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2023 Storm Damage, Department of Water Resources Levee Rehabilitation Repair Site 23-081

Final Initial Study/Mitigated Negative Declaration Merced County State Clearinghouse No.: 2026010949

California Department of Water Resources

March 2026

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ACRONYMS AND ABBREVIATIONS

A-1	General Agriculture
AAQA	Ambient air quality analysis
AB	Assembly Bill
ACE	Areas of Conservation Emphasis
ADT	average daily trips
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APE	Area of Potential Effects
ASTM	American Society for Testing and Materials
Basin Plan	Sacramento River Basin and San Joaquin River Basin Plan
BMPs	best management practices
CAAQS	California ambient air quality standards
cal B.P.	calibrated radiocarbon years Before Present
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
cfs	cubic foot per second
CH_4	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalence
County	Merced County
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
dB	decibels
dBA	A-weighted decibels
DPM	diesel particulate matter
DPS	distinct population segments
DTSC	California Department of Toxic Substances Control
DWQ	Division of Water Quality
DWR	California Department of Water Resources
EIA	U.S. Energy Information Administration
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration

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FRAs	Federal Responsibility Areas
ft	feet
FTA	Federal Transit Administration
g	estimated peak horizontal ground acceleration
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
General Plan	Merced Vision 2030 General Plan
GGERP	Greenhouse Gas Emissions Reduction Plan
GHGs	greenhouse gases
GWP	global warming potential
H: V	horizontal: vertical
HCP	Habitat Conservation Plan
Hz	hertz
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
LCFS	Low Carbon Fuel Standard
L_{dn}	Day-Night Noise Level
L_{eq}	Equivalent sound level
L_{max}	Maximum sound level
Ln	Statistical Descriptor
LRAs	Local Responsibility Areas
LSJLD	Lower San Joaquin Levee District
MLD	Most Likely Descendant
MND	Mitigated Negative Declaration
mph	miles per hour
MRZ	mineral resource zone
MT	metric tons
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NAVD88	North American Vertical Datum of 1988
NCCP	Natural Communities Conservation Plan
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWIC	Northwest Information Center
NWS	National Weather Service
ODS	On Demand Stop
OHWM	Ordinary High-Water Mark
PM	particulate matter
PM_{10}	PM equal to or less than 10 micrometers in diameter

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$PM_{2.5}$	PM equal to or less than 2.5 micrometers in diameter
PPV	peak particle velocity
PRC	Public Resources Code
proposed project	Site 23-081 levee repairs
RCNM	Roadway Construction Noise Model
Refuge	Merced National Wildlife Refuge
RMS	root-mean-square
SB	Senate Bill
SHPO	State Historic Preservation Officer
SIPs	State Implementation Plans
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SOIPQS	Secretary of the Interior's Professional Qualification Standards
SPFC	State Plan of Flood Control
SR	State Route
SRAs	State Responsibility Areas
SSC	Species of Special Concern
Superfund	National Priorities List
SWRCB	State Water Resources Control Board
TCP	Traffic Control and Worksite Safety Plan
TCRs	tribal cultural resources
The Bus	Merced County Transit
UCMP	Berkeley Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Services
VdB	vibration decibels
VMT	Vehicle Miles Traveled
Xerces	The Xerces Society for Invertebrate Conservation
ZEV	Zero Emissions Vehicles

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1. INTRODUCTION

1.1 Background

The State Plan of Flood Control (SPFC) is a complex system of levees, weirs, bypasses, dams, reservoirs and other features constructed to protect urban and rural areas from flooding. The SPFC system includes approximately 1,600 miles of levee within a geographic area of more than 43,000 square miles that encompasses the Sacramento and San Joaquin rivers and tributaries. SPFC levees at multiple sites have been identified as damaged to such an extent that the flood control performance has been compromised, presenting a potential public safety risk that could result in flooding, property damage, and loss of life in the protected area during the next high-water event.

The winter storms of the 2022–2023 season severely damaged many segments of the SPFC levees on the Sacramento and San Joaquin river systems that provide important flood protection to the entire region. The California Department of Water Resources (DWR) through a process of identification and prioritization, assessed a number of locations with the highest risk of failure and associated damage. Six of these locations were selected for emergency repair activities that were conducted in fall 2023. Rehabilitation repairs were conducted on the Yolo Bypass, Yolo County (Site 23-009); Bear River, Sutter County (Sites 23-045, -046, and -047); Sacramento River, Colusa County (Site 23-079); and San Joaquin River, Stanislaus County (23-080). Repairs included waterside rock slope protection with clearing and grubbing as needed at the project sites.

Site 23-081 was identified as a critical site during the 2023 Storm Damage Emergency Rehabilitation assessment but required additional planning to address Eastside Bypass levee wave wash damage. The waterside levee repair is expected to take place in 2027 but may extend to 2030. DWR is preparing this Initial Study/Mitigated Negative Declaration (IS/MND) to evaluate levee repairs at Site 23-081 in Merced County (County) (proposed project).

1.2 California Environmental Quality Act Context

California Environmental Quality Act (CEQA) requires that all state and local government agencies consider the environmental consequences of projects 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). DWR has principal responsibility for carrying out the proposed project and is therefore the CEQA lead agency for this IS/MND.

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

This document is an IS/MND prepared in accordance with CEQA (Public Resources Code [PRC] Section 21000 et seq.) and the CEQA Guidelines (Title 14, Section 15000 et seq. of the California Code of Regulations). 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 eliminate the proposed project's potentially significant or significant effects or reduce them to a less-than-significant level.

If there is substantial evidence (such as the findings of an IS) 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 impacts would be less than significant or that mitigation measures committed to by the applicant would clearly reduce 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 describing the reasons 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 there is no substantial evidence, 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
  - there is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a significant impact on the environment.

DWR has analyzed the potential environmental impacts of the proposed project, determined that the proposed project's impacts would be less than significant or can be reduced to a less-than-significant level with the 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. In addition, previously imposed mitigation measures as part of the previous evaluations and as applicable to the proposed project, and applicable environmental commitments, are identified. This evaluation is provided for the following environmental resource topics:

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- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Recreation
- Transportation and Traffic
- Tribal Cultural Resources

The proposed project was determined to have no impact, given the location of the repairs and the types of construction activities to occur, on the following environmental resources: Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Utilities and Services Systems and Wildfire. The project site is located in a rural and agricultural setting, and would not involve the development of new homes, businesses, or utilities, and no homes, businesses, or utilities currently exist at the project site. Implementation of the proposed project would not generate population growth or include any other uses or activities that would increase demand for fire or police protection services such that the construction of new or expansion of existing fire or police service facilities would be required. Implementation of the proposed project would not physically divide an established community because no homes exist within the project vicinity. Further, proposed project activities would be temporary and would not affect ongoing or future recreational within the Merced National Wildlife Refuge (Refuge) or agricultural activities near the project site, nor would it change existing or future designated land uses in the project area. The project site is classified by the California Geological Survey as mineral resource zone (MRZ)-4, areas where available geologic information is inadequate to assign to any other mineral resource zone category, and is not located in a designated regionally important area of known mineral resources (i.e., MRZ-2) or within a designated locally important area of known mineral resources under the *2030 Merced County General Plan* (Parrish 2021, Merced County 2013). There are no lands within or near the project site that are classified as a State Responsibility Areas or Very High Fire Hazard Severity Zone; the closest lands classified as such are located over 20 miles west of the project site and the project site and vicinity lacks structures that would be subject to wildfires (CAL FIRE 2024). For these reasons Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Utilities and Services Systems and Wildfire are not discussed further in this IS.

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DWR prepared a Notice of Availability/Notice of Intent to Adopt an IS/MND for the proposed project on January 30, 2026 for a 30-day review period. The notice was posted at the Merced County Clerk's office, State Clearinghouse CEQAnet, Sacramento Bee, and DWR's website (https://water.ca.gov/News/Public-Notices/2026/Jan-26/Comment-Period-for-Merced-County-Levee-Repair-Project). The public draft IS/MND was posted at the State Clearinghouse CEQAnet and DWR's website. One state agency submitted comments on the public draft IS/MND within the review period: the California Department of Conservation Geologic Energy Management Division. This comment letter described the agency's regulatory authority and different permits that they issue; there were no specific comments on the proposed project or the environmental analysis contained within the IS/MND. The comment letter noted that there are no wells reported to be located within and near by the project site, according to the California Geologic Energy Management Division Well Finder database. This information is now included in Section 3.2.9, Hazards and Hazardous Materials, of this Final IS/MND. The comment letter is contained within DWRs record for this Final IS/MND. None of the revisions made in this Final IS/MND are substantial or resulted in a change in impact determinations; the revisions clarify and provide additional information to content previously in the public draft IS/MND.

1.4 Conclusion

Chapter 3, "Initial Study," contains the analysis and discussion of 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. As such, further environmental review is not required by CEQA. DWR would adopt a Mitigation Monitoring and Reporting Program to ensure that all required mitigation measures are implemented.

1.4.1 Reference

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2. PROJECT DESCRIPTION

2.1 Introduction

This site was damaged during 2023 storm events. Although the activities required to repair this site are similar to the repairs that previously took place at other repair locations in the rehabilitation program, DWR is preparing this IS/MND to comply with CEQA for the repairs that would occur at Site 23-081.

2.2 Project Location

The repair of Site 23-081 is located along the right bank (east levee) of the Eastside Bypass in Merced County, the community of El Nido is located to the east of the site and the San Joaquin River is located to the west and south of the site (Figure 2-1). The local maintaining agency of the levee is NA0010 the Lower San Joaquin Levee District (LSJLD). The repairs to this site would be approximately 2.4 miles in length (approximately 12,500 feet in length) and occur between 37.16 north, -120.61 west and 37.13 north -120.59 west. The project area includes the work area, staging and laydown area, and haul routes to the site (Figure 2-2). The work area is comprised of the limits of work, approximately 20.9 acres, and the limits of repair within the limits of work, approximately 12.7 acres. The staging/laydown area would be approximately 7 acres.

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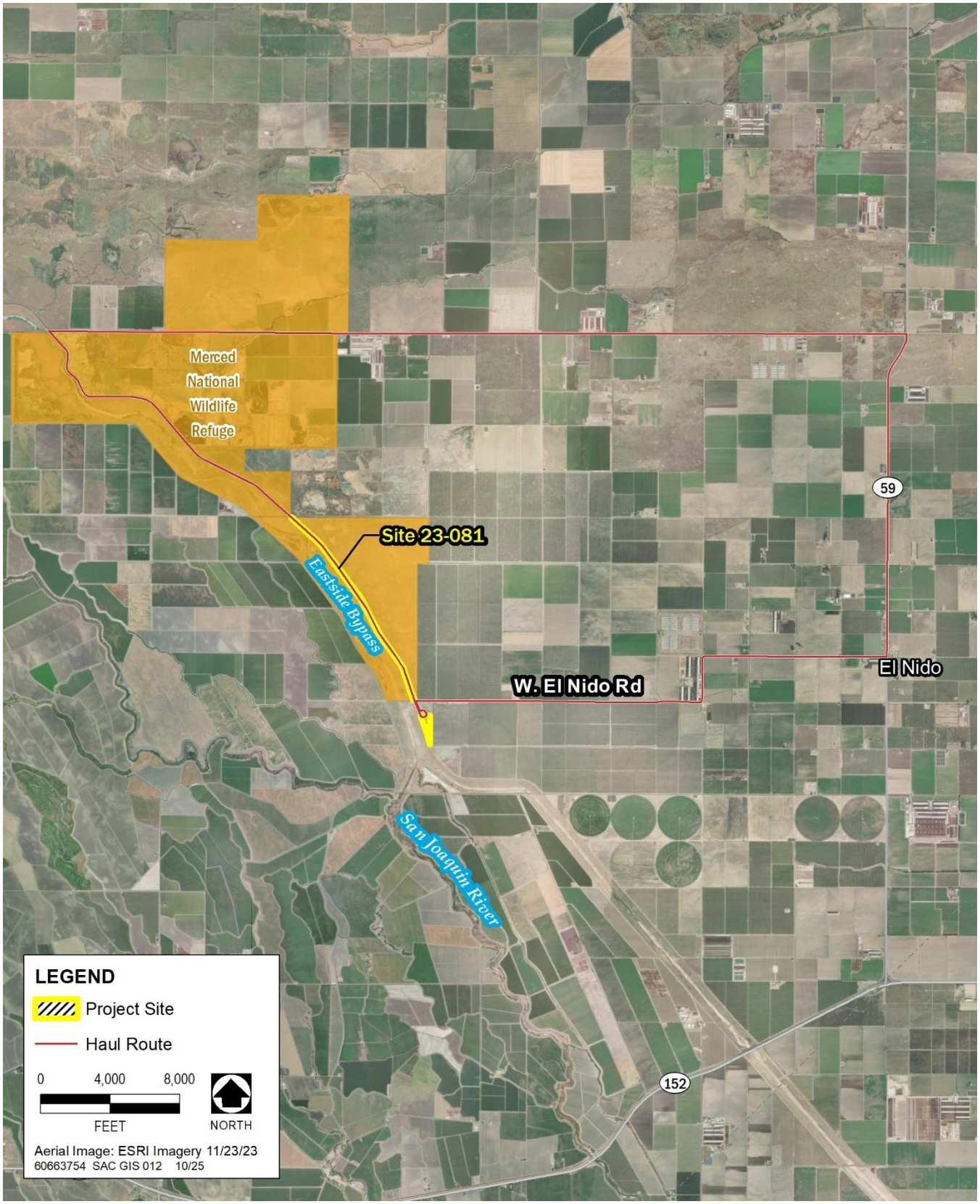

Figure 2-1. Site 23-081 Vicinity

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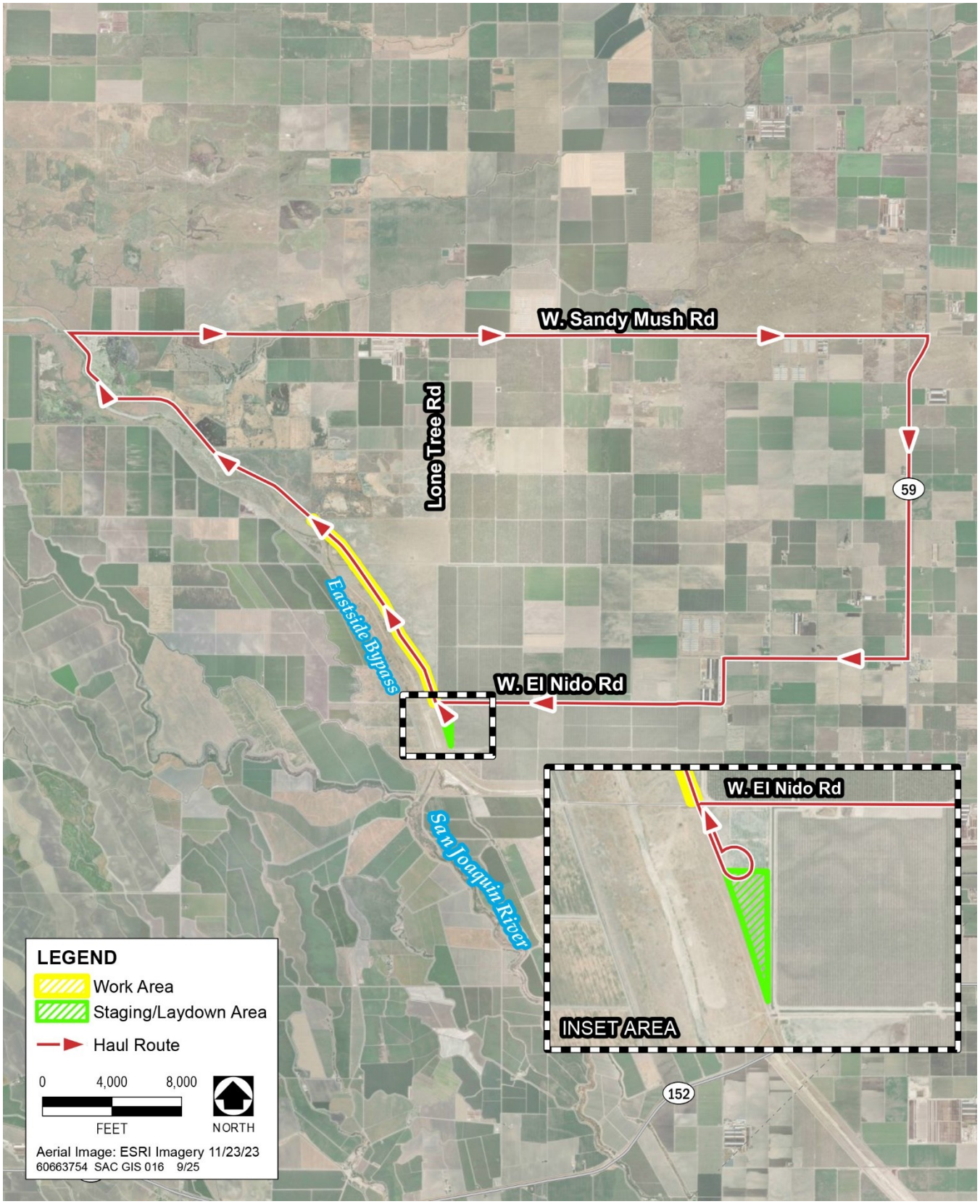

Figure 2-2. Site 23-081 Proposed Work Area, Haul Route, and Staging/Laydown Area

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2.3 Materials

The repair at Site 23-081 primarily consists of excavating eroded soil and replacing it with clean earthfill and covering the area with launch rock (see Appendix A for photographs of eroded levee slopes). The construction materials and quantities that would be used for the repair are summarized in Table 2-1. Additional details regarding the materials are provided in this section.

Table 2-1. Repair Material Summary

Material	Quantity (units)
Temporary Fencing	16,830 (linear feet)
Earthfill	25,144 (cubic yards)
Geotextile Fabric	52,600 (square yards)
Excavation	28,850 (cubic yards)
Launch Rock	86,846 (tons)
Aggregate Base Resurfacing	4,074 (tons)

2.3.1 Earthfill

Earthfill would be used to reconstruct the eroded levee slope. Earthfill will conform to the following specified requirements:

- Standard Sieve Size 3-inch: 100 Percent Passing (American Society for Testing and Materials [ASTM] D 6913).
- Standard Sieve Size Number 200: Minimum of 20 Percent Passing (ASTM D 1140).
- Liquid Limit: Less than 50 (ASTM D 4318).
- Plasticity Index: Minimum of 8 (ASTM D 4318).

Earthfill materials would not contain petroleum hydrocarbons, pesticides, heavy metals, or other deleterious substances in excess of the Department of Water Resources Borrow Material Chemical Acceptance Criteria. In cases where the earthfill is found to exceed the concentrations listed in the DWR Borrow Acceptance Criteria, the contractor or DWR would demonstrate that the respective exceedance(s) is/are within natural background concentrations and will not result in a net adverse impact to human health, water quality, or the environment.

2.3.2 Launch Rock

Launch rock would be used to increase the slope stability of the repair. The launch rock will conform to these specified requirements:

- All rock material will be clean, sound, hard, angular fragments of rock with no appreciable fines, and will be free of cracks, seams, or other defects.

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- Rock material will have a specific gravity greater than 2.6, and a saturated surface-dry basis, when tested in accordance with ASTM C 127.
- The shape of rock will be such that the minimum dimension of a rock greater than one third of the maximum dimension and will be angular.
- All rock will be free of dirt or mud, loose concrete or mortar, trash and organic matter.
- Gradation of Launch Rock will conform to the composition provided in Table 2-2.

Table 2-2. Launch Rock Percentage Composition

Weight (pounds)	Percent Larger
400	0
300	0–15
70	50–85
15	95–100
5	100

2.3.3 Geotextile Fabric

Geotextile fabric would be used as separator between the earthfill and the launch rock. The geotextile fabric will conform to these specified requirements:

- The Geotextile Fabric will be woven and have an apparent opening size of 40.
- Geotextile Fabric will be GEOTEX, 111F; Mirafi, FW 402; or equal.

2.3.4 Aggregate Base Resurfacing

Aggregate base resurfacing would restore non-paved levee crown roads to preconstruction conditions. The aggregate base resurfacing will conform to the following specifications:

- Caltrans 2018 Standard Specifications Section 26-1.02B, Class 2, 3/4-inch maximum grading.
- Caltrans 2018 Standard Specifications Section 26-1.02B, Aggregate quality characteristics.
- The Aggregate Base’s specific gravity will be greater than 2.60.
- The LA Rattler results will be less than 10 percent loss after 100 revolutions and less than 25 percent loss after 500 revolutions.

2.4 General Construction Approach

The construction at levee repair Site 23-081 would occur in five stages:

1) Mobilization

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2) Staging and Laydown
3) Site preparation
4) Construction
5) Demobilization

These stages are described in more detail in the following sections. The environmental commitments described in Section 2.5 include conservation measures and/or best management practices (BMPs) that were developed in coordination with resources agencies to avoid, minimize, and/or provide compensation for effects on biological resources and water quality during construction of the levee repair.

2.4.1 Mobilization

During mobilization construction equipment would be inspected and transported to the site and stored at the staging and laydown area. Equipment would be inspected for functionality and compliance with the applicable air quality standards and requirements before use for construction. Off-road equipment would be washed and cleaned off-site prior to transport to the site and after construction to remove biological material and prevent the spread of noxious weeds and other invasive species.

2.4.2 Staging and Laydown

The staging and laydown area is the designated location for the storage of equipment and materials. The staging and laydown area is accessible from the levee crown road and West El Nido Road (Figure 2-2). The selected laydown/staging area was previously disturbed area during previous levee improvement work in 2020.

2.4.3 Site Preparation

During site preparation temporary fencing would be installed around the perimeter of the limits of repair and staging/laydown area, and clearing and grubbing would occur within the limits of repair. Clearing would remove vegetation at or above the ground surface, and grubbing would remove debris, trash, concrete, and organic material up to a depth of three feet below the ground surface. Materials removed below the ground surface would be backfilled with earthfill to provide a stable area for construction.

2.4.4 Construction

The construction at Site 23-081 involves excavation, soil placement, geotextile fabric placement, and launch rock placement on the waterside of the levee. Excavation would remove failed material one to five feet (maximum depth) along the levee. Earthfill material would be placed in controlled lifts and compacted to specifications. After compaction, geotextile fabric would be placed on top of Earthfill and function as a separator between earthfill and launch rock. Launch rock placed on top of the geotextile fabric would stabilize bank slope and attenuate wave wash during bypass inundation. Lauch rock would extend from the bottom to the top of the repair. A typical design of the repair is shown in Figure 2-3 and typical cross sections of the repair are shown in Figure 2-4. Project information is summarized in Table 2-3.

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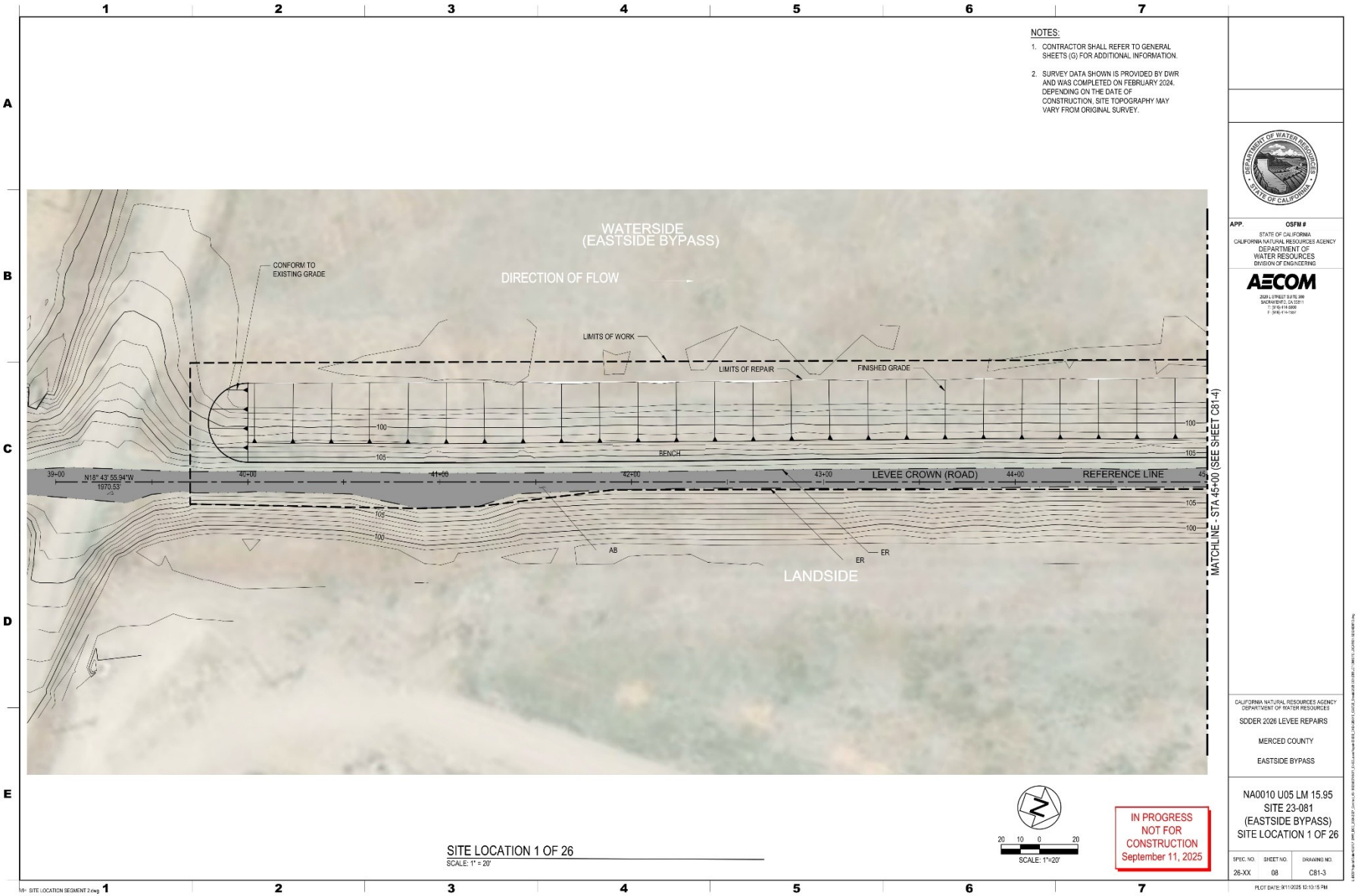

Figure 2-3. Site 23-081 Representative Design of the Repair

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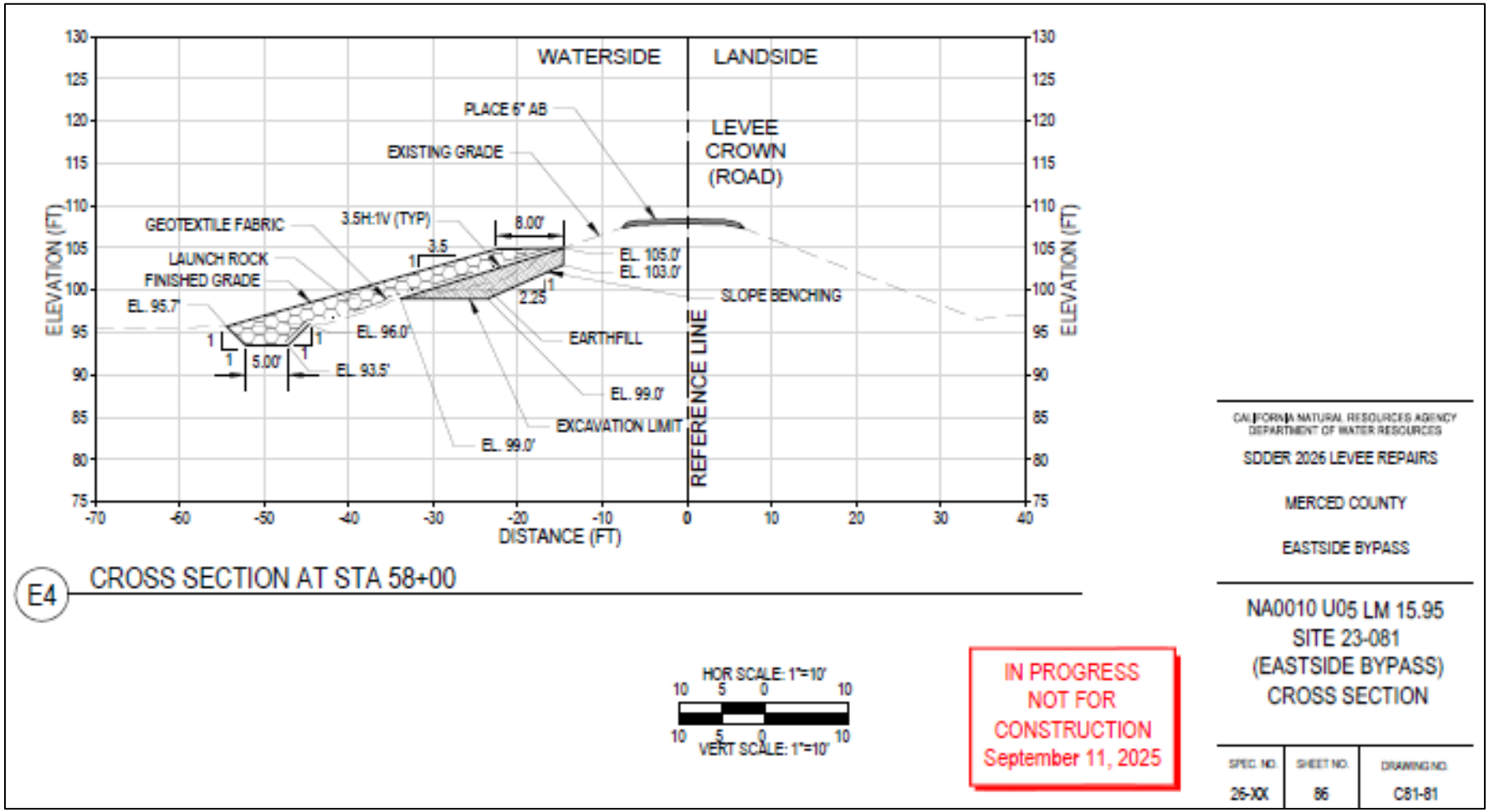

Figure 2-4. Site 23-081 Representative Cross Section of the Repair

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Table 2-3. Project Summary

Project Elements	Details
Final bank slopes (H:V)	3:1, 3.25:1, 3.5:1, 4.5:1
OHWM (estimated elevation in feet in NAVD88)	97
Area repair below OHWM (acres)	4.075
Area repair above OHWM (acres)	8.634

H:V = horizontal: vertical
NAVD88 = North American Vertical Datum of 1988
OHWM = Ordinary High-Water Mark[1].

Construction at Site 23-081 would occur in single construction season from May 15 to November 30, for a period of approximately 28 weeks. All work would take place during daylight hours. The maximum length of the workday is assumed to occur from 6 a.m. to 8 p.m. The following construction equipment would be used to repair the levee: skid-steers, wheel loaders, long-reach excavators, graders, dozers, forklifts, water trucks, dump trucks, and pickup trucks. Approximately AECOM Environmental 65 round-trip truckloads are expected to complete construction based on the quantities of materials presented in Table 2-1. Given the extent of the levee repair, it is anticipated three construction crews would work concurrently at the project site. Approximately 34 workers are expected to be at Site 23-081 each workday, resulting in approximately AECOM Environmental 68 daily worker one-way trips to and from the site for the duration of the construction period.

2.4.5 Demobilization

Following completion of levee rehabilitation construction, all equipment and materials would be removed from the repair site and excess materials would be disposed of at appropriate facilities. Any damage as a result of the construction to haul-route roads and/or fencing, would be repaired. All areas would be cleaned and cleared of rubbish and left in a safe condition, suitable for use as intended.

2.5 Environmental Commitments

The following summarizes the applicable environmental commitments DWR has incorporated into the proposed project. These environmental commitments include conservation measures and/or BMPs. These environmental commitments were developed in coordination with the resource agencies to avoid, minimize, and/or provide compensation for effects on biological resources. DWR would implement these environmental commitments as part of the proposed project construction activities. 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 permit(s). The environmental

[1] The ordinary high water mark (OHWM) defines the lateral extent of non-tidal aquatic features in the absence of adjacent wetlands in the United States. The federal regulatory definition of the OHWM, 33 CFR 328.3(c)(4), states: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2025)

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analysis in this IS/MND considers these commitments as elements of the proposed project when determining the significance of impacts. DWR will include the environmental commitments in the Mitigation Monitoring and Reporting Program for approval and implementation.

2.5.1 Biological Resources

DWR would minimize disturbance to biological resources at or near repair sites by implementing the following measures and/or BMPs:

GM-01 Agency Approved Biologist. DWR will submit to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) in writing the name, qualifications, business address, and contact information of a biologist(s) (qualified biologist) and obtain approval of the biologist(s) before starting repairs. DWR will ensure that the qualified biologist is knowledgeable and experienced in the biology and natural history of all special-status species potentially occurring in the repair area. The qualified biologist will be responsible for monitoring repairs to help minimize and fully mitigate or avoid the incidental take of individual species and to minimize disturbance of species' habitats.

GM-02 Preconstruction Biological Surveys. Before the start of repair activities, a qualified biologist will conduct a preconstruction survey to identify if special-status species are present. Surveys will be conducted within the project footprint, laydown areas, and adjacent haul routes. If required, species and/or buffers will be marked in the field by a qualified biologist, using temporary fencing, high-visibility flagging, or other means that are equally effective.

GM-03 Environmental Awareness Training. DWR will provide environmental awareness training by a qualified biologist to the DWR construction lead, construction foreman, crew leader, and any contractor personnel working on construction sites. Environmental awareness training will include descriptions of all species potentially occurring in the repair area for activity-specific training, species' habitats, and methods of identification, including visual aids as appropriate. The training also will describe activity-specific measures that will be followed to avoid impacts including the proper use of BMPs and applicable permit requirements to protect receiving water quality. Hardcopies of environmental permits and training materials will be provided to the DWR construction lead, construction foreman, crew leader, and any contractors participating in the repair work.

GM-04 Listed Species Take Reporting. A qualified biologist will immediately notify DWR if a species is taken or injured by a repair-related activity, or if a species is otherwise found dead or injured in the repair site vicinity. DWR will provide initial notification to USFWS and other appropriate agencies (CDFW). The initial notification will include information regarding the location, species, number of animals taken or injured, and site number. Following initial notification, DWR will submit a written report within two calendar days. The report will include the date and time of the finding or incident, location of the animal or carcass, and if possible, will provide a photograph, explanation as to cause of take or injury, and any other pertinent information.

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GM-05 Environmentally Sensitive Area Delineation. Before the start of repair activities, the qualified biologist will identify potential riparian habitat and wetlands and other waters. Where feasible, DWR will mark the boundaries of these areas using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the boundaries, and repair activities will be excluded from these areas to the extent possible. A qualified biologist will monitor the fencing installation.

GM-06 Invasive Plant Species Control. DWR will implement measures to minimize the potential for invasive plants to be introduced or spread during repair activities. Measures to avoid contamination and spread of invasive species will be created for each site, as deemed necessary by a qualified biologist, and will be approved by a qualified biologist before implementation.

GM-07 Resource Agency Access. DWR will provide USFWS and CDFW staff with reasonable access to the site and otherwise will fully cooperate with the natural resource agencies' efforts to verify compliance with, or effectiveness of, conservation measures.

GM-08 Stop Work Authority. A qualified biologist will be authorized to stop repair activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status wildlife. If repair activities are stopped, the qualified biologist will consult with USFWS or CDFW as appropriate to determine appropriate measures that DWR will implement to avoid adverse effects. Buffers will be maintained until a threat of disturbance to the sensitive biological resource no longer exists, as determined by a qualified biologist.

GM-09 Staging and Access. Existing staging sites, maintenance toe roads, and levee crown roads will be used to the extent practicable for staging and access, to avoid affecting previously undisturbed areas. The number of access routes and the size of staging and work areas will be limited to the minimum necessary to conduct the repair activity.

GM-10 Construction Area Limit Delineation. Where feasible and practicable (e.g., based on the size of the repair area and repair to be performed), work area limits will be clearly marked (e.g., with flagging or fencing), including access roads; staging and equipment storage areas; stockpile areas for spoil disposal, soil, and materials; fueling and concrete washout areas; and equipment exclusion zones. Work will occur only within the marked limits. This measure is intended to apply to repair activities occurring in discrete areas as opposed to activities occurring over an extensive area where flagging work limits will be infeasible.

GM-11 Equipment Inspection. Inspections will be conducted under all vehicles and heavy equipment for the presence of wildlife before the start of each workday when equipment is staged overnight. In addition, a search for wildlife will be conducted in all equipment and materials that have been stored on site for one or more nights before they are moved.

GM-12 Open Excavation Covering. All excavated, steep-walled holes or trenches will be covered with appropriate covers (thick metal sheets or plywood) at the end of each workday. Covers will be placed to ensure that trench edges are fully sealed. Alternatively, such trenches may be furnished with one or more escape ramps, constructed of earth fill or wooden planks, to provide an escape for wildlife.

