify that the Wilton Rancheria Tribe is notified when the District will proceed with authorized construction activities. Points of contact will be established for the applicant, construction supervisor, and Wilton Rancheria Tribe Monitor, and the contact numbers and email addresses will be documented and shared among all parties. The points of contact will be responsible for identifying backup representatives in the event that they are unable to participate.
2. **Tribal Monitoring:** All levee construction-related, ground-disturbing activity will be monitored by a qualified tribal representative from Wilton Rancheria Tribe so that the procedures for unanticipated discoveries are addressed expeditiously. The requirements for a monitor will be inclusive of levee excavation activities that have the potential to result in ground disturbance. "Ground-disturbing activity" is defined herein as any activities that will have the potential to disturb soil beyond that which was reasonably visible to tribal representatives during the preconstruction pedestrian survey at the levee erosion repair sites. This includes levee grading, excavation, and any other below-the-ground activities at the levee

erosion repair sites. Monitoring will not be required for backfilling of previously excavated areas, placement of equipment into excavated areas, reseeding, or revegetation, regrading or contouring of soil that previously was monitored, or for any aboveground project activity or construction that does not include ground disturbance, but monitors are allowed to observe upon request.

The District will be responsible for contacting tribal monitors whenever ground disturbance is scheduled. If tribal monitors do not respond within 24 hours of the notification, the District will document that contact was made with no response received and may proceed with ground disturbance, following the guidelines of Mitigation Measure TCR-2.

Tribal monitors will have the authority to request a temporary and reasonable pause of ground-disturbing activities within 50 feet of a discovery for up to 30 minutes, to safely examine the ground more closely for indications of potential TCRs, without being impeded by construction equipment. Positive findings will not have a time limit for evaluation and recovery. In the event of the discovery of a potential TCR, the procedures in Mitigation Measure TCR-2 will apply. In the event of the discovery of human remains, Mitigation Measure CUL-2 will apply.

At the end of monitoring, in conjunction with the Wilton Rancheria, the District will develop a brief memorandum, stating the dates of monitoring, by whom, the methods of monitoring, and the findings.

Mitigation Measure TCR-3. Unanticipated Discoveries TCRs

If any suspected TCRs are discovered during ground-disturbing construction activities, all work will cease within 100 feet of the find. A Wilton Rancheria Tribal Representative will be notified immediately and will determine whether the find is a TCR (PRC Section 21074). The Tribal Representative will make recommendations regarding the treatment of the discovery. Preservation in place will be the preferred alternative under CEQA and Wilton Rancheria Tribe protocols, and every effort must be made to preserve the resources in place, including through project redesign.

Work at the discovery location will not be allowed to resume until all necessary investigations and evaluations of the discovery under the requirements of the CEQA, including AB 52, have been satisfied.

The District will provide an on-site lockbox that the Tribal Monitor and/or Tribal Representative(s) can access. In the event of a find, the materials may be stored in the on-site lockbox for Tribal Representation review. The District will initiate discussions with DWR (the landowner) to identify a location protected from inundation on MWT which could be used for possible reburial.

The contractor will implement any measures deemed by the District (as CEQA lead agency) to be necessary and feasible to preserve in place, avoid, or minimize

impacts on the resource, including, but not limited to, facilitating the appropriate tribal treatment of the find, as necessary.

a ii) **Less-than-Significant with Mitigation Incorporated.**

As identified in environmental issue area ai), one TCR has been identified within the APE, which is the Sacramento River TCL. No other resources have been identified or determined by the District, in its discretion and supported by substantial evidence, to be significant within the APE, pursuant to criteria set forth in subdivision (c) of Section 5024.1 of the PRC. As noted under ai), the impact on the TCR would be less than significant with mitigation incorporated.

References

- AECOM. 2015. *Cultural Resources Inventory and Evaluation Report, McCormack-Williamson Tract Levee Modification and Habitat Enhancement Project*. Prepared for The Nature Conservancy.
- . 2025. *McCormack-Williamson Tract Erosion Repair Project Cultural Resources and Tribal Cultural Resources Technical Report*. Prepared for MBK Engineers.
- Bennyhoff, J. A. 1977. *Ethnogeography of the Plains Miwok*. Publication No. 5. Center for Archaeological Research, University of California, Davis.
- Bureau of Indian Affairs (BIA). 2002 (February 5). *McCaleb Approves United Auburn Indian Community Land Into Trust Application*. Available: <https://www.bia.gov/as-ia/opa/online-press-release/mccaleb-approves-united-auburn-indian-community-land-trust>. Accessed October 2025.
- Heizer, R. (editor). 1978. *Handbook of North American Indians, Volume 8: California*. Smithsonian Institution, Washington, DC.
- Helix Environmental Planning, Inc. (Helix). 2023. *P-34-005225 – Sacramento River Tribal Cultural Landscape* [DPR 523 Continuation Sheet-Update]. On file under P-34-005225 at the NCIC, Sacramento.
- Indian Country Today. 2010 (September 12). *News from the West Coast – Trust Acquisition Clears Way for Community Development*. Available: <https://indiancountrytoday.com/archive/news-from-the-west-coast>. Accessed October 2025.
- Ione Band of Miwok Indians (IBMI). 2024. *About Us*. Available: <https://ionemiwok.net/>. Accessed via Wayback Machine, October 2025.
- Kroeber, A. L. 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Washington, DC.
- Levy, R. 1978. Eastern Miwok. In *Handbook of North American Indians Volume 8: California*, R. Heizer, editor. Smithsonian Institution, Washington, DC.

Sacramento Bee. 2024 (May 14). *Wilton Rancheria Reclaims 77 Acres Near Sacramento From Federal Government. Here's What's Next*. Available: <https://www.sacbee.com/news/local/article288482087.html>. Accessed October 2025.

Tremaine & Associates. 2018. *Sacramento River TCL* [DPR 523 Series forms]. On file under P-34-005225 at the NCIC, Sacramento.

United Auburn Indian Community (UAIC). 2025. *Our History*. Available: <https://www.auburnrancheria.com/about-us/our-history-1/>. Accessed October 2025.

Wilton Rancheria. 2024. *Wilton Rancheria Tribal History*. Available: <https://wiltonrancheria-nsn.gov/Home/TribalHistory/tabid/305/Default.aspx>. Accessed via Wayback Machine, October 2025.

