



DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

San Joaquin River Multi-Benefit Project on Sherman Island

July 2026

PREPARED FOR

Reclamation District No. 341

P.O. Box 140

Isleton, CA 95641

PREPARED BY

Stillwater Sciences

2855 Telegraph Avenue, Suite 400

Berkeley, CA 94705



Suggested citation: Stillwater Sciences. 2026. San Joaquin River Multi-Benefit Project on Sherman Island. Draft Initial Study/Mitigated Negative Declaration. Prepared by Stillwater Sciences, Berkeley, California, and Wagner & Bonsignore, Sacramento, California for Reclamation District No. 341, Isleton, California .

Cover photo: Sherman Island toe berm on the landside levee.

PROJECT SUMMARY

San Joaquin River Multi-Benefit Project on Sherman Island: Biological Services	
CEQA lead agency name and address	Reclamation District No. 341 P.O. Box 140 Isleton, CA 95641
CEQA responsible agencies	Delta Levees Program Department of Water Resources P.O Box 948236 Sacramento, CA 94236
Contact person and phone number	Robert C. Wagner, P.E., District Engineer Martin Berber, P.E., Project Engineer Ph: (916) 441-6850
Project location	Sherman Island, Sacramento-San Joaquin Delta, Sacramento County
Project sponsor's name and address	Delta Levees Program Department of Water Resources P.O Box 948236 Sacramento, CA 94236
Zoning	Agriculture
Description of Project	Levee repair, levee road reconstruction, cattle fence relocation, utility pole relocation, steel pump discharge conduit, and siphon modifications.
Surrounding land uses and setting	The Project is on land zoned for agriculture and is adjacent to the San Joaquin River to the south.
Other public agencies whose approval is required	Delta Stewardship Council (Delta Plan Consistency Determination)
Have California Native American tribes traditionally and culturally affiliated with the Project Area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts on tribal cultural resources, procedures regarding confidentiality, etc.?	Wilton Rancheria requested formal consultation pursuant to Public Resources Code Section 21080.3.1. Consultation and was conducted pursuant to Government Code Sections 65351, 65352.3, and 65562.5.

PROPOSED MITIGATED NEGATIVE DECLARATION

Project: San Joaquin River Multi-Benefit Project on Sherman Island: Biological Services

Lead Agency: Reclamation District No. 341

Project Location: The proposed Project is located on Sherman Island, along the landside of the southeastern levee (between District Levee Stations 330+00 to 368+00). Sherman Island is situated on the northern shore of the San Joaquin River north of the towns of Antioch and Oakley in Sacramento County, just upstream from the confluence of the Sacramento and San Joaquin rivers.

Project Description: To maintain levee integrity and provide long-term flood protection to Sherman Island, Reclamation District No. 341 is proposing to rehabilitate approximately 0.75 mi of levee along the landside of the Sherman Island Levee.

Findings: An Initial Study has been prepared to assess the potential effects of the Project on the environment and the significance of those effects. Based on the Initial Study, Reclamation District No. 341 has determined that the Project, including conservation measures that are part of the Project design, will not have significant effects on the environment. This conclusion is supported by the following findings:

- The Project would have no impacts on the following: agriculture and forestry resources, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, and wildfire;
- The Project would result in less than significant impacts on the following: aesthetics, air quality, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, and utilities and service systems;
- Mitigation would be included to reduce potentially significant impacts to less than significant levels for: biological resources, cultural resources, and tribal cultural resources.

Mandatory Findings of Significance:

- The Project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, 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.
- The Project would not have environmental effects that are individually limited, but cumulatively considerable.
- The Project would not have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly.

Proposed Mitigation Measures: Mitigation measures included in the Project to avoid or minimize potential environmental impacts are included in the attached Initial Study, which is hereby incorporated and fully made part of this Mitigated Negative Declaration. Implementation of these mitigation measures will ensure that the potential environmental impacts of the Project are less than significant. Reclamation District No. 341 has agreed to implement each of the identified mitigation measures, which will be adopted as part of the Mitigation Monitoring and Reporting Program.

Determination: In accordance with Section 21082.1 of the California Environmental Quality Act (CEQA), Reclamation District No. 341 has independently reviewed and analyzed the Initial Study and proposed Mitigated Negative Declaration for the Project and finds that the Initial Study and proposed Mitigated Negative Declaration reflects the independent judgment of Reclamation District No. 341. The lead agency further finds that the Project mitigation measures will be implemented as stated in the Initial Study and Mitigated Negative Declaration. This Mitigated Negative Declaration is filed in accordance with CEQA and the State CEQA guidelines.

I hereby approve this Project:

Reclamation District No. 341

Date

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Project Purpose and Benefits	1
1.2	Project Location	1
1.3	Project Area	4
1.4	Project Description	4
1.4.1	Construction	5
1.4.2	Staging area.....	7
1.4.3	Equipment.....	7
1.4.4	Schedule	8
1.4.5	Conservation measures	8
1.4.6	Mitigation measures	10
2	ENVIRONMENTAL SETTING AND IMPACTS	15
2.1	Aesthetics	15
2.1.1	Environmental setting	16
2.1.2	Findings	16
2.2	Agriculture and Forestry Resources	18
2.2.1	Environmental setting	18
2.2.2	Findings	19
2.3	Air Quality	20
2.3.1	Environmental setting	20
2.3.2	Findings	24
2.4	Biological Resources	26
2.4.1	Environmental setting	27
2.4.2	Findings	38
2.5	Cultural Resources	45
2.5.1	Environmental setting	45
2.5.2	Findings	46
2.6	Energy	47
2.6.1	Environmental setting	47
2.6.2	Findings	48
2.7	Geology and Soils.....	48

2.7.1	Environmental setting	49
2.7.2	Findings	50
2.8	Greenhouse Gas Emissions	52
2.8.1	Environmental setting	52
2.8.2	Findings	53
2.9	Hazards and Hazardous Materials	54
2.9.1	Environmental setting	55
2.9.2	Findings	55
2.10	Hydrology and Water Quality	57
2.10.1	Environmental setting	58
2.10.2	Findings	59
2.11	Land Use and Planning	61
2.11.1	Environmental setting	61
2.11.2	Findings	62
2.12	Mineral Resources	62
2.12.1	Environmental setting	62
2.12.2	Findings	62
2.13	Noise	63
2.13.1	Environmental setting	63
2.13.2	Findings	64
2.14	Population and Housing	65
2.14.1	Environmental setting	65
2.14.2	Findings	65
2.15	Public Services	66
2.15.1	Environmental setting	66
2.15.2	Findings	66
2.16	Recreation	67
2.16.1	Environmental setting	67
2.16.2	Findings	67
2.17	Transportation	68
2.17.1	Environmental setting	68
2.17.2	Findings	68
2.18	Tribal Cultural Resources	69