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GM-13 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 rehabilitation site each day and disposed at an appropriate off-site location to minimize attracting wildlife to work areas.

GM-14 Clearing and Grubbing Best Management. Clearing of vegetation will be kept to the minimum necessary. DWR will minimize ground and vegetation disturbance by establishing designated equipment staging areas, access routes, spoils and soil stockpile areas, and equipment exclusion zones before the start of repair activity.

GM-15 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-16 Site Restoration. Temporary fill, construction debris, and refuse will be removed and properly disposed, following completion of any repair activities.

2.5.2 Aquatic Resources

BIO-01 Aquatic Resources. Wetlands and other waters will be avoided to the extent feasible. Where permanent impacts to waters of the U.S. cannot be feasibly avoided, DWR would compensate for impacts at a ratio agreed upon by applicable agencies, such as the U.S. Army Corps of Engineers (USACE), USFWS, the Central Valley Regional Water Quality Control Board, and/or CDFW, through purchase of credits at an agency-approved mitigation or conservation bank; and/or payment of in-lieu fees through the in-lieu fee program of the Sacramento District of the USACE and administered by the National Fish and Wildlife Foundation.

2.5.3 Crotch's Bumblebee

BIO-02 Crotch's Bumblebee Protection. If repair activities may adversely affect Crotch's bumblebee, DWR would implement the following measures:

1. **Preconstruction Surveys:** Prior to the initiation of vegetation clearing or ground disturbance, a qualified biologist will survey the site for Crotch's bumblebees and their nest sites.
2. **Crotch's Bumblebee Nest Avoidance:** If active nest sites are found during preconstruction surveys, the qualified biologist will establish and clearly mark an appropriate no-disturbance buffer around the nest, and construction personnel will be trained to avoid these zones while the nest site is active.

2.5.4 Monarch Butterfly

BIO-03 Monarch Butterfly Protection. If repair activities may adversely affect monarch butterfly, DWR would implement the following measures:

1. **Preconstruction Surveys:** If vegetation clearing is scheduled between May and October, a qualified biologist will survey the site for monarch butterfly larval host plants, specifically

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milkweed (*Asclepias* spp.), in suitable habitats. If host plants are found, the biologist will either conduct surveys to determine the presence or absence of adult monarch butterflies and inspect milkweed for monarch eggs, larvae, and pupae, or assume their presence.

2. **Wildlife Exclusion Fencing:** If butterfly eggs, larvae, or pupae are confirmed, or assumed to be present, host plants will be clearly marked with fencing or signage, and construction personnel will be trained to avoid these zones. No equipment or personnel will be allowed within these designated no-work zones during the flight season to prevent accidental damage.
3. **Milkweed removal:** If the absence of butterfly eggs, larvae, and pupae is confirmed by a qualified biologist, host plants within the work limits may be removed to minimize the potential for take.

2.5.5 Western Spadefoot

BIO-04 Western Spadefoot Protection: If repair activities may adversely affect western spadefoot (*Spea hammondii*), DWR would implement the following measures:

1. **Timing of Activities:** The proposed project will be scheduled to minimize adverse effects on the western spadefoot and its habitat. Disturbance to upland habitat will be confined to the dry season, generally late spring through fall (or the first measurable fall rain of 1 inch or greater), because that is the time period when western spadefoot are less likely to be moving through upland areas.

   To the maximum extent practicable, no construction activities will occur during rain events (greater than 0.25 inch of rainfall per 24-hour period) or within 24 hours following a rain event. DWR will monitor the National Weather Service (NWS) 72-hour forecast for the project area. Prior to construction activities resuming after a rain event, a qualified biologist will inspect the project site and all equipment/materials for the presence of western spadefoot. Construction may continue 24 hours after the rain ceases if no precipitation is forecasted within 24 hours. If rain exceeds 0.25 inch during a 24-hour period, work will cease until no further rain is forecasted. USFWS may approve modifications to this timing on a case-by-case basis.
2. **Preconstruction Habitat Surveys:** Surveys will be conducted in areas with suitable habitat by the qualified biologist within 15 days prior to any ground-disturbing construction. These surveys will flag any concentrations of suitable small mammal burrows.
3. **Wildlife Exclusion Fencing:** After the preconstruction habitat surveys, exclusion fencing will be erected along each section of the project area before project activities begin, including staging equipment and supplies. Fencing will be a minimum of 3 feet (ft) high and buried in the soil or forming a tight seal with the pavement to prevent western spadefoot from crawling under and entering the project area.
4. **Preconstruction Surveys:** No more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, a qualified biologist will conduct a pre-construction survey of the project site. The survey will consist of walking all suitable habitat within the project site to determine possible presence of western spadefoot.

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5. **Western Spadefoot Encounters:** If a western spadefoot is encountered during construction, all activities within a 50-foot radius of the animal will stop, and the qualified biologist will be immediately notified. The animal will be allowed to move out of the area upon its own volition, or the qualified biologist will use appropriate handling methods to relocate it to a location approved by CDFW.
6. **Biological Monitoring**: A qualified biologist will be on site during all grading activities, vegetation removal activities, and trenching activities. A qualified biologist will be onsite and monitor all locations where repairs will alter potential western spadefoot hibernacula/refugia (burrows, vegetation, etc.).

2.5.6 California Tiger Salamander

BIO-05 California Tiger Salamander Protection: If repair activities may adversely affect California tiger salamander (*Ambystoma californiense*), DWR would implement the following measures:

1. **USFWS-approved Biologist:** DWR will retain a USFWS-approved biologist (qualified biologist) with a Section 10(a)(1)(A) Recovery Permit to conduct terrestrial surveys and, if needed, handle California tiger salamanders.
2. **Timing of Activities**: The proposed project will be scheduled to minimize adverse effects on the California tiger salamander and its habitat. Disturbance to upland habitat will be confined to the dry season, generally late spring through fall (or the first measurable fall rain of 1 inch or greater) because that is the time period when California tiger salamanders are less likely to be moving through upland areas.

   To the maximum extent practicable, no construction activities will occur during rain events (greater than 0.25 inch of rainfall per 24-hour period) or within 24 hours following a rain event. DWR will monitor the NWS 72-hour forecast for the project area. Prior to construction activities resuming after a rain event, a qualified biologist will inspect the project site and all equipment/materials for the presence of California tiger salamanders. Construction may continue 24 hours after the rain ceases if no precipitation is forecasted within 24 hours. If rain exceeds 0.25 inch during a 24-hour period, work will cease until no further rain is forecasted. USFWS may approve modifications to this timing on a case-by-case basis.
3. **Preconstruction Habitat Surveys:** The qualified biologist will conduct surveys in areas with suitable habitat within 15 days prior to any ground-disturbing construction. These surveys will flag any concentrations of small mammal burrows potentially suitable for use as refugia. The qualified biologist will monitor these flagged areas during initial levee excavation.
4. **Wildlife Exclusion Fencing:** After the preconstruction habitat surveys, exclusion fencing will be erected along each section of the project site before project activities begin, including staging equipment and supplies. Fencing will be a minimum of 3 ft high and buried in the soil or forming a tight seal with the pavement to prevent California tiger salamanders from crawling under and entering the project area.

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5. **Preconstruction Surveys:** No more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, a qualified biologist will conduct a preconstruction survey of the project site. The survey will consist of walking all upland habitat within the project site to determine possible presence of California tiger salamanders. If a lapse in project construction activities of 14 days or longer occurs, the qualified biologist will repeat surveys in areas with suitable habitat.
6. **California Tiger Salamander Encounters:** If a California tiger salamander is encountered during construction, all activities within a 50-foot radius of the animal will stop. If the animal is traveling, the animal will be allowed to move away upon its own volition. If occupied refugia are found during levee excavation, the qualified biologist will be immediately notified, and the qualified biologist will follow appropriate handling methods for California tiger salamander to relocate the California tiger salamander individuals to CDFW and USFWS previously approved location(s), such as the Refuge.
7. **Biological Monitoring:** The need for biological monitoring will be determined by the qualified biologist. The qualified biologist will be on site during all grading activities, vegetation removal activities, and trenching activities. A qualified biologist will be onsite and monitor all locations where repairs will alter potential California tiger salamander hibernacula/refugia (burrows, vegetation, etc.). Biological monitoring will be conducted by a qualified biologist.

2.5.7 Northwestern Pond Turtle

BIO-06 Northwestern Pond Turtle Protection: If repair activities may adversely affect northwestern pond turtle (*Actinemys marmorata*), DWR would implement the following measures:

1. **Preconstruction Surveys**: A qualified biologist will survey the work site no more than 48 hours before the onset of activities for signs of northwestern pond turtles; during the nesting season (roughly May through July), the biologist will also survey for northwestern pond turtle nesting activity (i.e., recently excavated nests, nest plugs) or nest depredation (partially to fully excavated nest chambers, nest plugs, scattered egg shell remains, egg shell fragments). Preconstruction surveys to detect northwestern pond turtle nesting activity will be concentrated within 1,319 ft of suitable aquatic habitat and will focus on areas along south- or west-facing slopes with bare hard-packed clay or silt soils or sparse vegetation of short grasses or forbs. If northwestern pond turtles or their nest sites are found, the biologist will contact CDFW to determine whether relocation and/or exclusion buffers and nest enclosures are appropriate. If CDFW approves of moving the animal, the biologist will be allowed sufficient time to move the northwestern pond turtle(s) from the work site before work activities begin.
2. **Wildlife Exclusion Fencing:** After the preconstruction habitat surveys, Exclusion fencing will be erected along each section of the project area before project activities begin, including staging equipment and supplies. Fencing will be a minimum of 3 ft high and buried in the soil or forming a tight seal with the pavement to prevent northwestern pond turtles from crawling under and entering the project area.

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3. **Northwestern Pond Turtle Encounters:** If a northwestern pond turtle is encountered during construction, all activities within a 50-ft radius of the animal will stop, and the qualified biologist will be immediately notified. The animal will be allowed to move out of the area upon its own volition, or the qualified biologist will use appropriate handling methods to relocate it to a location approved by CDFW.
4. **Biological Monitoring:** The need for biological monitoring will be determined by the qualified biologist. The type of work occurring, weather, time of year, and site conditions, will be considered when determining need.

2.5.8 Special-status Plants

BIO-07 Special-Status Plants. If repair activities may adversely affect special-status plants, DWR would implement the following measures:

1. **Preconstruction Surveys:** Before the start of repair activities, a qualified botanist will survey suitable habitat within the repair limits and a 10-ft buffer during the appropriate identification period for special-status plants with the potential to be present. Survey methods will be consistent with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). Preconstruction surveys will be conducted by a qualified biologist within 14 days prior to the start of construction.
2. **Special-status Plant Flagging:** If special-status plants are documented within the project site, the plants and a 10-ft buffer will be flagged or otherwise marked (e.g., fenced) for avoidance. A qualified biologist will monitor any project activities that must occur within the buffer.
3. **Compensation:** If special-status plants cannot be avoided during project construction, USFWS and/or CDFW will be consulted, as appropriate, to determine compensation measures for the loss of special-status plants. Measures may include establishment of off-site populations, preservation and enhancement of existing populations, restoration of suitable habitat, or the purchase of credits at an approved mitigation bank.

2.5.9 Nesting Bird

BIO-08 Nesting Bird Surveys: If repair activities may adversely affect nesting bird species, DWR would implement the following measures:

1. **Timing of Activities**: If repair activities occur during the nesting period for birds (February 1 to September 15), DWR will complete pre-activity surveys for nesting birds (including ground-nesting birds). Surveys will be conducted by a qualified biologist no more than 5 days prior to the start of activities. Surveys will be conducted within suitable nesting habitat that could be affected by repair activities (e.g., staging areas, spoils areas, access routes) and will include a 500-foot buffer (or 0.25-mile buffer where suitable burrowing owl [*Athene cunicularia*] or Swainson's hawk [*Buteo swainsoni*] nesting habitat is present) surrounding these areas. Where appropriate, pre-activity surveys will follow established survey protocols or guidelines.

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5. **Active Nests:** If active nests are found, DWR will establish an avoidance buffer as indicated below for activities that would potentially affect the nesting birds. The temporary disturbance buffer will be established until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the activities. Alternatively, a qualified biologist, in coordination with the appropriate natural resource agency, may determine that a buffer is not required to avoid adverse effects on nesting birds, based on the specific activities to be conducted and species present.
   - Passerines: 100-foot buffer
   - Herons/Egrets: 200-foot buffer
   - Tricolored blackbird (*Agelaius tricolor*): 250-foot buffer
   - Raptors (including northern harrier [*Circus hudsonius*]): 300-foot buffer
   - Burrowing owl: 1,640-foot buffer (500 meters)
   - Swainson's hawk: 1,320-foot buffer (0.25-mile)

2.5.10 American Badger

BIO-09 American Badger Protection: If repair activities may adversely affect American badger (*Taxidea taxus*), DWR would implement the following measures:

1. **Preconstruction Surveys**: No more than 3 days prior to the date of initial ground disturbance and vegetation clearing, a qualified biologist will conduct a preconstruction survey of the project site. The survey will consist of walking all suitable habitat within the project site to determine possible presence of active American badger dens.
2. **American Badger Den Avoidance:** If an active American badger den is identified during the preconstruction surveys, an appropriate buffer, as determined by the qualified biologist, will be flagged or otherwise marked (e.g., fenced) for avoidance, and construction personnel will be trained to avoid this area.
3. **American Badger Encounters:** If an American badger is encountered during construction, all activities within a 50-ft radius of the animal will stop. The qualified biologist will be immediately notified, and the biologist will monitor the individual until it leaves the site of its own volition.

2.5.11 San Joaquin Kit Fox

BIO-10 San Joaquin Kit Fox Protection: If repair activities may adversely affect San Joaquin kit fox (*Vulpes macrotis mutica*), DWR would implement the following measures:

1. **Preconstruction Surveys**: No more than 3 days prior to the date of initial ground disturbance and vegetation clearing, a qualified biologist will conduct a preconstruction survey of the project site. The survey will consist of walking all suitable habitat within the project site to determine possible presence of active San Joaquin kit fox dens.
2. **San Joaquin Kit Fox Den Avoidance**: If San Joaquin kit fox or an active den is identified during the preconstruction surveys, DWR will notify CDFW and USFWS within 24 hours. An appropriate buffer around an active den, as determined by the qualified biologist in

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consultation with CDFW and USFWS, will be flagged or otherwise marked (e.g., fenced) for avoidance, and construction personnel will be trained to avoid this area.

3. **San Joaquin Kit Fox Encounters:** If San Joaquin kit fox is encountered during construction, all activities within a 100-ft radius of the animal will stop. The qualified biologist will be immediately notified, and the biologist will monitor the individual until it leaves the site of its own volition. DWR will notify CDFW and USFWS within 24 hours of a San Joaquin kit fox observation during work activities.
4. **Construction Vehicle Use:** Project-related vehicles will observe a daytime speed limit of 20 miles per hour (mph) throughout the project site. Nighttime construction will be minimized to the extent possible. However, if it does occur, speed limits will be reduced to 10 mph. Off-road vehicle use outside the designated project site will be prohibited.
5. **Biological Monitoring:** The need for biological monitoring will be determined by the qualified biologist. The type of work occurring, weather, time of year, and site conditions will be considered when determining need.

2.5.12 Water Quality

DWR would install appropriate BMPs to reduce the potential release of water quality pollutants to receiving waters through the implementation of BMPs and compliance with applicable permits. BMPs may include the following measures:

1. DWR will conduct environmental awareness training to train the contractor on the proper use of BMPs and applicable permit requirements to protect receiving water quality.
2. DWR will install erosion control measures, such as use of straw bales, silt fences, fiber rolls, or equally effective measures, at project locations adjacent to stream channels, drainage canals, and wetlands, as needed. During active construction activities, erosion control measures will be monitored during and after each storm event for effectiveness. Modifications, repairs, and improvements to erosion control measures will be made as needed to protect water quality.
3. DWR will restrict work to periods of low rainfall (less than ¼-inch per 24-hour period) and periods of dry weather (with less than a 50% chance of rain). DWR will monitor the NWS 72-hour forecast for the project area. No work will occur during a dry-out period of 24 hours after the above-referenced wet weather.
4. DWR will minimize ground and vegetation disturbance by establishing designated equipment staging areas, access routes, spoils and soil stockpile areas, and equipment exclusion zones prior to the commencement of activity.
5. DWR will prepare and implement a hazardous materials management and spill response plan. DWR will ensure any hazardous materials are stored at the staging areas and with an impermeable membrane between the ground and hazardous material, and that it is bermed to prevent the discharge of pollutants to groundwater and runoff water. DWR will immediately stop, and pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean-up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so, according to the

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prepared spill response plan. DWR will notify USFWS and CDFW, within 24 hours of any leaks or spills. DWR will properly contain and dispose of any unused or leftover hazardous products off site. DWR will use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas located away from stream channels and wetlands according to local, state, and federal regulations, as applicable.

6. Construction vehicles and equipment will be checked daily for leaks and will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease.

2.5.13 Traffic Control and Worksite Safety Plan

DWR or their contractor would prepare a Temporary Traffic Control and Worksite Safety Plan (TCP) prior to construction and would implement the TCP throughout construction duration. The TCP would identify BMPs for maintaining traffic safety at public intersections during construction activities. The TCP will:

- describe the existing public and private roadways;
- provide a map of the haul routes and identify public roadways;
- identify transit stops, pedestrian facilities including crosswalks, and public land uses including schools, markets, or other public land uses, along the haul routes, for construction drivers to be aware of; and,
- identify potential traffic hazards at public intersections.

The TCP will include measures to maintain safety at the intersection of West El Nido Road and State Route (SR) 59 including but not limited to providing signage at the intersection of West El Nido Road and SR 59 identifying where haul trucks will turn and alerting pedestrians and other traffic of haul truck usage.

2.6 Compensation for Adverse Effects

1. If impacts to wetlands or other waters cannot be feasibly avoided, then DWR would implement one of the following:
   a. DWR may opt to pay in-lieu fees for wetlands or waters of the U.S. permanent impacts authorized by the USACE through the in-lieu fee program of the Sacramento District of the USACE and administered by the National Fish and Wildlife Foundation, at a ratio determined in consultation with USACE.
   b. DWR may opt to secure wetlands or waters of the U.S. credits at a USACE-approved mitigation bank for permanent impacts at the repair sites, at a ratio determined in consultation with USACE.

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2.7 Anticipated Regulatory Permits and Approvals

Table 2-4 lists the federal, state, and local permits and regulatory approvals that are expected to be necessary to conduct the proposed activities.

Table 2-4. Permits and Approvals Potentially Needed to Conduct Permitted Activities

Permit	Permitting Authority	Affected Elements
Federal Permits/Approvals		
Clean Water Act Section 404/ Rivers and Harbor Act Section 10 Dredge and Fill Permit	U.S. Army Corps of Engineers	Permitted activities on facilities that would be constructed in Waters of the United States
Federal Endangered Species Act compliance	U.S. Fish and Wildlife Service	Permitted activities on facilities affecting federally listed special-status species
State Permits/Approvals	**Permitting Authority**	**Affected Elements**
Clean Water Act Section 401 Water Quality Certification	Central Valley Regional Water Quality Control Board	Activities within jurisdictional waters of the U.S. needing a Section 404 permit
Porter-Cologne Water Quality Control Act Waste Discharge Requirements	Central Valley Regional Water Quality Control Board	Permitted activities on facilities that would be constructed in waters of the State
National Pollutant Discharge Elimination System General Construction Activity Permit	Central Valley Regional Water Quality Control Board	Permitted activities on facilities where runoff would discharge into surface water
Section 1601 et seq. Streambed Alteration Agreement	California Department of Fish and Wildlife	Permitted activities on facilities that would impact the bed or bank of a stream channel
National Historic Preservation Act Section 106 Compliance	Historic Preservation Office	Permitted activities on facilities that would affect cultural and historic resources listed or eligible for inclusion in the National Register of Historic Places
Local Permit/Approvals	**Permitting Authority**	**Affected Elements**
Encroachment Permit	Local jurisdictions (including counties, cities, and Reclamation Districts)	Permitted activities on facilities located within rights-of-way or easements managed by Counties, cities or other local jurisdictions

2.7.1 Reference

California Department of Fish and Wildlife. 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. California Natural Resources Agency, Sacramento, CA. CDFW. *See* California Department of Fish and Wildlife.

U.S. Army Corps of Engineers. 2025. National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams. Final Version. Cold Regions Research and Engineering Laboratory. January 2025. Available online at: https://erdc-library.erdc.dren.mil/items/76c61f8f-6d75-4a35-aaf3-39aa64918afb

USACE. *See* U.S. Army Corps of Engineers.

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3. INITIAL STUDY

1. Project Title: 2023 Storm Damage DWR Rehabilitation Repair Site 23-081
2. Lead Agency: California Department of Water Resources
3. Contact Person and Phone Number: Kristin Ford, 916-914-0220
4. Project Location: Merced County
5. Project Sponsor: California Department of Water Resources
6. General Plan Designation: Agricultural (A)
7. Zoning: A-1 for General Agriculture
8. Description of Project: Repairing and rehabilitating approximately 2.4 miles of existing levee at Site 23-081 located on the waterside of the Eastside Bypass Diversion (Chapter 2, “Project Description“, provides additional project description details)
9. Surrounding Land Uses and Setting: Agriculture
10. Other public agencies whose approval may be required: Merced County, U.S. Army Corps of Engineers, Central Valley Regional Water Quality Control Board, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Historic Preservation Office (Table 2-4 summarizes Permits and Approvals from public agencies potentially needed to implement the proposed project).

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

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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.

X 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.

Mitra Emami	1/26/2026
Signature	Date
Mitra Emami	Principal Engineer
Printed Name	Title
Department of Water Resources	
Agency	

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3.2 Environmental Checklist

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3.2.1 Aesthetics

Table 3-1. Environmental Issues and Determinations for Aesthetics

Issues	Determination
a) Have a substantial adverse effect on a scenic vista?	NI
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	NI
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	LTS
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	NI

Table Notes:
LTS = Less-than-Significant Impact
NI = No Impact

Environmental Setting

The project site and laydown/staging area are on the waterside and the landside, respectively, of the right bank (facing downstream) of the levee along the Eastside Bypass in the San Joaquin Valley, in the Refuge west of the community of El Nido. Land uses in this area consist of irrigated cropland, and wetlands and open water in the Refuge.

The proposed project's access route from the east consists of West El Nido Road; public access on this road ends approximately 1 mile from the project site. Further access westward is limited to farm equipment and levee inspection and maintenance vehicles and equipment. Due to the distance and the flat topography, the proposed laydown/staging area, levee repair site, and the haul route along the levee crown are not visible to public vehicles from the west end of West El Nido Road.

The Tour Route Loop Road is a 5-mile-long auto tour route available for use by recreationists for birdwatching within the Refuge. 'The southern portion of the Tour Route Loop Road is approximately 0.75 mile north (at the closest point) of the north end of the proposed levee repair site. The northern portion of the Tour Route Loop Road parallels Sandy Mush Road, which is proposed for use as part of the proposed project's haul route. There are two public use trails (Meadowlark Trail and Kestral Trail) in the Refuge approximately 650 feet and 200 feet, respectively, south of Sandy Mush Road, as well as the Cottonwood Trail approximately 400 feet north of Sandy Mush Road. In addition, the southwest corner of the Tour Route Loop Road is approximately 850 feet east and north of a portion of the proposed haul route along the existing levee. Public access throughout the northwest side of the Refuge is available via walking on the tops of levees that separate the ponds. In addition, numerous waterfowl hunting blinds are present in the northwest portion of the Refuge near the Eastside Bypass Levee and Sandy Mush Road. From these public recreational facilities looking towards the project site

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and the proposed haul routes, the views are similar: low-growing grasses interspersed among wetlands with channels of open water. Low-growing irrigated row crops are also present in the foreground and middleground. The landform in the viewsheds is flat, consisting of the San Joaquin Valley alluvial plain. The only vertical elements are a thin line of a few scattered deciduous trees in the middleground along the Eastside Bypass, and along the entry road to the Auto Tour Route from Sandy Mush Road. In background views to the southwest (approximately 25 miles), the mountains of the Coast Ranges are visible on a clear day. The visual appearance of the project site and the proposed haul route from the Tour Route Loop Road and the trails is consistent with other views of agricultural cropland and irrigation channels throughout the San Joaquin Valley. The consistently flat, horizontal nature of the landform in the viewshed over a distance of 25 miles, comprised of the same colors (green and brown) and similar textures, does not represent a scenic vista.

Sandy Mush Road is a paved, two-lane roadway that provides access to farmland to the west across the Eastside Bypass and provides access to SR 59 and 99 to the east. Local residents and workers are present on Sandy Mush Road and SR 59, which are part of the proposed project's haul route.

The project site and the proposed haul roads are not situated in the vicinity of any designated or eligible State scenic highway (California Department of Transportation [Caltrans] 2019). The nearest State scenic Highway is Interstate 5 at the base of the Coast Ranges, approximately 25 miles west (Caltrans 2019).

Discussion

a) **No Impact.** The project area is flat and consists of agricultural land (row crops and orchards). These views are typical throughout the San Joaquin Valley. Looking southwest towards the project site and the project haul routes from the Tour Route Loop Road, trails, and other public access areas in the Refuge, the consistently flat, horizontal nature of the landform in the viewshed over a distance of 25 miles, comprised of the same colors (green and brown) and similar textures, does not represent a scenic vista. Thus, there would be no impact on a scenic vista.

b) **No Impact.** There are no State scenic highways within 25 miles of the project site, and due to the intervening distance and vegetation, the site is not visible from Interstate 5 (the nearest State scenic roadway). Thus, there would be no impact on a State scenic highway.

c) **Less-than-Significant Impact.** The project site is situated in a rural agricultural area west of the community of El Nido, in the San Joaquin Valley. Project haul trucks would be visible to, and would share the road with, recreational motorists, local residents, and workers for approximately 9.3 miles on Sandy Mush Road and approximately 3.5 miles on CA 59, and approximately 5.5 miles on El Nido Road. Furthermore, project haul trucks would be visible from public recreational viewpoints throughout the west side of the Refuge. However, the trucks would be visually similar to agricultural haul trucks and other farm equipment and machinery visible throughout the agricultural areas of the San Joaquin Valley. Furthermore, the visual presence of the haul trucks would be

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temporary during the proposed project's construction phase. The levee would be repaired using launch rock, which involves the placement of large rocks on top of geotextile fabric and soil at the base of the levee. Therefore, the visual appearance of the waterside of the levee would change as compared to existing conditions (i.e., soil and low-growing forbs) when water levels in the Eastside Bypass are low. However, the levee repair area is on the waterside of the right bank (looking downstream) of the Eastside Bypass and therefore is not visible to recreationists within the Refuge or from any other public vantage point. Therefore, the proposed project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings and impacts would be less than significant.

The project site is not located in an urbanized area (U.S. Census Bureau 2025); therefore, this analysis does not consider potential conflicts of the proposed project with applicable zoning or other regulations governing scenic quality.

d) **No Impact.** The proposed project would not create any new operational sources of daytime glare or nighttime lighting. All construction work would take place during daylight hours, and no nighttime lighting would be required. The maximum length of the workday would be 6 a.m. to 8 p.m. depending on allowable daylight. Therefore, the proposed project would not create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area, and there would be no impact.

References

California Department of Transportation. 2019. 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 January 21, 2025.

Caltrans. *See* California Department of Transportation.

U.S. Census Bureau. 2025. Urbanized Areas, Urban Cluster Mapping. Available: https://www.arcgis.com/home/webmap/viewer.html?url=https://tigerweb.geo.census.gov/arcgis/rest/services/TIGERweb/Urban/MapServer&source=sd. Accessed January 21, 2025.

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3.2.2 Agriculture and Forestry Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Table 3-2. Environmental Issues and Determinations for Agriculture and Forestry Resources

Issues	Determination
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	LTS
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	LTS
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	NI
d) Result in the loss of forest land or conversion of forest land to non-forest use?	NI
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	NI

Table Notes:
LTS = Less-than-Significant Impact
NI = No Impact

Environmental Setting

Important farmland is classified by the California Department of Conservation (CDOC) as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Under CEQA, the designations for Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are defined as "agricultural land" or "farmland" (PRC Sections 21060.1 and 21095, and CEQA Guidelines Appendix G). According to the CDOC Important Farmland Finder Map, the project site, including the laydown/staging area and work area, are designated as Grazing Land. Lands adjacent to the laydown/staging area are designated as Unique Farmland (CDOC 2025). Under CEQA, Grazing Land is not considered Important Farmland.

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The project site is zoned A-1 (General Agriculture). There are no areas designated for forest land or timberland adjacent to or at the project site (Merced County 2025). Under the California Land Conservation Act of 1965, also known as the Williamson Act, local governments can enter into contracts with private property owners to protect land (within agricultural preserves) for agricultural and open space purposes. There are no areas within or adjacent to the project site that are under current Williamson Act contracts (Merced County 2024a).

Discussion

a) & b) **Less-than-Significant Impact.** The proposed project would repair and rehabilitate the existing levee. As discussed above, lands adjacent to the project site are designated as Unique Farmland, however, the project site, including the laydown/staging area and work area, are designated as Grazing Land. Grazing Land is not considered Important Farmland for the purposes of CEQA. The project site and lands adjacent to the project site are not under active Williamson Act contacts. The project site is zoned A-1 for General Agriculture, which is intended to provide for areas for intensive farming operations dependent on higher quality soils, water availability, relatively flat topography, and agricultural commercial and/or industrial uses dependent on proximity to urban areas or location in sparsely populated low traffic areas. (Merced County 2024b). However, the project site is a levee and is not actively farmed, grazed, or under an active Williamson Act Contract.

Access to the project site would occur along existing paved public roads, levee crown roads, or unpaved private roads, and would not temporarily or permanently convert Important Farmland. Following levee rehabilitation construction, all equipment and materials would be removed from the repair site. Any potential damage to adjacent agricultural lands as a result of the construction, including fencing along the laydown/staging area, would be repaired following construction.

Because the project site is not currently actively farmed, is not designated as Important Farmland, is not under an active Williamson Act Contract, and would not result in the permanent conversion of Important Farmland, impacts would be less than significant.

c) & d) **No Impact.** The project site has a base zoning district designation of A-1 (General Agriculture) and no areas zoned as forestland, timberland, or a timberland production zone are present. The project site contains neither timberland as defined by PRC Section 4526 nor 10 percent native tree cover that would be classified as forestland under PRC Section 12220(g). Thus, the proposed project would not conflict with existing zoning for, or cause rezoning of, forestry resources, or result in conversion of forest land to non-forest use. Therefore, no impact would occur.

e) **No Impact.** As discussed above in Impact 3.2.2(a), Grazing Land is not considered Important Farmland under CEQA. While there are parcels actively used for agricultural production and are designated as Unique Farmland adjacent to the project site as detailed above, the proposed project would repair the levee within the designated project site and would not acquire or encroach upon portions of parcels adjacent to the project site under active agricultural uses such that the parcels could become

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fragmented, reduced in size, or irregularly shaped to such a degree that continuing agricultural land uses could be less profitable or otherwise less feasible.

The proposed project would not indirectly result in other changes in the physical environment that could result in the conversion of Important Farmland, including agricultural land designated as Unique Farmland, to nonagricultural uses, and no impact would occur.

References

California Department of Conservation 2025. California Important Farmland Finder. Available: https://maps.conservation.ca.gov/dlrp/ciff/. Accessed January 2025.

CDOC. *See* California Department of Conservation.

Merced County. 2024a. Merced County GIS Information Portal, Williamson Act. Available: https://geostack-mercedcounty.opendata.arcgis.com/datasets/6b807c495a464342952e595c4b6dc452/explore?filters=eyJBY3JlcyI6WzAsMjcyNF0sIk9wZW5TcGFjZUEiOlswLDI3MjRdfQ%3D%3D&location=37.113520%2C-120.530614%2C12.31. Accessed January 2025.

Merced County. 2024b. Merced County Code of Ordinances, Title 18 Zoning Code. Available: https://ecode360.com/43022872#43022872. Accessed January 2025.

Merced County. 2025. Merced County Zoning Designation Map with Parcel Look Up. Available: https://mercedcounty.maps.arcgis.com/apps/webappviewer/index.html?id=8c1725dd20594ea4b7129c9d097c048a. Accessed January 2025.

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3.2.3 Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

Table 3-3. 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

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

Environmental Setting

The proposed project is located in Merced County, which is located within the San Joaquin Valley Air Basin. The Air Basin is a Federally and State recognized geographic area that is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and a portion of Kern counties (17 California Code of Regulations, §80260). In California, 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 required by CEQA. The air quality districts are also 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, further described below. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has local air quality jurisdiction over projects within the San Joaquin Valley Air Basin.

Individual air pollutants at certain concentrations may adversely affect human or animal health, 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 patter (PM), which is subdivided into two classes based on particle size – PM equal to or less than 10 micrometers in diameter (PM_{10}) and PM equal to or less than 2.5 micrometers in diameter ($PM_{2.5}$).

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

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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. 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. Because the air quality standards for these air pollutants are regulated using human and environment health-based criteria, they are commonly referred to as “criteria air pollutants.” With respect to regional air quality, the Merced County is currently designated as nonattainment for the NAAQS and CAAQS for ozone and $PM_{2.5}$, and for the CAAQS for PM_{10}, and is designated unclassified or attainment for all other NAAQS and CAAQS (EPA 2024, CARB 2023).

Naturally occurring asbestos can also be an air toxic of concern that can be released as a result of earth disturbance during construction. The project site is not located 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 upon to inform the evaluation of a proposed project’s impacts related to air quality. SJVAPCD prepared the Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) to assist lead agencies and project applicants in evaluating the potential air quality impacts of projects in the San Joaquin Valley Air Basin (SJVAB) (SJVAPCD 2015).

Discussion

a) **Less than Significant with Mitigation.** 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. These plans, known as State Implementation Plans or SIPs, are developed by state and local air quality management agencies for areas not meeting the ambient air quality standards, and submitted to EPA for approval. As noted above, the project region (i.e., Merced County) is non-attainment for NAAQS and CAAQS for ozone and $PM_{2.5}$ and for the CAAQS for PM_{10}. The SJVAPCD has adopted several air quality attainment plans over the years that identify measures needed to attain the applicable air quality standards. To evaluate consistency with the regional air quality plans, the SJVAPCD states in its GAMAQI that projects with emissions below the thresholds of significance for criteria pollutants would be determined to “[n]ot conflict with or obstruct implementation of the District’s air quality plan.” The SJVAPCD GAMAQI also describes the mass emissions screening threshold for determining whether an ambient air quality analysis (AAQA) is warranted to evaluate a project’s impacts on localized ambient air quality as a result of a project’s potential to cause or contribute to any violation of a CAAQS or NAAQS under CEQA. Guidance for the ambient air quality thresholds of significance provided by SJVAPCD in Section 8.4.3 of the GAMAQI detail that the SJVAPCD recommends that an AAQA be performed when the increase in on-

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site emissions exceed 100 pounds per day for a criteria air pollutant, after implementation of all enforceable mitigation measures.

As indicated below, in the analysis of environmental issue area b), emissions that would result from the proposed project would be well below SJVAPCD recommended annual thresholds of significance for construction activities and the SJVAPCD AAQA screening level thresholds for all pollutants except PM_{10}. Therefore, the proposed project would generate PM_{10} emissions that could result in impacts on regional and localized ambient air quality and have the potential to cause or contribute to a violation of a NAAQS or CAAQS. As further detailed in the environmental issue area b) evaluation, implementation of Mitigation Measure AQ-1 would reduce potential PM_{10} emissions to a level that would not exceed the SJVAPCD annual threshold of significance for construction or AAQA screening level threshold.

Furthermore, the proposed project would not induce or otherwise increase the potential for growth in the areas adjacent to or served by the levee repair sites because the repairs would return the levees to previous flood protection standards. Given that the proposed project would not result in growth inducing effects and that mitigated project emissions would not exceed the SJVAPCD 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 of the SJVAPCD, and this impact would be less than significant with mitigation.

b) **Less than Significant with Mitigation.** The proposed project would generate emissions as a result of construction activities, including exhaust emissions from the use of construction equipment and construction related vehicles such as worker, vendor, and haul truck trips to and from the project site, and fugitive dust emissions from each disturbing activities and travel on unpaved roadways. Emissions were modeled using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.29. As detailed in Chapter 2, “Project Description,” project construction activities involving the use of heavy-duty construction equipment would occur over approximately 28 weeks in a single construction season, could require equipment use for up to 10 hours per day, and would result in up to 68 worker one-way trips and 130 haul truck one-way trips per day (a one-way trip is a trip to *or* from the project site). Travel on unpaved roadways would occur for a portion of each haul truck trip, as shown in Figure 2-2, which was accounted for in the emissions modeling. For the purposes of emissions modeling, each haul truck was conservatively assumed to travel up to 6 miles on unpaved road; it is unlikely that each truck would travel the entirety of the longest haul route every trip taken and therefore it is unlikely that unpaved roadway travel would be as extensive as modeled. Refer to Appendix B for emissions modeling details and output files.