3.2.9 Mandatory Findings of Significance

Table 3.2-15 Environmental Issues and Determinations for Mandatory Findings of Significance

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

Notes:

LTS/M = Less-than-Significant Impact with Mitigation Incorporated

Discussion

- a) **Less-than-Significant Impact with Mitigation Incorporated.** The proposed project would be temporary and involve repair of 14 levee critical erosion sites on MWT (Figure 2.2-1); thus, it would provide a net benefit to the surrounding areas. Based on the analysis contained herein, the proposed project would not 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 or restrict the range of rare or endangered plants or animals; or eliminate important examples of the major periods of California history or prehistory. As discussed in Section 3.2.1, Air Quality, Section 3.2.2, Biological Resources, Section 3.2.3, Cultural Resources, and Section 3.2.8, Tribal Cultural Resources, the proposed project would implement the following mitigation measures to reduce impacts on these resources to a less-than-significant level: Mitigation Measure AQ-1, Mitigation Measures BIO-1 through BIO-8, Mitigation Measure CUL-1, Mitigation Measure CUL-2, and Mitigation Measures TCR-1 through TCR-3. Adherence with federal, State, and local regulations, as well as implementation of the environmental commitments described in Section 2.5, would further reduce the impacts on these resources.
- b) **Less-than-Significant Impact with Mitigation Incorporated.** Three past, present, and reasonably foreseeable future projects would occur on MWT: Phase A, Phase B, and the installation of a new pump station. Phase A and Phase B generally have been completed, and mitigation plantings are being maintained on MWT, requiring minimal trips for maintenance. The District is planning to install a new pump station on MWT in

summer 2026, to improve drainage within the area protected by the Ring Levee. The new pump station would be installed on the southwest portion of the Ring Levee. The work also would include grouting and abandoning an existing pipe through the Ring Levee. Construction is anticipated to occur from August through September 2026.

The proposed project would have no impacts on the following resources, as described in Section 1.3.1, Resources Dismissed from Further Evaluation: Aesthetics, Agriculture and Forestry Resources, Energy, Land Use and Land Use Planning, Population and Housing, Mineral Resources, Noise, Public Services and Utilities, Recreation, Transportation and Traffic, and Wildfire. In addition, construction routes and operating times for the pump station construction are expected to be similar to the project. Both the proposed project and the new pump station installation would have no effects on vehicle miles traveled because both would be short term, temporary construction projects with no operational trips. Thus, no cumulatively considerable impact would occur.

The potential project impacts on geology, soils and paleontology, GHG emissions, hazards and hazardous materials, and hydrology and water quality would be from temporary, short-term construction, site-specific and geographically local to each erosion repair site. Phase A and Phase B combined with the proposed project would not contribute to cumulative impacts on these resources because Phase A and Phase B generally have been completed and incorporated mitigation or environmental commitments for impacts on these types of resources. In addition, Phase A and Phase B occur primarily in different locations on MWT and would not substantially overlap with the erosion repair sites. The timing of the installation of the new pump station would overlap with the proposed project construction, but no overlap would occur in the project area except for equipment staging in the Ring Levee. Installation of the pump station is not anticipated to affect aquatic habitat for federally listed fish or aquatic reptile species or riparian woodland habitat suitable for special-status species and would not result in removal or trimming of any blue elderberry habitat for valley elderberry longhorn beetle. Mobile wildlife passing through either the proposed project's construction footprint or the new pump station's construction footprint would be expected to disperse to avoid any temporary noise or vibration disturbances during the short construction duration for each project. As described in environmental issue area (a) above, implementation of mitigation measures during construction (e.g., WEAP training, preconstruction surveys) would reduce, avoid, or minimize potentially significant impacts on air quality, biological, cultural, or tribal cultural resources that could have the potential to be cumulatively considerable. In addition to implementing the mitigation measures, the District or its contractors would comply with all applicable federal, State, and local regulations, and would incorporate and implement environmental commitments described in Section 2.5 for these resources to further reduce, avoid, or minimize temporary local impacts on these resources.

Thus, the proposed project would not have environmental effects that would be individually limited but cumulatively considerable. The cumulative impact would be less than significant.

- c) **Less-than-Significant Impact with Mitigation Incorporated.** As discussed above, the proposed project would result in primarily temporary and limited construction activities and would not include any operational impacts. Furthermore, the proposed project would comply with all applicable federal, State, and local regulations, and implement environmental commitments described in Section 2.5. Implementation of the above-mentioned mitigation measures would ensure that impacts on human beings would be reduced to less-than-significant levels. No other activities or uses are proposed that may cause substantial adverse effects on human beings, either directly or indirectly, or on the physical environment. Therefore, the impact would be less-than-significant with mitigation incorporated.

References

None.

APPENDIX A. AIR QUALITY AND GREENHOUSE GAS RESULTS

APPENDIX B. POTENTIAL TO OCCUR TABLE

APPENDIX A. AIR QUALITY AND GREENHOUSE GAS RESULTS

MWT

Location: Unincorporated Sacramento County

Standard Inputs:

Land Use	User Defined Recreation
Size	14 erosion repair sites. Limits of work: 1 acre Length of repairs: 1290 linear feet = 0.25 miles
Construction equipment	1 each of the following (except haul truck) all operate 11 hours per day for a total of 59 working days.
	Pickup - F250
	Water truck - would water twice daily, requiring up to 2 hours per day onsite travel
	Long Reach Excavator - Cat 335
	Tractor Loader - Case 570N
	Front End Loader - Cat 950
	(2) Haul Truck - 13CY
	Smooth Drum Roller - Cat CS7
	Motor Grader - Cat 140
	Medium Excavator - Cat 315
Construction Schedule	Use "Grading" Phase in CalEEMod as the only construction phase - captures fugitive dust from earth moving activities Anticipated start August 1, 2026 Duration: 59 days
Acres of Grading	Default from CalEEMod
Off-Site Vehicle Trips	
Worker Trips (one-way)	Based on CalEEMod estimate of 25 one-way trips/day & default distance of 14.3 miles/one-way trip.
Worker Trip Distance	Use Defaults
Total Vendor Truck Off-Site Delivery Trips (one-way)	934.44
Daily Vendor Truck Off-Site Delivery Trips (one-way)	16.00
Vendor Trip Distance (one-way)	31 miles to Jackson Valley Quarry in Ione and 25 miles to Stockton for aggregate, as measured from start of haul route kmz feature at J8 and I-5. Conservatively use 31 miles
Haul Truck Trips	No exported material
On-Site Vehicle Trips (Unpaved)	
Worker Trips	0 - Assume turnaround at work site and no unpaved roadway travel
Total Vendor Truck Trips Traveled On-site (one-way)	934.44
Daily Haul Truck Trips Traveled On-Site (one-way)	16.00
Onsite Vendor Trip Distance (one-way)	3.98
Haul Truck Travel On-Site	0 - No exported material