2.18.1	Environmental setting	70
2.18.2	Findings	71
2.19	Utilities and Service Systems	72
2.19.1	Environmental setting	73
2.19.2	Findings	73
2.20	Wildfire	76
2.20.1	Environmental setting	76
2.20.2	Findings	76
2.21	Mandatory Findings of Significance	78
3	DETERMINATION.....	80
4	LIST OF PREPARERS.....	81
5	CONSULTATION AND COORDINATION.....	82
6	COMPLIANCE WITH FEDERAL AND STATE ENVIRONMENTAL LAWS AND REGULATIONS	83
6.1	Federal	83
6.2	State	83
7	REFERENCES.....	87

Appendices

Appendix A	Project Design Sheets
Appendix B	California Emissions Estimator Model Emissions Summary Sheets
Appendix C	Database Query Results for Special-status Plant Species and Sensitive Natural Communities Previously Documented in the Project Region
Appendix D	Database Query Results for Special-status Fish and Wildlife Species Previously Documented in the Project Region
Appendix E	Comprehensive List of Vascular Plant Species Documented during Special-status Botanical Surveys for the Project

Tables

Table 1-1	Equipment list for the Sherman Island Levee Rehabilitation Project	7
Table 2-1	Summary of environmental factors potentially affected by the Project	15
Table 2-2	Summary air quality statistics for the Sacramento Valley Air Basin, 2018 to 2023	21
Table 2-3	Sacramento Metropolitan Air Quality Management District air quality thresholds of significance for construction phase.....	23
Table 2-4	Project emission sources and quantities used to determine emissions.....	24
Table 2-5	Estimated Project construction emissions of criteria pollutants for which the Project region is designated as non-attainment	25
Table 2-6	Summary of vegetation and land cover types in the Survey Area.....	29
Table 2-7	Special-status plants with the potential to occur within the Survey Area	33
Table 2-8	Special-status wildlife species with moderate to high potential to occur in the Project Area.....	35
Table 2-9	Potential Project construction-related effects and minimization measures for special-status wildlife	39
Table 4-1	List of preparers	81

Figures

Figure 1-1	Location of the Project Area on Sherman Island, and adjacent islands.....	2
Figure 1-2	San Joaquin Multi-Benefit Project and Survey Areas.....	3
Figure 1-3	Typical levee section for the Project	6
Figure 1-4	Typical County Road Detail	6
Figure 2-1	Vegetation and land cover types within the Survey Area.....	30

Acronyms and Abbreviations

AB	Assembly Bill
ac	acre
APN	Assessor's Parcel Number
BACT	Best Available Control Technology
BFE	Base Flood Elevation
BMP	Best Management Practice
Basin Plan	Water Quality Control Plan for the Central Valley
BGEPA	Bald and Golden Eagle Protection Act
°C	degrees Celsius
CalEEMod	California Emissions Estimator Model
CalFire	California Department of Forestry and Fire Protection
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHRIS	California Historical Resources Information System
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO _{2e}	Carbon dioxide equivalent
CRPR	California Rare Plant Rank
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
Delta	Sacramento-San Joaquin River Delta
District	Reclamation District No. 341
DWR	California Department of Water Resources
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FE	Federally Endangered
FMBTA	Federal Migratory Bird Treaty Act
FMMP	Farmland Mapping and Monitoring Program
FPT	Federally Proposed as Threatened
ft	foot
FT	Federally Threatened
GHG	greenhouse gas
IS/MND	Initial Study/Mitigated Negative Declaration

MBTA	Migratory Bird Treaty Act
MCV	<i>A Manual of California Vegetation</i>
mi	mile
MMTCO _{2e}	million metric tons of carbon dioxide equivalent
NAHC	Native American Heritage Commission
NO _x	Nitrogen Oxides
OBL	Obligate
Project	San Joaquin River Multi-Benefit Project on Sherman Island
PL 84-99	Public Law 84-99
PM _{2.5}	particulate matter (≤ 2.5 microns in diameter)
PM ₁₀	particulate matter (≤ 10 microns in diameter)
ppm	parts per million
ROG	Reactive Organic Gases
SCE	State Candidate Endangered
SE	State Endangered
SFP	State Fully Protected
SLF	Sacred Lands File
SMARA	Surface Mining and Reclamation Act
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMBTA	State Migratory Bird Treaty Act
SR	State Rare
SSC	Species of Special Concern
ST	State Threatened
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TNW	Traditional Navigable Water
UPL	Upland
USACE	U.S. Army Corps of Engineers
USDA NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibels
VOC	Volatile Organic Compounds
WOUS	Waters of the United States

1 INTRODUCTION

Reclamation District No. 341 (District) plans to implement the San Joaquin River Multi-Benefit Project (Project) on Sherman Island in Sacramento County, California. The Project includes rehabilitating a portion of a levee, reconstructing a portion of the levee road, and creating approximately 1 acre (ac) of vegetated habitat. The Project Funding Agreement SH-24-1.0-SP was executed on July 3, 2024, between the California Department of Water Resources (DWR) and the District.

1.1 Project Purpose and Benefits

The existing levee section from Levee Station (STA) 330+00 to 368+00 does not meet the minimum geometry requirement under the Delta-Specific Public Law 84-99 (PL-99) Standard, which consists of a 16-foot (ft) wide levee crest, 2:1 waterside slope, 3:1 landside slope, and 1.5 ft of freeboard above the 100-year Base Flood Elevation (BFE). The Project will improve flood protection for Sherman Island by bringing the levee up to the Delta-Specific PL 84-99 Standard, increasing stability through the addition of a broad toe berm and improved slopes, and accommodating long-term settlement. The Project will also establish approximately 1 ac of Hedgerow Habitat (Riparian forest and Scrub-shrub habitats) on the toe berm on the landside levee between Levee Station 337+00 and 344+65.

The primary geotechnical concerns for the Project include the presence of deep, weak marsh deposits, relatively steep landside slopes, lack of toe berm, ongoing settlement of the levee crest, and loss of freeboard. The design standard for levees on soft ground conditions, such as those encountered in the Project Area, includes a broad toe berm to buttress the landside slopes, construction in stages, and providing tolerance to allow for the long-term settlement and deformation.

The Project will implement conservation measures in addition to mitigation measures to reduce potential impacts to less than significant.

1.2 Project Location

The Project is located in the Sacramento-San Joaquin River Delta (Delta) on Sherman Island, approximately 2.7 miles (mi) north of the towns of Antioch and Oakley in Sacramento County, California. Sherman Island is bound to the north by the Sacramento River, to the northeast by Threemile Slough, and to the south by the San Joaquin River (Figures 1-1 and 1-2). The Project Area, which includes areas of construction activity (i.e., planned construction extent), is located along a 0.75 mi reach of the San Joaquin River from Levee Station 330+00 to Levee Station 368+00, and ranges from approximately -10 to 10 ft in elevation (Figure 1-2).