As noted above, the SJVAPCD has established recommended thresholds of significance for the purposes of evaluating project impacts under CEQA. Thresholds 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

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purposes of identifying a potential cumulative air impact with respect to regional emission of criteria air pollutants. Table 3-4 presents the proposed project's daily and annual emissions and the applicable SJVAPCD annual thresholds of significance for construction activities. While not shown in Table 3-4, as noted above, SJVAPCD recommends that an AAQA be performed when, after implementation of all enforceable mitigation measures, the increase in on-site emissions exceed 100 pounds per day for a criteria air pollutant.

Table 3-4. Summary of Maximum Daily and Annual Project Construction Emissions

Pollutant	Maximum Daily Emissions[1] (pounds per day)	Maximum Annual Emissions[1] (tons per year)	SJVAPCD Threshold of Significance[2] (annual tons per year)
CO	94.1	6.6	100
ROG	9.98	0.71	10
NO_X	88.25	6.24	10
SO_X	0.32	0.02	27
PM_{10}	750	49.15	15
$PM_{2.5}$	82.14	5.42	15

Notes:
CO = carbon monoxide; NOx = oxides of nitrogen; PM_{10} = respirable particulate matter with aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gas; SJVAPCD = San Joaquin Valley Air Pollution Control District; SO_X = sulfur oxides.

Sources:
1. Modeled by AECOM in 2025 (see Appendix B for detailed modeling inputs and output files)
2. SJVAPCD 2015

As shown in Table 3-4, the proposed project's construction emissions could exceed the SJVAPCD's recommended annual threshold of significance for PM_{10} from construction activities and the SJVAPCD AAQA screening threshold for PM_{10}. Therefore, the proposed project could generate a level of emissions that would result in a cumulatively considerable net increase of PM_{10}, and this impact is considered potentially significant.

The PM_{10} emissions that would be generated as a result of the proposed project are primarily a result of haul truck travel on unpaved roadways (shown as the "Onsite truck" emissions in the CalEEMod output files provided in Appendix B). Therefore, Mitigation Measure AQ-1 requires unpaved roadways used for project construction to be watered three times daily and project vehicles traveling on unpaved roadways to be limited to 10 miles per hour or less in order to reduce fugitive dust generation from this construction-related activity. Implementation of Mitigation Measure AQ-1 would reduce fugitive dust PM emissions; mitigated annual and maximum daily PM_{10} emissions would be 6.4 tons per year and 96.42 pounds per day, respectively, which would not exceed the respective SJCAQPD annual threshold or AAQA screening threshold. Furthermore, the proposed project would implement fugitive dust control measures as standard best management practices, in alignment with the SJVAPCD Rule VIII, further minimizing fugitive dust generation during construction activities, beyond that which

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was modeled and presented in Appendix B. Therefore, this impact would be less than significant with mitigation.

Mitigation Measure AQ-1. Implement Dust Control Measures on Unpaved Construction Roadways.

DWR will include in the construction specifications the following requirements to be implemented by construction contractor(s) throughout the duration of construction at the project site:

- Implement three times daily watering of the unpaved roadways to be used for construction haul routes.
- Limit construction vehicle travel speed on unpaved roadways to 10 miles per hour or less.

c) **Less-than-Significant Impact.** Some land uses are considered more sensitive to air pollution than others, due to 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 are typically 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 site is surrounded by agricultural land use. There are no sensitive receptors within a mile of the project site; the nearest sensitive receptor is a residence approximately 1.1 miles east of the project site. While there is a residence located approximately 0.25 mile north of West Sandy Mush Road, a haul route proposed for the project, activity on this route would be limited to vehicle travel on this paved road and would not be a substantial contributor to localized emissions.

The primary localized pollutant of concern that would result from the proposed project is diesel particulate matter. CARB identified diesel particulate matter as a toxic air contaminant. 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 diesel particulate matter (CARB 2013).

Construction of the proposed project would generate emissions of toxic air contaminants from the use of heavy-duty construction equipment, haul trucks, and construction worker vehicles. These activities could expose nearby receptors to toxic air contaminants, primarily in the form of diesel particulate matter. More than 90 percent of diesel particulate matter is less than 1 micrometer in diameter and thus is a subset of $PM_{2.5}$ (CARB 2024). Therefore, exhaust $PM_{2.5}$ is used as the upper limit for diesel particulate matter emissions associated with construction of the proposed project. While the proposed project would generate diesel particulate matter (DPM) from onsite equipment and trucks as well as vehicle trips to and from the site, those

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emissions generated from trips to and from the site would be distributed along those travel routes and not concentrated in any one location. Due to the limited number of daily truck trips (approximately 130 daily one-way truck trips) and broad geographical region of such truck trip emissions (i.e., emissions would be dispersed over a large geography), 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 B, maximum daily $PM_{2.5}$ exhaust emissions from on-site trucks and on-site equipment would be approximately 3.3 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 construction, there would not be substantial pollutant concentrations from an individual project, with the potential exception of the immediate vicinity of the construction site. Concentrations of mobile-source diesel particulate matter emissions are typically reduced by 60 percent at a distance of 300 ft from the source (Zhu and Hinds 2002), and by 70 percent at approximately 500 ft (CARB 2005). As noted above, the project site would not be within one mile (5,280 ft) from any sensitive receptors. 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 cease after levee repair activities are complete.

Given 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, this 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 there are no receptors within more than a mile of the project site in any given direction. As a result, proposed project construction would not result in other emissions, such as those leading to odors, adversely affecting a substantial number of people. Therefore, this impact would be less than significant.

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3.2.4 Biological Resources

Table 3-5. 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
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

Table Notes:
LTS = Less-than-Significant Impact
NI = No Impact

Environmental Setting

Information in this section is based on data collected during an initial site visit conducted on April 11, 2024, (AECOM 2024) and a biological reconnaissance survey (AECOM 2025a) and aquatic resource delineation (AECOM 2025b) conducted on September 10 and 11, 2024, and May 6, 2025, of the study area, which included the limits of work and staging/laydown area. In addition, information for this section was collected during a review of the following data sources:

- California Native Plant Society Rare Plant Inventory (CNPS 2026a);
- California Natural Diversity Database (CNDDB) (CDFW 2026) for records of special-status species previously documented within the United States Geological Services (USGS) 7.5-mile Quadrangles of Bliss Ranch, Santa Rita Bridge, Sandy Mush, Arena, Atwater, Merced, El Nido, Delta Ranch, and Turner Ranch.
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation project planning tool (USFWS 2026a);
- Western Monarch Mapper (Xerces 2026)

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- National Wetlands Inventory (NWI, USFWS 2026b);
- Critical Habitat Mapper (USFWS 2026c);
- USGS National Hydrography Dataset (NHD) (USGS 2026).

Site 23-081 is located on a levee in a rural area bordering agricultural fields (Appendix C, Figures 1 and 2). Adjacent land uses are primarily agricultural and a national wildlife refuge. Habitat within the project site (including staging and laydown areas) includes ruderal areas, grasslands, and emergent wetland vegetation. Aquatic resources within the study area include the Eastside Bypass channel and five agricultural ditches (Appendix C, Figure 3). Land cover types and vegetation communities at the repair site are summarized in Table 3-6 and shown in Figure 3 in Appendix C.

Table 3-6. Summary of Land Covers and Vegetation Communities at Site 23-081

Land Cover Type	Vegetation Community	MCV Alliance	Rarity[1]
Ruderal	N/A	Not applicable	N/A
Grasslands	Wild oats and annual brome grasslands	*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance	N/A
Emergent Wetland Vegetation	Bermudagrass – prickle grass – crowngrass turfs	*Cynodon dactylon* - *Crypsis* spp. – *Paspalum* spp. Herbaceous Semi-Natural Alliance	N/A
	Nodding beggarticks – western goldentop – marsh seedbox mudflats	*Bidens cernua – Euthamia occidentalis – Ludwigia palustris Herbaceous Alliance*	S4
	Smartweed – cocklebur patches	*Polygonum lapathifolium – Xanthium strumarium* Herbaceous Alliance	S4

Notes:
MCV = Manual of California Vegetation Online (CNPS 2026b)
N/A = Not applicable
S = State Rarity Rank
4: Apparently Secure- At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

Plant and wildlife species recognized as rare, endangered, or threatened pursuant to Section 15380(b) of the CEQA Guidelines include species protected pursuant to federal and/or State endangered species laws, listed as rare or endangered under the California Native Plant Protection Act, designated as a Species of Special Concern (SSC) by CDFW, fully protected under the California Fish and Game Code (Sections 3511, 4700, and 5050), and/or assigned a California Rare Plant Rank (CRPR) List 1 or 2 by CDFW. Species recognized under these terms are collectively referred to as “special-status species.”

Special-status species considered for this analysis are based on review of the CNDDB, CNPS, and USFWS records for the study area. A comprehensive list of special-status plant and wildlife species that were considered in the analysis is provided in Appendix C. The list includes the common and scientific names for each species, regulatory status (federal, State, CNPS), habitat requirements, distribution, and a discussion of the potential for occurrence within the project site. The following set of criteria determines a species’ potential for occurrence within the project site:

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- No Potential: The project site is outside the species' range or suitable habitat for the species is absent from the project site and adjacent areas.
- Unlikely to Occur: No recent occurrences (i.e., within 20 years) of the species have been recorded within or near the project site (i.e., within 3 miles), and either habitat for the species is marginal, or potentially suitable habitat is present but the species' current known range is restricted to areas far from the project site or the species is believed to be extirpated from the vicinity.
- Potential to Occur: The project site is within the species' range, and no occurrences of the species have been recorded recently within the project site; however, suitable habitat for the species is present and recorded occurrences of the species are generally present in the vicinity.
- Known to Occur: The project site is within the species' range, suitable habitat for the species is present, and the species has been recorded within the project site.

The database queries returned 28 special-status plant species and 27 special-status wildlife species. Most of the special-status species identified by the queries are not expected to occur in the project site because of a lack of suitable habitat or because the project site is outside the species' range. As presented in Appendix C, the following 7 special-status plant species and 11 special-status wildlife species have potential to occur within the study area:

- Alkali milk-vetch (*Astragalus tener* var. *tener*); CRPR 1B.2
- Heartscale (*Atriplex cordulata* var. *cordulata*); CRPR 1B.2
- Lesser saltscale (*Atriplex minuscula*); CRPR 1B.1
- Delta button-celery (*Eryngium racemosum*); state endangered, CRPR 1B.1
- San Joaquin spearscale (*Extriplex joaquinana*); CRPR 1B.2
- Heckard's pepper-grass (*Lepidium latipes* var. *heckardii*); CRPR 1B.2
- Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*); CRPR 2B.1
- Crotch's bumblebee (*Bombus crotchii*); candidate for State endangered listing
- Monarch butterfly (*Danaus plexippus*); proposed for federally threatened listing
- Western spadefoot, northern distinct population segment (DPS); proposed for federally endangered listing, SSC
- California tiger salamander, central California DPS; federally threatened, state threatened
- Northwestern pond turtle (*Actinemys marmorata*); proposed for federally threatened listing, state SSC
- Tricolored blackbird; state threatened, state SSC
- Burrowing owl; candidate for state endangered listing, state SSC
- Swainson's hawk; state threatened
- Northern harrier; state SSC
- American badger; state SSC
- San Joaquin kit fox; federally endangered, state threatened

During the biological reconnaissance survey on September 10 and 11, 2024, no special-status plant species were observed, and four special-status wildlife species (monarch butterfly, tricolored blackbird, Swainson's hawk, and northern harrier) were observed (AECOM 2025a).

Discussion

a) **Less-than-Significant Impact.** Seven special-status plant species, eleven special status wildlife species, and various migratory birds have the potential to occur and/or nest in or near the project site based on database queries and the field surveys. Evaluation of direct and indirect impacts to these special status species are provided below, organized by species or species group. General Conservation Measures and Best Management Practices detailed in Chapter 2, "Sections 2.5, "Environmental Commitments" and 2.6, "Compensation for Adverse Effects" and summarized in Table 3-7 will be implemented by DWR, or their contractors, to reduce, avoid, or minimize potential substantial adverse temporary direct and indirect impacts during construction. The measures in Table 3-7 are referenced where appropriate throughout the impact evaluation.

Table 3-7. General Conservation Measures and Best Management Practices

General Measure No.	Description	Implementation Timing
GM-01	Agency Approved Biologist	Preconstruction
GM-02	Preconstruction Biological Surveys	Preconstruction
GM-03	Worker Environmental Awareness Training	Preconstruction
GM-04	Listed Species Take Reporting	Construction
GM-05	Environmentally Sensitive Area Limit Delineation	Preconstruction
GM-06	Invasive Plant Species Control	Construction
GM-07	Resource Agency Access	Construction
GM-08	Stop Work Authority	Construction
GM-09	Staging and Access	Construction
GM-10	Construction Area Limit Delineation	Construction
GM-11	Equipment Inspection	Construction
GM-12	Open Excavation Covering	Construction
GM-13	Construction Site Best Management	Construction
GM-14	Clearing and Grubbing Best Management	Construction
GM-15	Erosion Control Materials	Construction
GM-16	Site Restoration	Construction

Note:
GM = General Measure

Special-status Plants

Seven special-status plant species were identified that could potentially occur within the project site. However, the project site is unlikely to support special-status plant species because it is confined to constructed levee slopes and other areas that are regularly maintained to control vegetation and lack the specific soil and hydrologic characteristics associated with the seven special status plant species. No special

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status plant species were observed during a biological reconnaissance survey in September 2024.

If special-status plants are present within the project site, 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). Preconstruction surveys included in environmental commitment BIO-07: Special-Status Plants, described in Section 2.5.8, would identify any populations of special-status plants that may be present within the project site and ensure avoidance of these populations or compensation for any permanent impacts to these populations during project construction. Mitigation Measure AQ-1: Implement Dust Control Measures on Unpaved Construction Roadways described in Section 3.2.3, “Air Quality“ and environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR and their contractors to reduce the potential for indirect impacts to special-status plant populations related to dust in the vicinity of the project site. Impacts would be less than significant.

Crotch’s Bumblebee

Direct impacts to Crotch’s bumblebee could occur if nests are crushed or removed. Indirect impacts to Crotch’s bumblebee could occur if project construction activities reduce habitat availability or suitability through removal of forage plants or reduction in plant health from exposure to fugitive dust or hazardous materials. Permanent loss of annual grassland habitat along the levee slopes would not significantly affect the availability of foraging or nesting habitat for Crotch’s bumblebee. Habitat within the work limits is dominated by non-native annual species, such as shortpod mustard (*Hirschfeldia incana*) and wild oats (*Avena* spp.), and regularly disturbed via mowing, burning, and inundation; abundant native vegetation more suitable for foraging and undisturbed substrate for nesting are available in the Refuge on the landside of the levee.

Mitigation Measure AQ-1: Implement Dust Control Measures on Unpaved Construction Roadways described in Section 3.2.3, “Air Quality,” and environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors to reduce the potential for indirect impacts. In addition, the species-specific environmental commitment, BIO-02: Crotch’s Bumblebee Protection, described in Section 2.5.3, will be implemented to avoid, minimize, and reduce potential direct and indirect impacts during construction on Crotch’s bumblebee. With the implementation of the above mitigation measure and environmental commitments, the potential for substantial adverse effects on Crotch’s bumblebee would be low. Impacts would be less than significant.

Monarch Butterfly

Several milkweed plants were identified within and adjacent to the study area (i.e., limits of work) but outside the repair area, and a monarch butterfly was observed during the biological reconnaissance survey. Given the routine disturbance of the study

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area as a result of regular levee maintenance and inundation, the identified plants are unlikely to provide suitable breeding habitat for monarch butterfly, and non-native annual grassland species on the levee slope may provide marginal foraging and dispersal habitat.

Although unlikely, direct impacts could occur during construction if monarch butterflies or larvae are crushed, milkweed is removed or damaged, or removal of nectar plants disrupts monarch mating, foraging, or dispersal. Indirect impacts to monarch butterflies could occur if increased human activity and construction activities temporarily reduced habitat quality (e.g., if fugitive dust emissions lowered the vigor of adjacent vegetation). Permanent loss of annual grassland habitat in the repair area would not significantly affect the availability of breeding, foraging, or dispersal habitat for monarch butterfly given the marginal habitat quality and the abundance of higher-quality habitat in the surrounding vicinity (Xerces 2026).

Mitigation Measure AQ-1: Implement Dust Control Measures on Unpaved Construction Roadways described in Section 3.2.3, “Air Quality“, and environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, the species-specific environmental commitment, BIO-03: Monarch Butterfly, described in Section 2.5.4, will be implemented to avoid and minimize potential direct and indirect impacts during construction on monarch butterflies. With the implementation of the above mitigation measures and environmental commitments, the potential for substantial adverse effects on monarch butterflies would be low. Impacts would be less than significant.

Western Spadefoot

Suitable aquatic (i.e., vernal pool) and upland habitat for western spadefoot is present on the landside of the levee adjacent to the northern portion of the study area. Regular inundation and pest and vegetation management in the study area likely preclude western spadefoot occupation for breeding or aestivation. Western spadefoot individuals may pass through the study area during dispersal between aquatic and upland habitats.

Direct impacts could occur if western spadefoot is injured or killed by construction vehicles or equipment during repair activities. In addition, earth-moving and construction equipment operations could cause western spadefoot to alter their behavior, potentially exposing them to predators or other risks. Indirect impacts may include temporary reductions in habitat suitability caused by increased construction activity. For instance, accidental pollutant discharges could degrade habitat quality, potentially resulting in mortality or diminished growth and viability of vegetation in adjacent suitable habitat.

Environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, species-specific environmental commitment BIO-04: Western Spadefoot, described in Section 2.5.5, will be implemented to avoid and minimize potential temporary direct and indirect impacts

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during construction on western spadefoot. Therefore, the potential for substantial adverse effects on western spadefoot would be low, and impacts would be less than significant.

California Tiger Salamander

The aquatic habitat adjacent to the Action Area in the Eastside Bypass channel and immediately on the landside of the levee is not suitable for California tiger salamander breeding due to its regular, deep inundation and the potential presence of predatory fish. The study area does not contain suitable breeding habitat for California tiger salamander and likely does not provide suitable upland refugia because it is routinely disturbed through inundation and levee maintenance. There is suitable vernal pool habitat located approximately 0.7 miles to the east/northeast of the study area on the land side of the levee, which is within the species' maximum 1.3-mile dispersal distance. Therefore, juveniles and adults could occur in the study area during overland travel. Overland travel would primarily occur during November through April and thus would only overlap one month with the expected construction timeframe (November).

Direct impacts could occur in uplands if California tiger salamanders are physically harmed by construction vehicles or equipment. In addition, earth-moving and construction equipment operations could cause California tiger salamanders to alter their behavior, potentially exposing them to predators or other risks. Indirect impacts may include temporary reductions in habitat suitability caused by increased construction activity. For instance, accidental pollutant discharges could degrade habitat quality, potentially resulting in mortality or diminished growth and viability of vegetation in suitable habitat in the vicinity of the project site and haul route.

Environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, species-specific environmental commitments BIO-05: California Tiger Salamander, described in Section 2.5.6, will be implemented to avoid and minimize potential temporary direct and indirect impacts during construction on California tiger salamanders. Therefore, the potential for substantial adverse effects on California tiger salamanders would be low, and impacts would be less than significant.

Northwestern Pond Turtle

Suitable aquatic habitat for northwestern pond turtle occurs adjacent to the study area within the Eastside Bypass channel, and marginally suitable upland habitat occurs in the grasslands of the study area. Upland habitat within the study area could be used for basking or nesting (from May through October), although the steep levee slopes and regular levee maintenance activities (i.e., vegetation and pest management) in the study area limit its suitability for use as nesting habitat.

Direct impacts could occur in uplands if northwestern pond turtles are physically harmed or if their occupied underground burrows or nests are inadvertently collapsed during repair activities. In addition, earth-moving and construction equipment operations could cause northwestern pond turtles to leave their hiding places,

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potentially exposing them to predators or other risks. Indirect impacts may include temporary reductions in habitat suitability caused by increased human activity. For instance, accidental pollutant discharges during these activities could degrade habitat quality, potentially resulting in mortality or diminished growth and viability of vegetation in habitats suitable for the species. Permanent loss of annual grassland habitat in the repair area would not significantly affect the availability of upland nesting habitat for northwestern pond turtle given the marginal habitat quality and the abundance of annual grassland habitat in the surrounding vicinity. Additionally, northwestern pond turtle could still use the repaired levee slopes for basking.

Environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, species-specific environmental commitments BIO-01: Aquatic Resources and BIO-06 Northwestern Pond Turtle described in Section 2.5.2 and 2.5.7, will be implemented to avoid, minimize, and reduce potential temporary direct and indirect impacts during construction on northwestern pond turtle. Therefore, the potential for substantial adverse effects on northwestern pond turtle would be low and impacts would be less than significant.

Special-status and Nesting Birds

No large trees or emergent wetlands suitable for Swainson’s hawk or tricolored blackbird nesting, respectively, occur in the study area, and frequent disturbance associated with levee maintenance and inundation during the initial months of the breeding season likely limit nesting by ground-nesting species, including burrowing owl and northern harrier. However, suitable nesting habitat for Swainson’s hawk, tricolored blackbird, burrowing owl, northern harrier, and other protected migratory bird species that nest in riparian, emergent wetland, or grassland vegetation is found in the vicinity of the study area.

Impacts to nesting birds could occur during construction if visual or auditory disturbance results in nest abandonment or failure or if vegetation containing nests is removed. Environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, species-specific environmental commitment BIO-08: Nesting Bird, described in Section 2.5.9, will be implemented to avoid and minimize potential construction impacts on nesting birds, including special-status species (i.e., burrowing owl, Swainson’s hawk, tricolored blackbird, and northern harrier). Therefore, the potential for substantial adverse effects on special-status and other nesting birds would be low, and impacts would be less than significant.

American Badger

Suitable habitat and soils for den creation for American badger were observed in and adjacent to the study area. Direct impacts to American badgers could occur from collisions with vehicles or equipment or auditory or visual disturbance during

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construction. Indirect impacts due to habitat disruption or pollution or behavior alterations associated with construction activities could also affect the species.

Environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, species-specific environmental commitment BIO-09: American Badger, described in Section 2.5.10, will be implemented to avoid, minimize, and reduce potential direct and indirect impacts during construction on American badger. Therefore, the potential for substantial adverse effects on American badger would be low, and impacts would be less than significant.

San Joaquin Kit Fox

Suitable habitat and soils for den creation for San Joaquin kit fox are present in and adjacent to the study area. Given the regular inundation and levee maintenance activities within the study area, San Joaquin kit fox would not be expected to use the site for denning. Additionally, although CNDDB records were documented approximately 50 to 500 feet from the study area in 1999 and 2000, the species has not been subsequently recorded within the vicinity. The most recent species status assessment concluded that there is no evidence of a current population in the northern and eastern San Joaquin Valley, including the study area (USFWS 2020).

Although unlikely, direct impacts to San Joaquin kit fox could occur from collisions with vehicles or equipment or auditory or visual disturbance during construction. Indirect impacts due to pollution of adjacent suitable habitats or behavior alterations associated with construction activities could also affect the species.

Environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, species-specific environmental commitment BIO-10: San Joaquin Kit Fox, described in Section 2.5.11, will be implemented to avoid, minimize, and reduce potential direct and indirect impacts during construction on San Joaquin kit fox. Therefore, the potential for substantial adverse effects on San Joaquin kit fox would be low, and impacts would be less than significant.

b) **Less-than-Significant Impact.** No sensitive natural communities are present within the study area, and patches of emergent wetland vegetation within the Eastside Bypass channel transition to upland vegetation along the waterside levee slope above the ordinary high-water mark without any intermediate riparian vegetation. Construction activities associated with vegetation removal at the repair location on the levee would remove limited wetland vegetation within the Eastside Bypass. Indirect impacts to wetland vegetation in and adjacent to the study area could include temporary reductions in habitat quality due to increases in sedimentation and runoff from adjacent construction activities or pollutants being accidentally discharged during these activities, potentially leading to mortality or reduced growth and viability of vegetation. Environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, environmental

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commitment BIO-01: Aquatic Resources described in Section 2.5.2 and Section 2.5.12, “Water Quality,” will be implemented to avoid, minimize, and reduce potential temporary direct and indirect impacts during construction. Given the above, the potential for substantial adverse effects would be low, and impacts would be less than significant.

c) **Less-than-Significant Impact.** The proposed project repairs are expected to occur within the banks of the Eastside Bypass, a potential Water of the State and Water of the U.S. Any Water of the U.S., Water of the State, or jurisdictional wetlands that would be lost or disturbed will be replaced or rehabilitated on a “no-net-loss” basis in accordance with ’agency guidelines through the Section 404 permit and Section 401 Water Quality Certification processes. Habitat restoration, rehabilitation, and/or replacement will be at a location and by methods acceptable to the respective agencies. Furthermore, environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors. In addition, environmental commitment BIO-01: Aquatic Resources described in Section 2.5.2 and Section 2.5.12, “Water Quality,” will be implemented to avoid, minimize, and reduce potential temporary direct and indirect impacts on wetlands during construction. These environmental commitments include erosion control, invasive species control, hazardous material management, agency consultation, and permit acquisition, as well as compensation, if needed, which would reduce, avoid, or mitigate for potentially substantial adverse effects on wetlands because they would either prevent the loss of wetlands or replace the loss consistent with “no net loss.” Impacts would be less than significant.

d) **Less-than-Significant Impact.** The proposed project repairs would take place within, and adjacent to the Refuge, on the waterside levee slope of the Eastside Bypass. This bypass serves as a vital wildlife corridor and is integral to the San Joaquin River Restoration Project. The area has been classified with an Areas of Conservation Emphasis (ACE) terrestrial connectivity habitat ranking of 5 (Irreplaceable and Essential Corridors) from the Refuge southward to just north of El Nido Road, where the ranking transitions to 4 (Conservation Planning Linkages) (CDFW 2023). Additionally, this section, designated as Reach 2 of the San Joaquin River Restoration Project, includes planned improvements to the Middle Eastside Bypass to facilitate fish passage. No wildlife nursery sites were present in the study area during the biological reconnaissance survey.

Construction activities, including vegetation removal and human presence, may temporarily disrupt terrestrial wildlife movement. However, work is restricted to late summer through fall, outside the nesting and breeding seasons for many resident bird species, thereby minimizing disruption. No in-water work would occur at Site 23-081, and the proposed project would not change flows within the Eastside Bypass; therefore, impacts to native, resident or migratory fish are not anticipated, and their movement would not be impeded. Furthermore, environmental commitments described in Section 2.5.1 and summarized in Table 3-7 would be implemented by DWR or their contractors, along with species-specific measures (BIO-1 through BIO-10) detailed in

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Section 2.5.2 to 2.5.11 will avoid, minimize, and reduce temporary direct and indirect impacts on other special status species wildlife movement and their habitats. Therefore, the proposed project is not expected to cause substantial adverse effects on the movement of native resident or migratory species or established wildlife corridors and impacts would be less than significant.

e) **Less-than-Significant Impact.** *The Merced Vision 2030 General Plan (*General Plan*)* was adopted by the City Council on January 3, 2012. Chapter 7-- Open Space, Conservation, and Recreation of the General Plan list the following goal which pertains to the preservation of Natural Resources.

Goal Area OS-1: Open Space for the Preservation of Natural Resources.

- **Policy OS-1.1** of the Merced General Plan emphasizes the identification and preservation of wildlife habitats that support rare, endangered, or threatened species. It aims to protect these critical habitats through proper land use planning, environmental review processes, and collaboration with state and federal agencies. This policy seeks to balance urban development with ecological conservation to ensure the long-term sustainability of the region's biodiversity.
- **Policy OS-1.2** of the Merced General Plan focuses on maintaining and enhancing existing aquatic habitats that provide ecological value, particularly for native plant and animal species. It encourages the restoration of degraded habitats and promotes conservation strategies to preserve the natural ecosystem.

The environmental commitments of the proposed project align with the goals and policies of the General Plan. Project construction would result in the loss of approximately 12.7 acres of habitat, primarily annual grassland dominated by non-native species. However, project implementation would repair the Eastside Bypass levee, thereby protecting hundreds of acres of high-quality vernal pool, wetland, and grassland habitat in the Refuge and other lands on the landside of the levee. Additionally, there are no mature trees within the area of disturbance, therefore construction would not conflict with the County's tree preservation policy or ordinance.

The proposed project would not conflict with any local policies or ordinances protecting biological resources and there would be no impact.

f) **No Impact.** The project site is not within the jurisdiction of a Natural Communities Conservation Plan (NCCP)/ Habitat Conservation Plan (HCP); however, it is adjacent to and within part of the Refuge, the management of which is guided by the Draft San Luis National Wildlife Refuge Complex Final Comprehensive Conservation Plan (USFWS 2024). The Comprehensive Conservation Plan provide long-term guidance for management decisions and set forth goals, objectives, and strategies needed to accomplish refuge purposes and identify USFWS future needs. The four goals of the Refuge identified by the Comprehensive Conservation Plan are:

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- Conserve, protect, manage, restore and enhance natural habitats and associated plant and wildlife species of the Northern San Joaquin Valley on Complex lands, with an emphasis on supporting an abundance and natural diversity of migratory birds including waterfowl, shorebirds, waterbirds, raptors, songbirds and other wildlife
- Contribute to the recovery of threatened and endangered species as well as the protection and management of populations of endemic Central Valley wildlife and Special Status wildlife, plants and habitats
- Maintain, enhance and restore natural ecological processes to promote healthy, functioning ecosystems for wildlife on Complex lands by developing strong relationships with partners, research institutions, and other local, state and Federal agencies. Coordinate the natural resource management of the Complex's natural resources within the larger context of the Central Valley/San Francisco Ecoregion and Pacific Flyway
- Provide the public with opportunities for compatible, wildlife-dependent recreation and other uses to enhance understanding, appreciation and enjoyment of natural resources on the Complex

Water is supplied to the refuge through a water conveyance system that consists of existing structures including levees along the Eastside Bypass. The Comprehensive Conservation Plan describes the maintenance activities of the Eastside Bypass levels, which are overseen by the LSJLD. Levee banks must be kept clear of woody vegetation, overhanging limbs and the burrowing of rodents including the California ground squirrel. These activities support the goals of the Comprehensive Conservation Plan by supporting the water supply and delivery system to the refuge and maintaining flood protection. These activities are allowed due to the risk of threatened and endangered species being impacted in the event of a catastrophic levee breach and flooding that could be caused, particularly by California ground squirrel burrowing. The proposed project would repair and rehabilitate the Eastside Bypass levee and would be consistent with the maintenance activities already performed on the levee, as described by the Comprehensive Conservation Plan. The proposed project would preserve and protect existing threatened and endangered species using the Refuge by repairing the existing levee. The proposed project would not conflict with the provisions of the Comprehensive Conservation Plan to provide long-term guidance for management decisions and set forth goals, objectives, and strategies needed to accomplish refuge purposes. There would be no impact.

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3.2.5 Cultural Resources

Table 3-8. 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?	LTS
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

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

Environmental Setting

This section provides a discussion of the existing conditions, as well as relevant precontact and historic-era conditions, related to cultural resources at the project site, and the immediately surrounding area (one-mile buffer). Cultural resources include architectural resources, archaeological resources, and human remains. The Area of Potential Effects (APE) for the purposes of cultural resources includes the limits of work for the repair site, the laydown/staging area, and the access/haul routes as depicted on Figure 2-2 in Chapter 2, “Project Description.” Information in this section is summarized from the *2023 Storm Damage, Department of Water Resources Rehabilitation Repair Site 23-081, Cultural Resources Assessment, Merced County* (AECOM 2025), prepared for the proposed project.

Geomorphic Setting

The San Joaquin Valley is situated between the Sierra Nevada Mountain Range on the east, the Diablo and Temblor ranges on the west, the Tehachapi Mountains on the south, and the Sacramento-San Joaquin Delta on the north. The valley occupies a trough created by tectonic forces related to collision of the Pacific and North American plates. The trough is filled with marine sediments overlain by continental sediments that are thousands of feet deep in some places and form a thick sequence of sedimentary bedrock units that underlie the valley (Galloway and Riley n.d.). These continental sediments were deposited largely by streams and washes draining the surrounding mountains and terminating in topographically closed sinks, such as Corcoran Lake, which occupied most of the San Joaquin Valley during the middle Pleistocene (Bartow 1991; Rosenthal and Meyer 2004); and later by Tulare, Kern, and Buena Vista lakes.

Late Quaternary alluvial deposits in the northern San Joaquin Valley and adjacent foothills were formed by repeated episodes of sediment deposition, prolonged periods of landform stability, and the erosion and dissection of older, steeply sloping landforms (Rosenthal and Meyer 2004). These processes resulted in a series of inset stream terraces and nested alluvial fans, which originate from the foothills of the Sierra Nevada and Diablo Range (Dupre et al. 1991:167). Unconsolidated late Pleistocene and Holocene alluvium composed of reworked fan and stream materials, such as the Modesto Formation, were deposited during the last major series of aggregational events in the eastern San Joaquin Valley (Marchand and Allwardt

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1981). Modesto Formation sediments, which date to the late Pleistocene/early Holocene overlie the central portion of the valley and are mapped in the APE. The surface of the formation is relatively flat, with a slight downward slope to the west, and it is incised by modern rivers and streams (Rosenthal and Meyer 2004).

The youngest geomorphic features in the valley are recent flood and over bank deposits, which are found primarily along the margin of the San Joaquin River and its major tributaries (Wahrhaftig et al. 1993; Warner and Hendrix 1984) and are most extensive on the valley floor, including in the vicinity of the proposed project. These deposits include Patterson and Dos Palos alluvium, which are both mapped west of the APE and date from the early to middle Holocene (Rosenthal and Meyer 2004).

The dramatic history of rising sea levels since the last glacial maximum (approximately 19,000 years ago) and the response of the San Joaquin River and its tributaries to that rising base level; as well as more recent historic period human-induced landscape changes, have significantly affected near-surface deposition within the vertical-APE.

Pre-Contact Setting

The following overview of precontact land use is based on the work of Jeffrey Rosenthal, Gregory White, and Mark Sutton (Jones and Klar 2007:147) for the Sacramento and San Joaquin Valley area.

Land use in this region falls into several broad regional patterns:

- Paleo-Indian Period
- Early Holocene (Lower Archaic)
- Early Period (Middle Archaic)
- Middle Period (Upper Archaic)
- Late Period (Emergent Period).

The earliest well-documented entry and spread of humans into California occurred at the beginning of the Paleo-Indian Period (13,500–10,500 calibrated radiocarbon years Before Present [cal B.P.]). At that time glaciers had already receded from the crest of the Sierra Nevada, the present-day Sacramento and northern San Joaquin Valleys included extensive grasslands and riparian forest, and central California's Sacramento–San Joaquin Delta estuary had not yet developed. Archaeologists believe that social units during the Paleo-Indian Period were small, highly mobile, and not heavily dependent on exchange of resources, and that exchange activities occurred on an ad-hoc, individual basis. Distinctive fluted projectile points (which likely served as all-purpose tools) and flaked crescent-shaped implements are characteristic artifacts of this period. People frequently produced these and other stone tools from lithic materials that are archaeologically exotic to the areas in which the tools are found, indicating that the tool makers may have traveled great distances.

Evidence of occupation in the Central Valley is limited to a few isolated locations, such as Tracy Lake and the south end of the valley (Jones and Klar 2007:151). Basally thinned and fluted projectile points represent cultural sites from this period. These projectile points are

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similar to Clovis points found elsewhere, which archaeologists have dated to 11,500–9550 cal B.P.

Generally drier conditions prevailed at the beginning of the Lower Archaic or Lower Holocene Period (10,500–7500 cal B.P.). As a result, areas of oak woodlands and grassland expanded at the expense of conifer forests. Milling stone technologies expanded, suggesting that people relied primarily on plant foods rather than meat, and settlement appears to have been semisedentary. Most stone tools were manufactured from local materials, and patterns of material exchange continued on an ad-hoc basis. Distinctive flaked-stone artifact types from this period include large projectile points with various shapes.

During the Middle Archaic Period (7500–2500 cal B.P.), foraging subsistence strategies gave way to more intensive food procurement practices. This period begins at the end of the mid-Holocene, when climatic conditions were similar to the present-day climate. The economic base became more diverse, and people began to use acorn-processing technology such as the mortar and pestle. Hunting remained an important source of food, although the emphasis clearly shifted toward plant foods. Sedentism appears to have been more fully developed, and the population grew and expanded into more varied parts of the landscape. Little evidence exists that regularized exchange relations developed.

The growth of sociopolitical complexity and the development of status distinctions based on material wealth mark the Upper Archaic Period (2500–800 cal B.P.). Group-oriented religions emerged; the Kuksu religious system may have originated at the end of this period. Exchange systems became more complex; archaeologists have seen evidence of regular, sustained exchanges between groups. Shell beads gained in significance as possible indicators of personal status and as important trade items. The large projectile points found in earlier periods were also present in this period, but in different styles. In addition, the bowl mortar and pestle replaced the milling stone and hand-stone throughout most regions of California.