Item	Estimated Quantity	Units	Truckloads (this is a round-trip, one-way trips assumed to be 2x)
Earthfill (cubic yards)	0	CY	0
Estimated excavation (cubic yards)	0	CY	0
Agricultural Soil (cubic yards)	0	Cy	0
Topsoil (tons)	0	Tons	0
Rock slope protection (RSP) (CY)	10,788	CY	431.5242963
Aggregate Base (CY)	571	CY	35.69444444

Truck Capacity:	CY per truck
RSP	25
Aggregate	16

Note:

1. Truck capacity informed by project engineers.

Fugitive Dust Control Measures

Measure	PM10 Reduction	PM2.5 Reduction
Water exposed surfaces 2x per day	61%	61%
Water unpaved construction roads 2x per day	55%	55%
Limit vehicle speeds on unpaved roads to 15 mph	66.7%	66.7%

MWT Levee Repair Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

3. Construction Emissions Details

3.1. Grading (2026) - Unmitigated

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

8.1. Justifications

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	MWT Levee Repair
Construction Start Date	7/1/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.0
Precipitation (days)	34
Location	38.26659905501799, -121.49469695575299
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	714
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.35

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Recreational	1.00	User Defined Unit	1.00	0.00	0.00	—	—	—

1.3 User-Selected Emission Reduction Measures by Emissions Sector

No measure selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.8	4.8	36	34	0.12	1.6	15	17	1.5	1.6	3.1	—	13,700	13,700	0.60	0.38	5.3	13,833
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.8	4.8	36	34	0.12	1.6	15	17	1.5	1.6	3.1	—	13,669	13,669	0.60	0.38	0.14	13,797
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.94	0.78	5.8	5.5	0.02	0.26	2.2	2.5	0.24	0.24	0.47	—	2,211	2,211	0.10	0.06	0.37	2,232
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.17	0.14	1.1	1.0	< 0.005	0.05	0.40	0.45	0.04	0.04	0.09	—	366	366	0.02	0.01	0.06	369

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	5.8	4.8	36	34	0.12	1.6	15	17	1.5	1.6	3.1	—	13,700	13,700	0.60	0.38	5.3	13,833
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	5.8	4.8	36	34	0.12	1.6	15	17	1.5	1.6	3.1	—	13,669	13,669	0.60	0.38	0.14	13,797
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.94	0.78	5.8	5.5	0.02	0.26	2.2	2.5	0.24	0.24	0.47	—	2,211	2,211	0.10	0.06	0.37	2,232
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.17	0.14	1.1	1.0	< 0.005	0.05	0.40	0.45	0.04	0.04	0.09	—	366	366	0.02	0.01	0.06	369

3. Construction Emissions Details

3.1. Grading (2026) - Unmitigated

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

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.5	4.7	33	32	0.11	1.6	—	1.6	1.4	—	1.4	—	11,620	11,620	0.47	0.09	—	11,659
Dust From Material Movement	—	—	—	—	—	—	0.29	0.29	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.04	0.01	0.61	0.28	< 0.005	< 0.005	14	14	< 0.005	1.4	1.4	—	252	252	0.03	0.04	0.47	265
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.5	4.7	33	32	0.11	1.6	—	1.6	1.4	—	1.4	—	11,620	11,620	0.47	0.09	—	11,659
Dust From Material Movement	—	—	—	—	—	—	0.29	0.29	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.04	0.01	0.65	0.28	< 0.005	< 0.005	14	14	< 0.005	1.4	1.4	—	252	252	0.03	0.04	0.01	265
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	0.75	5.3	5.2	0.02	0.25	—	0.25	0.23	—	0.23	—	1,878	1,878	0.08	0.02	—	1,885
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	2.1	2.1	< 0.005	0.21	0.21	—	41	41	< 0.005	0.01	0.03	43
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.14	0.97	0.94	< 0.005	0.05	—	0.05	0.04	—	0.04	—	311	311	0.01	< 0.005	—	312
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.38	0.38	< 0.005	0.04	0.04	—	6.7	6.7	< 0.005	< 0.005	0.01	7.1
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.06	1.4	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	278	278	< 0.005	0.01	0.99	282
Vendor	0.13	0.04	2.3	0.78	0.01	0.02	0.43	0.45	0.02	0.11	0.14	—	1,550	1,550	0.09	0.23	3.8	1,626
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.08	1.0	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	247	247	0.01	0.01	0.03	250
Vendor	0.13	0.04	2.5	0.78	0.01	0.02	0.43	0.45	0.02	0.11	0.14	—	1,550	1,550	0.09	0.23	0.10	1,622
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.17	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	41	41	< 0.005	< 0.005	0.07	42
Vendor	0.02	0.01	0.39	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	251	251	0.01	0.04	0.27	262
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.8	6.8	< 0.005	< 0.005	0.01	6.9
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	41	41	< 0.005	0.01	0.04	43
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1 Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	8/1/2026	10/22/2026	5.0	59	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Off-Highway Trucks	Diesel	Average	1.00	11	500	0.38
Grading	Off-Highway Trucks	Diesel	Average	1.00	2.0	376	0.38
Grading	Excavators	Diesel	Average	1.00	11	273	0.38
Grading	Tractors/Loaders/Back hoes	Diesel	Average	1.00	11	74	0.37
Grading	Tractors/Loaders/Back hoes	Diesel	Average	1.00	11	249	0.37
Grading	Off-Highway Trucks	Diesel	Average	2.0	11	376	0.38
Grading	Rollers	Diesel	Average	1.00	11	100	0.38
Grading	Graders	Diesel	Average	1.00	11	250	0.41
Grading	Excavators	Diesel	Average	1.00	11	108	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	Worker	25	14	LDA,LDT1,LDT2
Grading	Vendor	16	31	HHDT,MHDT
Grading	Hauling	0.00	20	HHDT
Grading	Onsite truck	16	4.0	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	67%	67%

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Grading	11,359	—	39	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	375	0.01	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