The Survey Area, where evaluations were performed to characterize habitat and identify sensitive biological resources, included the Project Area and the following buffers: 100-ft to the west, 30-ft to the east, and 30-ft to the north (Figure 1-2). A buffer to the south was not included because no work will occur on the waterside of the existing levee. The Survey Area included the road bed on top of the levee to the waterside hinge, beyond which rip rap covers the waterside slope (Figure 1-3).

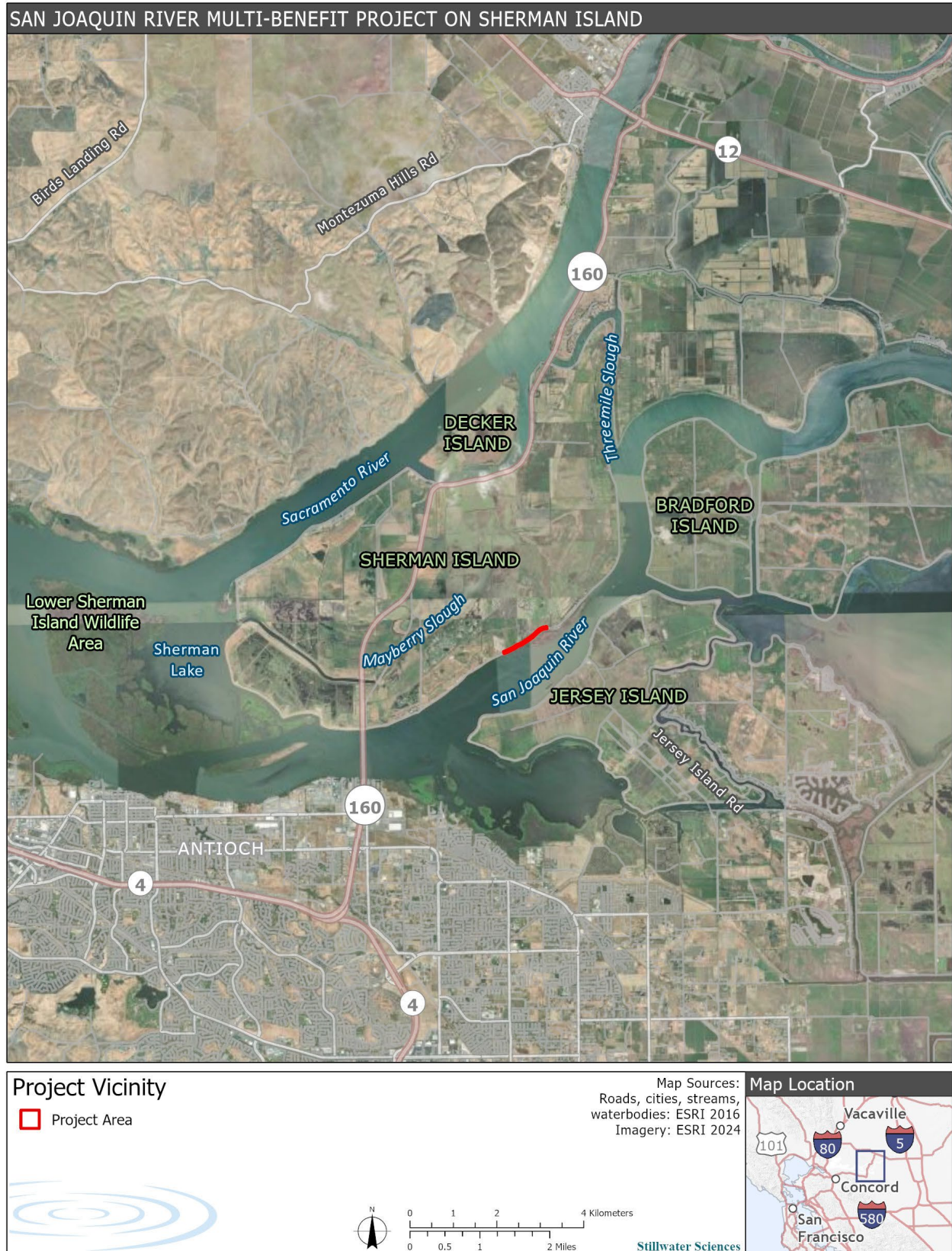


Figure 1-1 Location of the Project Area on Sherman Island, and adjacent islands



Figure 1-2 San Joaquin Multi-Benefit Project and Survey Areas

1.3 Project Area

The Project Area is on the southeast side of Sherman Island and includes approximately 3,800 linear ft of levee along the right bank (as facing downstream) of the San Joaquin River from Levee Station 330+00 to Levee Station 368+00 (Figure 1-1). The Project Area encompasses the levee crown (Sherman Island East Levee Road), the landside slope, and adjacent landside areas used for access and staging. All work will occur landward of the waterside hinge of the existing levee.

The Project is anticipated to be completed in a single construction phase, with all activities (i.e., levee rehabilitation, road reconstruction, utility relocations, and habitat enhancement) occurring within the Project Area. Access to the island is provided via watercraft or California State Route 160; the Antioch Bridge provides access from the south, and the Three Mile Slough Bridge provides access from the north. From State Route 160, access to the Project Area will be provided via Sherman Island Cross Road, Sherman Island East Levee Road and established landside routes.

1.4 Project Description

The Project includes removing the existing Sacramento County (County) road, placing fill as compacted embankment, constructing a new County Road, and establishing approximately 1 ac of Hedgerow Habitat (Riparian forest and Scrub-shrub habitats) on the levee toe berm. Specific Project components are summarized below and detailed in Project design sheets in Appendix A, and features (e.g., levee station numbering, power poles, conduits and siphons) shown in Figure 1-2.

1. Rehabilitate the Sherman Island levee system from Levee Station 330+00 to 368+00, approximately 0.75 mi, to meet the Delta-Specific PL 84-99 Standard, providing 1.5 ft freeboard above the 100-year BFE and an additional 1 ft crest overbuild to accommodate settlement. The levee repair section will feature a 28-ft-wide embankment crest with a 3:1 landside slope, and a toe berm for stability. While the Typical Levee Repair Section includes a 2:1 waterside slope, all work conducted will occur landward of the waterside hinge of the existing levee. This will require import and placement of compacted embankment material (139,000 tons).
2. Reconstruct approximately 0.75 mile of Sherman Island East Levee Road as a 24-ft-wide County road. The road will be composed of 8 inches of aggregate base and 4 inches of asphalt concrete material, and require importing materials, aggregate base (3,300 tons), and asphalt concrete (1,900 tons).
3. Relocate an existing cattle fence between Levee Station 357+00 and 367+00 during Project construction.
4. Relocate 10 Pacific Gas & Electric Company (PG&E) power poles between Levee Stations 330+00 and 347+00 (poles 6–15) prior to the start of Project construction, which carry PG&E power lines and AT&T lines (Figure 1-2).
5. Modify two steel Pump Discharge conduits that serve as discharge pipelines for the District's pump station, at Levee Station 355+78 (30-inch) and Levee Station 355+85 (32-inch) and ensure they cross the levee crest above the 100-year BFE (Figure 1-2).