Several technological and social changes characterized the Emergent or Late Prehistoric Period (800 cal B.P. to contact). Two subphases, Phase 1 and Phase 2, are typically recognized within the Emergent Period. The bow and arrow, which had been introduced at the end of the Upper Archaic Period, ultimately replaced the dart and atlatl used in earlier periods. Territorial boundaries between groups became well established. Distinctions in an individual's social status increasingly could be linked to acquired wealth. Groups exchanged goods more regularly and more goods, including raw materials, entered the exchange networks. The clamshell disk bead became a monetary unit for exchange, and increasing quantities of goods moved greater distances. Specialists arose to govern various aspects of production and exchange.

Historic-era Setting

The following overview is primarily focused on the historic-era land use of the APE as it relates to early exploration and settlement, river transportation, reclamation, and agriculture. These principal themes can provide historical context for cultural resources that may be present within the APE.

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Early Exploration and Settlement

The earliest recorded European explorations of the area around the mouth of the Sacramento and San Joaquin rivers occurred in 1806 and 1808. Two expeditions, one led by Alferez Gabriel Moraga and the other by Father Pedro Muñoz, passed through the general region in search of suitable mission sites (Beck and Haase 1974:18). In general, these early expeditions to the interior lands were peaceful, although by 1813 some explorations took on a more belligerent course, in part, through their pursuit and capture of neophytes who escaped from the coastal missions. Although expeditions were carried out into the interior along the major rivers, including the San Joaquin, no missions were established, apparently because seasonal inundation was viewed as a hindrance to the establishment of settlements (Waugh 1986: CR-18). As opposed to land ownership by Spain, later rule by Mexico stressed individual ownership of the land and, after Mexican secularization of the missions, vast tracts of mission lands were granted to individuals.

For the most part, these early settlements were composed of single-family farm residences or farm labor camps. Those who did not fare well in the goldfields turned to farming. The tule marshes provided forage for cattle during summer and were burned in fall to promote new growth in spring after the floodwaters receded (Waugh 1986:18–19).

Land Reclamation

In the State of California, a complex system of levees, weirs, bypasses, dams, reservoirs, and other features constructed over the last 150 years help to protect urban and rural areas against flooding, including the State's capital city, and the Sacramento and the San Joaquin Valleys. This collection of structures, lands, programs, and modes of operation and maintenance have been brought together in a State-federal flood protection system referred to as the State Plan of Flood Control (SPFC). The extensive flood control system includes approximately 1,600 miles of levee, many of which were constructed incrementally by local, state, or federal agencies. Additionally, the SPFC relies on many non-SPFC dams and other features to attenuate flows and aid in operations. The geographic area protected by the SPFC encompasses two major river systems, the Sacramento and San Joaquin rivers and tributaries with more than 43,000 square miles of combined drainage area (Bradner and Singleton 2017).

Flood History and Development

With few exceptions, the largest and most damaging floods in California have occurred in the Central Valley (DWR 2010). Devastating floods have been documented in the San Joaquin river basin that includes the current APE since the mid-1800s. Prior to this time little information is available about flooding in the area. According to histories of Native Americans and early pioneers, great floods occurred on numerous occasions, including an event in the early nineteenth century, which was responsible for thousands of deaths. This early period pre-dates the California Gold Rush, which began in 1849 and was the beginning of a series of dramatic changes in California and led to more systematic recording of river stage and/or flow. Over time, floodplains that were primarily agricultural land when levees where first built in the Central Valley grew into cities, industrial areas, and suburbs. Cities grew close to river and streams banks as channels were used for commerce. More than one million people now live and work in these floodplains (DWR 2012).

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Local Levee Construction Era

The discovery of gold in the Sierra Nevada Mountains spurred the development of practices and industries that significantly impacted flooding in the Central Valley. One of the most impactful practices introduced during the Gold Rush period was the use of hydraulic mining for recovery of gold and minerals. The sediment raised channel beds above their natural levels and in many cases above surrounding lands, which decreased channel capacity and increased the vulnerability of surrounding lands to flooding (DWR 2009 and 2012).

Lower San Joaquin Levee District

The San Joaquin River and its tributaries have historically caused flood problems which have been a threat to life and property. Flooding problems have been lessened through the activities of federal, state and local governments, and most importantly, the sacrifices and efforts of the landowners affected by the river.

Completion and operation of Friant Dam in 1947 reduced flow volumes but contributed to a major sedimentation problem in the river. Reservoir operations reduced peak flows which previously transported much of the sediment downstream. Sediment buildup has reduced the river's flow capacity and increased the potential for flooding and erosion problems. Sedimentation also led to vegetation encroachment within the San Joaquin, which further accelerated channel constriction. Subsequent flood flows were impeded and rose to higher stages due to these constrictions.

Addressing these problems took many years of planning, engineering and public hearings, before the Lower San Joaquin River Flood Control Project plan was approved. The LSJLD was created by the State Legislature in 1955. Its purpose, in part, is to operate, maintain and repair levees, bypasses, channels, control structures, and other facilities in connection with the Lower San Joaquin River Flood Control Project. Also, the LSJLD's function is to ensure that the benefits of the project, paid for by the taxpayers, are not lost and to provide protection to the people and the property for whom this project was designed.

The project was designed and constructed by the DWR between 1959 and 1966 to provide flood protection along the San Joaquin River and tributaries in Merced, Madera, and Fresno Counties. The plan covers 108 river miles, contains 191.5 miles of levees and protects over 300,000 acres. The project is a series of bypasses built to collect San Joaquin flood flows, as well as floodwater from the Kings River system. The bypasses divert flows around stretches of the San Joaquin River where constrictions impaired its capacity. The LSJLD, in accordance with its agreement with the State Reclamation Board (this agency is now called the Central Valley Flood Protection Board), is obligated to maintain not only the bypasses, but the channel of the San Joaquin River within the project, in a condition where the channel will carry flood flows in accordance with the maximum benefits for flood protection.

The flood protection results have been of immeasurable value to the benefitting landowners. The LSJLD operates with an unpaid board, minimal staff, with no investment in real property, and only the absolute necessities in equipment. While this has been accomplished to some extent only through the cooperation of landowners and other agencies in the LSJLD's area in times of emergencies, it also reflects the philosophy of the Board, which is to provide the best flood protection with minimal funds. The LSJLD landowners are the only ones who pay for the

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maintenance of the river and flood protection within this project (Lower San Joaquin Levee District 2025).

Eastside Bypass
The Eastside Bypass is part of a large-scale flood control plan that began in 1911 when the U.S. Army Corps of Engineers adopted the Jackson Plan and created the California State Reclamation Board to focus a study on large-scale flood control for the Sacramento River watershed. A flood control plan (Plan A) was adopted, and all elements were completed by 1966 (Byrd et. al. 2009:30). The Eastside Bypass supports the Mariposa Slough, and it is predominantly bound by agricultural land, with portions included in the Refuge. The East Side Bypass is a historic property under National Register of Historic Places (NRHP) and historical resource under CEQA consisting of three segments of the East Side Bypass and an earthen dam. The bypass/levee first appears on the 1961 Turner Ranch USGS topographic quadrangle map and has been continuously used and improved to the present. The bypass/levee is part of a large-scale flood control plan that began in 1911 when the USACE adopted the Jackson Plan and created the California State Reclamation Board to focus study on large-scale flood control for the Sacramento River watershed. The bypass within the APE is located west and south of the Refuge. It includes the Diversion Canal which routes water eastward from the levee. The levee measures approximately 185 to 285 ft. in width, and 5 to 15 ft. in depth. The Diversion Canal extends eastward 0.43 miles. The Diversion Canal measures 80 to 180 ft. in width, and 5 to 10 ft. in depth. The East Side Bypass measures 140 to 660 ft. on either side of the levee. The associated bypass road measures 10 to 12 ft. in width.

Methodology and Results

This section describes the various methods and results used to identify and document cultural resources at the project site.

Records Search and Literature Review

A records search was conducted by AECOM archaeologist, Karin G. Beck, at the Northwest Information Center (NWIC), of the California Historical Resources Information System (CHRIS). The search area includes the APE and a 1-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 (State of 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)

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The archival records search consisted of an archaeological and historical records and literature review and a review of previous research and documented resources on file at the Central California Information Center (CCaIC) file No. 12982I. This research provides a background of cultural resources investigations that have been conducted and the types of cultural resources that have been identified and would be expected. Table 3-9 summarizes the eight previous investigations that included Site 23-081. One resource, the historic-era Eastside Bypass has been documented within the APE (Table 3-10). Seven investigations have been conducted within one mile of the APE and eighteen resources were identified within a mile of the APE. The vast majority of these resources reflect precontact habitation and are in the vicinity of the southern portion of the APE.

Table 3-9. Summary of Previous Investigations Within the APE

CCaIC Report No.	Report Title	Author/Date	Documented Resources
ME-00611	Cultural Resources Overview and Management Plan for the San Luis, Merced, and Kesterson National Wildlife Refuges, Merced County, California	Haversat and Breschini (1985)	None in APE
ME-00701	Draft Report: Archaeological Record Search and Field Survey for the Lower San Joaquin River and Tributaries Channel Clearing Project	Wener (1984)	None
ME-03160	An Archaeological Assessment within Portions of the Lower San Joaquin Levee District and the Madera County Flood Control and Water Conservation Levees, Merced and Madera Counties, California	Shapiro (1997)	None in APE
ME-03164	Addendum Report: An Archaeological Assessment Within Portions of the Lower San Joaquin Levee District and the Madera County Flood Control and Water Conservation Levees, Fresno, Merced and Madera Counties, California	Shapiro and Shapiro (1997)	None
ME-03572	U.S. Fish and Wildlife Archaeological and Historical Resources Identification Report Under Programmatic Agreement Appendix B; Project Name: Castle Duck Club-GWMA 99	Parks (1999)	None
ME-03758	Letter Report: Cultural Resources Survey-San Joaquin River Eastside Bypass Levee Raising Project	Orlins (2000)	None
ME-07722	An Archaeological Survey for the Department of Water Resources' Geotechnical Levee Investigations of the Eastside Bypass, Merced County, California	Sikes and Rodman (2012)	P-24-001962
ME-08662	Confidential: Cultural Resources Survey and Inventory for the San Joaquin River Restoration Program Reach 4B1, Eastside Bypass Reach 2, and Eastside Bypass Reach 3, Merced County, California	Schneider et al. (2017)	P-24-001962

Notes: Report is on file at the Central California Information Center
APE = Area of Potential Effects
CCaIC = Central California Information Center

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Table 3-10. Documented Site within the APE

Primary Number	Description	CRHR Significance/NRHP Eligibility
P-24-001962	Eastside Bypass	Not eligible for the NRHP through consensus determination of a federal agency and the SHPO in 2022

Notes: Site documentation is on file at the Central California Information Center
APE = Area of Potential Effect
CRHR = California Register of Historical Resources
NRHP = National Register of Historic Places
SHPO = State Historic Preservation Officer

The historical resource consists of three segments of the Eastside Bypass and an earthen dam. The Eastside Bypass is currently individually determined eligible for NRHP under Criteria A and C by consensus through Section 106 process and listed in the CR (OHP 2022). Contributing structures to the Eastside Bypass are the Eastside Bypass Control Structure, San Joaquin River Control Structure, Sand Slough Control Structure, and the levees that form the bypass. Non-contributing structures that are not eligible for the NRHP are the lower and upper USFWS weirs, earthen dam, dredge tailings, earthen ditch, the concrete bridge, and an irrigation canal. Reclamation initiated Section 106 consultation with the SHPO that included the levee within APE pursuant to 36 CFR Part 800.6. The SHPO concurred that character-defining features of the Eastside Bypass including the levees, inclusive of their locations, dimension, and materials and that proposed modifications for the Phase 4B project including the levees would not result in adverse effects to historic properties (OHP 2018).

Pedestrian Survey

On August 28 and 29, 2024 AECOM archaeologists conducted a survey of the APE, including the levee, access/haul routes, and the laydown/staging area. The survey method consisted of pedestrian survey utilizing 15-meter parallel transects. Surface scrapes were conducted at random intervals to facilitate inspection of the ground surface and rodent back dirt was inspected for the presence of subsurface archaeological deposits. Quarry rock consisting of granite, basalt, limestone and sandstone commonly used in levee construction for riprap was observed. The levee had large sections covered in a black tarp held in place by sandbags. Particular attention was paid to exposed areas where holes in the levee from previous storm damage exists. Recent grubbing and clearing had taken place and ground visibility was high at approximately 98 percent. The staging area was covered with annual bursage and sunflower with approximately 80 percent visibility. No cultural materials were observed during the pedestrian survey.

Tribal Consultation

Tribal consultation under AB 52 and in accordance with DWR Tribal Policy was carried out for the proposed project. The details and results of this consultation are discussed in Section 3.2.14, “Tribal Cultural Resources.”

Discussion

a) **Less-than-Significant Impact.** CEQA Guidelines Section 15064.5 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 listed in or determined to be eligible

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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 architectural and structural 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.

Proposed project activities involve making repairs along existing levee slopes to restore the levee to its original design. These repairs and maintenance would not result in a significant physical change of the levee as a potentially eligible historical resource. As such, a less-than-significant impact to the levee as historical resource is anticipated. Once the repair is complete; no further disturbance to the levee would occur. Impacts would be less than significant.

b & c) **Less-than-Significant Impact with Mitigation Incorporated.** This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources as defined in PRC Section 21083.2(g). A significant impact would occur if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource. Because no known precontact or historic-era archaeological sites on file with the CHRIS are present within the project site, and field survey failed to identify any new cultural resources there would be no damage to or destruction of known precontact or historic-age archaeological resources during project construction.

Based on the CHRIS records search, the distribution of nearby archaeological sites, survey results, previous disturbance, and environmental context, the majority of the project site has a high potential to encounter or impact an unknown archaeological site or to encounter unknown human remains, which could result in physical demolition, destruction, or alteration of an unknown archeological resource. Potentially significant impacts on unknown buried archeological resources during construction would be mitigated to a less-than-significant level through DWR, or their contractor's, implementation of preconstruction training, incorporation of Tribal monitoring and archeological monitoring, and the development and implementation of a plan in the unlikely instance of the inadvertent discovery (Mitigation Measures CUL-1, CUL-2, and CUL-3). These mitigation measures would allow for the appropriate monitoring and stop work authority during construction if unknown archaeological resources are discovered. These mitigation measures would also allow appropriate handling of such resources, and, for precontact resources, consultation and coordination with the appropriate Native American representative.

There is no indication that the project site has been used for human burials. However, due to the historical nature of levee construction there is a potential 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

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Measure CUL-4, which includes provisions compliant with the PRC and Health and Safety Code would reduce this 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 project site location and unknown precontact archaeological sites may also be considered Traditional Cultural Resources or Tribal Cultural Resources (TCRs) by tribal groups pursuant to PRC 21074; 21083.09. Refer to Section 3.2.14, “Tribal Cultural Resources“, for the impact analysis and proposed Mitigation Measures TCR-1 and TCR-2, as well as CULT-1 through CUL-4, which would reduce potentially significant impacts on TCRs.

Mitigation Measure CUL-1. Preconstruction Training.

Prior to construction, a qualified archaeologist with expertise in California archaeology will develop an archaeological resources training program in consultation with interested Tribes and present to all construction and field personnel. Only personnel who have received the training will be allowed to access the APE. Topics may include the potential presence and type of Native American and non-Native American resources that might be found during operations associated with construction, and necessary reporting protocols in the event of an inadvertent discovery (see Mitigation Measure CUL-3 and CUL-4). Written materials will be provided to personnel as appropriate.

Mitigation Measure CUL-2. Conduct Monitoring at Locations Identified by Native Americans as Sensitive.

Native American monitoring may be conducted at sensitive locations under agreements between DWR and culturally affiliated Native American Tribes. DWR may include qualified tribal monitors during certain construction activities. The decision to do so is based on the nature of the activity and the cultural sensitivity of the specific location. Tribal monitors would be required to submit reports, and the results be maintained by DWR to determine the need for additional surveys related to future activities in the area. If cultural materials are encountered during construction, Mitigation Measure CUL-2 and CUL-3 will be implemented.

Mitigation Measure CUL-3. Archaeological Monitoring and a Plan for Inadvertent Discovery of Archaeological Resources.

Archaeological monitoring will occur when ground-disturbing activities occur at the proposed project repair site given the high potential for unknown archaeological resources. Monitoring will be conducted by or supervised by a qualified archaeologist who meets the Secretary of the Interior’s Professional Qualification Standards (SOIPQS). A Monitoring Plan will be developed that includes the following components:

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- Person(s) responsible for conducting monitoring activities;
- Person(s) responsible for overseeing and directing the monitors;
- How the monitoring willbe conducted at the repair site and the required format and content of monitoring reports;
- Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports;
- Protocol for notifications in the event inadvertent discoveries are encountered (e.g., collection, identification, curation);
- Methods to ensure security and protection of cultural resources;
- A protocol for notifying local authorities (i.e., Sheriff, Police) should site looting or other illegal activities occur during project implementation.
- The archaeologist in collaboration with the Tribal monitor, if present, may adjust the frequency of monitoring (e.g., from continuous to intermittent) based on the conditions and professional judgment regarding the potential to impact cultural resources.
- Contact information for all responsible personnel identified in the Plan

If Native American or historic-period resources are encountered, all activity within 100 ft of the find will immediately halt until it can be evaluated by a SOIPQS archaeologist (and a Native American representative if the artifacts are precontact). DWR will be notified, and a SOIPQS archaeologist will inspect the findings within 24 hours of discovery. If it is determined that project activities could damage a significant cultural resource, DWR willre-design the proposed project to avoid any adverse effects. If avoidance is not feasible, a qualified archaeologist will prepare and implement a detailed Archaeological Resources Management Plan in consultation with the State Historic Preservation Officer and, for Native American resources, the appropriate Native American Tribal representative.

In considering any suggested mitigation proposed by the archaeologist and Native American representative, DWR will determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is not feasible, other appropriate measures (e.g., data recovery as agreed upon between DWR, the archaeological consultant, and Native American representatives) will be instituted. DWR may re-instate work in other parts of the project site outside of designated culturally sensitive areas, while identifying appropriate management of resources.

Mitigation Measure CUL-4. Inadvertent Discovery of Human Remains

If an inadvertent discovery of human remains is made during project-related construction activities or project planning, DWR will implement the procedures listed

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below. Should human remains be identified in the project APE, the following performance standards will be met prior to implementing or continuing actions such as construction, that may result in damage to or destruction of human remains. Avoiding or substantially lessening potential significant impacts to human remains or implementation of the procedures described below maybe considered to avoid or minimize significant adverse impacts and constitute the standard by which an impact conclusion of less than significant may be reached:

- In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, all work will halt within 100 feet of the maximum extent of the find. The Construction Lead or on-site inspector will immediately notify DWR. DWR notify the Merced County Coroner and a professional archaeologist to determine the nature of the remains.
- The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the Coroner determines that the remains are those of a Native American in ancestry, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (California Health and Safety Code Section 7050[c]).
- After the Coroner's findings have been made, a qualified archaeologist who meets the SOIPQS and the NAHC-designated Most Likely Descendant (MLD), in consultation with the landowner, will determine the ultimate treatment and disposition of the remains.
- The responsibilities of DWR for acting upon notification of a discovery of Native American human remains are identified in California PRC Section 5097.9 et seq.

Upon the discovery of Native American human remains, DWR will require that all construction work must stop within 100 ft of the discovery until consultation with the MLD has taken place. The MLD will have 48 hours to complete a site inspection and make recommendations to the landowner after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. California PRC Section 5097.98(b)(2) suggests that the concerned parties may mutually agree to extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. Site-protection measures that DWR will employ are as follows:

- Record the site with the NAHC or the appropriate Information Center; and Record a document with the County in which the property is located;
- If agreed to by the MLD and the landowner, DWR or DWR's authorized representative will work with the landowner and MLD to rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the

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NAHC is unable to identify an MLD, or if the MLD fails to make a recommendation within 48 hours after being granted access to the site. DWR or DWR's authorized representative may also reinter the remains in a location not subject to further disturbance if he or she rejects the recommendation of the MLD and mediation by the NAHC fails to provide measures acceptable to DWR. Mitigation may still be needed if impacts occur to those burials; DWR will consult with the MLD to identify appropriate mitigation.

- If the human remains are of historic age and are determined to be not of Native American origin, DWR will follow the provisions of the California Health and Safety Code Section 7000 (et seq.) regarding the disinterment and removal of non-Native American human remains.

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3.2.6 Energy

Table 3-11. Environmental Issues and Determinations for Energy

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

Table Notes:
LTS = Less-than-Significant Impact
NI = No Impact

Environmental Setting

Energy is typically consumed as a result land use development in the form of electricity from renewable and non-renewable sources, natural gas, and petroleum. The primary energy resources that would be required for project construction is petroleum fuel in the form of gasoline and diesel.

Transportation is the largest energy consuming sector in California, accounting for approximately 42 percent of all energy use in the state (U.S. Energy Information Administration [EIA] 2025). More motor vehicles are registered in California than in any other state, and commute times in California are among the longest in the country (EIA 2024a). Transportation fuel has and will continue to diversify in California and elsewhere. While historically gasoline and diesel fuel accounted for nearly all demand, there are now numerous alternative fuel options becoming more market-available, including ethanol, natural gas, electricity, and hydrogen. Currently, despite advancements in alternative fuels and clean vehicle technologies, gasoline and diesel remain the primary fuels used for transportation in California and California remains the second highest consumer of motor gasoline in the country (EIA 2024a).

Discussion

a) **Less-than-Significant Impact.** The proposed project would require energy resources for the duration of construction, primarily in the form of fossil fuels (i.e., gasoline and diesel fuel) to power construction equipment and vehicles operating onsite, trucks delivering materials to the site, and construction workers driving to and from the site. Once constructed, the levee repairs would not require energy resources.

To quantify energy consumption that could result from the proposed project, this analysis uses the same project inputs and modeling as detailed in Section 3.2.3, “Air Quality“. Because CalEEMod, the emissions estimating model used to inform the air quality analysis, does not quantify fuel consumption, the proposed project’s fuel demand was quantified based on the greenhouse gas emissions estimates modeled using CalEEMod and application of the Energy Information Administration’s carbon dioxide emission coefficients (EIA 2024b). Table 3-12 presents the fuel consumption anticipated as a result of the proposed project; note that this presents total estimated fuel consumption for one construction season (2027).

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Table 3-12. Modeled Construction Fuel Consumption

Energy Consuming Component	Gasoline (gallons)	Diesel (gallons)
On-site Equipment	0	166,198
On-road Vehicles	5,366	65,374
Total	**5,366**	**231,572**

Notes:
Modeled by AECOM in 2025.
See Appendix B for detailed emissions modeling and energy calculations.

Proposed project construction is expected to consume a total of 5,366 gallons of gasoline and 231,572 gallons of diesel fuel for construction worker trips, haul truck trips, and construction equipment use. This is considered a conservative estimate of fuel consumption as it assumes that equipment would operation continuously for 10 hours daily over the entire construction duration and also assumes maximum on-site workers every day and that all excavated material would be hauled offsite. However, fuel consumption rates would vary over the duration of construction based on the intensity of construction activities. The actual intensity of construction and related fuel consumption would be influenced by factors such as the amount and duration of equipment use during different construction activities, as well as the number of vehicle trips and distances traveled during each phase of construction.

The proposed construction-related activities and associated equipment use are necessary components of the repair to the levee. Related fuel consumption would be temporary, ceasing after the completion of construction, and would not represent a significant demand on available energy resources, beyond normal construction fuel usage. Furthermore, construction would not include unusual characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites. Therefore, construction associated with the proposed project would not result in inefficient, wasteful, or unnecessary use of fuel or other energy sources. This impact would be less than significant.

b) **No Impact.** Proposed project construction would result in energy consumption in the form of petroleum fuel, as detailed in a), and would not result in an inefficient or wasteful consumption of energy resources.

The primary energy use associated with the proposed project is transportation energy related to worker vehicle trips and haul trips. Existing energy standards are promulgated either through the regulation of fuel refineries and products, such as the Low Carbon Fuel Standard (LCFS), which mandates a 10 percent reduction in the non-biogenic carbon content of vehicle fuels by 2020. Additionally, there are other regulatory program with emissions and fuel efficiency standards established by EPA and CARB such as Pavley II/LEV III and the Heavy-Duty (Tractor-Trailer) GHG Regulation. CARB has set a goal of 4.2 million Zero Emissions Vehicles (ZEV) on the road by the year 2030. Further, construction sites need to comply with State requirements designed to minimize idling of commercial vehicles and off-road equipment and associated emissions, which also minimizes use of fuel (e.g., California

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Code of Regulations, Title 13 Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes).

As the state's primary energy policy and planning agency, the California Energy Commission prepares the Integrated Energy Policy Report (CEC 2024). This report forecasts future energy demands and evaluates existing and planned energy resources to meet such demands, as well as provides a framework for next steps and recommendations to continue to advance California's renewable energy resource goals. The Integrated Energy Policy Report addresses various aspects of the energy sector, including transportation fuels and the transition to alternative transportation vehicles. The report documents energy forecasting and recommended action for plans, programs, and policies related to construction equipment and vehicles, including those regulations detailed above that have thus far been implemented as federal and state policy for renewable energy and energy efficiency in construction equipment and on-road vehicles. In addition, the California Energy Commission invests in programs and projects to make California's transportation sector cleaner, such as through the Alternative and renewable Fuel and Vehicle Technology Program that directs investments to develop and deploy low carbon fuels, infrastructure for zero and near-zero emission vehicles, and advanced vehicle technologies.

The plans and programs discussed above do not directly regulate the proposed project. However, the proposed project would comply with all applicable federal and state regulations, including use of compliant equipment and vehicles and operating equipment in accordance with regulation for vehicle and equipment idling limitations and maintenance requirements to maintain operational fuel efficiency. The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and impacts would not occur.

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3.2.7 Geology and Soils

Table 3-13. 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?	NI
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?	LTS/M

Table Notes:
LTS = Less-than-Significant Impact
LTS/M = Less-than-Significant Impact with Mitigation Incorporated
NI = No Impact

Environmental Setting

Regional and Local Geology

The project site is situated in the San Joaquin Valley which, together with the Sacramento Valley, comprise the Central Valley Geomorphic Province. The Central Valley is a forearc basin composed of thousands of feet of sedimentary deposits, which has undergone alternating periods of subsidence and uplift over millions of years. Based on a review of geologic mapping (Wagner et al. 1991), the northern half of the proposed levee repair area consists of the Modesto Formation on both the waterside and the landside. The proposed staging area is also composed of the Modesto Formation. The southern end of the proposed repair area consists of Dos Palos Alluvium on the waterside and the Modesto Formation on the landside.

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Paleontological Resources

Paleontological Sensitivity Assessment Criteria

The potential paleontological sensitivity of a project area can be assessed by identifying the paleontological importance of rock units that are exposed there. A paleontologically sensitive rock formation is one that is rated high for potential paleontological productivity (i.e., the recorded abundance and types of fossil specimens, and the number of previously recorded fossil sites) and is known to have produced unique, scientifically important fossils. Exposures of a specific rock formation at any given project site are most likely to yield fossil remains representing particular species or quantities similar to those previously recorded from the rock formation in other locations. Therefore, the paleontological sensitivity determination of a rock formation is based primarily on the types and numbers of fossils that have been previously recorded from that rock unit.

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the Society of Vertebrate Paleontology (2010) established four categories of sensitivity for paleontological resources: high, low, no, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity. Areas consisting of high-grade metamorphic rocks (e.g., gneisses and schists) and plutonic igneous rocks (e.g., granites and diorites) are considered to have no sensitivity. In keeping with the SVP significance criteria, all vertebrate fossils are generally categorized as being of potentially significant scientific value.

For the purposes of this analysis, a unique paleontological resource or site is one that is considered significant under the following professional paleontological standards. An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

- a type specimen (i.e., the individual from which a species or subspecies has been described);
- a member of a rare species;
- a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- a skeletal element different from, or a specimen more complete than, those now available for its species; or
- a complete specimen (i.e., all or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; the fossil record is well developed and well documented,

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and they would generally not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

Paleontological Sensitivity Assessment
The Dos Palos alluvium is of Holocene age (i.e., the last 11,700 years), and consists of moderately to well sorted, moderately to well bedded unconsolidated sand and silt with lesser amounts of gravel, clayey silt, and clay (Lettis 1982). 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, the Dos Palos Alluvium is not paleontologically sensitive.

The Modesto Formation is of late Pleistocene age, ranging from approximately 12,000 to 42,000 years Before Present. This formation is composed of unconsolidated, unweathered to slightly weathered deposits of gravel, sand, silt, and clay. The Modesto Formation forms low alluvial terraces, and some young alluvial fans and abandoned channel ridges, of rivers throughout the Central Valley (Helley and Harwood 1985, Marchand and Allwardt 1981).

The results of a paleontological resources records search performed at the University of California, Berkeley Museum of Paleontology (UCMP) on February 19, 2025, indicate there are no recorded fossil localities at the project site. However, the Modesto Formation is known to contain unique, scientifically important vertebrate fossil remains. Vertebrate fossil specimens from sediments referable to the Modesto Formation have been reported at a variety of locations throughout the Sacramento and San Joaquin Valleys, including Stockton, Tracy (along the Delta-Mendota Canal), Manteca, Modesto, and Merced (Jefferson 1991a and 1991b, UCMP 2025). The Tranquility site in Fresno County (UCMP V-4401), has yielded more than 130 Rancholabrean-age fossils of fish, turtles, snakes, birds, moles, gophers, mice, wood rats, voles, jack rabbits, coyote, red fox, grey fox, badger, horse, camel, pronghorn antelope, elk, deer, and bison from sediments referable to the Modesto Formation. Because of the large number of vertebrate fossils that have been recovered from the Modesto Formation throughout the Central Valley, it is considered to be of high paleontological sensitivity.

Seismicity
The project site is situated in the flat alluvial plain of the San Joaquin Valley. The nearest active fault is the Cottonwood Arm section of the Ortigalita Fault Zone, which is approximately 28 miles west of the project site in the Coast Ranges (Jennings and Bryant 2010, U.S. Geological Survey and California Geological Survey 2017). This fault is zoned under the Alquist-Priolo Earthquake Fault Zoning Act (California Geological Survey 2022). The O’Neal Fault System, which is not considered active but has shown evidence of movement in the middle to late Quaternary period (i.e., the last 700,000 years), is approximately 22 miles southwest of the project site in the foothills of the Coast Ranges (Jennings and Bryant 2010, U.S. Geological Survey and California Geological Survey 2017).

The project site is situated in an area that is classified with a moderately low potential for strong seismic ground shaking (Branum et al. 2016) and is in a flat area that is not subject to landslide hazards.

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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 ft 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 Characteristics

Based on a review of soil survey data provided by the U.S. Natural Resources Conservation Service (NRCS 2024), native soil at the proposed levee repair area consists of Fresno loam, Merced silt loam, Pozo clay loam, and Rossi clay loam. The proposed staging area is composed of Fresno loam and Pozo clay loam. Based on NRCS (2024) soil characteristics, the Merced silt loam has a high-water erosion hazard. All of the soils are rated with a low to moderate wind erosion hazard. All of the soils are rated with a high to very high stormwater runoff potential (i.e., hydrologic groups C and D, respectively).

The proposed work area consists of approximately 2.4 miles along the waterside of the levee along the Eastside Bypass. The levee itself consists of reworked, engineered, and compacted materials derived from native soil deposits in the area. Subsurface soil data for Site 23-081 was obtained by the California Department of Water Resources between 2006 and 2015 from several boring logs located along the levee crown and landside toe. The boring results indicated that a variety of soils are present, including sand, silty sand, silt, poorly graded sand with silt, clayey sand with silt, clayey sand, clay with silt, and clay.

Expansive soils are composed largely of clays, which greatly increase in volume when saturated with water and shrink when dried (referred to as “shrink-swell” potential). Expansive soils in levees can result in levee destabilization and shallow surface slides along the sides of levees. However, data available for the levee repair area indicates that soils with a high shrink-swell potential are not present (Kleinfelder 2011).

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. The project site is not located within or near an Alquist-Priolo Earthquake Fault Zone (California Geological Survey 2022). Thus, there would be no impact.

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 (i.e., the last 11,700 years). The project site is located in an area that has not historically experienced large magnitude earthquakes (U.S. Geological Survey 2025). The nearest active fault is

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approximately 28 miles west of the project site in the Coast Ranges. The 2016 map showing the probabilistic *Earthquake Shaking Potential for California* (Branum et al. 2016) indicates that the project site is in an area of moderately low potential shaking hazard intensities (i.e., estimated peak horizontal ground acceleration of 0.45*g*). Furthermore, the proposed project is a levee maintenance and repair project, and as such the seismic design or engineering requirements contained in USACE Engineering Manual 1110-2-1913 (USACE 2000) do not apply because the USACE has determined that repair projects of this nature would not be subject to seismic hazards. Therefore, this impact would be less than significant.

a) iii) **No Impact.** Active seismic sources are a relatively long distance from the project site, groundwater in the project area ranges from approximately 40 to 50 ft below the ground surface (DWR 2023), and the project site soils are composed of engineered levee materials and primarily consolidated Pleistocene-age native Modesto Formation deposits. Therefore, liquefaction would not represent a hazard and there would be no impact.

a) iv) **No Impact.** The project site and the surrounding lands are flat. Thus, there is no potential for landslides due to terrain hazards and there would be no impact.

b) **Less-than-Significant Impact.** The proposed project would involve ground-disturbing construction activities, including vegetation clearing and grubbing, excavating, grading, and placing earthfill and launch rock. These activities would expose soil to potential erosion from wind and rain. The limits of work for the repair would be approximately 20.9 acres and the staging/laydown area would be approximately 7.3 acres, resulting in a total area of potential disturbance of approximately 28.2 acres. DWR and the construction contractor would implement industry-standard construction BMPs to control stormwater and nonstormwater discharges at the construction site in compliance with the National Pollution and Discharge Elimination System, Statewide Construction General Permit (Order No. 2022-0057- Division of Water Quality [DWQ], National Pollutant Discharge Elimination System [NPDES] No. CAS000002). A stormwater pollution prevention plan would be developed, specifying the BMPs to be used to minimize soil and sediment discharges from the site, minimize potential contamination of stormwater, and prevent hazardous material spills. Furthermore, DWR is required to comply with applicable water quality certification permits pursuant to Section 401 of the Clean Water Act to prevent water quality pollutants such as silt, sediment, hazardous materials, and construction related fluids from entering receiving waters. DWR will incorporate its standard environmental commitments related to water quality, which are described in detail in Section 2.5.10 (Chapter 2, “Project Description“). As part of these environmental commitments, DWR will install erosion control measures such as straw bales, silt fences, fiber rolls, or equally effective measures, at project locations adjacent to stream channels, drainage canals, and wetlands. Environmental awareness training to train the contractor on the proper use of BMPs and applicable permit requirements will be conducted to prevent erosion and protect receiving water quality. DWR will also minimize ground and vegetation disturbance by establishing designated equipment staging areas, access routes, spoils and soil stockpile areas,

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and equipment exclusion zones prior to the commencement of activity. Therefore, this impact would be less than significant. (Please see Section 3.2.10, “Hydrology and Water Quality,” for additional details and discussion related to construction and operational water quality impacts.)

c) **Less-than-Significant Impact.** The proposed project is a levee repair project that is intended to address existing levee instability resulting from damage during 2023 storm events. As described in detail in Chapter 2, “Project Description,” the levee repair site would be excavated of existing levee soils disturbed by the structural failure and transition zones and the repair site would be shaped for earth fill placement and then compaction. After compaction, geotextile fabric would be placed on top of earthfill and function as a separator between earthfill and launch rock. Launch rock is the final material placed on top of the geotextile fabric and would extend from the bottom to the top of the repair. The proposed levee repair has been appropriately designed and engineered to provide stability per USACE Engineers Manual 1110-2-1913 (USACE 2000). Therefore, this impact would be less than significant.

d) **No Impact.** Based on the results of site-specific soil borings, sediments within the levee repair site are not expansive. Furthermore, the proposed project includes placement of imported fill material for use at the repair site that is not expansive, per USACE Engineers Manual 1110-2-1913, to ensure future levee stability (USACE 2000). Thus, there would be no impact.

e) **No Impact.** The proposed project involves repair of an existing levee and does not include or require wastewater treatment systems. Temporary, portable restrooms would be provided for construction workers during the construction phase. Thus, there would be no impact.

f) **Less-than-Significant Impact with Mitigation Incorporated**.

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. There are no unique geologic features at the project site; thus, there would be no impact.

Paleontological Resources

The Dos Palos Alluvium at the southern end of the waterside of the levee repair is of Holocene age. 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, project-related construction activities in the Dos Palos Alluvium would have no impact on unique paleontological resources.