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

5.18.1 Biomass Cover Type

5.18.1.1. Unmitigated

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

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	22	annual days of extreme heat
Extreme Precipitation	3.4	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	9.4	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about $\frac{3}{4}$ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.4. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	1	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	1	1	1	2
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	40
AQ-PM	25
AQ-DPM	21
Drinking Water	94
Lead Risk Housing	76
Pesticides	89
Toxic Releases	18
Traffic	26
Effect Indicators	—
CleanUp Sites	42
Groundwater	91
Haz Waste Facilities/Generators	62
Impaired Water Bodies	98
Solid Waste	59
Sensitive Population	—
Asthma	45
Cardio-vascular	53
Low Birth Weights	7.4
Socioeconomic Factor Indicators	—
Education	71
Housing	23
Linguistic	69
Poverty	74
Unemployment	51

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	44.02669062
Employed	15.11612986
Median HI	45.01475683
Education	—
Bachelor's or higher	33.8380598
High school enrollment	100
Preschool enrollment	95.7141024
Transportation	—
Auto Access	97.49775439
Active commuting	81.32939818
Social	—
2-parent households	69.88322854
Voting	87.4117798
Neighborhood	—
Alcohol availability	73.78416528
Park access	13.83292699
Retail density	2.527909663
Supermarket access	2.399589375
Tree canopy	78.3908636
Housing	—
Homeownership	47.28602592
Housing habitability	86.34672142
Low-inc homeowner severe housing cost burden	65.7128192
Low-inc renter severe housing cost burden	96.49685615
Uncrowded housing	51.79006801
Health Outcomes	—
Insured adults	42.12755037
Arthritis	0.0
Asthma ER Admissions	65.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	41.1
Cognitively Disabled	19.2
Physically Disabled	25.6

Indicator	Result for Project Census Tract
Heart Attack ER Admissions	45.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	91.2
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	53.3
Elderly	22.1
English Speaking	44.0
Foreign-born	46.6
Outdoor Workers	11.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	94.2
Traffic Density	37.6
Traffic Access	23.0
Other Indices	—
Hardship	68.3
Other Decision Support	—
2016 Voting	79.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64
Healthy Places Index Score for Project Location (b)	59
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Survey area acreage.
Construction: Construction Phases	Levee repair modeled as grading phase - single 59-day phase for all construction activity/equipment/vehicles.
Construction: Off-Road Equipment	Project-specific equipment list.
Construction: Dust From Material Movement	RSP and aggregate base imported.
Construction: Trips and VMT	Vendor delivery distance based on Stockton Quarry. On-site trucks travel to staging area. No offsite hauling.