6. Modify two siphons that function as pipelines, transporting water for field irrigation, at Levee Station 336+59 (14-inch) and Levee Station 366+08 (12-inch) and ensure they cross the levee crest above the 100-year BFE (Figure 1-2).
7. The Project will implement mitigation measures to reduce potential impacts to less than significant, which include but are not limited to preconstruction surveys, environmental training, biological monitoring, protective nest buffers, and species-specific limited operating periods recommended by resource agencies.
8. Create approximately 1 ac of Riparian Forest and Scrub-shrub habitats as Hedgerow Habitat on the levee toe berm between Levee Station 337+00 and Levee Station 344+65. A habitat enhancement planting, maintenance, and three-year monitoring plan will be developed for review and approval by California Department of Fish and Wildlife (CDFW) and DWR. The approximate location of the enhancement area is provided in Figure 1-2.
9. Hydroseed the new landside levee slope and toe berm (approximately 13 ac) with about 42 pounds of native seed mix approved by CDFW including *Bromus carinatus* (California brome) (18 pounds), *Elymus glaucus* (blue wild rye) (12 pounds), *Vulpia microstachys* (small fescue) (8 pounds), and *Leymus tritocoides* (creeping wildrye) (4 pounds).

1.4.1 Construction

1.4.1.1 Site preparation

Site preparation will include stripping, clearing, and grubbing upland vegetation and debris within the Project Area. The site will be stripped to a depth sufficient to remove vegetation and root-bearing soil. Tree roots larger than 1 inch in diameter will be removed. All stripped and grubbed material will be disposed of offsite and will not be reused as fill. Existing asphalt concrete and aggregate base will be removed from the levee crest. Where feasible, aggregate base and gravel will also be removed and either hauled offsite or stockpiled, as appropriate.

1.4.1.2 Levee rehabilitation

The existing levee section from Levee Station 330+00 to Levee Station 368+00 does not meet the minimum geometry requirements under the Delta-Specific PL 84-99 Standard, which specifies a 16-ft-wide levee crest, a 2:1 waterside slope, a 3:1 landside slope, and 1.5 ft of freeboard above the 100-year BFE.

As part of the rehabilitation, a shallow, unshored exploratory trench will be excavated along the levee axis through the existing levee crest as the initial step of construction. The trench depth will depend on the ability of the levee materials to stand unshored, but is anticipated to range from approximately 5 to 7 feet. Excavated materials will be placed back into the trench and compacted following inspection. This trenching will allow continuous observation of shallow subsurface conditions, disrupt continuous horizontal layers of permeable or erodible soils, and provide an opportunity to locate and remove buried obstructions and deleterious materials (e.g., pipes, tree roots, expansive clays, salts, or porous rock) prior to reconstruction.

The proposed levee repair will provide a 28-ft-wide crest, a 2:1 waterside slope, a 3:1 landside slope, and a toe berm for stability (Figure 1-3). All work will occur landward of the waterside hinge of the existing levee.

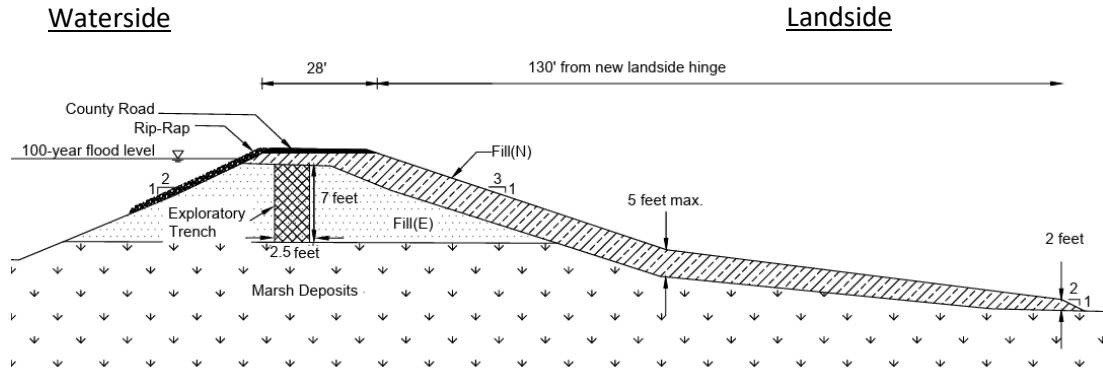


Figure 1-3 Typical levee section for the Project (Shannon & Wilson 2025)

1.4.1.3 County Road Reconstruction

The Project also includes the reconstruction of a portion of Sherman Island East Levee Road on the levee crown as a 24-ft-wide County road consisting of two 10-ft travel lanes and two 2-ft shoulders.

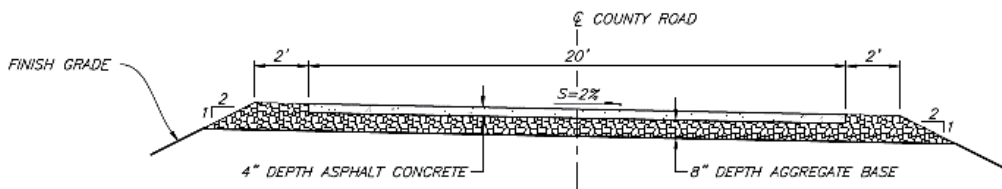


Figure 1-4 Typical County Road Detail

1.4.1.4 Pump discharge conduit and siphon modifications

Two steel pipe Pump Discharge Conduits that serve as discharge pipelines for the District's pump station will be modified. The Pump Discharge Conduits will be raised to accommodate the levee rehabilitation and ensure that they cross the levee crest above the 100-year BFE. Two siphons that function as pipelines, transporting water for field irrigation, will be raised to accommodate levee rehabilitation and ensure that they cross the levee crest above the 100-year BFE.

1.4.1.5 Utility relocation

Ten Pacific Gas & Electric Company (PG&E) power poles between Levee Stations 330+00 and 347+00 (Poles 6-15) will need to be relocated prior to the start of Project construction. The utility poles will be relocated within the existing Project Area, subject to final PG&E coordination and design. The power poles not only carry PG&E power lines, but also AT&T lines. The District will contract with PG&E and AT&T for the relocation of their respective facilities.

The District will also acquire the necessary easement on Assessor's Parcel Number (APN) 158-0030-005-0000 from the DWR's Real Estate Branch for the new power pole alignment.

1.4.1.6 Cattle fence relocation

The Project will require relocation of two existing cattle fence segments located within Levee Stations 357+00–367+00 prior to the start of construction.