Due to the large number of vertebrate fossils recovered from the Modesto Formation throughout the Central Valley, this formation is considered to be of high paleontological

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sensitivity. Most of the levee repair work is anticipated to be focused on sediments within the waterside of the existing levee, which are comprised of reworked, engineered, and compacted materials derived from native sediment in the area (primarily the Modesto Formation). Previous activities associated with the existing levee construction would likely have destroyed any paleontological resources that may have been present. Nevertheless, earthmoving activities within the Modesto Formation at the levee repair site and the staging area could result in accidental damage to or destruction of unique paleontological resources. The following mitigation measure would be implemented to reduce impacts to unique paleontological resources to a less-than-significant level by implementing preconstruction training of all construction workers, and preparing and implementing a plan to evaluate and recover any unique paleontological resources that are inadvertently discovered during construction activities.

Mitigation Measure GEO-1: Preconstruction Training and a Recovery Plan for Inadvertent Discovery of Paleontological Resources.

Prior to the start of earthmoving activities associated with the proposed project, DWR will do the following:

1. Retain the services of either a qualified archaeologist or a qualified paleontologist to provide training to all construction personnel involved with earthmoving activities regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered.

2. If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work within 100 ft of the find and will notify DWR.

3. If paleontological resources are discovered, DWR will retain a qualified paleontologist to evaluate the resource and prepare and implement a recovery plan. The recovery plan may include, but is not limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum curation for any specimen recovered, and a report of findings. The recovery plan will be submitted to DWR for review and approval. Recommendations in the recovery plan will be implemented before construction activities can resume at the site where the paleontological resource(s) were discovered.

4. If any substantially complete fossil skeletons are recovered from the project site, DWR will consider donating the fossil remains for public display at the Fossil Discovery Center in Chowchilla at 19450 Ave 21 ½ (Telephone: 559-665-7107 or website: https://www.maderamammoths.org/home.html).

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3.2.8 Greenhouse Gas Emissions

Table 3-14. 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/M
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	LTS/M

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

Environmental Setting

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the 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. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead 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 (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. Human-caused, or anthropogenic, emissions of these GHGs in excess of natural ambient concentrations are generally considered responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change (Intergovernmental Panel on Climate Change [IPCC] 2021).

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 CO_2. Therefore, CO_2 has a GWP of 1. GHGs with lower emissions rates than CO_2 may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2 (i.e., have a higher GWP). For example, N_2O has a GWP of 298, meaning that 1 ton of N_2O has the same contribution to the greenhouse effect as approximately 298 tons of CO_2 (CARB 2022). The concept of CO_2 equivalence (CO_2e) is used to account for the different GWP potentials of GHGs. GHG emissions are typically measured in terms of pounds or tons of CO_2e and are often expressed in metric tons (MT) CO_2e.

GHGs are emitted by natural processes and as a result of human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition. GHGs are not monitored at local air pollution monitoring stations and do not

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represent a direct impact to human health. Rather, GHGs generated locally contribute to global concentrations of GHGs, which changes the climate and environment.

The temperature record shows a decades-long trend of warming, with the newest release in long-term warming trends announcing 2023 ranked as the warmest year on record with an increase of 1.6 degrees Fahrenheit compared to the 1951-1980 average (NASA 2024). The IPCC concluded that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the warming of the 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 there is scientific consensus that warming is largely attributable to anthropogenic activities.

To better understand the sources and magnitudes of GHG emissions, public and private entities at the Federal, State, and local level are developing GHG inventories. At the state level, California GHG source emissions totaled 371.1 million MT CO_2e in 2022 (CARB 2024). The transportation sector represents the single largest source of California's GHG emissions in 2022, accounting for 39 percent of total GHG emissions. Transportation was followed by industrial sources, which accounted for 23 percent, and then by the electricity sector (in-state sources and imported electricity), which accounted for 16 percent of total GHG emissions (CARB 2024).

Approach to Analysis

Addressing the potential impacts from GHG emissions generated as a result of a project requires an agency to make a determination as to what constitutes a significant impact.

Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See State CEQA Guidelines Section 15064[h][3].) Pursuant to State CEQA Guidelines Sections 15064(h)(3) and 15183(b), lead agencies may rely on plans for the reduction of GHGs in evaluating a project's GHG emission; a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of a previously adopted plan or mitigation program, including a GHG reduction plan or climate action plan, under specified circumstances.

DWR has developed a Greenhouse Gas Emissions Reduction Plan (GGERP), first adopted in 2012 and since updated in 2020 and 2023 to review GHG reductions achieved and update strategies for further reductions consistent with legislative changes for GHG reductions since the initial GGERP adoption (DWR 2024). The GGERP guides DWR project development and decision making with respect to energy use and GHG emissions, and details steps that DWR will take to reduce its emissions.

Consistent with the State climate change laws, policies, and goals at the time, the 2012 GGERP established the following GHG emissions reduction goals to reduce emissions to 50 percent below 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The 2012 Plan also included 11 specific measures designed to achieve these reduction goals. DWR achieved its near-term goal five years early. Update 2020 included a mid-range goal to reduce emissions to 60 percent below 1990 levels by 2030, exceeding the statewide emissions

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reduction target of 40 percent below the 1990 level by 2030, which was established in Senate Bill 32 (2016); DWR met this goal nine years early. Update 2023 included substantive changes to the following three components of the 2012 Plan and Update 2020: (1) GHG emissions reduction goals; (2) GHG quantification; and (3) GHG emissions reduction measures. A key updated goal in DWR's GGERP Update 2023 is to, "[b]y 2035, supply 100 percent of electricity load with zero-carbon resources and achieve carbon neutrality," in alignment with current state GHG emissions reduction targets and strategies.

In addition to establishing DWR GHG emissions reduction goals, describing strategies for the achievement of these goals, and monitoring and revising the plan to GHG reduction targets are met and exceeded, the GGERP is also used to streamline DWR's CEQA analysis for most DWR projects' potential to contribute to the cumulative impact of increased GHG emissions in the atmosphere, pursuant to CEQA Guidelines sections 15064(h)(3), 15064.4(b)(3), 15130(d), and 15183.5. As required by the CEQA Guidelines, environmental documents for later projects that rely on Update 2023 will "identify those requirements specified in [Update 2023] that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project." (California Code of Regulations., Title. 14, Section 15183.5, subdivision (b)(2)). Therefore, for the purposes of analysis, the proposed project impacts related to GHG emissions are evaluated in the context of consistency with the DWR GGERP Update 2023.

Discussion

a) **Less-than-Significant Impact with Mitigation.** Given the relatively small levels of emissions generated by a typical project in relationship to the total amount of GHG emissions generated on a national or global basis, individual projects, such as the proposed project, are unlikely to contribute to climate change significantly by themselves. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new projects could result in significant, cumulative impacts with respect to climate change. Therefore, this impact is assessed within the cumulative context of the proposed project's potential contribution to significant impacts on global climate change.

The proposed project construction GHG emissions were modeled using the same methods and assumptions as those described in Section 3.2.3, "Air Quality". In addition to criteria air pollutants, the CalEEMod also estimates GHG emissions associated with construction and operational activities. For construction, GHG emissions were estimated for off-road construction equipment, material delivery trucks, haul 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 B. Once constructed, the levee repairs would not result in ongoing GHG emissions.

The local air district, SJVAPCD, has not established any current quantitative thresholds of significance by which to evaluate the significance of a project pursuant to CEQA. As described, in the "Approach to Analysis," if the proposed project is consistent with

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DWR's GGERP Update 2023, it may be considered to have a less-than-significant GHG impact.

GGERP Section X, "Future DWR Projects Use of Update 2023 for CEQA Process," outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. Among these steps are the following:

- Analyze GHG emissions from construction of the project.
- Identify, quantify, and analyze the project's GHG emissions.
- Determine that the project's construction emissions do not exceed the levels of construction emissions analyzed in the GGERP.
- Incorporate DWR's project-level GHG emissions reduction strategies into the design of the project.
- Determine that the project does not conflict with DWR's ability to implement any of the specific project GHG emissions reduction measures identified in the GGERP.
- Determine that the project would not add electricity demands to the State Water Project system of 100 gigawatt-hours per year of greater.

GHG emissions from construction of the proposed project have been analyzed, identified, and quantified and are presented in detail in Appendix B. The proposed project's construction emissions do not exceed the levels of construction emissions analyzed in the GGERP. The GGERP notes that projects that generate 25,000 MT of CO_2e over the entire project construction period, or 12,500 MT of CO_2e in any single construction year, are considered to be "extraordinary construction projects." Such extraordinary projects are not included in the GGERP and are not eligible to use the plan to streamline the cumulative impacts analysis of later projects under CEQA. As detailed in Appendix B, the proposed project would result in approximately 2,522 MT CO_2e during construction. Using the GGERP threshold, the proposed project is not considered an extraordinary construction project and would not, by itself, potentially adversely affect DWR's ability to achieve its GHG emissions reduction goals. In addition, the proposed project would not conflict with DWR's specific project GHG emissions reduction measures identified in the GGERP and would not increase electricity demands of the State Water Project.

Nonetheless, the proposed project could be considered inconsistent with the GGERP if it did not implement applicable project-level GHG emissions reduction strategies of the GGERP. Mitigation Measure GHG-1, below, identifies the emissions reduction measures applicable to the proposed project to ensure consistency with the GGERP. With implementation of Mitigation Measure GHG-1, the proposed project would have a less-than-significant impact with respect to conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases Therefore, this impact would be less than significant with mitigation.

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Mitigation Measure GHG-1: Implement DWR BMPs for Construction Practices.

The following GGERP Plan BMPs will be implemented as part of construction activities associated with the proposed project:

- **BMP 1.** Evaluate project characteristics, including location, project workflow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.
- **BMP 2.** Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.
- **BMP 3.** Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.
- **BMP 6.** Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.
- **BMP 8.** Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion
- **BMP 9.** Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.
- **BMP 10.** Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules will be detailed as required by Air Quality Control Plans.
- **BMP 11:** Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on site and every two weeks for equipment that remains on site. Check vehcies used for hauling materials off site weekly for correct tire inflation. Procedures for the tire inflation program will be documented as required in Air Quality Control Plans.
- **BMP 14.** For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box type

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trailer is used for hauling, a SmartWay[2] certified truck will be used to the maximum extent feasible.

b) **Less-than-Significant Impact with Mitigation.** DWR adopted its GGERP, which details DWR's efforts to reduce GHG emissions consistent with Executive Order S-3-05 and Assembly Bill (AB) 32 and consistent with more recent State targets established in Senate Bill (SB) 32 (2016), SB 100 (2018), Executive Order B-18-12 (2012), Executive Order B-30-15 (2015), Executive Order B-55-18 (2018), SB 1020 (2022) and SB 1203 (2022). The GGERP estimates historical (back to 1990), current, and future GHG emissions from DWR's operations, construction, maintenance, and business practices (e.g., building-related energy use). The plan specifies aggressive 2035 and 2050 emissions reduction goals, and identifies a list of measures to achieve these goals. The plan's 2035 goal is to achieve carbon neutrality by 2035, which exceeds the State's target for carbon neutrality by 2045 under AB 1279 (2022).

As detailed in Impact a), the proposed project would be consistent with the GGERP with implementation of Mitigation Measure GHG-1. The GGERP was specifically developed with consideration of State legislation including the State's GHG reduction targets and Scoping Plan. Therefore, with implementation of Mitigation Measure GHG-1, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases, and this impact would be less than significant with mitigation.

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DWR. *See* California Department of Water Resources.

[2] The U.S. Environmental Protection Agency has developed the SmartWay truck and trailer certification program to set voluntary standards for trucks and trailers that exhibit the highest fuel efficiency and emissions reductions. These tractors and trailers are outfitted at point of sale or retrofitted with equipment that significantly reduces fuel use and emissions including idle reduction technologies, improved aerodynamics, automatic tire inflation systems, advanced lubricants, advanced powertrain technologies, and low rolling resistance tires.

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3.2.9 Hazards and Hazardous Materials

Table 3-15. 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

Table Notes:
LTS = Less-than-Significant Impact
NI = No Impact

Environmental Setting

Hazardous Materials Sites

AECOM performed a search of publicly available databases maintained under PRC Section 65962.5 (i.e., the “Cortese List”) to determine whether any known hazardous materials are present either in or within 0.25 mile of the project site. These searches included the EnviroStor database maintained by the California Department of Toxic Substances Control (DTSC 2025), and the GeoTracker database maintained by the State Water Resources Control Board (SWRCB 2025). The results of the database search indicated there is a closed site (listed as both a LUST Cleanup Site and a Cleanup Program Site) on West El Nido Road approximately 0.25 mile east of the proposed levee repair site and the proposed staging/laydown area. Another closed site (listed as LUST Cleanup Site) is located along Sandy Mush Road in the Refuge. Closed sites are not part of the Cortese List. The site on West El Nido Road involved soil and groundwater contamination from former farm underground diesel and gasoline storage tanks. The tanks were removed, and soil and groundwater were remediated in the 1990s. The site on Sandy Mush Road involved soil contamination from a former underground storage tank, and remediation occurred in the 1990s. The nearest open, active hazardous materials site is approximately 6 miles southwest of the project site near Dos Palos.

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In addition, AECOM performed a search of the USEPA's National Priorities List (Superfund) database. The nearest Superfund site (the former Castle Air Force Base) is approximately 16 miles northeast of the project site (EPA 2024). Finally, there are no wells reported to be located within and near by the project site, according to the California Geologic Energy Management Division Well Finder database (CalGEM 2026).

Schools

There are no schools within 0.25 mile of the project site. The nearest K–12 school is in the community of El Nido, approximately 5.25 miles east of the project site.

Airports

The nearest airport is the Merced Regional Airport, approximately 10 miles northeast of the project site.

Wildland Fire Hazards

State Responsibility Areas (SRAs) are areas where the California Department of Forestry and Fire Protection (CAL FIRE) is the primary emergency response agency responsible for fire suppression and prevention. Land where the primary responsibility for firefighting falls within the purview of a federal agency are referred to as Federal Responsibility Areas (FRAs). The project site is situated within an FRA in an area that has not been classified for fire hazards (CAL FIRE 2024). The primary entities responsible for fire suppression activities at the project site is the U.S. Fish & Wildlife Service (associated with the Refuge) and Merced County Fire Department, Battalion 16 (Merced County Fire Department 2022).

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 (CHP) and the Caltrans, and use of these materials is regulated by DTSC, as outlined in CCR Title 22. DWR 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. Because the proposed project would be required to implement and comply with existing hazardous material regulations, and because each of these regulations is specifically designed to protect the 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 this impact would be less than significant.

b) **Less-than-Significant Impact.** The proposed project would involve minor earthwork associated with erosion repairs to approximately 12,473 linear feet along the waterside of the Eastside Bypass. A laydown/staging area (approximately 7 acres) south of the repair site would be used to store equipment and materials and for construction worker parking. Construction of the proposed project 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

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operation. The use of these materials is heavily regulated at the federal, state, and local level, and DWR and its construction contractor are required to follow all applicable laws and regulations. Furthermore, as described in detail in Subsection 2.4.5, “Water Quality,” (in Chapter 2, “Project Description“) DWR and its construction contractor will implement appropriate BMPs to reduce the potential release of water quality pollutants, including hazardous materials, to receiving waters and the environment and will comply with the terms and conditions contained in any applicable permits (e.g., DWR will prepare and implement a hazardous materials management and spill response plan). Therefore, 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, and this impact would be less than significant.

c) **No Impact.** The project site and the proposed haul and access routes are not located within 0.25 mile of a school. Furthermore, only small amounts of hazardous materials such as fuels and oils to maintain construction equipment would be used in the construction laydown/staging area, for a period of 28 weeks. 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 results of the GeoTracker and EnviroStor database searches, which are maintained as part of the Cortese List, indicate there are two closed hazardous materials spill sites in the project vicinity (SWRCB 2025, DTSC 2025). Closed sites are not part of the Cortese List. However, closed sites can pose a human health or environmental hazard if excavation occurs in areas where contaminated soil or groundwater are still present; thus, the two closed sites in the project vicinity are briefly discussed below.

The former Newhall Land & Ranch site is situated on West El Nido Road approximately 0.25 mile west and north of the proposed levee repair and staging/laydown areas, respectively. West El Nido Road and Sandy Mush Road would simply be used as a project site access route; there would be no project-related excavation, staging, or storage at these former hazardous materials sites, which was remediated in the 1990s. Thus, there would be no hazard.

The nearest open, active site on the Cortese List is in Dos Palos approximately 6 miles southwest of the project site. There are also no Superfund sites in the project vicinity. Thus, there would be no impact related to hazardous materials from construction on a Cortese-listed site or other known hazardous materials site.

e) **No Impact.** The project site is not located within the boundaries of an airport land use plan or within two miles of a public airport or public use airport. Thus, there would be no impact from airport or aircraft hazards.

f) **No Impact.** Project-related construction equipment and materials would be staged and stored in an approximately 7-acre area along the landside of the Eastside Bypass,

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south of West El Nido Road. During the 28-week construction period (, the proposed project would involve an estimated 65 round trip truckloads of material per day along the haul route shown in Figure 2-2 (in Chapter 2, “Project Description”). This haul route consists of the levee crown along the Eastside Bypass, which is not available for public access. The haul route would also include portions of Sandy Mush Road, CA 59, and West El Nido Road, which are paved roadways used by local residents, workers, and recreational access to the Refuge. The presence of the proposed project’s haul trucks on these roadways would not impede the ability of local residents, workers, or recreationists within the refuge, to evacuate in the event of an emergency because there would not be sufficient traffic volumes from the proposed project to impede roadway circulation and given the rural nature of the surrounding area there are relatively few residents, workers, and recreationists that would require evacuation in the event of an emergency.

Project operation would not alter the existing drainage pattern of the Eastside Bypass or any upstream or downstream waterbodies, or any high water events that are contained by the State Plan of Flood Control levees. Restoration of the flood capacity of the Eastside Bypass that would result from the proposed project would better accommodate high water events and would therefore help reduce the need for emergency evacuation on local roadways.

For the reasons listed above, the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and thus there would be no impact.

g) **No Impact.** The project site is located in an Local Responsibility Areas (LRA) and FRA, in an area that has not been classified for fire hazards (CAL FIRE 2024). The project site and vicinity are situated in the middle of the San Joaquin Valley within and south of the Refuge. The surrounding lands are used for agriculture (irrigated row crops). The wildfire hazard potential in the project area is low, and the proposed project would not exacerbate existing or create new fire hazards. Thus, there would be no impact.

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3.2.10 Hydrology and Water Quality

Table 3-16. 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	LTS
iv) impede or redirect flood flows?	NI
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	LTS/M
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	LTS

Table Notes:
LTS = Less-than-Significant Impact
LTS/M = Less-than-Significant Impact with Mitigation Incorporated
NI = No Impact

Environmental Setting

The project site is located along the middle section of the Eastside Bypass north of Sand Slough (i.e., the Middle Eastside Bypass of the Eastside Bypass). The Eastside Bypass extends from the confluence of the Fresno River and the Chowchilla Bypass to its confluence with the San Joaquin River. It conveys flood flows from the San Joaquin, Fresno, and Chowchilla Rivers; Berenda and Ash Sloughs; and Deadman, Owens, and Bear Creeks. (DWR and Reclamation 2018)

The Middle Eastside Bypass extends from the Sand Slough Control Structure located at the confluence of the Upper Eastside Bypass and Sand Slough, to the Eastside Bypass Control Structure located near the head of the Mariposa Bypass. Flood flows from the San Joaquin River that are conveyed through the Chowchilla Bypass, the Upper Eastside Bypass, and the Middle Eastside Bypass can be split between the Mariposa Bypass and the Lower Eastside Bypass. The Mariposa Bypass Control Structure regulates the proportion of flood flows that continues down the Eastside Bypass or is returned to the San Joaquin River via the Mariposa Bypass. The Lower San Joaquin River Flood Control Project Operation and Maintenance Manual states that the operating rule for the Mariposa Bypass is to divert all flows to the San

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Joaquin River when flows in the Eastside Bypass above the Mariposa Bypass (i.e., flows in the Middle Eastside Bypass) are less than 8,500 cubic foot per second (cfs); flows greater than 8,500 cfs remain in the Eastside Bypass, eventually discharging back into the San Joaquin River at the Eastside Bypass/Bear Creek Confluence with the San Joaquin River. Historical operations deviate from this rule because of the elevation difference between the Eastside Bypass Control Structure and the Mariposa Bypass Control Structure. (DWR and Reclamation 2018)

The project site is located at the waterside slope and levee crown road of the east levee at the Middle Eastside Bypass. This levee was constructed as part of the Lower San Joaquin River Flood Control Project or Lower San Joaquin River and Tributaries Project (DWR and Reclamation 2018). The LSJLD is responsible for operations and maintenance of project levees within the project area. The LSJLD was created in 1955 by a special act of the State Legislature to operate, maintain, and repair levees, bypasses, and other facilities built in connection with the Lower San Joaquin River Flood Control Project. The LSJLD encompasses approximately 300,000 acres in Fresno, Madera, and Merced Counties (DWR and Reclamation 2018). The existing Eastside Bypass levees are currently maintained by LSJLD as provided in an agreement with CVFPB. This includes routine vegetation management, levee inspections, levee restoration and repair, rodent control, encroachment removal, and levee patrolling during flood events. The project site is located within the 100-year floodplain, designated Zone A, a special flood hazard area designated by the Federal Emergency Management Agency (FEMA 2008).

The Eastside Bypass typically remains dry until flood flows or Restoration Flows are conveyed, although there is some ponding within the bypass in low-lying areas. Water is typically in the bypass November 15 to June 15 of each water year, with rainfall contributing to higher flows during late fall/winter, and snowmelt contributing to higher flows in spring. Friant Dam flood releases occur on average once every 3 to 4 years. Flows up to a maximum of approximately 300 cfs in the Eastside Bypass could also occur as a result of the San Joaquin Restoration program. (DWR and Reclamation 2018)

The project site is underlain by the Merced subbasin of the San Joaquin Valley groundwater basin, as defined by DWR Bulletin 118 (DWR 2018). DWR has prioritized the Merced subbasin as “high priority” based on groundwater reliability concerns (both current and projected) and documented overdraft issues in the subbasins (DWR 2020).

The Eastside Bypass has the potential to be a gaining or losing stream. The actual direction and rate of flow between groundwater and surface water depends on location along the bypass, groundwater levels, local geologic conditions, and the overall hydrologic conditions of the area. Additionally, groundwater levels vary with distance from the bypass and also based on time of year, likely due to agricultural activities. Groundwater levels have also shown a decline during this period, due to recent drought conditions. During recent drought conditions, subsidence in and around the Eastside Bypass increased. Subsidence rate ranges from approximately 0.45 ft/year at the upstream end of the Eastside Bypass to less than 0.15 feet/year in the downstream end of the bypass. Subsidence is changing the slopes of the San Joaquin River and bypasses. (DWR and Reclamation 2018.)

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The Eastside Bypass is not specifically identified in the Sacramento River Basin and San Joaquin River Basin Plan (Basin Plan) for beneficial uses (RWQCB 2019). Nor is the Middle Eastside Bypass listed as 303(d) impaired under the Clean Water Act (SWRCB 2025). However, downstream areas have been listed as impaired on the 303(d) list, including sections of Deep Slough and Bear Creek within the Lower Eastside Bypass. Downgradient areas are listed as impaired for pH (Deep Slough) and toxicity, pyrethroids, bifenthrin, and indicator bacteria (Bear Creek).

Discussion

a) **Less-Than-Significant Impact.** Levee repairs are proposed in one construction season and would take place during late spring through fall, primarily during the dry season. The repairs would occur on the waterside of the levee but would not require in-water work. The proposed project would result in approximately 28 acres of disturbed area (limits of work and staging/laydown area). Construction activities would include removal of existing vegetation, excavation, grading, and the placement of earthfill, placement of geotextile fabric, and placement of launch rock Stormwater runoff from disturbed soils could cause the release of construction-generated sediment to the Eastside Bypass. In addition, stormwater runoff could be contaminated with chemicals used during construction (e.g., fuels and oils) through the transportation, storage, and use of the materials, if they are not properly controlled. DWR or their construction contractor would implement BMPs described in Chapter 2, Section 2.5.12, “Water Quality” and industry-standard construction BMPs to control stormwater and nonstormwater discharges at the construction site in compliance with the National Pollution and Discharge Elimination System, Statewide Construction General Permit (Order No. 2022-0057-DWQ, NPDES No. CAS000002). As part of compliance, a stormwater pollution prevention plan would be developed, specifying the BMPs to be used to minimize soil and sediment discharges from the site, minimize potential contamination of stormwater, and prevent hazardous material spills. Furthermore, DWR is required to comply with applicable water quality certification permits pursuant to Section 401 of the Clean Water Act to prevent water quality pollutants such as silt, sediment, hazardous materials, and construction related fluids from entering receiving waters. Implementation of the environmental commitments and compliance with regulations would reduce the potential release of water quality pollutants into the Eastside Bypass by controlling erosion and runoff from the project site, minimizing ground and vegetation disturbance to the extent feasible, and preparing and implementing a hazardous materials management and spill response plan during construction. Finally, the repairs would not involve use of groundwater, and the repair would be above the toe of the levee and therefore encountering groundwater is not expected to occur. Implementation of construction site BMPs would reduce and eliminate potential contamination of stormwater discharges at the construction site and minimize and substantially avoid the release of construction-generated sediment to the Eastside Bypass. As such, construction activities would comply with water quality standards and waste discharge requirements and avoid substantial degradation of surface or ground water quality. Therefore, impacts would be less than significant.

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b) **No Impact.** The proposed project involves repairing erosion on an existing levee. None of repair activities require the use of groundwater or reduce groundwater recharge such that the groundwater table would be altered. There would be no additional impervious surfaces created as part of the proposed project that would further reduce infiltration. The placement of aggregate base at levee crown roads would be used to restore the roads to preconstruction conditions. Therefore, the proposed project would not substantially decrease groundwater supplies and would not interfere substantially with groundwater recharge or impede sustainable groundwater management of the basin. There would be no impact.

c) i) **Less-Than-Significant Impact** The proposed project would not alter the existing drainage pattern of the Eastside Bypass, nor would it alter the existing drainage pattern of the levee slope. The proposed project would repair erosion on multiple sections of the levee along approximately 2.4 miles. The repair would not substantially alter the existing drainage pattern of the site or area. Rainfall on the waterside slope of the levee would continue to discharge to the Eastside Bypass. Furthermore, the repair would occur primarily during the dry season. As described in environmental issue area a) of Section 3.2.10, “Hydrology and Water Quality”, DWR or their construction contractor would comply with BMPs identified in the stormwater pollution prevention plan as required by the National Pollution and Discharge Elimination System permit from the SWRCB, would comply with requirements in the applicable water quality certification permits pursuant to section 401 of the Clean Water Act, and would implement the BMPs described in Chapter 2, Section 2.5.12, “Water Quality“ for controlling erosion. Therefore, the proposed project would not result in substantial erosion or siltation on- or off-site. Impacts would be less than significant.

c) ii) **Less-Than-Significant Impact.** The proposed project would not increase impervious surface area, alter the existing drainage pattern of the Eastside Bypass, or alter high water events contained by this State Plan of Flood Control Levees. The Eastside Bypass would continue to convey flows as it currently does under multiple hydrologic conditions and would continue to serve as flood protection to the surrounding area. Therefore, the proposed project would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite. Impacts would be less than significant.

c) iii) **Less-Than-Significant Impact.** The proposed project would not create or contribute additional runoff from new impervious surfaces or alter high water events contained by the State Plan of Flood Control Levees. The proposed project would repair existing erosion on a flood control levee primarily during the dry season and once the repairs are completed, the project area would be returned to approximate pre-project grades. Therefore, the proposed project would allow the existing Eastside Bypass to continue to convey water using the existing capacity of the flood control system. In addition, as described in environmental issue area a), DWR or their construction contractor would comply with BMPs identified in the project-specific stormwater pollution prevention plan as required by the National Pollution and Discharge Elimination System permit from the SWRCB, would comply with requirements in the applicable water quality certification

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permits pursuant to section 401 of the Clean Water Act, and would implement the BMPs as Chapter 2, Section 2.5.12, “Water Quality“ for controlling pollution. Therefore, the proposed project is not expected to provide substantial additional sources of polluted runoff. Impacts would be less than significant.

c) iv) **No Impact.** The proposed project would repair existing erosion on a flood control levee primarily during the dry season and once the repairs are completed, the project area would be returned to approximate pre-project grades and existing conditions. The proposed project would not change the capacity of the Eastside Bypass. As described under environmental issue area cii), the Eastside Bypass would continue to convey flows as it currently does and continue to afford flood protection to the surrounding area. Therefore, the proposed project would not impede or redirect flood flows and impacts would not occur.

d) **Less-Than-Significant Impact with Mitigation Incorporated.** The proposed project would not be located in a tsunami or seiche hazard zone. The proposed repair site would be located in zones subject to flooding (i.e., located on the waterside slope of the levee) and within the FEMA-designated 100-year floodplain, but it is not expected to be exposed to flooding hazards during the timing of construction activities because activities would primarily occur when there is relatively little water in the Eastside Bypass (i.e., May through November). However, the Eastside Bypass can contain water as late as June or July and as early as November as a result of flood flows or other releases. Mitigation Measure HYD-1 would reduce the potential and risk associated with the release of pollutants due to potential inundation as a result of a flood hazard. Therefore, the risk of a release of pollutants due to project inundation would be substantially avoided and impacts would be less than significant with mitigation incorporated.

Mitigation Measure HYD-1: Construct in the dry and Coordinate with Lower San Joaquin Levee District in November.

Project-related construction activities are currently planned from May 15 through November 30 over a single construction season. The contractor will construct levee repairs in the dry on the levee slope within the limits of work to reduce the risk of release of pollutants into the water and reduce the risk of potential inundation. All construction activities, personnel, equipment, and repair materials within the limits of work will avoid potential inundation during construction because construction will occur in the dry between May 15 and July 15 and after November 1. In addition, DWR or the contractor, will coordinate with the Lower San Joaquin Levee District and the Central Valley Flood Protection Board between May 15 and July 15 and between November 1 through November 30 regarding the expected water levels in the Eastside Bypass.

e) **Less-Than-Significant Impact.** As described in environmental issue area b), the proposed project would not use groundwater or reduce groundwater recharge such that the groundwater table would be altered. As such, the proposed project would not conflict or obstruct implementation of a sustainable groundwater management plan and

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impacts would not occur. With respect to implementation of the Basin Plan, as described in environmental issue area a), the timing of construction, and compliance with environmental commitments and required BMPs, would substantially avoid and/or prevent water quality pollutants such as silt, sediment, hazardous materials, and construction related fluids from entering the Eastside Bypass. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan, and impacts would be less than significant.

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SWRCB. *See* State Water Resources Control Board

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3.2.11 Noise

Table 3-17. Environmental Issues and Determinations for Noise

Issues	Determination
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	LTS
b) Generation of excessive groundborne vibration or groundborne noise levels?	LTS
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	NI

Table Notes:
LTS = Less-than-Significant Impact
NI = No Impact

Environmental Setting

Sound, Noise, and Acoustics

Sound is the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is defined as sound that is unwanted (i.e., loud, unexpected, or annoying). Acoustics is the physics of sound.

The amplitude of pressure waves generated by a sound source determines the perceived loudness of that source. A logarithmic scale is used to describe sound pressure level in terms of decibels (dB). The threshold of human hearing (near-total silence) is approximately 0 dB. A doubling of sound energy corresponds to an increase of 3 dB. In other words, when two sources at a given location are each producing sound of the same loudness, the resulting sound level at a given distance from that location is approximately 3 dB higher than the sound level produced by only one of the sources. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously do not produce 140 dB; rather, they combine to produce 73 dB.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 hertz (Hz) and above 5,000 Hz in a manner corresponding to the human ears decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). All noise levels reported in this section are in terms of A-weighting. There is a strong correlation between A-weighted sound levels and community response to noise. As discussed above, doubling sound energy results in a 3-dB increase in sound. In typical noisy environments, noise-level changes of 1 to 2 dB are generally not perceptible by the healthy human ear; however, people can begin to detect 3-dB increases in noise levels. An increase of 5 dB is generally perceived as distinctly noticeable, and a 10-dB increase is generally perceived as a

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doubling of loudness. The following are the sound level descriptors commonly used in environmental noise analysis:

- **Equivalent sound level (L_{eq}):** An average of the sound energy occurring over a specified time period. In effect, the L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour, A-weighted equivalent sound level ($L_{eq[h]}$) is the energy average of A-weighted sound levels occurring during a 1-hour period.
- **Day-Night Noise Level (L_{dn}):** The 24-hour L_{eq} with a 10 dB "penalty" applied during nighttime noise-sensitive hours, 10:00 p.m. through 7:00 a.m. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.
- **Maximum sound level (L_{max}):** The highest instantaneous sound level measured during a specified period.
- **Statistical Descriptor (L_n):** The n-percent exceeded level, L_n, is the sound pressure level exceeded for n percent of the time. The noise level exceeded n percent of a specific period of time, generally accepted as an hourly statistic. An L_{10} would be the noise level exceeded 10 % of the measurement period.

Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB for each doubling of distance from a point/stationary source. Roadways and highways and, to some extent, moving trains consist of several localized noise sources on a defined path; these are treated as "line" sources, which approximate the effect of several point sources. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. Therefore, noise from a line source attenuates less with distance than noise from a point source with increased distance.

The project site is located in a rural setting. Typical noise producing activities in rural settings include intermittent agricultural equipment and roadway noise generated by cars or trucks. Typical ambient noise levels are generally low during the day, ranging from approximately 30 to 40 dBA. The nearest potential noise sensitive receptor is located approximately 6,000 ft from the project site.

Groundborne Vibration

Groundborne vibration is energy transmitted in waves through the ground. Vibration attenuates at a rate of approximately 50 percent for each doubling of distance from the source. This approach considers only the attenuation from geometric spreading and tends to provide for a conservative assessment of vibration level at the receiver.

Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration. Vibration typically is described by its peak and root-mean-square (RMS) amplitudes. The RMS value can be considered an average value over a given time interval. The peak vibration velocity is the same as the "peak particle velocity" (PPV), generally presented in units of inches per second. PPV is the maximum instantaneous positive or negative peak of the vibration signal and is generally used to assess the potential for damage

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to buildings and structures. The RMS amplitude typically is used to assess human annoyance to vibration, and the abbreviation “VdB” is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.

Regulatory Setting

Merced County’s 2030 General Plan includes a Noise Element designed to protect residents from excessive noise exposure. The County has established noise level standards for various land uses to ensure compatibility and minimize noise-related impacts. For residential properties, the standards are set at 65 dB L_{dn} (Day-Night Average Sound Level) and 75 dB L_{max} (Maximum Sound Level), with non-residential properties permitted levels 5 dB higher.

The Merced County Noise Ordinance, detailed in Chapter 10.60 of the County Code, sets regulations to prevent excessive noise and protect community health and welfare. While specific exterior noise limits for daytime and nighttime hours are not detailed in the provided information, the ordinance includes standards for residential and non-residential land uses. Construction activities are typically exempt from these limits, provided they occur within permitted hours. Construction noise is restricted to permitted hours: 7:00 a.m.–6:00 p.m. on weekdays and prohibited on weekends and holidays unless specific criteria are met. Compliance with the ordinance permitted hours for construction activities ensures temporary construction noise is consistent with the local noise regulation.

The Merced County Code (Section 10.60.030) sets sound level limitations for the County. The noise control ordinance states that noise levels, when measured at or within the property line of the receiver, should not exceed the background noise level by at least 10 dBA during daytime hours (7 a.m. to 10 p.m.) and by at least 5 dBA during nighttime hours (10 p.m. to 7 a.m.).

Vibration

Section 18.41.090 of the Merced County Code states that no use will create any disturbing ground vibration based on typical human reaction beyond the boundaries of the site (Merced County 2023).

Discussion

a) **Less-than-Significant Impact.** Short-term temporary project-generated stationary noise and long-term permanent project-generated stationary noise are described and evaluated below. As discussed below, there would be an increase in short-term temporary project-generated stationary noise associated with construction for the duration of 28 weeks over a single construction season. Given the temporary and intermittent nature of construction activities, adherence to the Merced County noise ordinance permitted construction hours, and implementation of noise reducing BMPs as part of Mitigation Measure GHG-1, the proposed project would not result in a substantial temporary increase in ambient noise levels in excess of applicable standards and would be consistent with the Merced County noise ordinance. There would be no noise generated after proposed project construction is complete and therefore there would be no substantial increase in long-term permanent project-generated stationary noise. Impacts would be less than significant.

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Short-Term Temporary Project-Generated Stationary Noise

The proposed project would repair and rehabilitate the levee using a variety of construction equipment. Project construction equipment would include a skid-steer, wheel loader, long-reach excavator, grader, dozer, forklift, water trucks, dump trucks, and pickup trucks. Based upon the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) (FHWA 2006), noise levels for these types of individual project equipment can range from 68 dB to 81 dB, L_{eq}, and 75 to 85 dB L_{max} at 50 ft, as shown in Table 3-18.

Sensitive land uses are located approximately 6,000 ft from the project site. Based upon the equipment noise levels, usage factors, and a typical noise-attenuation rate of 6 dB for every doubling of distance, exterior noise levels at noise-sensitive receptors located 1.1 miles (6,000 ft) east of the project site could be 36 dB to 39 dB, L_{eq}. Table 3-18 summarizes modeled construction noise levels at the nearest noise-sensitive locations to the project site, demonstrating that the proposed construction activities will not exceed applicable County noise standards.