APPENDIX B. POTENTIAL TO OCCUR TABLE

Table B-1. Potential to Occur Table

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
Plants				
<i>Amsinckia grandiflora</i>	large-flowered fiddleneck	FE/SE, CRPR 1B.1	Cismontane woodland, valley and foothill grassland at elevations from 886–1,804 feet	No Potential. The project area is outside the elevational range of this species.
<i>Brasenia schreberi</i>	watershield	--/CRPR 2B.3	Occurs within freshwater marshes and swamps from 0 to 7,000 feet of elevation.	Low Potential. There is 1 CNDDDB record of this species within 5 miles of the project area; however, it is more than 50 years old, and no presumed extant occurrences are present within 20 miles of the project area. Additionally, this perennial plant was not observed during biological surveys.
<i>Carex comosa</i>	bristly sedge	--/CRPR 2B.1	Occurs within freshwater marshes and swamps, on lakeside edges, and within valley and foothill grasslands between 0 and 2,050 feet of elevation.	Moderate Potential. There are 12 CNDDDB records of this species within 5 miles of the project area. Records indicate that this species often occupies levee edges and oak woodland understories, both of which are found within the project area.
<i>Cicuta maculata</i> var. <i>bolanderi</i>	Bolander's water-hemlock	--/CRPR 2B.1	Occurs within brackish and freshwater marshes and swamps from 0 to 655 feet of elevation.	Low Potential. There is 1 CNDDDB record of this species within 5 miles of the project area; however, it is more than 50 years old. There are no additional records of this species within the general vicinity, but there is potential habitat for it in the project area.
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	woolly rose-mallow	--/CRPR 1B.2	Occurs within freshwater marshes and swamps, often on riprap on the sides of levees. This species has an elevational range of 0 to 355 feet.	Moderate Potential. There are 13 CNDDDB records of this species within 5 miles of the project area. Suitable habitat, including levee edges with riprap, is present in the project area.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	--/CRPR 1B.2	Occurs within freshwater marshes and swamps from 0 to 15 feet elevation.	Moderate Potential. There are 7 CNDDDB records of this species within 5 miles of the project area, with marginal amounts of suitable habitat present for this species.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	--/SR, CRPR 1B.1	Occurs within brackish and freshwater marshes and swamps, levee edges, or riparian areas. This species occurs at an elevational range of 0 to 35 feet.	Moderate Potential. There are 5 CNDDDB records of this species within 5 miles of the project area, with suitable habitat present.
<i>Limosella australis</i>	Delta mudwort	--/CRPR 2B.1	Occurs within brackish and freshwater marshes and swamps, levee edges, or riparian areas. This species occurs at an elevational range of 0 to 10 feet.	Moderate Potential. There are 6 CNDDDB records of this species within 5 miles of the project area, most of which are described as being on levee edges within and around riprap, which is present within the project area.
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	--/CRPR 1B.2	Occurs within freshwater marshes and swamps and riparian areas from 0 to 2,135 feet of elevation.	Moderate Potential. There are 12 CNDDDB records of this species within 5 miles of the project area. Records indicate that this species often occupies levee edges and oak woodland understories, both of which are found within the project area.
<i>Scutellaria galericulata</i>	marsh skullcap	--/CRPR 2B.2	Occurs within freshwater marshes and swamps and meadow seeps, often on exposed log tops, from 0 to 6,890 feet of elevation.	Low Potential. There are 2 CNDDDB records of this species within 5 miles of the project area, both of which are from 17 years ago and are isolated from floating logs. The project area is outside the current known range of this species, which includes the northern Sierra Nevada and Modoc Plateau (Jepson Flora Project 2025). Habitat for this species is marginal and in low amounts within the project area.
<i>Scutellaria lateriflora</i>	side-flowering skullcap	--/CRPR 2B.2	Occurs within freshwater marshes and swamps and mesic seep areas from 0 to 1,550 ft of elevation.	Moderate Potential. There are 10 CNDDDB records of this species within 5 miles of the project area with suitable habitat present.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Symphyotrichum lentum</i>	Suisun Marsh aster	--/CRPR 1B.2	Occurs within brackish and freshwater marshes and swamps, levee edges, or riparian areas. This species occurs at an elevational range of 0 to 10 feet.	Moderate Potential. There are 3 CNDDDB records of this species within 5 miles of the project area, with all occurrences being described as at the base of levees within riparian areas, which is abundant within the project area.
Invertebrates				
<i>Bombus crotchii</i>	Crotch's bumble bee	--/SC	Inhabits grasslands and shrublands and requires a drier environment than other bumble bee species. Forages on milkweed, dusty maidens, lupines, medics, phacelias, sages, clarkias, poppies, and buckwheat. Nests underground in abandoned rodent nests, or above ground in tufts of grass, old bird nests, rock piles, or cavities in dead trees.	Moderate Potential. There are six CNDDDB occurrences documented within 5 miles of the project area near the Cosumnes River Preserve. Five of these occurrences are recent observations from 2020 and 2024. Two iNaturalist observations were documented in the Cosumnes River Preserve. The project area provides limited suitable overwintering habitat in the form of grassland. Riprap above the waterline near the levee road may provide marginal overwintering habitat. Forage species are present throughout the project area.
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	FT/--	Endemic to the vernal pools of the Central Valley and Central Coast mountains. Inhabits vernal pool habitats such as rain-filled pools, clear-water sandstone-depression pools and grass or mud bottomed swales, earth slump, or basalt-flow depression pools in grasslands.	No Potential. There are no CNDDDB occurrences documented within 5 miles of the project area. No vernal pool habitat is present in the project area.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Danaus plexippus plexippus</i>	monarch butterfly	PT/--	The monarch population west of the Rocky Mountain range overwinters in California along the Pacific Coast, roosting in groves of eucalyptus, Monterey pines, and Monterey cypress trees. Most overwintering sites in California are 1.5 miles from the Pacific Ocean or San Francisco Bay. Adult monarchs feed on the nectar of diverse blooming sources during breeding and migration but require milkweed plants (<i>Asclepias</i> spp.) to lay eggs. Breeding monarchs can now be found throughout California, with native hostplants occurring inland, and additionally along the coast where hostplants are artificially planted.	No Potential (overwintering/ breeding); Low Potential (foraging). No CNDDDB occurrences of this species were documented within 5 miles of the project area. There are both adult and breeding records of this species at the adjacent Cosumnes River Preserve; however, they occur in host plants that were propagated adjacent to the preserve offices (Western Monarch Milkweed Mapper 2018). The project area is outside the overwintering range for this species; no milkweed was observed during the field survey, and there is minimal forage plants present in the project area. There is no potential for monarch butterflies to overwinter in the project area, but it may occasionally forage or pass through the project area.
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	FT/--	Occurs only in the Central Valley, in association with blue elderberry (<i>Sambucus mexicana</i>) generally occurs along waterways and in floodplains. It prefers to lay eggs in elderberries 2–8 inches in diameter; some preference shown for “stressed” elderberries.	High Potential. High-quality blue elderberry shrubs with signs of beetle exit holes are present in the project area and were documented during 2025 field surveys, so mature blue elderberry in the project area are assumed to be occupied by the species (USFWS 2017). There is one historical CNDDDB occurrence within five miles near Snodgrass Slough.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Lepidurus packardii</i>	vernal pool tadpole shrimp	FE/--	Inhabits vernal pools and swales in the Sacramento Valley.	No Potential. There is one CNDDDB occurrence documented within 5 miles of the project area as a non-specific record. The record observed the species in a roadside ditch west of Bruceville Road approximately 2.5 miles from the project area in 1993. No vernal pool habitat is present in the project area. This species is not expected to occur in the project area. The construction of levees and other flood control measures have limited the ability for vernal pool tadpole shrimp to disperse via large scale flood events.
Fish				
<i>Acipenser medirostris</i> pop. 1	green sturgeon - southern DPS	FT/SSC	Anadromous fish, migrating from March through June from seawater into the freshwater of larger coastal rivers to spawn. Spawns in cool, deep fast-flowing river reaches over gravel and cobble bottoms. Found in the Sacramento and San Joaquin rivers and Delta. Primarily spawns in the upper mainstem of the Sacramento River, although some spawning activity has recently been documented in the Feather and Yuba rivers. Juveniles spend several months in freshwater habitats near adult spawning habitats before migrating into estuarine environments.	Moderate Potential. There are two CNDDDB occurrences from 2019 within five miles of the project area. Snodgrass Slough has suitable rearing and foraging habitat and is designated critical habitat for the DPS. The Delta Cross Channel diversion gate separating the Sacramento River from Snodgrass Slough is open from June through November, which overlaps the juvenile rearing life stage.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Hypomesus transpacificus</i>	delta smelt	FT/SE	Euryhaline species restricted to the Sacramento-San Joaquin estuary. Spawns in shallow, fresh or slightly brackish water upstream of the mixing zone, mostly in tidally influenced backwater sloughs and channel edge-waters. Suitable spawning substrate is comprised of sand or gravel. They spawn in freshwater at temperatures from about 45–59°F. Juvenile smelt rear and grow in the low salinity zone and adjacent freshwater habitats for several months, preferring shallow open waters.	Low Potential. There are four CNDDDB occurrences of delta smelt documented within 5 miles of the project area. Adult delta smelt have been documented in the Mokelumne River based on trawl surveys between 2002 and 2007. The potential for delta smelt to occur in the project area is low due to the lack of suitable spawning and rearing habitat.
<i>Oncorhynchus mykiss irideus</i> pop. 11	steelhead - Central Valley DPS	FT/SSC	The Central Valley DPS includes all naturally spawned populations of steelhead (and their progeny) in the Sacramento and San Joaquin rivers and their tributaries. Inhabits riparian, emergent, palustrine habitat. Spawning and rearing occur in perennial streams with clear, cool to cold, fast-flowing water with a high dissolved oxygen content and abundant gravels and riffles. Preferred water depth for spawning is 6–24 inches, for fry is 2–14 inches and for parr is 10–20 inches. Migrates to freshwater habitat in the fall and winter to spawn. Spawning takes place between December and April.	Moderate Potential. There are three CNDDDB occurrences within five miles of the project area. The Delta Cross Channel diversion gate separating the Sacramento River from Snodgrass Slough is typically open from June through November, which overlaps adult migration into the Sacramento River. Migrants to the Sacramento River could stray into Snodgrass Slough or be swept in. This DPS also occurs in the Mokelumne River, which connects to Snodgrass Slough at the southern end of the McCormack-Williamson Tract. Strays from the Mokelumne River may enter Snodgrass Slough.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Oncorhynchus tshawytscha</i> pop. 11	chinook salmon - Central Valley spring-run ESU	FT/ST	Spawns in cold, clear, well-oxygenated tributaries of the Sacramento River system, including the Feather, Yuba, and upper American rivers; juveniles may rear and migrate through lower river and Delta habitats near the Cosumnes River and adjacent sloughs before entering the ocean. Spring-run chinook salmon migrate upstream between March and July, with peak migration occurring in May and June.	Low Potential. There are no CNDDDB occurrences within five miles of the project area. The Delta Cross Channel diversion gate between the Sacramento River and Snodgrass Slough is typically open from June through November, which overlaps the tail end of adult migration to the Sacramento River after the peak. Late migrants to the Sacramento River could stray into Snodgrass Slough via the channel or be swept in, but the habitat is not suitable for spawning.
<i>Oncorhynchus tshawytscha</i> pop. 7	chinook salmon - Sacramento River winter-run ESU	FE/SE	Historically migrated to the headwaters of the Sacramento, Pit, and McCloud rivers, as well as Battle Creek (Tehama County). All historical spawning habitat is now upstream of major dams. Today, the one remaining population spawns in the mainstem Sacramento River immediately downstream of Keswick Dam near Redding. Adults enter fresh water from January to May, with a peak in mid-March. Historically, they would hold within spring-fed streams to mature before spawning from April through August, with eggs incubating during the hot summer months. Winter-run juveniles appear to occupy fresh water year-round and generally prefer temperatures between 10–16°C (50–61°F). Fries emerge from redds from July to mid-October and juveniles feed for five to 10 months before migrating downstream in January through April during the first high flows of the rainy season, moving mostly at night to avoid predators.	No Potential. There are no CNDDDB occurrences within five miles of the project area. The Delta Cross Channel diversion gate between the Sacramento River and Snodgrass Slough is typically open from June through November. During this time, adult chinooks in the DPS are spawning in the Sacramento River immediately downstream of Keswick Dam.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Spirinchus thaleichthys</i> pop. 2	longfin smelt - San Francisco Bay-Delta DPS	FE/ST	Euryhaline, nektonic, and anadromous species found in open waters of estuaries, mostly in middle or bottom of water columns. It prefers salinities of 15–30 ppt but can be found in completely freshwater to almost pure seawater. Longfin smelt utilize different portions of the San Francisco Bay and the delta and estuary areas throughout their life cycle. During the fall, adult longfin smelt migrate upstream into brackish sloughs and freshwater rivers for the winter and spring spawning season. Adult longfin smelt spend the non-spawning months primarily in Suisun, San Pablo, and San Francisco bays, although they may use upstream waters to a greater extent during years of low river outflow.	Low Potential. There are two CNDDDB occurrences of longfin smelt documented in the Sacramento River near Walnut Grove, and in Hog Slough, a tributary of the Mokelumne River during trawl surveys in 1973, 1996, and 2002. However, subsequent efforts detected no longfin smelt. Longfin smelt are not expected to spawn or rear in the waterways surrounding the project area. Juveniles are rarely found in freshwater habitats. Juveniles and larvae are more affiliated with the low salinity zone of the Delta, which is downstream of the project area.