1.4.1.7 Habitat enhancement

The Project will establish approximately 1 ac of Hedgerow Habitat (Riparian forest and Scrub-shrub habitats) on the levee toe berm between Levee Station 337+00 and 344+65. The levee toe berm will be planted with a combination of plantings, which include Riparian Forest (RF), Scrub shrub (SS), and native grasses and forbs. The District will provide a habitat enhancement planting, maintenance, and monitoring plan for review and approval by CDFW and DWR.

1.4.2 Staging area

Access for construction within the Project Area will be along established roads, primarily along the Sherman Island East Levee Road. Construction activities will be performed from the levee crest, landside levee slope and toe berm. Contractor facilities, large equipment, and construction materials will be staged within the Project Area, generally along the landside levee toe and crest, with primary staging also occurring at the existing pad near the pump station. Stockpiling of materials, portable equipment, and supplies will occur in designated areas along the levee crown or adjacent landside levee. All staging and stockpiling will be confined to the Project Area.

1.4.3 Equipment

Table 1-1 provides a list of equipment expected to be used during Project implementation.

Table 1-1 Equipment list for the Sherman Island Levee Rehabilitation Project

Equipment type	Number of rigs (or trips, if specified)	Estimated hours (or total trips, if specified)
Digger Derrick Truck	1	100
Excavator, CAT 315	1	100
Bucket Truck	1	100
Boom Truck	1	100
Compactor, CAT 815	1	440
Dozer, CAT D6T	1	440
CAT 160 Road Blade	1	220
CAT 613 Scrapers	1	220
Haul Trucks (Import)		
<i>Compacted Fill¹</i>	~200 trips/day	3,150 total trips
<i>Aggregate Base</i>	~35–40 trips/day	600 total trips

<i>Asphalt Concrete</i>	~25-30 trips/day	195 total trips
Water Truck	1	880
Foreman/Support Crew Truck	2	440

¹ Fill material may alternatively be delivered by barge, depending on contractor needs.

1.4.4 Schedule

Project construction is expected to take approximately six months between May and October 2027. A typical workday is assumed to begin at 7:00 a.m. and end at 5:00 p.m. from Monday through Friday.

1.4.5 Conservation measures

The conservation measures (CMs) described below will be implemented as part of the Project. The measures are based on standard practices to avoid, minimize, or reduce potential impacts on environmental resources and to comply with existing regulations and/or requirements pertaining to air quality, biological resources, energy, greenhouse gas (GHG) emissions, hazards/hazardous materials, and hydrology/water quality.

CM-1. The following best management practices (BMPs) will be implemented during Project construction to prevent, control, and minimize emissions:

- a) All diesel-fueled construction equipment will be in compliance with the California Air Resources Board's (CARB's) In-Use Off-Road Diesel-Fueled Fleets Regulation.
- b) All construction equipment will be properly tuned and maintained prior to and for the duration of on-site operation.
- c) Diesel-powered construction equipment idling time will be minimized to the extent feasible.
- d) An operational water truck will be available at all times. Water will be applied to exposed surfaces as needed, at a minimum of twice daily, to control dust and to prevent visible emissions violations and off-site dust impacts.
- e) Traffic speeds on all unpaved surfaces will be limited to 15 mi per hour or less.
- f) Ground cover will be re-established within the Project Area as soon as possible after construction.
- g) Haul trucks transporting loose materials on-site will either be covered or maintain a minimum of two ft of freeboard, and those traveling on freeways or major roads will be covered.
- h) Wet power vacuum street sweepers will be used to remove any visible trackout mud or dirt onto adjacent public roads at least once per day. Dry power sweeping will be prohibited.

CM-2. Prior to beginning Project activities each day or before moving vehicles or equipment, work areas, including staging areas and areas under and around vehicles and equipment will be scanned for wildlife by a qualified biologist. If any wildlife is observed in the Project Area, activities within the immediate vicinity will cease and the animal will be allowed to move out of the area on its own.

CM-3. Prior to Project construction, a Stormwater Pollution Prevention Plan (SWPPP) will be developed. The SWPPP will be kept on site during construction activity and will be accessible during operation of the Project. The SWPPP will include, but not be limited to, the following elements to avoid and minimize potential impacts on water quality in surrounding waterways from erosion:

- a) Requirements regarding work limits and erosion control measures during and surrounding major precipitation events.
- b) Measures to protect the site from washout or erosion prior to the onset of the rainy season.
- c) Procedures to restore temporarily affected areas to pre-construction contours and conditions upon completion of construction activities, and to re-seed any areas of bare ground with a native seed mix.
- d) Requirements regarding the proper storage of soil, silt, and earthen materials, and implementation of erosion control measures throughout all phases of operation where silt and/or earthen fill have the potential to enter Waters of the United States (WOUS) including aquatic habitats adjacent the Project Area.

CM-4. The SWPPP would additionally include, but not be limited to, the following elements to avoid and minimize potential impacts from hazards and hazardous materials:

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

CM-5. The SWPPP will additionally include, but not be limited to, the following elements to prevent, control, and minimize impacts from a spill of a hazardous, toxic, or petroleum substance during construction of the Project:

- a) Methods for handling and storing vehicles, equipment, diesel fuel, oil, gasoline, lubricants and other petroleum products to minimize potential spills and effects on storm water.
- b) Procedures for containment, clean-up, and reporting of any minor spills.
- c) Requirements for reporting major spills to the proper emergency response agencies to avoid fines and penalties.
- d) Additional specific spill control, clean-up, and reporting requirements, including on-site storage of spill response materials and training in spill response for all on-site personnel.

CM-6. The following measures will be implemented to reduce the potential for fire:

- a) Smoking will be permitted only in designated smoking areas.

- b) Every fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C.
- c) All flammable materials will be removed from equipment parking and storage areas.

1.4.6 Mitigation measures

Mitigation measures (MMs) have been added to the Project to reduce potential impacts to biological resources, cultural resources and tribal cultural resources to a less-than-significant level.

MM-1. Ground disturbance will be minimized to the extent feasible in order to avoid and reduce potential impacts on sensitive wildlife species and their habitats. Ground disturbance will be limited to the minimum area necessary to complete the Project, and existing disturbed areas will be used for access, staging, and construction activities wherever feasible.

MM-2. Mitigate for impacts on native habitat protected by Assembly Bill 360 at the following ratios: 3:1 for native Riparian Forest habitat, 2:1 for native Scrub-shrub habitat, and 1:1 for native Shaded Riverine Aquatic and Freshwater Marsh habitats. The District will consult with CDFW pre- and post-construction to assess potential habitat impacts. If any impacts are identified, the District will mitigate through the purchase of mitigation credits or implement onsite mitigation in coordination with CDFW.

MM-3. Surveys for special-status plants will be re-conducted if construction activities occur after 2030 (i.e., five years after most recent special-status plant survey in 2025) throughout the Project Area. Surveys will be in accordance with *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000) and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018).