Table 3-18. Proposed Project Construction Noise Levels

Receiver	Noise Level, dBA L_{eq}, at 50 feet	Noise Level, dBA L_{max}, at 50 feet	Noise Level, dBA L_{eq}, at 6,000 feet	Noise Level, dBA L_{max}, at 6,000 feet
Excavator	77	81	35	39
Wheel Loader	75	79	33	37
Grader	81	85	39	43
Water Truck	72	76	30	34
Forklift	68	75	26	33
Skid Steer	74	78	32	36
Support Truck	72	76	30	34
Dump Truck	72	76	30	34
Medium Dozer	78	82	36	40

Refer to Appendix D for modeling input parameters and output results.
dBA = A-weighted decibels; FHWA = Federal Highway Administration; L_{eq} = Equivalent Noise Level; L_{max} = Instantaneous Maximum Noise Level.
Sources: FHWA Roadway Construction Noise Model, January 2006; Modeled by AECOM 2025

Given the results presented in Table 3-18, temporary noise from project construction activities—such as operation of excavators, graders, dozers, and other heavy equipment—may intermittently elevate noise levels above typical rural ambient conditions. The Merced County Code (Section 10.60.030, Merced County 2023) establishes sound level limitations stating that noise levels, when measured at or within the property line of a receiver, should not exceed the background noise level by more than 10 dBA during daytime hours (7:00 a.m. to 10:00 p.m.) or 5 dBA during nighttime hour s (10:00 p.m. to 7:00 a.m.).

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Typical rural ambient noise levels in the project area are expected to range between 35 and 45 dBA L_{eq}, consistent with low-density agricultural and open-space environments. Construction equipment, such as excavators, dozers, and graders, can generate noise levels of approximately 72 to 81 dBA L_{eq} at 50 feet, which would attenuate to about 30 to 40 dBA L_{eq} at 6,000 feet from the active work area. Although these levels would temporarily exceed rural ambient conditions and the County's noise limits in the immediate vicinity of construction, such increases would be short-term and intermittent, occurring only during active daytime work periods. Consequently, while construction activities would result in temporary and localized noise increases, they would not represent a substantial long-term impact on surrounding sensitive receptors.

Furthermore, the County's Noise Ordinance exempts certain activities, including construction activities provided they occur between the daytime hours of 7 a.m. and 6 p.m. on weekdays. These exemptions are typical of municipal noise ordinances and reflect a recognition that construction noise is temporary, generally is acceptable when limited to daylight hours, and is expected as part of a typical noise environment (along with sirens). The proposed project would be consistent with these timeframes in the Noise Ordinance.

In addition, Mitigation Measure GHG-1 would also implement DWR's BMPs for Construction Practices which include the following:

- **BMP 9.** Minimize idling time by requiring that equipment be shut down after five minutes when not in use
- **BMP 10.** Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules will be detailed as required by Air Quality Control Plans

Implementation of Mitigation Measure GHG-1 would further minimize the temporary increase in ambient noise.

The proposed project would generate traffic noise during construction associated with 68 worker one-way vehicle trips and 13 truck trips during peak hours. Worker vehicles are generally light-duty passenger vehicles, which contribute minimally to overall traffic noise levels. Project-related truck and worker trips would primarily travel along SR 59, connecting south to SR 152 or north to SR 99, and would also use local roads such as West El Nido Road and West Sandy Mush Road to access the work areas. Traffic volumes along these State highways range from approximately 6,400 to 16,000 vehicles per day, while local roads in the project vicinity carry relatively low volumes, similar to South Gurr Road and Turner Island Road, which accommodate about 1,290 vehicles per day (DWR et. al. 2017).

The addition of 13 truck trips per peak hour represents a minor increase in heavy vehicle traffic, which typically generates higher noise levels compared to passenger

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vehicles. However, the limited number of truck trips and worker vehicles is not anticipated to result in a substantial increase in ambient noise levels along the affected roadways. For context, traffic noise levels typically increase by about 3 dBA when traffic volumes are doubled (Caltrans 2013). Because the project-generated trips represent only a small fraction of existing roadway volumes, the overall increase in traffic noise due to project-related trips would be less than 1 dBA L_{eq}, which is below the threshold of perceptibility and would not result in a substantial increase in ambient noise levels along affected roadways.

Long-Term Permanent Project-Generated Stationary Noise

The proposed project is construction only, and there would be no noise associated with operation. Therefore, the operation of the proposed project would not create a substantial permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance, or applicable standards.

b) **Less-than-Significant Impact**. Construction activities have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

For the proposed project, the heaviest vibration-generating construction equipment on-site would be the dozer, which is conservatively assumed to generate vibrations similar to a bulldozer. According to the Federal Transit Administration (FTA 2018), the vibration level for a bulldozer is 0.089 inches per second (in/sec) PPV and 87 VdB at a reference distance of 25 ft. Using FTA's recommended procedure for applying a propagation adjustment to these reference levels, predicted worst-case vibration levels would not be perceptible at the closest existing structures, located at 6,000 ft from the project site, and would not exceed Caltrans's recommended standard of 0.2 in/sec PPV (Caltrans 2020) with respect to the prevention of structural damage for normal buildings, or the FTA's maximum-acceptable vibration standard of 80 VdB (FTA 2018) with respect to human annoyance for residential uses.

The long-term operation of the proposed project would not include any vibration sources, and short-term construction would not result in the exposure of persons or structures to or generation of excessive groundborne vibration or groundborne noise levels.

c) **No Impact**. As described in Section 3.2.9, "Hazards and Hazardous Materials", the project site is not located within 2 nautical miles of any airports. Furthermore, the proposed project would not use any aircraft for project construction or operation. Therefore, the proposed project would not expose people residing in the area to aircraft noise. No impact would occur.

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3.2.12 Recreation

Table 3-19. Environmental Issues and Determinations for Recreation

Issues	Determination
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	LTS/M
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	NI

Table Notes:
LTS/M = Less-than-Significant Impact with Mitigation Incorporated
NI = No Impact

Environmental Setting

The proposed project is located within and to the south of the Refuge. The Refuge, part of the San Luis National Wildlife Refuge Complex, provides multiple opportunities for recreation (USFWSa n.d.). Recreation at the refuge includes birding, picnicking, wildlife watching and photography, as well as waterfowl hunting, hiking, and the use of an auto tour using the Tour Route Loop Road (USFWSa n.d.). There are five zones in the Lone Tree Unit of the Refuge that allow waterfowl hunting (1 party of 3 hunters per zone) and Zone B contains several blinds (USFWSb n.d., USFWSc n.d.). Hunting season dates are determined by CDFW and may change each year depending on population status; however, the waterfowl hunting season generally runs from the third weekend in October until the last weekend in January or first weekend in February (USFWSb n.d.). Shoot days are only on Wednesdays and Saturdays at the Lone Tree Unit (USFWSb n.d.). Hunters are allowed to hunt between ½ hour before sunrise to 12 noon during the hunting season.

Discussion

a) **Less-Than-Significant Impact with Mitigation Incorporated.** The proposed project would repair an existing levee and would not increase the use of existing neighborhood and regional parks such that a substantial physical deterioration would occur or be accelerated. Some levee repairs would occur approximately 0.5 miles (2,500 ft) from existing public duck hunting blinds located in Zone B of the Lone Tree Unit and potentially even closer in other Zones of the Lone Tree Unit. The repairs would not occur during most of the waterfowl hunting season or during the bulk of the period when migratory waterfowl would be present at the refuge (i.e., late fall and winter). However, construction could occur during the approximately five or six weeks of waterfowl hunting season, depending on the start of the hunting season (end of October through November 30). Construction could occur within relative proximity of hunting for approximately half a day on potentially 22 days during the waterfowl hunting season, assuming hunting starts at the end of October, only occurs on Wednesdays and Saturdays, and ends on November 30. This proximity of construction to existing hunting opportunities could adversely affect public recreational hunting in the Refuge and the proposed project could have a potential short-term temporary significant impact on hunting causing hunters to go elsewhere for waterfowl hunting opportunities.

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Implementation of Mitigation Measure REC-1 by DWR or their contractors before and during construction would reduce potentially significant impacts associated with waterfowl hunting to a less-than-significant level because project construction would minimally overlap with waterfowl hunting season, and reduce the number of potential days of overlap, depending on the start of the hunting season, and would be staged such that construction activities could be safely performed during the waterfowl hunting season.

Mitigation Measure REC-1: Implement Construction and Hunting Closures during Waterfowl Hunting Season.

Project-related construction activities are currently planned from May 15 through November 30 over a single construction season. To provide for waterfowl hunting activities at the Refuge, and to ensure the safety of project-related construction workers, levee repairs will be restricted on Saturdays during waterfowl hunting season between the middle of October through end of November and either not allowed or repairs will need to be at the southern end of the project site to avoid potential conflicts with hunters. As determined in consultation between DWR and the Refuge, hunting during Wednesdays may be closed at the Refuge at specific units adjacent to ongoing construction activities. The exact date of the start of waterfowl hunting may vary and is determined by CDFW, but it generally begins the last weekend in October. Although it is not expected, if any project-related construction is planned to occur in close proximity to privately owned waterfowl hunting clubs such that construction worker safety would be an issue, agreements with each club will be negotiated to facilitate both construction and private hunting during the waterfowl hunting season.

b) **No Impact.** The proposed project would repair an existing levee. The proposed project does not include recreational facilities or require the construction or expansion of existing recreational facilities and thus would not have an adverse physical effect on the environment. There would be no impact.

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3.2.13 Transportation and Traffic

Table 3-20. Environmental Issues and Determinations for Transportation and Traffic

Issues	Determination
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	LTS
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	LTS
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	LTS
d) Result in inadequate emergency access?	LTS

Table Notes:
LTS = Less-than-Significant Impact

Environmental Setting

The focus of this analysis centers around construction traffic associated with repair of the levee site. No operational traffic impacts would result from the proposed project.

Roadway Network

Regionally, access to the project site would be provided primarily by SR 59. SR 59 runs north to south entirely within Merced County, beginning at SR 121 and terminating at the intersection with 2nd Street in Snelling.

Local access to the project site would be from West El Nido Road. West El Nido Road is a local, rural road that runs east to west, generally comprising two lanes, and becomes an unpaved dirt road approximately 1.2 miles before the project site. W. Sandy Mush Road would provide access from the project site. W. Sandy Mush Road is also a local, rural road that runs east to west, generally comprising two lanes. Access to and from the repair site would occur primarily along existing paved public roads, levee crown roads, or unpaved private farm roads. Proposed access routes and haul routes are shown in Figure 2-1 and Figure 2-2.

Public Transit, Pedestrian, and Bicycle System

No bus stops, pedestrian, or bicycle facilities are located near the project site. There is an existing, yellow-marked crosswalk at the intersection of West El Nido Road and SR 59, approximately 5 miles east of the project site. There is also one On Demand Stop (ODS) location for regional commuter bus service located at the El Nido Market on SR 59. Merced County Transit (The Bus) offers up to 9 stops each day at the El Nido Market ODS location between Monday to Friday, or up to 5 stops on Saturday and Sundays (The Bus 2025). Bikeways are proposed along W. Sandy Mush Road along a portion of the haul route (Merced County Association of Governments 2008).

Discussion

a) **Less-than-Significant Impact.** The proposed project would not include any permanent changes to the public roadway network. Temporary construction activities would be temporally limited (28 weeks over a single construction season), as well as

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geographically limited and localized to the project site and immediate regional or local roadways as described above. As a result, the direct impacts of construction would not substantially impact the area's regional or local public roadways.

No bus stops, pedestrian, or bicycle facilities are located near the project site. Roadways in the vicinity of the project site are rural roadways that do not have designated bicycle lanes and minimal pedestrian facilities, such as the existing marked crosswalk across SR 59 at West El Nido Road. The El Nido Market ODS location offers limited bus service, and proposed construction would not impact the commuter bus service at this stop. Bikeways are proposed along W. Sandy Mush Road along a portion of the haul route; however, given the lack of existing dedicated bicycle lanes and the rural nature of the roadways in the project vicinity that are regularly used by large pieces of farm equipment, existing cyclists would exercise caution and be aware of varying road conditions. The proposed project would not have a substantial adverse effect on the area's roadways or on existing or planned transportation facilities.

Given the limited duration and geography of construction activities, proposed project construction is not anticipated to conflict with any applicable plan, policy, or ordinance related to the transportation system that could result in a substantial adverse environmental effect. Therefore, the impact on traffic circulation, transit, bicycle and pedestrian facilities would be less than significant.

b) **Less-than-Significant Impact.** Section 15064.3 (b)(3) of the CEQA Guidelines allows a qualitative analysis of potential impacts related to Vehicle Miles Traveled (VMT). The *Technical Advisory on Evaluating Transportation Impacts in CEQA* also states that "for many projects, a qualitative analysis of construction traffic may be appropriate" (Office of Planning and Research 2018). VMT analysis is intended to capture the long-term impacts of a project, and vehicle trips associated with proposed construction activities would generally be temporary, with minimal VMT generation that would not lead to long-term trip generation. Pursuant to CEQA Guidelines Section 15064.7, agencies have the discretion to adopt their own thresholds of significance. For the purposes of this analysis to disclose potential impacts associated with construction within Merced County, the Merced County Association of Governments recommended thresholds for VMT are used. The *VMT Thresholds and Implementation Guidelines* prepared for the Merced County Association of Governments (LSA 2022) provides that if a project meets one of the screening factors, a detailed CEQA transportation analysis of VMT would not be required and a project would be presumed to result in a less-than-significant VMT impact. The screening factors for projects that are expected to result in less-than-significant VMT impacts are presented in Section 3.0, Screening Criteria (LSA 2022). Section 3.0 identifies that for projects that are consistent with the jurisdiction's General Plan and generate fewer than 1,000 average daily trips (ADT), the project may be screened out from further VMT analysis (LSA 2022). While this metric is primarily used to assess potential VMT impacts associated with the operation of development projects, this criterion is used in this analysis to disclose the small change in VMT as a result of the proposed project construction.

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As discussed above, no operational traffic impacts would result from the proposed project. During construction, the proposed project would result in temporary, short-term increases in worker-commute trips and truck trips. However, temporary construction worker commute trips and truck trips associated with materials and equipment deliveries are anticipated to originate from the greater Merced County region or adjacent counties. During the 28-week construction period, approximately 34 daily roundtrip worker trips and 65 daily roundtrip truck trips are expected. The estimated total trips per day are well below the suggested criterion of 1,000 ADT per day, and thus detailed CEQA transportation analysis of construction VMT is not required.

Any adverse physical environmental impacts associated with the minor increases in VMT during construction, such as greenhouse gas emissions and transportation-related noise, are identified in relevant sections throughout this document, in connection with discussions of construction-related impacts. There are no additional significant impacts beyond those comprehensively considered throughout the other sections of this document. Therefore, consistent with the adopted *VMT Thresholds and Implementation Guidelines,* and given the limited number of trips generated during the short-term project construction period, there would be no conflict with CEQA Guidelines Section 15064.3 and the VMT impact associated with the proposed project would be less than significant.

c) **Less-than-Significant Impact.** The proposed project does not include design features or incompatible uses that would substantially increase hazards. Construction activities would be temporary, and a clear line of sight is generally available in both directions on West El Nido Road, W. Sandy Mush Road, and SR 59. During project construction activities, heavy truck vehicles, such as haul trucks or flatbed trailers, would access the project site to and from either West El Nido Road, W. Sandy Mush Road, or along existing levee crown roads and unpaved private farm roads. Slow-moving trucks entering and exiting at the intersection of West El Nido Road and SR 59 location could pose a hazard for pedestrians, including children, using the existing marked crosswalk to access nearby land uses or El Nido Elementary School during school hours. DWR or their contractor would prepare a Traffic Control and Worksite Safety Plan as described in Chapter 2, Section 2.5.13, “Traffic Control and Worksite Safety Plan“. The Traffic Control and Worksite Safety Plan would address potential traffic hazards during construction and include measures such as signage or traffic cones to help ensure safe and efficient movement of traffic through the affected area, with a focus on safety at the intersection of West El Nido Road and SR 59. No additional unusual angles or other hazardous design elements would exist in the circulation and access to and from the project site. Implementation and compliance with the Traffic Control and Worksite Safety Plan would limit the potential for traffic hazards to occur during construction and minimize conflicts with construction vehicles and equipment. The impact related to traffic hazards would be less than significant.

d) **Less-than-Significant Impact.** Site access would be available from West El Nido Road or along existing levee crown roads and unpaved private farm roads. Construction activities would not directly impede access to or from nearby properties. Slow-moving

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trucks using the intersection at West El Nido Road and SR 59, approximately 5 miles east of the project site, or at W. Sandy Mush Road and SR 59, approximately 8.5 miles northeast of the project site, could slightly delay the movement of emergency vehicles through El Nido. However, the trucks would typically pull to the side of the road when emergency vehicles use their sirens as is typical under current conditions. Additionally, truck traffic would be temporary and intermittent, and no public roads would require closure during proposed project construction. As discussed above in Impact 3.2.15(c), a Traffic Control and Worksite Safety Plan would be implemented to reduce potential impacts of project construction activities on emergency access by ensuring acceptable traffic flow to/from the proposed work area, staging area, and laydown area. Therefore, proposed project construction would not pose a significant obstacle to emergency response vehicles and would not result in inadequate emergency access. This impact would be less than significant.

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LSA. *See* LSA Associates Inc.

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3.2.14 Tribal Cultural Resources

Table 3-21. 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

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

Environmental Setting

This section provides a discussion of the Tribal Cultural Resources existing conditions at the project site (including access/haul roads and laydown/staging area), as well as the immediately surrounding area (one-mile buffer). Information in this section is summarized from the *2023 Storm Damage, Department of Water Resources Rehabilitation Repair Site 23-081, Cultural Assessment, Merced County* (AECOM 2025) prepared for the proposed project. Section 3.2.5, “Cultural Resources“, also provides details. Tribal cultural resources are resources that have cultural value to a California Native American tribe. Tribal cultural resources 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

Beginning in the early 16th century, but primarily during the late 19th and early 20th centuries, Native American lifeways and languages were documented throughout California. Whether by professional ethnographers or anthropologists, field personnel from government agencies such as the Bureau of Indian Affairs, soldiers, merchants, settlers, or travelers, ethnographic accounts partly illuminate the traditions, beliefs, and cultures of Native American groups during specific points in time. Synthesized narratives such as the *Handbook of North American Indians* (Heizer 1978) categorize Native traditions and practices; however, the complexity of regional diversity should not be overlooked.

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Depopulation and relocation of Central Valley Native Americans in the 19th century resulted in conflicting and incomplete information about tribal locations. Though cultural descriptions of these groups in the English language are known from as early as 1849, most of our current cultural knowledge comes from various early 20th century anthropologists (Levy 1978:413). The uncertainty regarding the territorial boundaries of the Native American groups that occupied the proposed project site and vicinity derives from the fact that ethnographies historically demarcated contact-period tribal boundaries in various and conflicting ways (Levy 1978).

The proposed project is located within the traditional lands of the Northern Valley Yokuts that are part of the Penutian language family (Levy 1978). While traditional anthropological literature portrays native peoples as having static cultures and boundaries, it is clear that many variations of culture and ideology existed within and between villages. While these “static” descriptions of separations between native cultures of California make it an easier task for ethnographers to describe past behaviors and ascribe people to a particular geographic locale, this approach masks Native adaptability and self-identity. Most California’s Native Americans never saw themselves as members of larger “cultural groups,” as described by anthropologists. Instead, they saw themselves as members of specific village communities, perhaps related to others by marriage or kinship ties, but viewing the village as the primary identifier of their origins. In short, all tribal group boundaries should be viewed as permeable and approximate. Prior to the appearance of European American explorers and settlers, the Northern Valley Yokuts territory was within the San Joaquin Valley including this project site.

The Yokuts, meaning “persons” or “people,” historically inhabited the largest territory of any group in California, spanning approximately 300 miles in length and 75 miles in width over the San Joaquin Valley, the Mount Diablo Range, and the Sierra Foothills, from the Cosumnes River basin to Tejon Canyon in the east, and from Carquinez Strait to Paleta in the west. This vast area was home to over 36,000 individuals across more than 60 tribes. Due to their extensive size, the Yokuts tribes are commonly divided into two main groups: southern and northern valley Yokuts (UC Merced 2019)

The Yokuts were seasonally mobile hunter-gatherers who lived in semi-permanent villages. They moved to temporary camps to access food resources in different environmental zones. The main distinction between various Yokuts groups was based on the resources available in their territories. The North Valley Yokuts primarily relied on acorns, which they processed into a thick soup, as well as salmon, other fish, grass seeds, tule roots (processed into meal), and likely waterfowl, tule elk, and pronghorn (UC Merced 2019).

Their principal settlements were situated on low mounds near larger watercourses and consisted of single-family dwellings, sweathouses, and ceremonial assembly chambers. The dwellings were small, lightly constructed, semi-subterranean, and oval-shaped, while public structures were large and earth-covered. The abundance of riverine resources in the area supported their sedentary lifestyle (UC Merced 2019).

As with other California Native American groups, the Gold Rush of 1849 had a devastating effect on the Native Americans who inhabited the proposed project site. The flood of miners that came to the area in search of gold brought diseases with them that decimated tribal

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populations. Those who survived were subjected to violence and prejudice at the hands of the miners, and the Native Americans were eventually pushed out of their ancestral territory. Although this contact with settlers had a profound 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 reinvesting in their traditions and represent a growing and thriving community that is actively involved in defining their role as stewards of their ancestors' sites, including the identification of TCRs. TCRs provide the backdrop to religious understanding, traditional stories, knowledge of resources such as varying landscapes, bodies of water, 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. Consulting tribes view these interconnected sites and places as living entities; their associations and feeling persist and connect with descendant communities (NVYOT 2025).

The Yokuts

The tribe's population was significantly reduced due to forced relocations to Spanish missions such as Santa Clara, San José, and San Juan Bautista. Today, the tribe's footprint has expanded through intermarriages with the Miwoks, Patwin, and Ohlone peoples, which helped replenish their numbers. Despite this, the federal government has not recognized the Northern Valley Yokuts/Ohlone tribe, leaving them to rebuild independently.

Unratified federal treaties have posed additional challenges. To achieve self-sufficiency, the tribe's chairperson established a nonprofit circa 2000 called Nototomne (people of the valley), representing their intermarriages with other valley tribes. This nonprofit aims to protect cultural resources from westernized development. Over 25 years, it has saved more than 400 ancestral burials and numerous artifacts (NVYOT 2025).

The tribe has also made significant community contributions by preserving state park areas, providing cultural sensitivity training, and encouraging the construction of monuments to honor those forcibly removed. Recently, the tribe formed a new nonprofit, Northern Valley Yokut/Ohlone Tribe Inc. circa 2024, to support cultural and ancestral research, land acquisition for reinterment, and infrastructure development to improve the quality of life for tribal members (NVYOT 2025).

Methodology and Results

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

Public Resources Code 21074; 21083.09 and CEQA

In September of 2014, the California Legislature passed AB 52, which added provisions to the PRC concerning the evaluation of impacts on tribal cultural resources under CEQA, and consultation requirements with California Native American tribes. In particular, AB 52 now requires lead agencies to analyze a project's impacts on "tribal cultural resources," separately

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from paleontological resources (PRC Section 21074; 21083.09). The Bill defines “tribal cultural resources” in a new section of the PRC, Section 21074. The Bill also requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (PRC Sections 21080.3.1, 21080.3.2, 21082.3). Section 21074(a) defines a TCR as any of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
  - included or determined to be eligible for inclusion in the California Register; or
  - included in a local register of historical resources, as defined in PRC Section 5020.1(k).
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying these criteria, the lead agency would consider the significance of the resource to a California Native American tribe.

According to PRC Section 21074(a)(c), a historical resource, unique archaeological resource, or non-unique archaeological resource may also be a TCR if it is included or determined eligible for the California Register or included in a local register of historical resources.

Section 3.2.5, “Cultural Resources“, describes the archival and field survey methods implemented by AECOM archaeologists to identify potential precontact archaeological resources. As detailed in that discussion, results of the records search indicated that precontact archaeological sites were identified in proximity to the project site (refer to Table 3-9 and Table 3-10).

California Natural Resources Agency Tribal Consultation Policy

In 2012, the California Natural Resources Agency, of which DWR is under, issued a final California Natural Resources Agency Tribal Consultation Policy that laid out the agency’s duties towards collaborative, meaningful tribal consultation. This policy has five components:

- Outreach—this component emphasizes early, meaningful, and regular consultation, dissemination of public documents to tribes for their review, and engaged follow-up and meetings with tribal representatives.
- Tribal Liaisons—this component recommends the designation of a tribal liaison that serves as a central point of contact for tribes and that provides oversight of department tribal communications.
- Tribal Liaison Committee—this component creates a tribal liaison committee, consisting of all the agency’s tribal liaisons, who are mandated to meet regularly and report back to the agency about consultation efforts and opportunities.
- Access to Contact Information: this component mandates that the agency will work with the Native American Heritage Commission to maintain a contact list of tribal representatives.

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- Training—this final component mandates that the agency will provide training for tribal liaisons, executive staff, managers, and employees on implementation of the policy.

California Department of Water Resources Tribal Policy
Similar to the Natural Resource Agency's policy document, in 2016 DWR released its own Tribal Engagement Policy. This policy consists of seven bullet points, given below verbatim:

- Establish meaningful dialogue between DWR and California Tribes early on in planning for CEQA projects to ensure that DWR's tribal outreach efforts are consistent with mandated tribal consultation policies, and to ensure that California Tribes know how information from consultation affected DWR's decision making process;
- Establish guidelines to share information between DWR and California Tribes, while protecting their confidential information to the fullest extent of the law;
- Consult with California Tribes to identify and protect tribal cultural resources where feasible, and to develop treatment and mitigation plans to mitigate for impacts to tribal cultural places;
- Develop criteria in communication plans and grant funding decisions for all applicable DWR programs that will facilitate tribal participation;
- Provide cultural competency training for DWR executives, managers, supervisors, and staff on tribal engagement and consultation practices;
- Recognize that California Tribes have distinct cultural, spiritual, environmental, economic, public health interests, and traditional ecological knowledge about California's natural resources;
- Enable California Tribes to manage and act as caretakers of tribal cultural resources.

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 September 10, 2024, yielding negative results for the presence of sacred lands on file and attached a list of Native American Groups who may have knowledge of cultural resources in the project area.

In compliance with CEQA and DWR's *Tribal Engagement Policy*, DWR sent certified letters and emails to each Tribe and Tribal representative identified by the Native American Heritage Commission Native American Contact List and DWR's AB 52 Notification List on April 29, 2025. AB 52 consultation notifications were provided to Santa Rosa Rancheria Tachi Yokut Tribe and North Valley Yokuts Tribe. The Amah Mutsun Tribal Band, North Fork Rancheria of Mono Indians of California, Southern Sierra Miwuk Nation, Tule River Indian Tribe, and Wuksache Indian Tribe/Eshom Valley Band received DWR Tribal Policy Letters. At the time of the release of this document, no Tribes have requested AB 52 consultation or provided comments on the proposed project.

DWR's Tribal outreach under AB 52 and the Tribal Engagement Policy has not yet resulted in any responses or scheduled consultation meetings with Tribes. Consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency *Tribal Consultation Policy*,

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DWR considers Tribal consultation ongoing to provide opportunities for interested and consulting Tribes to collaborate with DWR in the identification and protection of potential Tribal cultural resources that may be encountered during the proposed project.

Discussion

ai) & ii) **Less-than-Significant Impact with Mitigation Incorporated.** The Sacred Lands File review failed to identify resources of importance to the Native American Community. At the time of the release of this document, none of the Tribes that received AB 52 Request for Notification Letters or Tribal Policy Letters have requested AB 52 consultation or provided comments on the proposed project.

Survey work and literature review have not identified any known TCR's within the APE, and Tribal consultation is ongoing. The proposed project potential impacts to precontact archaeological resources or human remains that could also be considered a TCRs are discussed in Section 3.2.5, "Cultural Resources", environmental issue area b) and c) of this document. As noted in that section, there is the potential for discovery of unknown precontact archaeological resources and unknown human remains during construction. Mitigation Measures CUL-1 through CUL-4 described in Section 3.2.5 require preconstruction training, a protocol to follow in the event of an inadvertent discovery of precontact archaeological resources or human remains, and archaeological and Tribal monitoring at the project site. These measures also apply to TCRs, and with continued consultation efforts with Native American tribes would reduce some impacts to TCR to a less-than-significant level. In addition, implementation of mitigation measures TCR-1 and TCR-2 for addressing TCRs and TCPs are included below, would further reduce impacts to less-than-significant levels because these measures would allow for the appropriate oversight and stop work authority during construction and would require continue coordination and Tribal involvement regarding impacts on TCRs or TCPs.

Mitigation Measure TCR-1: Implement Procedures for Inadvertent Discovery of Cultural Material and Implement an Inadvertent Discovery Plan.

Survey work and literature review have not identified any known TCR's within the project area, and tribal consultation is ongoing until the project is complete. Project-related activities associated with the proposed project will require ground-disturbance, including excavation, trenching, grading, and use of staging and borrow areas. These ground disturbing activities could result in damage to or destruction of previously unidentified TCRs, which could be present within the project site. In the event that archaeological resources that are considered TCRs are discovered during construction, Mitigation Measure TCR-2, described below, will be implemented.

- If an inadvertent discovery of archaeological cultural materials (e.g., unusual amounts of shell, animal bone, any human remains, bottle glass, ceramics, building remains) is made at any other time during project-related construction activities or project planning, DWR, in consultation with the appropriate tribe(s),

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USACE, and other interested parties, will develop and implement appropriate protection and avoidance measures where feasible.

- These procedures will be developed in accordance with 36 CFR 800.13 which specifies procedures for post-review discoveries. Additional measures, such as development of a Memorandum of Agreement and a Historic Property Treatment Plan, may be necessary if avoidance or protection is not possible. All the steps identified above will be detailed in an accidental-discovery plan developed before construction so that all parties are aware of the process that must be implemented should buried archaeological resources be uncovered during construction.

Mitigation Measure TCR-2: In the Event that Tribal Cultural Resources or Traditional Cultural Properties are Discovered during Construction, Implement Procedures to Evaluate Tribal Cultural Resources/Traditional Cultural Properties and Implement Avoidance and Minimization Measures to Avoid Significant Adverse Effects.

California Native American Tribes traditionally and culturally affiliated with the geographic area of the APE for Site 23-81 may have expertise on the identification and management of TCRs (California PRC Section 21080.3.1). DWR considers Tribal coordination and consultation ongoing to support identification and protection of TCRs. If potential TCRs or TCPs are identified during construction further consultation with culturally affiliated Tribes will be conducted and focus on measures to avoid or minimize effects. The following performance standards will be met prior to continuance of construction and associated activities that may result in damage to or destruction of TCRs or TCPs:

- DWR will evaluate each identified TCR/TCP, prior to construction, for *California Register of Historical Resources (*CRHR*)* and NRHP eligibility through application of established eligibility criteria (California Code of Regulations 15064.636 and CFR Part 63 respectively), in consultation with interested Native American Tribes.
- If a TCR is determined to be eligible for listing on the NRHP, DWR will avoid damaging effects to the TCR/TCP in accordance with California PRC Section 21084.3, if feasible.
- If DWR determines that the proposed project may cause a substantial adverse change to a TCR/TCP, and measures are not otherwise identified in the consultation process, the following are examples of mitigation capable of avoiding or substantially lessening potential significant impacts to a TCR/TCP or alternatives that would avoid significant impacts to a TCR/TCP. These measures may be considered to avoid or minimize significant adverse impacts and constitute the standard by which an impact conclusion of less-than significant may be reached:

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- Avoid and preserve resources in place, including, but not limited to, planning construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- Treat the resource with culturally appropriate dignity taking into account the Tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - Protect the cultural character and integrity of the resource.
  - Protect the traditional use of the resource.
  - Protect the confidentiality of the resource.
  - Establish permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or using the resources or places.
  - Protect the resource.
- If a TCP is determined to be eligible for listing in the NRHP, then the procedures for determination of effect and, if adverse, treatment of the resource to resolve adverse effect will be conducted in accordance with the procedures required for compliance with Section 106 of the NHPA (36 CFR Parts 800.5–800.6).

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3.2.15 Mandatory Findings of Significance

Table 3-22. 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

Table 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 in nature and would involve construction activities to repair and rehabilitate Site 23-081 to maintain flood protection; thus, providing a net benefit to the surrounding areas. 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 3.2.4, "Biological Resources", impacts to protected wildlife species and habitat would be less than significant. As discussed in Section 3.2.5, "Cultural Resources", and Section 3.2.14, "Tribal Cultural Resources", implementation of the following mitigation measures would reduce impacts to less than significant: Mitigation Measure CUL-1. Preconstruction Training; Mitigation Measure CUL-2. Conduct Monitoring at Locations Identified by Native Americans as Sensitive; Mitigation Measure CUL-3. Archaeological Monitoring and a Plan for Inadvertent Discovery of Archaeological Resources; Mitigation Measure CUL-4. Inadvertent Discovery of Human Remains; Mitigation Measure TCR-1: Implement Procedures for Inadvertent Discovery of Cultural Material and Implement an Inadvertent Discovery Plan; and, Mitigation Measure TCR-2: In the Event that Tribal Cultural Resources or Traditional Cultural Properties are Discovered during Construction, Implement Procedures to Evaluate Tribal Cultural

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Resources/Traditional Cultural Properties and Implement Avoidance and Minimization Measures to Avoid Significant Adverse Effects. As discussed in Section 3.2.7, “Geology and Soils“, implementation of Mitigation Measure GEO-1 would reduce impacts on paleontological resources to less than significant. Finally, as discussed in Section 3.2.12, “Recreation,” implementation of Mitigation Measure REC-1 would reduce impacts on recreational resources to less than significant. Adherence to federal, State, and local regulations, as well as implementation of the Environmental Commitments and proposed mitigation measures discussed herein, would reduce impacts to less than significant.

b) **Less-than-Significant Impact with Mitigation Incorporated.** The on-going management of the Refuge which is guided by the Draft San Luis National Wildlife Refuge Complex Final Comprehensive Conservation Plan, the San Joaquin River Restoration Program, and the completed Reach O levee repair in 2020 as part of the Eastside Bypass Improvements Project are past, present, and probable future projects occurring within the general project vicinity. These projects are intended to maintain and restore various fish and wildlife species and intended to maintain the integrity of the levee of the Eastside Bypass. Specifically, the Reach O levee repair was to improve levee seepage and stability requirements to allow for higher Restoration Flows as part of the San Joaquin River Restoration Program.

The proposed project would have no impact on the following resources, as described in Section 1.3, Scope of This Document: Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Utilities and Services Systems and Wildfire. Thus, no cumulatively considerable impact would occur related to these resources.

The potential impacts of the proposed project on all other resources evaluated in this IS/MND are primarily temporary and short-term construction related impacts that are site-specific and localized to the area of the levee repair. The Reach O levee repair as part of the Eastside Bypass Improvements Project combined with the proposed project would not contribute to cumulative impacts because Reach O has been completed and the Eastside Bypass Improvements Project incorporated mitigation or environmental commitments to reduce, avoid, or minimize impacts on resources. The proposed project would support the on-going management of the Refuge and the San Joaquin River Restoration Program by repairing and rehabilitating a critical levee repair site on the Eastside Bypass that would protect existing habitat at the Refuge and support the implementation of the restoration flows for the San Joaquin River Restoration Program. The proposed project would not result in significant impacts on environmental resources. DWR, or its contractors, would comply with all applicable federal, State, and local regulations, implement required Environmental Commitments described in Section 2.5, “Environmental Commitments” and implement required mitigation measures described in Section 3.2.3, “Air Quality“, Section 3.2.5, “Cultural Resources“, Section 3.2.8, “Greenhouse Gas Emissions“, Section 3.2.7, “Geology and Soils“, Section 3.2.10, “Hydrology and Water Quality”, Section 3.2.12, “Recreation“, and Section 3.2.13, “Tribal Cultural Resources“, to avoid, reduce, or minimize potentially significant impacts. As discussed in Section 3.2.8, no single project could generate

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enough GHG emissions to noticeably change the global average temperature. Instead, GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate change; the combined GHG emissions from past, present, and future projects have contributed to and continue to contribute to global GHG emissions and the associated environmental impacts from climate change. The proposed project would implement Mitigation Measure GHG-1, Implement DWR BMPs for Construction Practices, to ensure consistency with DWR's GGERP, which was prepared in accordance with CEQA Guidelines Section 15183.5(b) for a "plan for the reduction of GHG emissions." An individual project's compliance with a qualifying GHG reduction plan, such as DWR's GGERP, suffices to mitigate the proposed project's incremental contribution to that cumulative impact to a level that is not cumulatively considerable (see State CEQA Guidelines Section 15064[h][3].). Once constructed there would be no long-term operational impacts associated with the proposed project and therefore no long-term incremental contribution to cumulatively considerable impacts. Given the temporary and spatially limited impacts, and the incorporation and implementation of required Environmental Commitments and mitigation measures, the proposed project would not result in cumulatively considerable incremental effects when viewed in connection with the effects of past, present, or probable future projects. Impacts would be less-than-significant with mitigation incorporated.

c) **Less-than-Significant Impact with Mitigation Incorporated.** As discussed above, the proposed project would result in short-duration construction and would not include any operational impacts. Further, the proposed project would comply with all applicable federal, State, and local regulations, and implement Environmental Commitments. Implementation of the above-mentioned mitigation measures, including Mitigation Measure GHG-1, which includes measures to minimize the temporary increase in ambient noise throughout construction, Mitigation Measure REC-1, which would allow recreational hunting 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, overall impacts would be less-than-significant.