Amphibians				
<i>Ambystoma californiense</i> pop. 1	California tiger salamander – central California DPS	FT/ST	Inhabits seasonal/semi-permanent water sources (at least 3–4 months in duration) and adjacent upland habitat with small fossorial mammal activity in lowland grasslands, oak savannah, and mixed woodlands. Range includes the Central Valley and Central Coast ranges from Colusa County south to San Luis Obispo and Kern counties from sea level to 3,460 feet in elevation with two disjunct populations in Sonoma County and Santa Barbara County. The active season follows the onset of autumn rain and continues through early spring. Adults may move as far as 1.24 miles between breeding ponds and upland aestivation sites.	No Potential. No CNDDDB occurrences were recorded within 5 miles of the project area. No suitable aquatic habitat is present. No upland refugia such as burrows were observed.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Rana draytonii</i>	California red-legged frog	FT/SSC	Occurs in lowlands and foothills in deeper pools and streams, usually with emergent wetland vegetation. It requires 11 to 20 weeks of permanent water for larval development. Adults and sub-adults can aestivate in small mammal burrows and moist leaf litter, generally found within 300 feet of aquatic habitat. However, during wet periods, they can travel up to 1 mile between aquatic features. The frog is known to occur in 35 counties in California extending along the California Coast Range from southern Mendocino County to Santa Barbara County, through the northern Transverse Ranges from Santa Barbara County to Los Angeles County, and in isolated populations in the Sierra Nevada foothills, Riverside County, and San Diego County. The California red-legged frog is no longer found in the Central Valley of California but is still common in the San Francisco Bay Area and along the Central Coast of California.	No Potential. No CNDDDB occurrences were documented within 5 miles of the project area. Emergent wetlands in the project area are limited to marginal patches. No burrows were observed. The oak woodland in the project area may provide suitable upland dispersal habitat; however, dispersal may be limited by the levee roads and agricultural land. Additionally, there are no known breeding occurrences in the vicinity of the project area.
<i>Spea hammondi</i>	western spadefoot	FPT/SSC	Prefers open areas with sandy or gravelly soils, in a variety of habitats including grasslands, woodlands, chaparral, sandy washes, lowlands, river floodplains, and mountains. Breeds in vernal pools and temporary rain pools following winter and spring rains; larvae transform within 3–11 weeks. Aestivates in burrows in loose soils typically away from the dried breeding pools. May also occasionally breed in pools of intermittent streams.	No Potential. No CNDDDB occurrences were documented within 5 miles of the project area. The project area does not provide suitable aquatic breeding or aestivation habitat. No bare sandy/gravel substrate or burrows were observed.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
Reptiles				
<i>Actinemys marmorata</i>	northwestern pond turtle	FPT/SSC	Semi-aquatic, requiring both aquatic and terrestrial (upland) habitats that are connected to one another or within close proximity. Occurs in both perennial and intermittent waters, including marshes, streams, rivers, ponds, and lakes; its range extends from Washington State southward to central California. Northwestern pond turtles need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg laying.	High Potential. There are six CNDDB occurrences documented within 5 miles of the project area. The species has been observed in sections of the Mokelumne River and Snodgrass and Lost sloughs. Additionally, there are numerous iNaturalist observations of this species at Cosumnes River Preserve, including one observation in Lost Slough approximately 0.3 miles south of Site 14. The project area provides suitable aquatic and upland habitat for foraging and overwintering but has limited areas with gentle slopes and high solar exposure suitable for nesting. Basking sites in the form of submerged logs and floating vegetation are present in the project area.
<i>Thamnophis gigas</i>	giant garter snake	FT/ST	Inhabits marshes, sloughs, ponds, small lakes, small streams, rice fields, and irrigation canals. Requires adequate water during early-spring through mid-fall; emergent, herbaceous wetland vegetation, such as cattails and bulrushes; grassy banks and openings in waterside vegetation for basking; and higher elevation uplands with refugia for cover and refuge from flood waters during the winter dormant season.	Moderate Potential. There are three CNDDB occurrences documented within 5 miles of the project area. One occurrence overlaps with the project area along Snodgrass Slough in 1992. Perennial slow-moving water in portions of Snodgrass and Lost sloughs provide marginally suitable aquatic habitat, though upland habitat is limited by dense riparian cover and a lack of burrows or basking sites. The project area is hydrologically connected to waterways where the species has been documented.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
Birds				
<i>Agelaius tricolor</i>	tricolored blackbird	--/ST, SSC	Resident of Sacramento and San Joaquin valleys and low foothills. This species typically nests within robust freshwater emergent wetlands or agricultural fields, mainly triticale, a wheat-rye hybrid grain grown for dairy cattle feed. High-quality foraging areas include habitats such as irrigated pastures, lightly grazed rangelands, dry seasonal pools, mowed alfalfa fields, feedlots, and dairy farms. Tricolored blackbirds may forage up to 3 miles from their nesting site.	No Potential (nesting), Low Potential (breeding season foraging). There are no CNDDDB occurrences within five miles of the project area. This species is observed within the agricultural fields in the vicinity of the project area, as well as within the tidal and freshwater wetlands of Cosumnes River Preserve (Sullivan et al. 2025); however, the project area does not contain emergent wetland patches of sufficient size or agricultural fields suitable for either breeding or foraging for this species.
<i>Antigone canadensis canadensis</i>	sandhill crane (lesser)	--/SSC	Occurs in freshwater wetlands, flooded agricultural fields, and shallow marshes across the Central Valley; winters in large numbers in the Sacramento–San Joaquin Delta region, including areas surrounding the project site.	No Potential. There are no CNDDDB occurrences within five miles of the project area. This species is observed often within the agricultural fields adjacent to the project area, as well as within the tidal and freshwater wetlands of Consumnes River Preserve; however, the project area does not contain significant emergent wetlands or agricultural fields suitable for either breeding or foraging for this species.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Athene cunicularia hypugaea</i>	western burrowing owl	--/SC, SSC	Inhabits areas with low vegetation in agricultural fields and native low-lying grasslands; can also occur in urban and suburban areas subject to regular human disturbance. Requires burrows, typically those created by ground squirrels or badgers, for cover and nesting but may also use rocky crevices and riprap as an alternative to a traditional burrow. The breeding season occurs from February 1 to August 31, but peaks between late April and July in most years.	Moderate Potential (wintering); Low Potential (nesting). There are two CNDDDB occurrences of both breeding and wintering owls documented within 5 miles of the project area; however, no breeding season observations of western burrowing owl have been recorded in Sacramento County in CNDDDB since 2016. There is marginally suitable habitat in the form of disturbed areas, and riprap that may function as burrow habitat available for this species within and adjacent to the project area.
<i>Botaurus exilis</i>	least bittern	--/SSC	Breeds in freshwater and brackish marshes with tall, dense emergent vegetation and clumps of woody plants over deep water.	Low Potential (foraging); No Potential (breeding). There are no CNDDDB occurrences within five miles of the project area. The project area contains only small amounts of fragmented wetlands often with little tall emergent vegetation.
<i>Buteo swainsoni</i>	Swainson's hawk	--/ST	Breeds in riparian areas, juniper sage flats, and oak savannah adjacent to foraging areas such as grasslands, alfalfa, and grain fields that support rodent populations. Nests in open riparian habitat, in scattered trees or small groves in sparsely vegetated flatlands. Migrates south during winter months.	High Potential/Known to Occur. There are 55 CNDDDB occurrences documented within five miles of the project area. Several occurrences overlap the project area. This species has previously been observed nesting and foraging within the project area. The project area provides suitable nesting and foraging habitat.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Circus hudsonius</i>	northern harrier	--/SSC	Inhabits open grassland, fresh and saltwater emergent wetlands, desert sinks, and meadows. Nests on ground in shrubby, undisturbed vegetation, typically at the marsh edge in emergent wetland or along river and lake margins. May also nest in grasslands, grain fields, or on sagebrush flats several miles from water. Forages in open habitats with an abundance of prey and perch sites.	High Potential (foraging); Moderate Potential (nesting)/Known to Occur. Although the project area contains marginal habitat with some open areas for foraging, there are small amounts of grassland or emergent wetlands present within the project area that may be suitable for this species to breed. This species has been observed foraging within the project area in the open habitats, levee roads, and woodlands, and may nest adjacent to the project area where large marshes or grasslands are more suitable.
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	FT/SE	Uses wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland and dense thickets along streams and marshes. Breeds in low- to moderate-elevation native forests lining the rivers and streams of the western United States. Cottonwood-willow forests are most often used, although other riparian tree species can be important components of breeding habitat as well. Current breeding range in California is highly restricted and, within the Central Valley, limited to the northern Sacramento valley from Red Bluff to Colusa. Dispersing and migrating individuals generally use woody lowland vegetation near fresh water.	Moderate Potential (foraging/dispersal); No Potential (nesting). Despite the project area having some suitable riparian habitat for this species, the most recent record was of two individual detections in 2009 and 2010 that was concluded to be dispersing/migrating within Snodgrass Slough adjacent to the project area. The project area is outside the species' current breeding range, but individuals dispersing or migrating may use the project area as a stopover site because marginal amount of suitable habitat is available.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Elanus leucurus</i>	white-tailed kite	--/FP	Inhabits open grasslands, emergent wetlands, meadows, and farmlands with sparse trees for perching and nesting, and ample prey for hunting. Nesting occurs in trees with dense canopies for cover, often oaks or willows. Forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Nesting kites frequently use hunting areas immediately adjacent to the nest (<0.3 mile) and up to approximately 1 mile from the nest (Monahan 2004).	Moderate Potential. Despite there being no CNDDDB records of this species within 5 miles of the project area, this species has been documented extensively in habitats within and surrounding the project area, both during wintering and breeding months (Sullivan et al. 2025). There are open habitats within and adjacent to the project area for hunting, and plentiful trees with dense canopies for nesting.
<i>Haliaeetus leucocephalus</i>	bald eagle	BGEPA, FD/SE, FP	Winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands on protected cliffs and ledges. Nests are normally built in the upper canopy of large trees, usually conifers adjacent to large bodies of water. Bald eagles may nest on man-made structures including utility towers, bridges, and buildings in urban areas.	Moderate Potential. There are no CNDDDB records of this species within 5 miles of the project area; however, there are records of this species occurring in winter within and adjacent to the project area (Sullivan et al. 2025) as well as during the breeding season (iNaturalist 2025). Following the inundation of MWT, there is now a significant amount of foraging habitat for this species, and the many emergent, large canopy trees in the project area offer suitable breeding habitat.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
<i>Lanius ludovicianus</i>	loggerhead shrike	--/SSC	Breeds mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. Loggerhead shrikes require tall shrubs or trees (also use fences or power lines) for hunting perches, territorial advertisement, and pair maintenance; open areas of short grasses, forbs, or bare ground for hunting; and large shrubs or trees for nest placement. They also need impaling sites for prey manipulation or storage, which can include sharp, thorny, or multi-stemmed plants and barbed-wire fences (Yosef 1996, Pruitt 2000).	Low Potential. There are no CNDDDB records within 5 miles of the project area. Limited, disturbed open habitat and no grassland habitat associated with this species are present within the project area.
<i>Melospiza melodia</i> pop. 1	song sparrow (Modesto population)	--/SSC	Endemic to the north-central portion of the Central Valley. Song sparrows in the Delta and northern San Joaquin Valley are locally numerous along riparian corridors, such as the Cosumnes and Stanislaus rivers. Occurs in emergent freshwater marshes dominated by tules and cattails, as well as riparian willow thickets. May also nest in riparian forests of valley oak with an understory of blackberry. Requires dense vegetation for nest sites near a source of standing or running water. Forages primarily on the ground.	High Potential/Known to Occur. There are 19 CNDDDB occurrences documented within 5 miles of the project area, with one record mapped to a non-specific area overlapping the project area along Snodgrass Slough and the Mokelumne River. This species was observed during field efforts conducted by AECOM in 2025.