Areas where special-status plants and/or sensitive natural plant communities are documented will be flagged or otherwise marked (e.g., staked, fenced) for avoidance, including a 10-ft-radius buffer. If work must be conducted within the 10-ft buffer, hand tools will be used to the extent possible. A biological monitor will be present during construction activities in areas within a 10-ft buffer of special-status plants to ensure that impacts are avoided.

Where avoidance of documented special-status plants and/or sensitive natural plant communities is not possible, a Mitigation and Monitoring Plan will be developed. Mitigation site(s) and methods will be approved by CDFW.

MM-4. All contractors and equipment operators will be provided with Worker Environmental Awareness Program training about the environmental resources of the Project Area, including special-status plants, fish, and wildlife species with potential to occur within the Project Area, and required protection measures. Workers will be informed about the presence, life history, and habitat requirements of all special-status species that may be affected by Project activities. Training will also include information on state and federal laws protecting plants, wildlife, fish, nesting birds, cultural resources, and water quality, and the consequences of noncompliance with these laws. This training will be conducted prior to construction activities and to any new staff/contractors added during the Project.

MM-5. Applicable measures from the U.S. Fish and Wildlife Service (USFWS) *Programmatic Biological and Conference Opinion California Statewide Programmatic Restoration Effort* (USFWS 2022) are included in the Project to avoid or minimize adverse effects on northwestern pond turtles (*Actinemys marmorata*) and their nests:

Identify Northwestern Pond Turtle Nesting Locations and Protect Nests:

Conduct two surveys following current guidance in the Visual Encounter Survey Protocol for Western Pond Turtles developed by the Oregon Native Turtle Working Group (ODFW 2020) for turtle nesting locations and nests between May and July to seek information on observations of large freshwater turtles walking across roads, parking lots, and lawns. These turtles are likely females in search of suitable nesting sites.

If a nest is found:

- Observe the process without disturbing the female, note the location of the nest, and protect it with signage or fencing. Install appropriate turtle nest-protection fencing to provide a 25-ft buffer of the nest and monitor.
- Cover the nest with wire mesh to protect the egg contents from predation as soon as the nest is discovered, as most turtle nests are depredated by mammalian predators (mostly raccoons) the first night after the eggs are deposited. Covering the nest with a 3 ft x 3 ft flat piece of half-inch wire mesh protects the nest for the duration of incubation, but must either be removed or modified prior to the baby turtles hatching and emerging from the nest, lest they become trapped by the wire covering.
- Temporary nest markers and barricades will be removed as soon as possible after the Project is complete. The local CDFW wildlife biologist will be consulted. Known nest sites will not be disturbed unless otherwise authorized by CDFW permit.

Pre-construction Surveys for Northwestern Pond Turtle:

- Within 14 days prior to the onset of construction activities, a qualified biologist will conduct three surveys for northwestern western pond turtle (*Actinemys marmorata*) within any suitable aquatic or upland nesting habitat located within 100 ft of construction areas. The biologist will be familiar with the life cycle and will conduct appropriate surveys for the applicable life stage.

Northwestern Pond Turtle Construction Monitoring:

- A biologist will conduct daily monitoring prior to all construction activities, including but not limited to in-water work and any soil disturbing activities, in suitable nesting, dispersal, and/or aquatic habitats.
- If juveniles or adults are encountered during construction (e.g., ground disturbance) and/or have the potential to be affected, activities will immediately stop and animals will be allowed to leave of their own accord. If necessary, in coordination with a biologist, appropriate barrier (e.g., silt fence) will be installed around the Project Area to prevent direct impacts on adults or young

moving between upland nesting and aquatic habitats. Fencing will be inspected daily. Additionally, rescue and relocation actions may occur at any documented nests.

- Biologists must obtain appropriate permits or approvals required for capturing and relocating species, as appropriate. Individuals will be relocated to a suitable location determined by a qualified biologist. CDFW will be notified within 24 hours of rescue and relocating individuals and identifying nests. Turtle capture and relocation efforts will be conducted in coordination with amphibian capture/relocation efforts where it makes sense.

MM-6. The following measures will be implemented to minimize potential impacts on giant garter snake or its habitat. These measures are based on the U.S. Fish and Wildlife Service's (USFWS's) *Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat, from Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California* (USFWS 1997), as well as recommendations from CDFW.

- Initial site preparation and initial ground-disturbing activities within 200 ft of suitable giant garter snake habitat will occur between May 1 and October 1; this is the active period for the snake, lessening the potential for direct mortality. Ground-disturbing work initiated prior to October 1 may continue into the snake's inactive season.
- Suitable habitat within a 200-ft buffer of the Project Area will be surveyed for giant garter snake by a qualified biologist within 24 hours prior to the start of construction activities, and again if there is a lapse in activity of two weeks or more.
- Damage to small mammal burrows within potential giant garter snake upland habitat will be avoided to the extent feasible. A qualified biologist with giant garter snake experience will survey a 200-ft buffer of suitable giant garter snake aquatic habitat within the Project Area for burrows that may be used by giant garter snake. Potentially suitable burrows will be flagged and avoided. If avoidance is not feasible, suitable burrows will be hand excavated or otherwise blocked by a qualified biologist prior to Project activities to minimize potential of giant garter snake movement into the Project Area.
 - If a giant garter snake is discovered at any time within the Project Area, including staging locations, all Project activities will halt until the U.S. Fish and Wildlife Service (USFWS) and CDFW have been notified and have been given the opportunity to provide additional giant garter snake protection measures.
- The Project will prohibit use of erosion control materials potentially harmful to giant garter snake, such as mono-filament netting; alternatively, tightly woven fiber netting or similar material will be used to ensure that giant garter snakes do not get trapped or become entangled.

MM-7. The following measures will be implemented for Project activities conducted between March 1 and August 15 to minimize impacts on Swainson's hawk (*Buteo swainsoni*):

- Survey timing and methodologies will aim to follow the *Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in*

California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000) within 0.25 mi of the Project Area up to construction start date.

- As much as feasible, surveys will aim to be conducted during Periods II and III, the early months of the nesting season (March 20 to April 20), to maximize the likelihood of detecting active nests.
- If active nests are found, a biologist will establish a 0.25-mi no-disturbance buffer in consideration of surrounding waterways. If Project-related activities need to occur within the no-disturbance buffer, a biological monitor experienced with raptor behavior will monitor the nest during work. The biological monitor will have the authority to stop work if nesting hawks are exhibiting agitated behavior. If the birds are tolerant of Project activities, consultation with CDFW will commence for the reduction of the no-disturbance buffer.