Reference

None.

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APPENDIX A PHOTOGRAPHS

Docusign Envelope ID: 8A10B1B8-0F7D-46D5-9E3D-19A9D9FED4F0

A.1 Introduction

The following appendix provides existing condition photos of Site 23-081.

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Photo 1: Typical condition, continuous 3-foot vertical scarps.

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Photo 2: Typical condition, continuous 4-foot vertical scarps.

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Photo 3: Vertical scarps totaling 6 to 7 feet in height.

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Photo 4: Proposed laydown and staging area.

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Photo 5: The Landside Agricultural Cropland.

Photo 6: The Landside Agricultural Cropland.

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APPENDIX B AIR QUALITY AND GREENHOUSE GAS

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Levee Repair 23.81 **Location: Merced County**

Standard inputs:

Land Use	**User Defined Recreation**
Size	Limits of work: 20.89 acres; area of repair 10.8 acres; 7-acre staging/laydown area
Construction equipment	3 each of the following, all operate 10 hours per day (hp):
	excavator (346)
	wheel loader (294)
	grader (165)
	water truck (1025) - would water twice daily, requiring up to 2 hours per day onsite travel
	high-capacity cushion forklift (110)
	skid steer (74)
	support truck (default) - trucks won't operate nonstop, assume up to 8 hours per day onsite travel.
	dump truck (495) (modeled as other material handling equipment because max dumper/tender hp in CalEEMod is too low)
	medium dozer (200)
Construction Schedule	Use "Grading" Phase in CalEEMod as the only construction phase - captures fugitive dust from earth moving activities
	10/10/2025 Assumption: 1 construction year, 2027 May 15 to November 30 (active construction) - approximately 28 weeks
	Duration: 28 weeks
Acres of Grading	Default from CalEEMod
Worker Trips (one-way)	Based on CalEEMod estimate of 68 one-way trips/day & default distance of 10.85 miles/one-way trip.
Total Haul Truck Off-Site Delivery Trips (one-way)	18,114.25
Daily Haul Truck Off-Site Delivery Trips (one-way)	129.39
Total Haul Truck Tips Traveled On-site (unpaved)	9,057.13
Daily Haul Truck Trips Traveled On-Site (one-way)	64.69
Daily Haul Truck Trips Traveled On-Site (one-way)	-
Worker Trip Distance	Updated to 17 miles based on distance to Merced.
Vendor Trip Distance	
Haul Truck Trip Distance	up to 23 Miles to Sierra Materials & Trucking Co (depending on route), excluding levee-top Haul Route - travel on unpaced levee captured as on-site trucks.
Unpaved Roadway Travel Distance:	
Worker Trips	0 miles - Assume turnaround at work site and no unpaved roadway travel
Haul Truck Delivery Trips (one-way)	23
Haul Truck Travel On-Site	6 miles unpaved roadway
Operations	Zero-out all operational inputs to only calculate construction emissions.

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Item	Estimated Quantity	Units	Truckloads (this is a round-trip, one-way trips assumed to be 2x)
Temporary Fencing (linear feet)	16,830	LF	
Earthfill (cubic yards)	25,144	CY	1572
Estimated excavation (cubic yards)	28,850	CY	1804
Agricultural Soil (cubic yards)	0	Cy	0
Topsoil (tons)	0	Tons	0
Launch rock (tons)	86846	Tons	4343
Aggregate Base (ton)	4074	Tons	204
Geotextile Fabric (square yards)	52600	yd^2	
Erosion Control Fabric (square yards)	0	yd^2	
Seeding (acres)	0	yd^2	

**highlighted cells are understood to be outside the 4-week heavy construction period, but details are useful to demonstrate the limited intensity during these times.*

Activity	Quantity	Units
Total excavated material per year:	28,850	Cubic Yards
Total imported material per year:	116,064	Cubic Yards
Annual haul trucks	9,057	trucks
Total one-way haul truck trips (assumes single year of construction)	18,114	one-way trips total
Total one-way haul truck trips per day:	129	one-way trips/dy
Total round-trip haul truck trips per day	64.69	daily round trips

Truck Capacity:	Truck Capacity Estimtes Used for Prior Levee Projects:
CY	16
Tons	20

Docusign Envelope ID: 8A10B1B8-0F7D-46D5-9E3D-19A9D9FED4F0

Site 23.81_10.10.2025 Detailed Report

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1.1. Basic Project Information

Data Field	Value
Project Name	Site 23.81_10.10.2025
Construction Start Date	5/15/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	28.8
Location	37.12849458011432, -120.58580309038857
County	Merced
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2310
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.30

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	20.9	User Defined Unit	20.9	0.00	0.00	0.00	—	—

1.3 User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/da for dail ton/ r for annual) and GHGs (lb/da for dail MT/ r 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.	11.9	9.98	87.2	94.1	0.32	3.26	747	750	3.01	79.1	82.1	—	38,553	38,553	1.21	2.07	28.7	39,229
Mit.	11.9	9.98	87.2	94.1	0.32	3.26	93.2	96.4	3.01	13.9	16.9	—	38,553	38,553	1.21	2.07	28.7	39,229
% Reduced	—	—	—	—	—	—	88%	87%	—	82%	79%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	11.9	9.92	88.2	92.8	0.32	3.26	747	750	3.01	79.1	82.1	—	38,481	38,481	1.19	2.07	0.74	39,129
Mit.	11.9	9.92	88.2	92.8	0.32	3.26	93.2	96.4	3.01	13.9	16.9	—	38,481	38,481	1.19	2.07	0.74	39,129
% Reduced	—	—	—	—	—	—	88%	87%	—	82%	79%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.62	3.87	34.2	36.2	0.13	1.27	268	269	1.17	28.5	29.7	—	14,977	14,977	0.47	0.81	4.82	15,233
Mit.	4.62	3.87	34.2	36.2	0.13	1.27	33.8	35.1	1.17	5.15	6.33	—	14,977	14,977	0.47	0.81	4.82	15,233
% Reduced	—	—	—	—	—	—	87%	87%	—	82%	79%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.84	0.71	6.24	6.60	0.02	0.23	48.9	49.2	0.21	5.21	5.42	—	2,480	2,480	0.08	0.13	0.80	2,522
Mit.	0.84	0.71	6.24	6.60	0.02	0.23	6.17	6.40	0.21	0.94	1.15	—	2,480	2,480	0.08	0.13	0.80	2,522
% Reduced	—	—	—	—	—	—	87%	87%	—	82%	79%	—	—	—	—	—	—	—

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	11.9	9.98	87.2	94.1	0.32	3.26	747	750	3.01	79.1	82.1	—	38,553	38,553	1.21	2.07	28.7	39,229
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	11.9	9.92	88.2	92.8	0.32	3.26	747	750	3.01	79.1	82.1	—	38,481	38,481	1.19	2.07	0.74	39,129
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	4.62	3.87	34.2	36.2	0.13	1.27	268	269	1.17	28.5	29.7	—	14,977	14,977	0.47	0.81	4.82	15,233
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.84	0.71	6.24	6.60	0.02	0.23	48.9	49.2	0.21	5.21	5.42	—	2,480	2,480	0.08	0.13	0.80	2,522

2.3. Construction Emissions by Year, Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	11.9	9.98	87.2	94.1	0.32	3.26	93.2	96.4	3.01	13.9	16.9	—	38,553	38,553	1.21	2.07	28.7	39,229
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	11.9	9.92	88.2	92.8	0.32	3.26	93.2	96.4	3.01	13.9	16.9	—	38,481	38,481	1.19	2.07	0.74	39,129
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	4.62	3.87	34.2	36.2	0.13	1.27	33.8	35.1	1.17	5.15	6.33	—	14,977	14,977	0.47	0.81	4.82	15,233
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.84	0.71	6.24	6.60	0.02	0.23	6.17	6.40	0.21	0.94	1.15	—	2,480	2,480	0.08	0.13	0.80	2,522

3. Construction Emissions Details

3.1. Grading (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	11.2	9.42	72.7	86.0	0.24	3.02	—	3.02	2.78	—	2.78	—	26,186	26,186	1.06	0.21	—	26,276
Dust From Material Movement	—	—	—	—	—	—	10.4	10.4	—	5.01	5.01	—	—	—	—	—	—	—
Onsite truck	0.11	0.08	2.84	1.09	0.01	0.03	733	733	0.03	73.2	73.2	—	1,750	1,750	0.02	0.28	3.71	1,837
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	11.2	9.42	72.7	86.0	0.24	3.02	—	3.02	2.78	—	2.78	—	26,186	26,186	1.06	0.21	—	26,276
Dust From Material Movement	—	—	—	—	—	—	10.4	10.4	—	5.01	5.01	—	—	—	—	—	—	—
Onsite truck	0.10	0.07	3.03	1.13	0.01	0.03	733	733	0.03	73.2	73.2	—	1,755	1,755	0.02	0.28	0.10	1,838
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	4.36	3.66	28.3	33.4	0.09	1.18	—	1.18	1.08	—	1.08	—	10,187	10,187	0.41	0.08	—	10,222
Dust From Material Movement	—	—	—	—	—	—	4.04	4.04	—	1.95	1.95	—	—	—	—	—	—	—
Onsite truck	0.04	0.03	1.15	0.43	< 0.005	0.01	263	263	0.01	26.2	26.2	—	682	682	0.01	0.11	0.62	715
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Off-Roa d Equipm ent	0.80	0.67	5.16	6.10	0.02	0.21	—	0.21	0.20	—	0.20	—	1,687	1,687	0.07	0.01	—	1,692
Dust From Material Movement	—	—	—	—	—	—	0.74	0.74	—	0.36	0.36	—	—	—	—	—	—	—
Onsite truck	0.01	0.01	0.21	0.08	< 0.005	< 0.005	47.9	47.9	< 0.005	4.79	4.79	—	113	113	< 0.005	0.02	0.10	118
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
aily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.30	0.25	4.75	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	758	758	0.03	0.03	2.71	770
Vendor	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
Hauling	0.27	0.17	11.4	2.30	0.07	0.20	2.77	2.97	0.20	0.76	0.96	—	9,858	9,858	0.09	1.55	22.2	10,346
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.32	3.41	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	676	676	0.01	0.03	0.07	685
Vendor	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
Hauling	0.25	0.16	12.2	2.35	0.07	0.20	2.77	2.97	0.20	0.76	0.96	—	9,865	9,865	0.09	1.55	0.58	10,330
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.12	1.41	0.00	0.00	0.28	0.28	0.00	0.06	0.06	—	271	271	0.01	0.01	0.45	275
Vendor	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
Hauling	0.10	0.07	4.64	0.90	0.03	0.08	1.06	1.14	0.08	0.29	0.37	—	3,836	3,836	0.03	0.60	3.74	4,021
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.26	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.08	45.6
Vendor	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
Hauling	0.02	0.01	0.85	0.16	< 0.005	0.01	0.19	0.21	0.01	0.05	0.07	—	635	635	0.01	0.10	0.62	666

3.2. Grading (2027) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm	11.2	9.42	72.7	86.0	0.24	3.02	—	3.02	2.78	—	2.78	—	26,186	26,186	1.06	0.21	—	26,276
Dust From Material Movement	—	—	—	—	—	—	10.4	10.4	—	5.01	5.01	—	—	—	—	—	—	—
Onsite truck	0.11	0.08	2.84	1.09	0.01	0.03	79.3	79.3	0.03	7.94	7.98	—	1,750	1,750	0.02	0.28	3.71	1,837
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	11.2	9.42	72.7	86.0	0.24	3.02	—	3.02	2.78	—	2.78	—	26,186	26,186	1.06	0.21	—	26,276
Dust From Material Movement	—	—	—	—	—	—	10.4	10.4	—	5.01	5.01	—	—	—	—	—	—	—
Onsite truck	0.10	0.07	3.03	1.13	0.01	0.03	79.3	79.3	0.03	7.94	7.98	—	1,755	1,755	0.02	0.28	0.10	1,838
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	4.36	3.66	28.3	33.4	0.09	1.18	—	1.18	1.08	—	1.08	—	10,187	10,187	0.41	0.08	—	10,222
Dust From Material Movement	—	—	—	—	—	—	4.04	4.04	—	1.95	1.95	—	—	—	—	—	—	—
Onsite truck	0.04	0.03	1.15	0.43	< 0.005	0.01	28.4	28.4	0.01	2.85	2.86	—	682	682	0.01	0.11	0.62	715
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.80	0.67	5.16	6.10	0.02	0.21	—	0.21	0.20	—	0.20	—	1,687	1,687	0.07	0.01	—	1,692
Dust From Material Movement	—	—	—	—	—	—	0.74	0.74	—	0.36	0.36	—	—	—	—	—	—	—
Onsite truck	0.01	0.01	0.21	0.08	< 0.005	< 0.005	5.19	5.19	< 0.005	0.52	0.52	—	113	113	< 0.005	0.02	0.10	118

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.30	0.25	4.75	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	758	758	0.03	0.03	2.71	770
Vendor	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
Hauling	0.27	0.17	11.4	2.30	0.07	0.20	2.77	2.97	0.20	0.76	0.96	—	9,858	9,858	0.09	1.55	22.2	10,346
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.32	3.41	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	676	676	0.01	0.03	0.07	685
Vendor	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
Hauling	0.25	0.16	12.2	2.35	0.07	0.20	2.77	2.97	0.20	0.76	0.96	—	9,865	9,865	0.09	1.55	0.58	10,330
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.12	1.41	0.00	0.00	0.28	0.28	0.00	0.06	0.06	—	271	271	0.01	0.01	0.45	275
Vendor	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
Hauling	0.10	0.07	4.64	0.90	0.03	0.08	1.06	1.14	0.08	0.29	0.37	—	3,836	3,836	0.03	0.60	3.74	4,021
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.26	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.08	45.6
Vendor	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
Hauling	0.02	0.01	0.85	0.16	< 0.005	0.01	0.19	0.21	0.01	0.05	0.07	—	635	635	0.01	0.10	0.62	666

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

Vegetati on	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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	5/15/2027	11/30/2027	5.00	142	Levee Repair

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	Excavators	Diesel	Average	3.00	10.0	346	0.38
Grading	Tractors/Loaders/Back hoes	Diesel	Average	3.00	10.0	294	0.37
Grading	Graders	Diesel	Average	3.00	10.0	165	0.41
Grading	Forklifts	Diesel	Average	3.00	10.0	110	0.20
Grading	Skid Steer Loaders	Diesel	Average	3.00	10.0	74.0	0.37
Grading	Off-Highway Trucks	Diesel	Average	3.00	8.00	376	0.38
Grading	Other Material Handling Equipment	Diesel	Average	3.00	10.0	495	0.40
Grading	Rubber Tired Dozers	Diesel	Average	3.00	10.0	200	0.40

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	3.00	10.0	346	0.38
Grading	Tractors/Loaders/Back hoes	Diesel	Average	3.00	10.0	294	0.37
Grading	Graders	Diesel	Average	3.00	10.0	165	0.41
Grading	Forklifts	Diesel	Average	3.00	10.0	110	0.20
Grading	Skid Steer Loaders	Diesel	Average	3.00	10.0	74.0	0.37
Grading	Off-Highway Trucks	Diesel	Average	3.00	8.00	376	0.38
Grading	Other Material Handling Equipment	Diesel	Average	3.00	10.0	495	0.40
Grading	Rubber Tired Dozers	Diesel	Average	3.00	10.0	200	0.40

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	60.0	17.0	LDA,LDT1,LDT2
Grading	Vendor	—	8.27	HHDT,MHDT
Grading	Hauling	130	23.0	HHDT
Grading	Onsite truck	83.0	6.00	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	60.0	17.0	LDA,LDT1,LDT2
Grading	Vendor	—	8.27	HHDT,MHDT
Grading	Hauling	130	23.0	HHDT
Grading	Onsite truck	83.0	6.00	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

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)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	116,064	28,850	533	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

Land Use	Area Paved (acres)	% Asphalt
User Defined Recreational	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	204	0.03	< 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

5.18.1.2. Mitigated

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

5.18.1.2. Mitigated

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)

5.18/.2.2. Mitigated

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	29.2	annual days of extreme heat
Extreme Precipitation	1.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	18.8	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 ¾ 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	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	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	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
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	74.1
AQ-PM	60.5
AQ-DPM	17.5
Drinking Water	98.7
Lead Risk Housing	70.8
Pesticides	91.6
Toxic Releases	20.9
Traffic	14.6
Effect Indicators	—
CleanUp Sites	20.5
Groundwater	99.5
Haz Waste Facilities/Generators	40.9
Impaired Water Bodies	87.0
Solid Waste	99.2
Sensitive Population	—
Asthma	67.2
Cardio-vascular	78.7
Low Birth Weights	14.0
Socioeconomic Factor Indicators	—
Education	83.6
Housing	4.74
Linguistic	77.4
Poverty	70.7
Unemployment	91.1

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	32.70884127
Employed	3.875272681
Median HI	27.98665469
Education	—
Bachelor's or higher	19.41485949
High school enrollment	17.54138329
Preschool enrollment	19.62017195
Transportation	—
Auto Access	84.51174131
Active commuting	71.65404851
Social	—
2-parent households	81.05992557
Voting	42.26870268
Neighborhood	—
Alcohol availability	97.0101373
Park access	2.194276915
Retail density	0.256640575
Supermarket access	8.225330425
Tree canopy	38.86821506
Housing	—
Homeownership	32.73450533
Housing habitability	59.54061337
Low-inc homeowner severe housing cost burden	90.79943539
Low-inc renter severe housing cost burden	91.71050943
Uncrowded housing	42.30719877
Health Outcomes	—
Insured adults	27.4990376
Arthritis	0.0
Asthma ER Admissions	36.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0

Indicator	Result for Project Census Tract
Diagnosed Diabetes	0.0
Life Expectancy at Birth	25.3
Cognitively Disabled	95.5
Physically Disabled	94.6
Heart Attack ER Admissions	38.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	53.7
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	12.9
Elderly	87.4
English Speaking	12.2
Foreign-born	52.0
Outdoor Workers	1.3
Climate Change Adaptive Capacity	—
Impervious Surface Cover	99.5
Traffic Density	4.2
Traffic Access	0.0
Other Indices	—
Hardship	67.5
Other Decision Support	—
2016 Voting	66.3

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	83.0
Healthy Places Index Score for Project Location (b)	22.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
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	Using area of repair + staging/laydown area as limits of work (20.89 total acres)
Construction: Construction Phases	Levee repair modeled as grading. Total duration is 28 weeks (May 15 through November 30, 2027).
Construction: Off-Road Equipment	Project-specific equipment list. Three sets of each equipment type. Assume all equipment operates 10 hours per day, except support trucks, which would not operate non-stop and are conservatively modeled as 8 hours daily.
Construction: Trips and VMT	Project-specific trip rates and distances, including travel on unpaved levee top road by haul trucks. Onsite Trucks: 3 water trucks traversing site twice daily for 12 total one-way onsite trips by water trucks + onsite haul truck travel.
Construction: Dust From Material Movement	—

Docusign Envelope ID: 8A10B1B8-0F7D-46D5-9E3D-19A9D9FED4F0

APPENDIX C BIOLOGICAL RESOURCES

Special-Status Plant Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Bloom Period	Habitat Requirements[2]	Potential for Occurrence[3]
		Federal	State	CRPR			
Astragalus tener var. *tener*	alkali milk-vetch	–	–	1B.2	Mar-Jun	**Habitat**: Playas, Valley and foothill grassland (adobe clay), Vernal pools **Microhabitat**: Alkaline **Elevation**: 5–195 feet	**Potential to Occur.** Suitable grasslands on adobe clay soils are present within the study area. The nearest CNDDB occurrence (#57; 1994) is approximately 8.6 miles northwest of the study area.
Atriplex cordulata var. *cordulata*	heartscale	–	–	1B.2	Apr-Oct	**Habitat:** Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy) **Microhabitat**: Alkaline (sometimes) **Elevation**: 0–1,835 feet	**Potential to Occur.** Suitable grasslands and alkaline conditions are present within the study area. The nearest CNDDB occurrence (#91; 1994) is approximately 3.3 miles east-northeast of the study area.
Atriplex minuscula	lesser saltscale	–	–	1B.1	May-Oct	**Habitat**: Chenopod scrub, Playas, Valley and foothill grassland **Microhabitat**: Alkaline, Sandy **Elevation**: 50–655 feet	**Potential to Occur.** Suitable grasslands and alkaline conditions are present within the study area. The nearest CNDDB occurrence (#56; 2017) is approximately 0.72 miles east of the study area.
Atriplex persistens	vernal pool smallscale	–	–	1B.2	Jun, Aug, Sep, Oct	**Habitat**: Vernal pools (alkaline) **Microhabitat**: N/A **Elevation**: 30–375 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Atriplex subtilis	subtle orache	–	–	1B.2	(Apr) Jun-Sep (Oct)	**Habitat:** Valley and foothill grassland **Microhabitat**: Alkaline **Elevation**: 130–330 feet	**No Potential to Occur.** The study area is outside of the species range.
Brasenia schreberi	watershield	–	–	2B.3	Jun-Sep	**Habitat**: Marshes and swamps (freshwater) **Microhabitat**: N/A **Elevation**: 95–7,220 feet	**No Potential to Occur.** Suitable marsh/swamp habitat is not present in the study area.
Castilleja campestris var. *succulenta*	succulent owl's-clover	FT	SE	1B.2	(Mar) Apr-May	**Habitat**: Vernal pools (often acidic) **Microhabitat**: N/A **Elevation**: 165–2,460 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	–	–	1B.1	Jun-Sep	**Habitat**: Meadows and seeps, Playas, Valley and foothill grassland **Microhabitat**: Alkaline **Elevation**: 5–510 feet	**Unlikely to Occur.** Suitable grasslands and alkaline conditions are present within the study area. The nearest CNDDB occurrence (#8; 1983) is more than 10 miles southwest of the study area.

Special-Status Plant Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Bloom Period	Habitat Requirements[2]	Potential for Occurrence[3]
		Federal	State	CRPR			
Cryptantha hooveri	Hoover's cryptantha	–	–	1A	Apr-May	**Habitat**: Inland dunes, Valley and foothill grassland (sandy) **Microhabitat**: N/A **Elevation**: 30–490 feet	**No Potential to Occur.** Suitable habitat does not occur in the study area. This species is presumed extinct in California.
Delphinium recurvatum	recurved larkspur	–	–	1B.2	Mar-Jun	**Habitat**: Chenopod scrub, Cismontane woodland, Valley and foothill grassland **Microhabitat**: Alkaline **Elevation**: 10–2,590 feet	**Unlikely to Occur.** One CNDDB occurrence (#79) in 1998 in an unspecified area within 5 miles east of the study area. The species is believed to be extirpated from this area.
Downingia pusilla	dwarf downingia	–	–	2B.2	Mar-May	**Habitat**: Valley and foothill grassland (mesic), Vernal pools **Microhabitat**: N/A **Elevation**: 5–1,460 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Eryngium racemosum	Delta button-celery	–	SE	1B.1	(May) Jun-Oct	**Habitat**: Riparian scrub (vernally mesic clay depressions) **Microhabitat**: N/A **Elevation**: 10–100 feet	**Potential to Occur.** Suitable clay depressions occur in the study area. Multiple CNDDB occurrences are located within the Eastside Bypass in the vicinity of the study area (#17, 2010, 1.1 miles northwest; #18, 2008, 3.8 miles northwest; #21, 1986, 5.82 miles northwest; #22, 1986, 2.9 miles northwest).
Eryngium spinosepalum	spiny-sepaled button-celery	–	–	1B.2	Apr-Jun	**Habitat**: Valley and foothill grassland, Vernal pools **Microhabitat**: N/A **Elevation**: 260–3,200 feet	**No Potential to Occur.** The study area is outside the species' range.
Euphorbia hooveri	Hoover's spurge	FT	–	1B.2	Jul-Sep (Oct)	**Habitat**: Vernal pools **Microhabitat**: N/A **Elevation**: 80–820 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Extriplex joaquinana	San Joaquin spearscale	–	–	1B.2	Apr-Oct	**Habitat**: Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland **Microhabitat**: Alkaline **Elevation**: 5–2,740 feet	**Potential to Occur.** Suitable grasslands and alkaline conditions are present within the study area. The nearest CNDDB occurrence (#74) is approximately 8.3 miles north-northwest of the study area.
Lagophylla dichotoma	forked hare-leaf	–	–	1B.1	Apr-Sep	**Habitat**: Cismontane woodland, Valley and foothill grassland. **Microhabitat**: Clay **Elevation**: 1,200–2,905 feet	**No Potential to Occur.** The study area is outside of the species range.

Special-Status Plant Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Bloom Period	Habitat Requirements[2]	Potential for Occurrence[3]
		Federal	State	CRPR			
Lasthenia chrysantha	alkali-sink goldfields	–	–	1B.1	Feb-Apr	**Habitat**: Vernal pools **Microhabitat**: Alkaline **Elevation**: 0–655 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	–	–	1B.1	Feb-Jun	**Habitat**: Marshes and swamps (coastal salt), Playas, Vernal pools **Microhabitat**: N/A **Elevation**: 0–4,005 feet	**No Potential to Occur.** Suitable marsh, swamp, playa, or vernal pool habitat is not present in the study area.
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	–	–	1B.2	Mar-May	**Habitat**: Valley and foothill grassland (alkaline flats) **Microhabitat**: N/A **Elevation**: 5–655 feet	**Potential to Occur.** Suitable grasslands and saline conditions are within the study area. The nearest CNDDB occurrence (#14) is approximately 8.6 miles north-northwest of the study area.
Navarretia nigelliformis ssp. *radians*	shining navarretia	–	–	1B.2	(Mar) Apr-Jul	**Habitat**: Cismontane woodland, Valley and foothill grassland, Vernal pools. **Microhabitat**: Clay (sometimes) **Elevation**: 215–3,280 feet	**No Potential to Occur.** The study area is outside of the species range.
Navarretia prostrata	prostrate vernal pool navarretia	–	–	1B.2	Apr-Jul	**Habitat**: Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools **Microhabitat**: Mesic **Elevation**: 10–3,970 feet	**Unlikely to Occur.** Suitable grasslands and alkaline conditions are within the study area. The nearest CNDDB occurrence (#24; 2001) is approximately 10.2 miles northwest of the study area.
Neostapfia colusana	Colusa grass	FT	SE	1B.1	May-Aug	**Habitat**: Vernal pools (adobe clay) **Microhabitat**: N/A **Elevation**: 15–655 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	FT	SE	1B.1	Apr-Sep	**Habitat**: Vernal pools. **Microhabitat**: N/A **Elevation**: 35–2,475 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Orcuttia pilosa	hairy Orcutt grass	FE	SE	1B.1	May-Sep	**Habitat**: Vernal pools. **Microhabitat**: N/A **Elevation**: 150–655 feet	**No Potential to Occur.** Suitable vernal pool habitat is not present in the study area.
Puccinellia simplex	California alkali grass	–	–	1B.2	Mar-May	**Habitat**: Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools **Microhabitat**: Alkaline, vernally mesic; sinks, flats, and lake margins **Elevation**: 5–3,050 feet	**Unlikely to Occur.** Suitable grasslands and alkaline conditions are present within the study area. The nearest CNDDB occurrence (#37; 1951) is approximately 10.7 miles northwest of the study area.

Special-Status Plant Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Bloom Period	Habitat Requirements[2]	Potential for Occurrence[3]
		Federal	State	CRPR			
Sagittaria sanfordii	Sanford's arrowhead	–	–	1B.2	May-Oct (Nov)	**Habitat**: Marshes and swamps (shallow freshwater) **Microhabitat**: Mesic **Elevation**: 0–2,135 feet	**No potential to Occur.** Suitable perennial aquatic habitat is not present in the study area.
Sidalcea keckii	Keck's checkerbloom	FE	–	1B.1	Apr-May (Jun)	**Habitat**: Cismontane woodland, Valley and foothill grassland **Microhabitat**: serpentinite, clay **Elevation**: 245–2,135 feet	**No Potential to Occur.** The study area is outside the species' range.
Trichocoronis wrightii var. *wrightii*	Wright's trichocoronis	–	–	2B.1	May-Sep	**Habitat**: Meadows and seeps, Marshes and swamps, Riparian forest, Vernal pools **Microhabitat**: alkaline **Elevation**: 15–1,425 feet	**Unlikely to Occur.** Suitable vernally mesic and alkaline conditions are present within the project site. The nearest CNDDB occurrence (#10, 2017) is within 1.6 miles northwest of the study area.

Notes:
[1] Legal Status
Federal Status Categories
FE = Listed as endangered under the Federal Endangered Species Act
FT = Listed as threatened under the Federal Endangered Species Act
California State Status Categories
SE = Listed as endangered under California Endangered Species Act
California Department of Fish and Wildlife (CDFW) Categories
1A = Plant species that are presumed extinct in California.
1B = Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
2B = Plant species considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
CDFW Threat Rank Extensions:
.1 Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat)
.2 Fairly endangered in California (20 to 80% of occurrences are threatened)
[2] Habitat Requirements.
The California Native Plant Society habitat requirements refer to the specific environmental conditions necessary for the survival, growth, and reproduction of native plant species in California.
[3] Potential for Occurrence:
No Potential to Occur: The study area is outside the species' range or suitable habitat for the species is absent from the study area and adjacent areas.
Unlikely to Occur: No recent occurrences (i.e., within 20 years) of the species have been recorded within or near the study area (i.e., within 3 miles), and either habitat for the species is marginal, or potentially suitable habitat is present but the species' current known range is restricted to areas far from the study area or the species is believed to be extirpated from the vicinity.
Potential to Occur: The project site is within the species' range, suitable habitat for the species is present, and no occurrences of the species have been recorded within the project site in the past 2 years; however, recorded occurrences of the species are generally present in the vicinity.

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Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Crustaceans							
Branchinecta conservatio	Conservancy fairy shrimp	FE	–	–	Relatively large vernal pools with highly turbid freshwater.	Six distinct populations in CA, including Merced Co. Found at elevations ranging from 16 to 5,577 feet above sea level.	**No Potential to Occur:** Suitable large vernal pool habitat is not present in the study area. Mapped USFWS critical habitat is within 3.5 miles north of the study area.
Branchinecta lynchi	vernal pool fairy shrimp	FT	–	–	Vernal pools in valley and foothill grassland; small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains.	**Unlikely to Occur:** Suitable vernal pool habitat is not present in the study area. CNDDB occurrence (#102; 1994) is adjacent to the north end of the study area, but the majority of the unspecified occurrence area spans suitable vernal pool habitat northeast of the study area. Mapped USFWS designated critical habitat for this species is 0.4 mile east of the study area.
Lepidurus packardi	vernal pool tadpole shrimp	FE	–	–	Vernal pools in valley and foothill grassland; pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	Sacramento Valley	**No Potential to Occur:** Suitable vernal pool habitat is not found to be present in the study area. The potential historic vernal pool habitat adjacent to the study area to the east on the landside of the levee and to the west on the waterside of the levee is frequently flooded during winter months. The changes to hydrology and the presence of fish and other predators during winter months within the Eastside Bypass is likely to have extirpated suitable habitat and occurrences near the study area. Suitable vernal pool habitat is present 0.6 mile east of the study area. The nearest occurrence (#353, 2013) is 5.3 miles northeast of the study area. Mapped USFWS designated critical habitat for this species is 0.4 mile east of the study area.

Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Insects							
Bombus crotchii	Crotch's bumblebee	–	SC	–	Open grassland and scrub; nests underground. Food plants include *Asclepias*, *Chaenactis*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia* spp.	Historically occurring from the Northern Central Valley to Baja California, Crotch's bumblebee is now believed to be absent from 70% of its historic region. and now primarily persists in coastal southern California habitats, though also survives in a few areas around Sacramento.	**Potential to Occur:** Suitable grassland habitat is present within the study area and within the range of the species, although it is frequently disturbed and dominated by non-native annual vegetation not preferred by the species for foraging. CNDDB has historical records from the 1950s of this species. More recently, a CNDDB occurrence (#607, 2024) of this species was recorded 2.9 miles northeast of the study area.
Danaus plexippus	monarch butterfly	FPT	–	–	This species can breed or forage in a field, roadside area, open area, wet area, or urban garden, as long as there is milkweed and flowering plants around. This species requires milkweed for breeding.	Occurs as north as northeast United States and as south as Central Mexica.	**Known to Occur:** Species was observed traveling through the study area during the field survey, and milkweed (host plant species) was identified during the field survey of the study area. Two occurrences of breeding monarchs have been reported approximately 1 mile north of the study area in 2018 and 2019 (Xerces 2026, Sighting 16618 and 16295).
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	–	–	Riparian scrub, elderberry savannah. Host plant is the blue elderberry shrub (*Sambucus mexicana*). Prefers to lay eggs in elderberries 2–8 inches in diameter; some preference shown for "stressed" elderberries.	Occurs only in the Central Valley.	**No Potential to Occur:** No suitable habitat (blue elderberry shrubs) within the study area.

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Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Fish							
Mylopharodon conocephalus	hardhead	–	–	SSC	Require relatively undisturbed habitats of larger streams with high water quality (clear and cool). Prefer pools and runs with deep, clear water with slow velocities and sand-gravel-boulder substrates.	In the San Joaquin drainage, scattered hardhead populations are found in tributary streams, but only rarely in the valley reaches of the San Joaquin River.	**No Potential to Occur:** No suitable aquatic habitat within the study area.
Oncorhynchus mykiss irideus pop. 11	steelhead – Central Valley DPS	FT	–	SSC	Cool, clear streams with abundant cover and well-vegetated banks, with relatively stable flows. Pool and riffle complexes and cold gravelly streambeds for spawning.	Populations in the Sacramento and San Joaquin rivers and their tributaries.	**No Potential to Occur:** No suitable aquatic habitat within the study area.
Amphibians							
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	FT	ST	–	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for reproduction and larval development; rodent burrows, rock crevices, or fallen logs for cover for adults and juveniles for summer dormancy.	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County.	**Potential to Occur:** The study area is within the known range for this species. CNDDB occurrence #4 (1994) reported a population within the Merced National Wildlife Refuge, 2.1 miles north of the study area. While the study area does not contain suitable breeding habitat, there is breeding habitat within the 1.3-mile dispersal distance for this species. The routinely disturbed study area does not provide suitable upland refugia habitat. Although the levee is a substantial barrier for this species to travel into the study area from the suitable habitat to the east, and also due to the routine maintenance of the levee, juveniles and adults could occur in the study area during overland travel.

Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Lithobates pipiens	northern leopard frog	–	–	SSC	Highly aquatic, occur in or near quiet, permanent and semi-permanent water in many habitats. Require shoreline cover or submerged and emergent vegetation. Found in irrigation canals.	Along the Colorado River, Imperial, Tulare, Kern, Modoc and Lassen Co. Elevation range extends from sea level to 2130 m (7,000 ft).	**No Potential to Occur:** No suitable aquatic habitat within the study area. This species has been observed in Merced Wildlife Refuge (CNDDB occurrence #6) in 1970, 4.5 miles northwest of the study area. However, it is now considered mostly extirpated.
Spea hammondii	western spadefoot - northern DPS	FPT	–	SSC	Occurs primarily in grassland habitats but can be found in valley–foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Throughout the Central Valley and adjacent foothills.	**Potential to Occur:** Suitable aquatic habitat is not present in the study area. However, there are vernal pools within the vicinity of the study area, and the species could occur in the study area during overland travel to more suitable habitats adjacent to the study area. There is a CNDDB record (#463, 2016) within approximately 925 feet of the study area.
Reptiles							
Actinemys marmorata	northwestern pond turtle	FPT	–	SSC	Aquatic; ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation. Needs basking sites and suitable (i.e., sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	West of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Below 6,000 feet elevation.	**Potential to Occur:** Suitable aquatic habitat is present within the project vicinity, and marginally suitable nesting habitat is present within the study area. This species may use the waterside levee slope for basking. The nearest CNDDB occurrences (#456, 2001; #720, 2006) are approximately 11 miles west of the study area.

Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Anniella pulchra	northern legless lizard	–	–	SSC	Secretive fossorial lizard that is common in several habitats but especially in coastal dune, valley-foothill, chaparral, and coastal scrub types	Found in the floor of the San Joaquin Valley from San Joaquin Co. south, the west slope of the southern Sierra, the Tehachapi Mountains west of the desert, and the mountains of southern California. Elevation is from near sea level to about 1,800 m (6,000 ft) in the Sierra	**Unlikely to Occur:** Marginally suitable sandy habitat surrounding the drainages within the study area. The closest CNDDB occurrence (#122, 2009) was approximately 10 north of the study area.
Gambelia sila	blunt-nosed leopard lizard	FE	SE	FP	Scarce resident of sparsely vegetated alkali flats, large washes, arroyos, canyons, and low foothills. Population densities may be correlated with an abundance of vacated small mammal burrows. Grazing practices that result in maintenance of scattered shrubs and grasses may benefit this lizard.	Currently occurs at scattered sites in the San Joaquin Valley and adjacent foothills. Found at elevations of 30 to 730 m (100 to 2,400 ft)	**Unlikely to Occur:** The study area is outside the current known range of the species. Suitable habitat (alkaline conditions and small mammal burrows) is present adjacent to the study area, but inundation (e.g., in 2017 and 2023) of the Eastside Bypass would likely prevent blunt-nosed leopard lizards from occupying the study area. The nearest CNDDB occurrence (#116, 1967) is approximately 2 miles east of the study area and considered potentially extirpated.
Phrynosoma blainvillii	Blainville's (coast) horned lizard	–	–	SSC	Occurs in valley foothill hardwood, conifer and riparian habitats, as well as in pine-cypress, juniper and annual grassland habitats.	Occurs in the Sierra Nevada foothills from Butte Co. to Kern Co. and throughout the central and southern California coast. range extends up to 1200 m (4,000 ft) in the Sierra Nevada foothills and up to 1,800 m (6,000 ft) in the mountains of southern California.	**Unlikely to Occur:** Suitable grassland habitat is present within the study area; however, the species predicted habitat is sparse. The closest CNDDB occurrence (#608) of this species is approximately 10 miles northwest of the study area and was last observed in 1989.

Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Thamnophis gigas	giant gartersnake	FT	ST	–	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	Historical range was in the Sacramento and San Joaquin valleys, but its current range is much reduced, and it apparently is extirpated south of Fresno County, except for western Kern County.	**Unlikely to Occur:** The known range of giant gartersnake does not extend east of the Eastside Bypass, and the study area located approximately 1,375 feet east of the Eastside Bypass's western edge. Although the *Recovery Plan for the Giant Garter Snake* (USFWS 2017) identifies upland refuge habitat up to 165 feet from marsh edges and overwintering habitat up to 820 feet from summer aquatic habitat, the study area is well beyond these maximum distances. Additionally, no suitable or continuous habitat corridor exists between known giant gartersnake habitat and the study area.
Birds							
Agelaius tricolor	tricolored blackbird	–	ST	SSC	Highly colonial. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	Most numerous in the Central Valley and vicinity. Generally endemic to California.	**Known to Occur:** Suitable nesting and foraging habitat within the project vicinity. Flocks were observed during the field survey. Numerous CNDDB records of nesting colonies are within the project vicinity.
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	–	SC	SSC	Open, dry, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Dependent on burrowing mammals, most notably, the California ground squirrel, for underground nests.	Resident throughout California in suitable habitat.	**Potential to Occur:** Suitable burrows and foraging habitat are located within the study area and vicinity. The closest CNDDB record (#1097, 2007) is approximately 4.9 miles east of the study area.

Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Buteo swainsoni	Swainson's hawk	–	ST	–	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas, such as grasslands, or alfalfa or grain fields supporting rodent populations.	Uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert.	**Known to Occur:** Suitable foraging and nesting trees within the study area and project vicinity. This species was observed during the field survey of the study area.
Charadrius montanus	mountain plover	–	–	SSC	Uses open grasslands, plowed fields with little vegetation, and open sagebrush areas. Often roosts in depressions such as ungulate hoof prints and plow furrows. Does not nest in California	Central Valley from Sutter and Yuba Counties, southward. West of San Joaquin Valley and Imperial Valley. Along the central Colorado river valley.	**No Potential to Occur:** The study area is outside the nesting range, and agricultural areas surrounding the study area provide more suitable wintering habitat.
Circus hudsonius	northern harrier	–	–	SSC	Grasslands, meadows, marshes, and seasonal and agricultural wetlands/fields; prefer open habitats with adequate vegetative cover.	Occurs throughout lowland California. Has been recorded in fall at high elevations ranging from near sea level to at least 9,000 feet in Mono County; largely within coastal lowlands from Lake Earl in Del Norte Couty to Bodega Head in Sonoma County, but also inland at Lake Berryessa in Napa County.	**Known to Occur:** Suitable nesting and foraging habitat within the study area and project vicinity. This species was observed during the field survey of the study area.

Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Haliaeetus leucocephalus	bald eagle	--	SE	FP	Requires large bodies of water, or free flowing rivers with abundant fish, and adjacent snags or other perches. Nests in large, old-growth, or dominant live tree with open branchwork.	Permanent resident, and uncommon winter migrant, now restricted to breeding mostly in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity Counties. Winters at a few inland waters in southern California,	**No Potential to Occur:** The study area is outside of the current nesting range.
Mammals							
Antrozous pallidus	pallid bat	–	–	SSC	Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with dry habitats with oak, mixed conifer, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts but also uses caves, mines, bridges, and buildings.	Occurs throughout California, except the high Sierra, from Shasta to Kern County and the northwest coast, primarily at lower and mid elevations (up to 6,000 feet)	**Unlikely to Occur:** Suitable foraging habitat within the study area. However, there are no trees or suitable roosting habitat within the study area.
Dipodomys nitratoides exilis	Fresno kangaroo rat	FE	–	–	Found in alkali desert scrub habitat and herbaceous habitats with scattered shrubs. Require sandy loam soils for excavation of burrows.	Occurs in the southwestern San Joaquin Valley at elevations up to 550 m (1,800 ft).	**No Potential to Occur:** Suitable habitat is not present in the study area. No CNDDB occurrences are within 10 miles of the study area.

Special-Status Wildlife Species with Potential to Occur

Scientific Name	Common Name	Regulatory Status[1]			Habitat Requirements	Distribution	Potential for Occurrence[2]
		Federal	State	CDFW			
Eumops perotis californicus	western mastiff bat	–	–	SSC	Found primarily in riparian and wooded habitats. Occurs at least seasonally in urban areas. Day roosts in trees within the foliage. Found in fruit orchards and sycamore riparian habitats in the Central Valley.	Coastal areas from the San Francisco Bay area south, plus the Central Valley and surrounding foothills, with a limited number of records from southern California, extending as far east as western Riverside and central San Diego counties, upper Sacramento River near Dunsmuir, Siskiyou County	**No Potential to Occur:** The study area is outside of the species range and predicted habitat.
Taxidea taxus	American badger	–	–	SSC	Occurs in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, and mountain meadows near timberline; they require sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground.	Throughout California, except for the humid coastal forests of northwestern California in Del Norte and the northwestern Humboldt Counties	**Potential to Occur:** Suitable habitat and soils for the creation of dens occur within and adjacent to the study area. Existing mounds with large burrows suitable for this species were observed in the vicinity of the study area. The nearest CNDDB occurrence (#295, 1986) is approximately 6.2 miles east of the study area.
Vulpes macrotis mutica	San Joaquin kit fox	FE	ST	–	Lives in annual grasslands or grassy open stages of vegetation dominated by scattered brush, shrubs, and scrub. Dig their own dens in loose-textured, sandy and loamy soils.	Resident of arid regions of the southern half of California.	**Potential to Occur:** Multiple CNDDB records (#47, 2000; #195, 1999) were documented within approximately 50 to 500 feet of the study area. Grasslands in the vicinity of the study area support suitable habitat for San Joaquin kit fox and soils for denning. However, the species has not been recorded within the project vicinity in over 25 years. The most recent species status assessment identified no evidence of a current population in the northern and eastern San Joaquin Valley, including the study area (USFWS 2020).

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Special-Status Wildlife Species with Potential to Occur

Notes:

– = not applicable; CDFW = California Department of Fish and Wildlife; CNDDB = California Natural Diversity Database; DPS = Distinct Population Segments; ESA = federal Endangered Species Act

[1] Regulatory Status Definitions:

Federal Status Categories

FE = Listed as endangered under the Federal Endangered Species Act
FT = Listed as threatened under the Federal Endangered Species Act
FPT = Proposed for listing as threatened under the Federal Endangered Species Act

California State Status Categories

SE = Listed as endangered under California Endangered Species Act
ST = Listed as threatened under California Endangered Species Act
SC = Candidate for listing as endangered under California Endangered Species Act

California Department of Fish and Wildlife (CDFW) Categories

SSC = Species of Special Concern
FP = Fully Protected
WL = Watch List

[2] **Potential for Occurrence:**

- **No Potential to Occur:** The study area is outside the species' range or suitable habitat for the species is absent from the study area and adjacent areas.
- **Unlikely to Occur:** No recent occurrences (i.e., within 20 years) of the species have been recorded within or near the study area (i.e., within 3 miles), and either habitat for the species is marginal or potentially suitable habitat may occur, but the species' current known range is restricted to areas far from the study area or the species is believed to be extirpated from the vicinity.
- **Potential to Occur:** The project site is within the species' range, and no occurrences of the species have been recorded recently (i.e., within 20 years) within the project site; however, suitable habitat for the species is present and recorded occurrences of the species are generally present in the vicinity.
- **Known to Occur:** The project site is within the species' range, suitable habitat for the species is present, and the species has recently been recorded within the project site.

Sources: CDFW 2026a; Xerces 2026; USFWS 2020.

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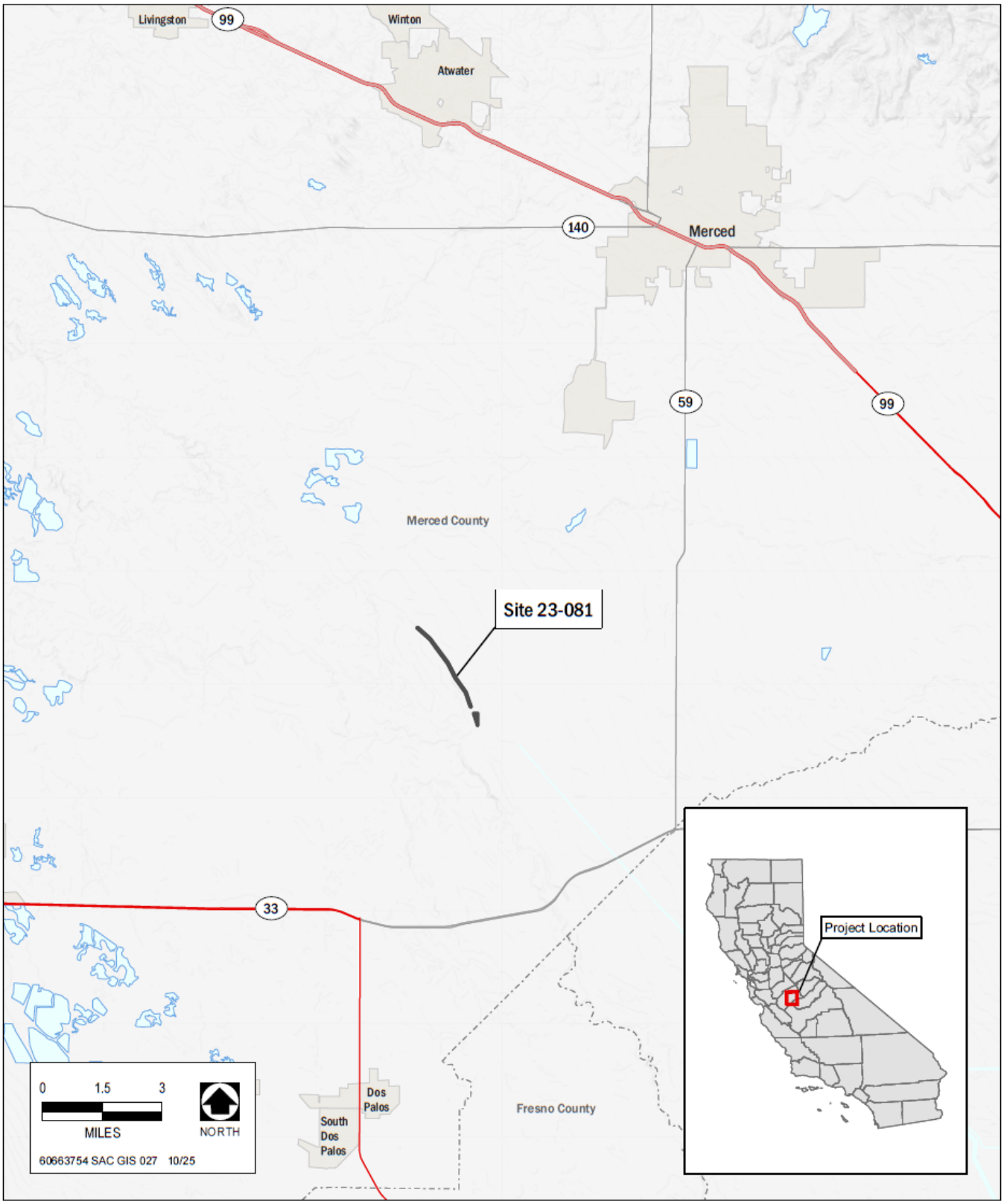

Figure 1. Project Location

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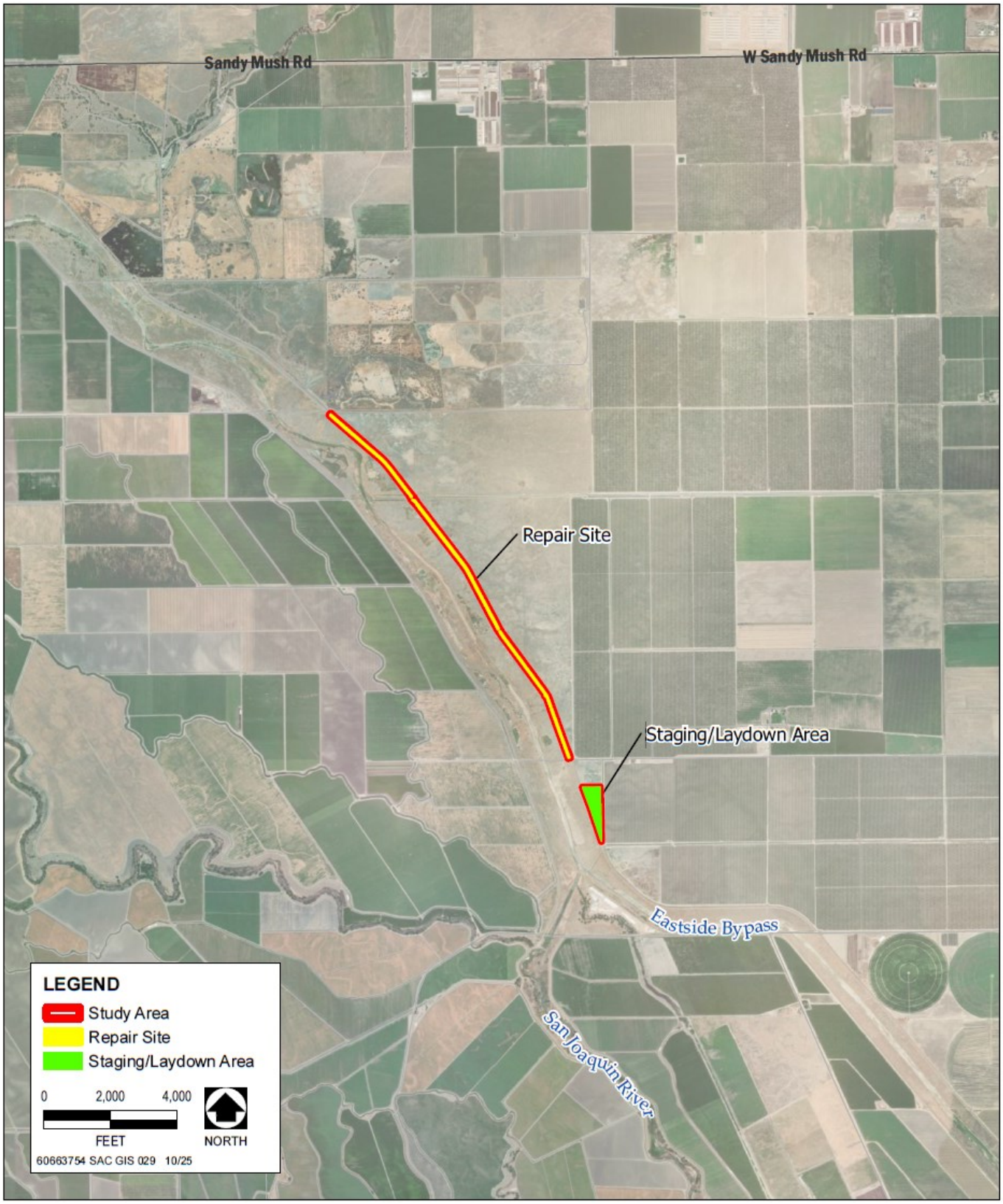

Figure 2. Study Area Map

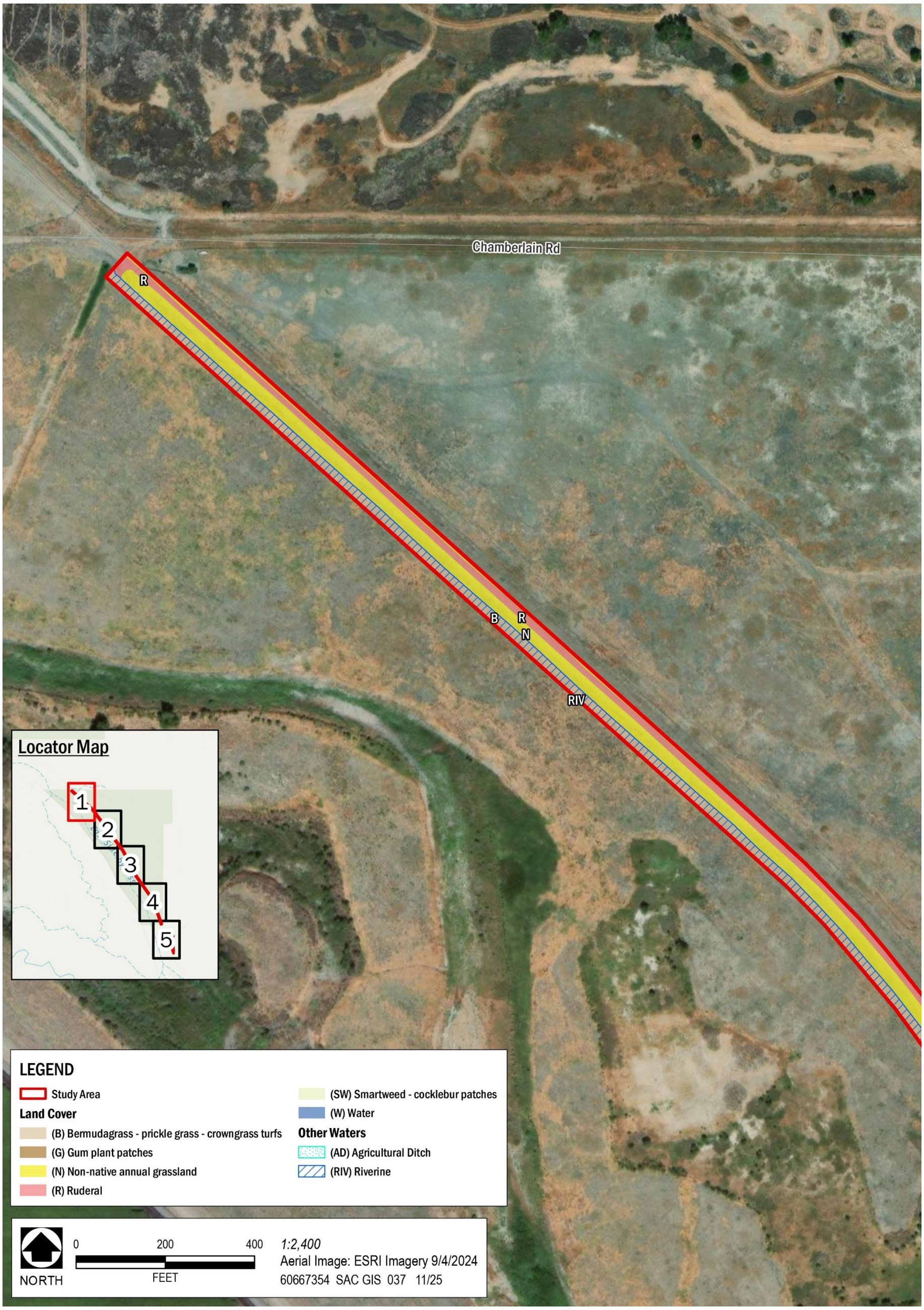

Figure 3. Vegetation Communities Map 1 of 5

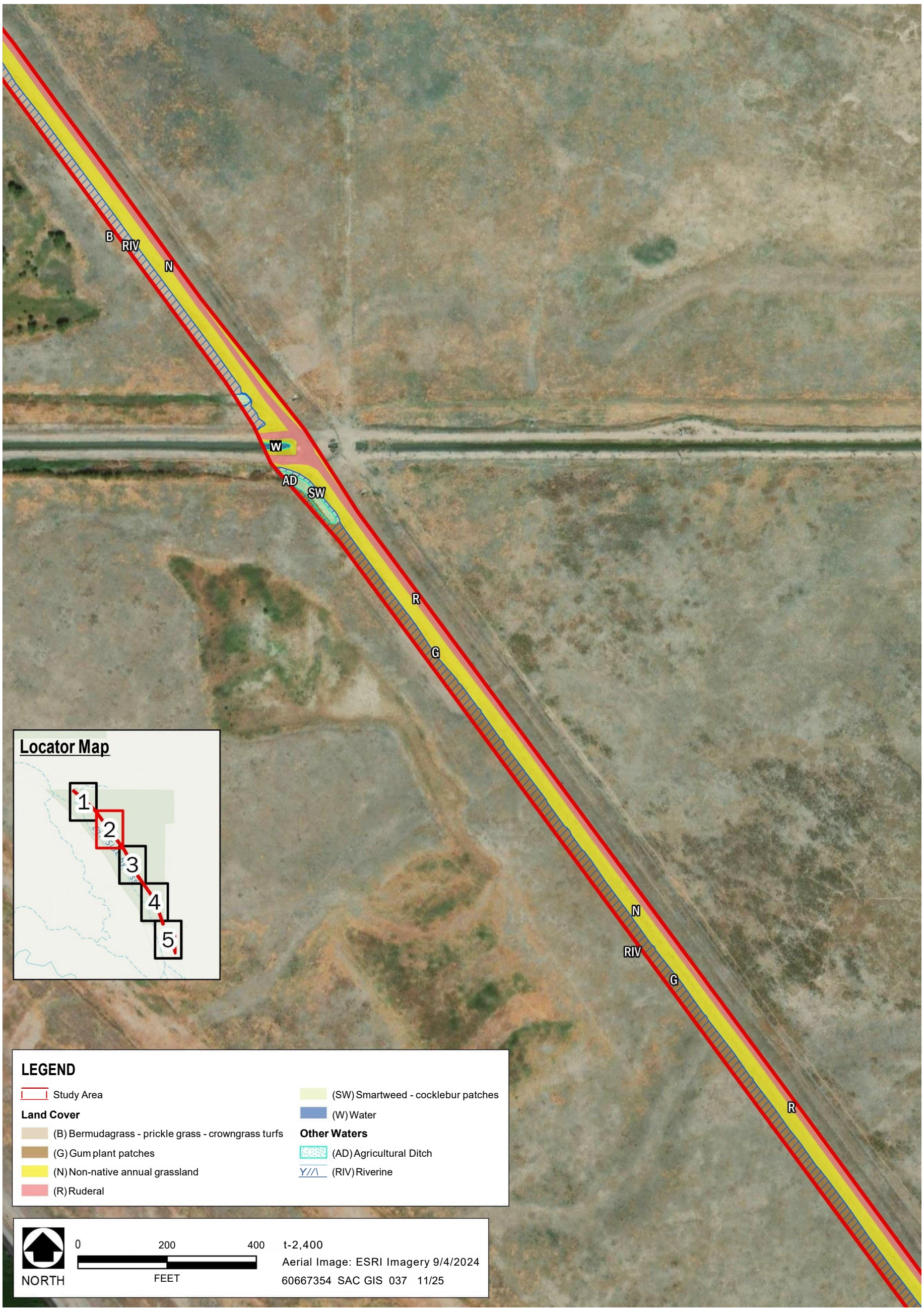

Figure 3. Vegetation Communities Map 2 of 5

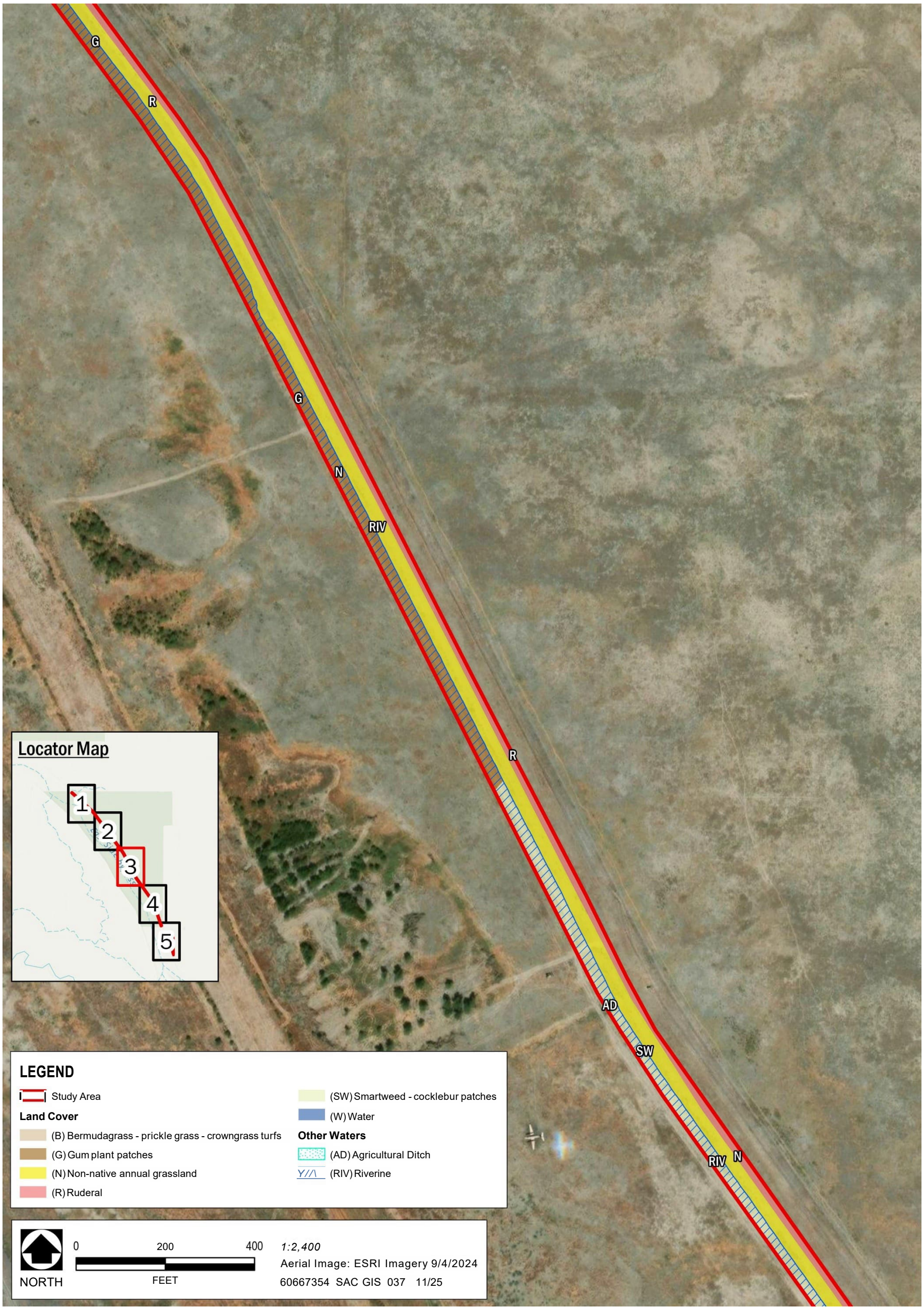

Figure 3. Vegetation Communities Map 3 of 5

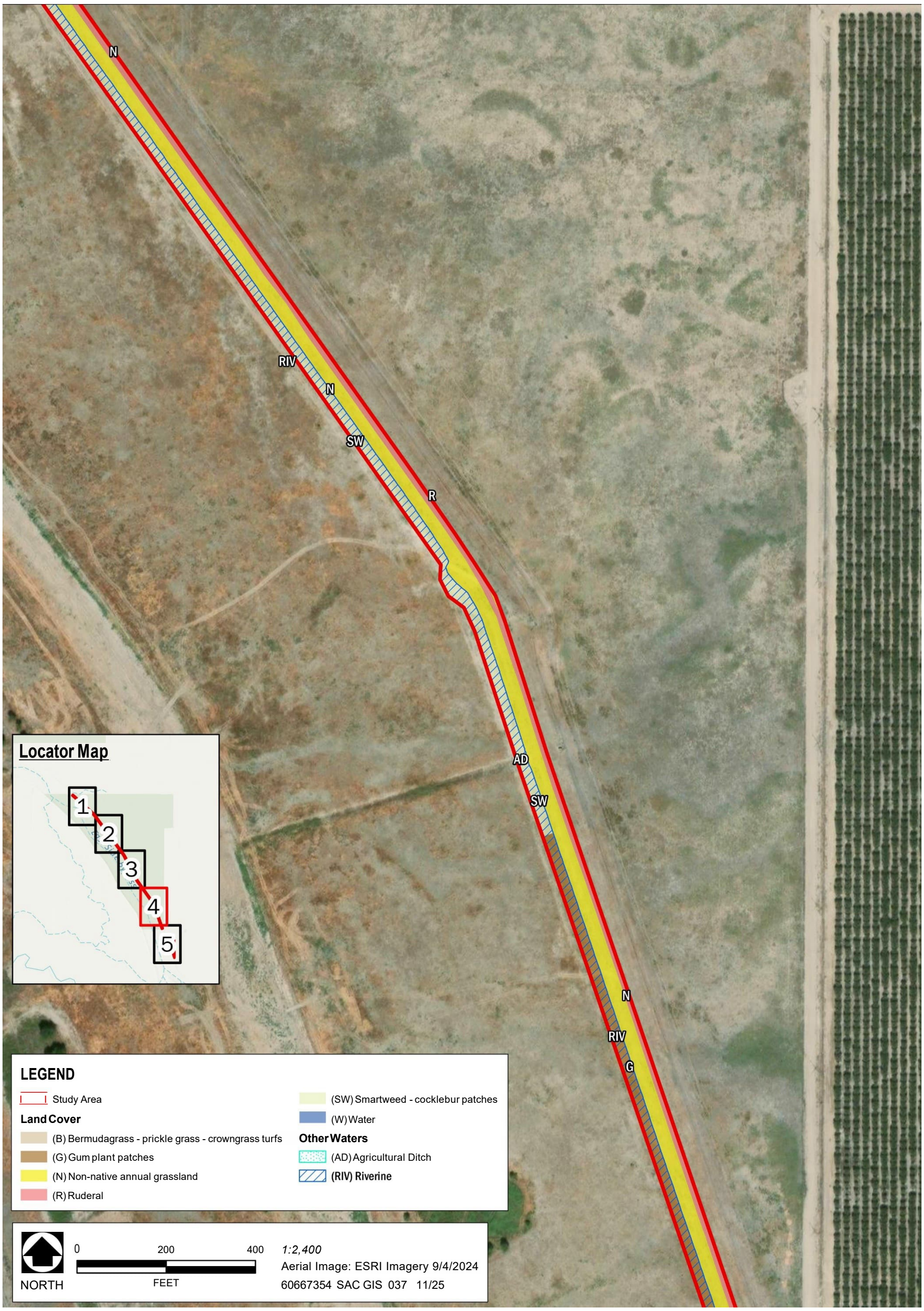

Figure 3. Vegetation Communities Map 4 of 5

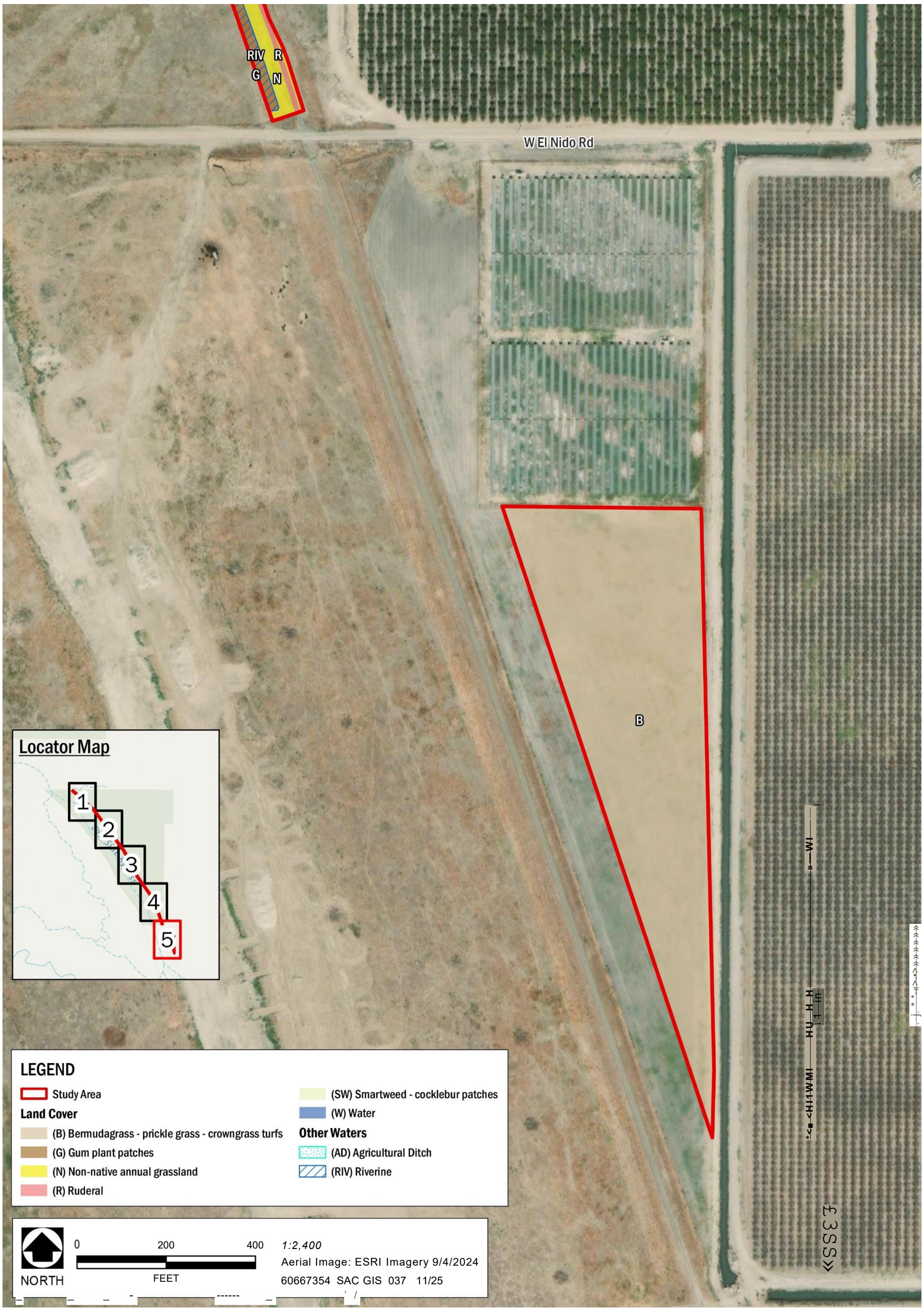

Figure 3. Vegetation Communities Map 5 of 5

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APPENDIX D NOISE MODELING

Project-Generated Construction Source Noise Prediction Model

Location	Distance to Nearest Receiver in Feet	Combined Predicted Noise Level (L_{eq} dBA)	Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Threshold*	937	60	Excavator	81	0.4
Threshold*	50	85	Front End Loader	79	0.4
Receptor	500	65	Grader	85	0.4
Receptor	6,000	44	Dump Truck	76	0.4
			Man Lift	75	0.2
			Backhoe	78	0.4
			Dump Truck	76	0.4
			Dump Truck	76	0.4
			Dozer	82	0.4

Ground Type	Hard
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Excavator	77
Front End Loader	75
Grader	81
Dump Truck	72
Man Lift	68
Backhoe	74
Dump Truck	72
Dump Truck	72
Dozer	78

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
83.2

Notes:
dBA = A-weighted decibel(s)
FHWA = Federal Highway Administration
L_{eq} = Equivalent Sound Level
L_{max} = Maximum Noise Level

Sources:
[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006.
[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level; U.F.= Usage Factor; G = Constant that accounts for topography and ground effects; D = Distance from source to receiver.
*Project specific threshold