Scientific Name	Common Name	Status Federal ¹ /State ²	Habitat	Potential to Occur and Rationale
Mammals				
<i>Lasiurus frantzii</i>	western red bat	--/SSC	The western red bat is found throughout the Central Valley and coastal California. Western red bats roost in the foliage of large shrubs and trees, often willows and cottonwoods, usually taking shelter on the underside of leaves. They may also be found in rock crevices adjacent to riparian corridors. The species is mainly associated with riparian habitats, particularly mature stands of cottonwood and sycamore, at elevations ranging from sea level to approximately 6,000 feet. Breeding typically occurs from August through October, but fertilization occurs in the spring.	Moderate Potential. There are two CNDDB occurrences documented within 5 miles of the project area. Western red bats were detected at Grand Island approximately 3.3 miles west of the project area in 1999. There is suitable habitat for this species in the form of riparian canopy along the waterways, containing mature cottonwood and sycamore trees, with many different substrates for both overwintering and breeding.
<i>Antrozous pallidus</i>	Pallid bat	--/SSC	Common in low-elevation areas of California, this bat is often found in a wide variety of habitats including woodlands and riparian areas. This species may roost in a variety of habitats, including rocky outcrops (including rip rap) and hollow trees. Young are reared from April–July.	High Potential. There are suitable foraging and roosting habitats available for this species within the project area including artificial rocky-crevices (rip rap) and many tree cavities or hollow snags.