MM-8. To the extent practicable, construction will take place outside the typical avian nesting season (February 15 to August 15). If construction is conducted during the nesting season, a biologist will conduct a focused pre-construction nesting bird survey within the Project Area no more than 1 week prior to the initiation of Project activities. The survey will be conducted in all potential nesting habitat located within the Project Area and within a 250-ft buffer or 1,000-ft buffer for passerines and raptors (e.g., *Buteo* spp.), respectively. If there is a lapse in construction activities for 7 days or more during the nesting season, a biologist will conduct an additional nesting bird survey in areas of potential habitat before Project activities are reinitiated. If an active nest is identified, a no-disturbance buffer will be established using flagging, fencing, and/or signage as appropriate. No construction activities will occur within the buffer zone until a qualified biologist has determined that the young have fledged or that construction activities within the buffer zone are not disturbing the birds. The width of the buffer zone and whether activities are permitted within it will be determined by a qualified biologist in consultation with CDFW.

MM-9. Western burrowing owl (*Athene cunicularia hypugaea*) could occur in or near the work area. No more than 14 days prior to the start of construction, a biologist will conduct a pre-construction survey for active burrowing owl burrows using methods recommended in CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Occupied habitat includes areas burrowing owls may use for breeding (February 1 to August 31), wintering (September 1 to January 31), foraging, and migration stopovers. Occupancy of suitable burrowing owl habitat can typically be verified by an observation of at least one burrowing owl or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, excrement, or loose soil near the burrow entrance. If burrowing owl presence is demonstrated, an appropriate buffer of up to 1,600 ft (as recommended in the *Staff Report on Burrowing Owl Mitigation*) will be established by a biologist in consideration of surrounding waterways. Project-related activities necessary within the buffer will be monitored by a qualified biologist to ensure that Project construction does not detrimentally impact the owls. The on-site biologist will have the authority to stop work if the owls are exhibiting agitated behavior.

MM-10. In the event of an inadvertent discovery of cultural resources or tribal cultural resources, Project activity will immediately cease within 250 ft of the discovery. Project work may continue at other locations while the discovery is examined. The potential significance of the discovery will be determined by a qualified archaeologist as defined in 36 Code of Federal Regulations (CFR) § 61, in coordination with

the appropriate Native American Tribe(s), as applicable. If it is determined that the discovery is not significant, no further investigations are necessary, and Project activities may resume. If the discovery is determined to be significant, additional investigations, such as data recovery or other culturally appropriate treatment, may be necessary before resuming Project activities at the site of the discovery. Any additional archaeological investigations would be designed and conducted in consultation with the relevant agencies, a qualified archaeologist, and the appropriate Native American Tribes. Regardless of the significance of an inadvertent discovery, all inadvertent discoveries of cultural resources and tribal cultural resources, must be appropriately documented and reburied on the project site in a location where the cultural resources will not be disturbed in the future

MM-11. In the event of an inadvertent discovery of human remains, the provisions of the California Health and Safety Code Section 7050.5, California Public Resources Code Section 5097.98, and Assembly Bill 2641 will be implemented. In addition, all work within 100 ft of the discovery will immediately cease until the discovery can be evaluated by the County Coroner. Project work may continue at other locations while the discovery is examined. If the remains are determined to be Native American, the County Coroner must contact the Native American Heritage Commission (NAHC) who will identify a Most Likely Descendant for the remains. The Most Likely Descendant will make recommendations for the recovery, treatment, and disposition of any Native American remains. Final disposition of any inadvertently discovered human remains will be decided in consultation with the Most Likely Descendant, and the District.

MM-12. In accordance with Wilton Rancheria's request, tribal monitoring shall be conducted during initial ground-disturbing activities (e.g., clearing and grubbing vegetation) and exploratory trenching activities within the center levee prism along the Project alignment. The District will contract a compensated tribal monitor from Wilton Rancheria for the activities described above. Wilton Rancheria will be notified at least 48 hours before the commencement of these activities to allow for coordination of tribal monitoring.

2 ENVIRONMENTAL SETTING AND IMPACTS

Each of the following resource sections includes a completed checklist (from Appendix G of the CEQA Guidelines) of environmental factors potentially affected and identifies potential Project impacts by significance level (i.e., no impact, less-than-significant impact, less-than-significant impact with mitigation incorporated, and potentially significant impact). The environmental factors checked in Table 2-1 would potentially be affected by this Project; mitigation measures will be implemented to ensure potential impacts are reduced to less than significant levels.

Table 2-1 Summary of environmental factors potentially affected by the Project

☐ 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	☐ Land Use and Planning	☐ Mineral Resources
☐ Noise	☐ Population and Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities and Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

2.1 Aesthetics

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Except as provided in Public Resources Code Section 21099, would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
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?	☐	☐	☒	☐

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	✓

2.1.1 Environmental setting

The term *aesthetics* typically refers to the perceived visual character of an area, such as of a scenic view, open space, or architectural facade. The aesthetic value of an area is a measure of its visual character and visual quality combined with viewer response (SJCOG 2018). This combination may be affected by the components of a project (e.g., buildings constructed at heights that obstruct views, hillsides cut and graded, open space changed to an urban setting) or by the length or frequency of viewer exposure to a setting. Aesthetic impacts are changes in viewer response as a result of Project construction and operation.

The levees along the perimeter of Sherman Island provide scenic views of the Delta, including the Sacramento River, Threemile Slough, the San Joaquin River, and Mayberry Slough. The island is primarily used as pasture, except for the central and northeastern parts of the island, which are agricultural (USBR 2025). The southwest portion of the island, known as Lower Sherman Island Wildlife Area, consists of 3,100 ac and is known for fishing and water sports, including windsurfing and kiteboarding. The District maintains 1,858 ac of habitat areas throughout the island, including 8.5 ac of waterside habitat that were constructed as part of the Mayberry Slough Setback Levee Project (USBR 2025).

Viewers of Sherman Island include recreational visitors, approximately 200 residents, District employees who maintain the island's infrastructure, Regional Park employees, and farmers and ranchers who manage the island's agricultural fields and pastures. Due to the island's subsidence and surrounding levees, individuals recreating on nearby waterways typically have limited visibility into the island's interior. The Project Area is located in the southeastern portion of the island along the San Joaquin River, approximately 2.25 mi east of State Scenic Highway 160, which traverses the island's western portion. The Sherman Island East Levee Road is also designated as a scenic corridor (Sacramento County 2017a).

2.1.2 Findings

a) Would the Project have a substantial adverse effect on a scenic vista?

Project implementation will not alter the scenic views of Sacramento River, Threemile Slough, or Mayberry Slough. The Project Area runs along the San Joaquin River, so the 18 ac Project Area will temporarily interrupt views of the San Joaquin River during the 6-month construction window. However, the land adjacent to the Project Area is not part of the Regional Park and is not generally used for scenic viewing. Views of the tract interior will not change following Project construction. Therefore, the impact on the scenic vista will be less than significant.

b) Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

State Scenic Highway 160 runs along the western portion of Sherman Island, approximately 2.25 mi from the Project Area. While the Project Area may be visible from the highway as it crosses the island, the distance minimizes any potential for obstruction or degradation of scenic resources. Therefore, the Project's impact on scenic resources would be less than significant.

c) In nonurbanized areas, would the Project 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?