Notes: °C = degrees Celsius; °F = degrees Fahrenheit; CNDDDB = California Natural Diversity Database; Delta = Sacramento San-Joaquin Delta; DPS = distinct population segment; ESU = Evolutionarily Significant Unit; MWT = McCormack-Williamson Tract; ppt = parts per thousand

¹ Federal Listing Codes:

-- = not applicable
BGEPA = Federally protected under the Bald and Golden Eagle Protection Act
FD = Federally delisted under the ESA
FE = Federally listed as endangered under the Endangered Species Act (ESA)
FPT = Federally proposed for listing as threatened under the ESA
FT = Federally listed as threatened under the ESA

² State Listing Codes:

-- = not applicable
FP = Fully Protected
PT = State proposed for listing as threatened under CESA
SC = State candidate for listing as endangered under CESA
SE = State listed as endangered under the California Endangered Species Act (CESA)
SR = listed as rare under the Native Plant Protection Act
SSC = Species of Special Concern
ST = State listed as threatened under CESA

California Rare Plant Rank (CRPR):

1B = Rare, threatened, or endangered in California or elsewhere
2B = Rare, threatened, or endangered in California but common elsewhere
0.1 = Seriously threatened in California
0.2 = Moderately threatened in California
0.3 = Not very threatened in California

References:

iNaturalist. 2025. Available from <https://www.inaturalist.org>. Accessed November 15, 2025.
Jepson Flora Project (eds.). 2025. Jepson eFlora. Available at: <https://ucjeps.berkeley.edu/eflora/>. Accessed December 5, 2025.
Monahan H.M. 2004. Foraging ecology in White-tailed Kites (*Elanus leucurus*). Fort Collins Science Center, Western Illinois University. Macomb, IL.
Pruitt, L., Loggerhead shrike status assessment. U.S. Fish & Wildlife Service, Bloomington, IN.
Sullivan, B.L., C.L. Wood, M.J. Iliff, R.E. Bonney, D. Fink, and S. Kelling. 2009. eBird: a citizen-based bird observation network in the biological sciences. *Biological Conservation* 142:2282–2292.
U.S. Fish and Wildlife Service (USFWS) 2017. Framework for assessing impacts to the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). USFWS, Sacramento, CA.
Western Monarch Milkweed Mapper. 2018. A project by the Xerces Society, U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, and Washington Department of Fish and Wildlife. Available: www.monarchmilkweedmapper.org. Accessed: November 15, 2025.
Yosef, R., 1996. Loggerhead Shrike (*Lanius ludovicianus*), in *The Birds of North America* (A. Poole and F. Gill, eds.), no. 231. Acad. Nat. Sci., Philadelphia.