Construction activities will temporarily disrupt the visual character of the Project Area. Portions of the crest and landside slope of the Sherman Island levee will be excavated during construction, resulting in short-term degradation of the site's visual quality; however, all activities will be designed to minimize impacts on the Scenic Corridor. Additionally, construction equipment may be visible to boaters using the adjacent waterways or the limited number of visitors to or residents of the tract. These impacts will occur for a short period (i.e., approximately 6 months). After Project completion, construction equipment will be removed, approximately 1 ac of Riparian Forest and Scrub-shrub habitats as Hedgerow Habitat will be planted on the levee toe berm, and approximately 11 ac of the new landside levee slope and toe berm will be hydroseeded with a native seed mix. Therefore, the Project will result in less-than-significant impacts on, and will not permanently degrade, the visual character or aesthetic quality of the Project Area or surrounding areas.

d) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The Project will not create a new source of light or glare; therefore, the Project will not result in an impact as it will not affect day or nighttime views in the area.

2.2 Agriculture and Forestry Resources

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the Project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	✓
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	✓
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])?	☐	☐	☐	✓
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	✓
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?	☐	☐	☐	✓

2.2.1 Environmental setting

The Project's location at the confluence of the Sacramento and San Joaquin rivers has allowed for the development of deep, fertile soils over time. The rich soil and a climate with a lengthy growing season promote extensive agricultural production in Sacramento County. The county has approximately 420,000 ac of land in agricultural production, largely with fruit and nut crops, field crops, vegetable crops, or livestock (Sacramento County 2023). Sherman Island was one of the first in the Delta to be reclaimed during the period 1868–1879 and is now used primarily as pastureland (Reclamation District No. 341 2025). Agricultural farming, mainly corn, grains, and alfalfa, are concentrated in the central and

northeastern parts of the island. The southwestern portion of the island, known as the Lower Sherman Island Wildlife Area, covers about 3,100 ac and is designated for wildlife habitat (CDFW 2025a, 2025b).

The California Farmland Mapping and Monitoring Program (FMMP), administered by the State Division of Land Resource Protection, is responsible for producing agricultural resource maps based on soil quality and land use. The FMMP designates land into the following categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban or Built-up Land, Other Land, and Water. Descriptions of these categories are detailed in the FMMP (California DOC 2025a).

Most of Sherman Island is designated as either Farmland of Local Importance or Other Land; remaining portions are primarily designated as Prime Farmland or Grazing Land (California DOC 2025b). The entire Project Area (18 ac) is designated as Farmland of Local Importance.

2.2.2 Findings

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

The levee within the Project Area is not in agricultural production, but the Project Area includes 18 ac of land designated as Farmland of Local Importance. The levee serves to protect the adjacent cattle pastureland. Upon construction completion, the levee and Farmland of Local Importance within the Project Area will be restored to their previous use. The Project is consistent with the Sacramento County General Plan Agricultural Element, as it enhances flood protection while maintaining the productivity and viability of agricultural lands. No lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance will be affected by the Project. Therefore, there will be no impact to farmland.

b) **Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?**

The Project Area is not included in a Williamson Act contract. The Project Area is zoned for agricultural use, but the Project Area is limited to the levee along the San Joaquin River and immediately adjacent areas (e.g., levee toe), which are not used for agricultural production. Land use in the Project Area will not change following Project construction. The Project will also establish approximately 1 ac of Hedgerow Habitat along the levee toe berm between Levee Station 337+00 and Levee Station 344+65, and approximately 11 ac of the new landside levee slope and toe berm will be hydroseeded with a native seed mix, which are compatible with existing agricultural uses. Therefore, the Project will have no impact on existing zoning and will not conflict with a Williamson Act contract.

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

The Project Area is not zoned as forest land or timberland. The Project will not impact existing zoning or result in rezoning.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

The Project will not result in the loss of forest land or conversion of forest land to non-forest use. Therefore, the Project will have no impact.

e) Would the Project 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?

Land use in the Project Area and vicinity will not change following Project construction; therefore, the Project will not involve other changes in the existing environment that could result in conversion of Farmland to non-agricultural use. The Project will have no impact.

2.3 Air Quality

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	✓	☐
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?	☐	☐	✓	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	✓	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	✓

2.3.1 Environmental setting

The Project is in the Sacramento Valley Air Basin, which includes Butte, Colusa, Glenn, Placer (western), Sacramento, Shasta, Solano (eastern), Sutter, Tehama, Yolo, and Yuba counties, and is administered by the Sacramento Metropolitan Air Quality Management District (SMAQMD). The Sacramento Valley Air Basin is bounded by mountainous areas to the east, west, and north, with an opening to the south into the Delta. The region experiences relatively long summers with generally hot and dry conditions and short winters with cool, wet conditions. Subtropical high air pressure events can occur year-round and result in the formation of strong atmospheric inversion layers. The combination of these topographical and

meteorological factors can prevent the dispersion of pollutants and is particularly conducive to poor air quality.

2.3.1.1 Criteria air pollutants

The federal Clean Air Act of 1970 (Section 6.1) and CARB have established air quality standards for several common pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, sulfates, and hydrogen sulfide (CARB 2025a). Air quality data for some criteria air pollutants in the Sacramento Valley Air Basin from 2018 to 2023 are summarized in Table 2-2.

Table 2-2 Summary air quality statistics for the Sacramento Valley Air Basin, 2018 to 2023

Year	Pollutant (averaging time)	Maximum concentration ¹	Federal standard	Days exceeding federal standards	State standard	Days exceeding state standard
2018	Ozone (1-hour)	0.117 ppm	NA	NA	0.09 ppm	11
	Ozone (8-hour)	0.098 ppm	0.070 ppm	36	0.070 ppm	42
	PM _{2.5} (daily)	411.7 µg/m ³	35 µg/m ³	24	NA	NA
	PM ₁₀ (daily)	454.0 µg/m ³	150 µg/m ³	9	50 µg/m ³	60
2019	Ozone (1-hour)	0.103 ppm	NA	NA	0.09 ppm	3
	Ozone (8-hour)	0.082 ppm	0.070 ppm	12	0.070 ppm	15
	PM _{2.5} (daily)	41.4 µg/m ³	35 µg/m ³	3	NA	NA
	PM ₁₀ (daily)	174.7 µg/m ³	150 µg/m ³	1	50 µg/m ³	45
2020	Ozone (1-hour)	0.137 ppm	NA	NA	0.09 ppm	9
	Ozone (8-hour)	0.097 ppm	0.070 ppm	29	0.070 ppm	33
	PM _{2.5} (daily)	329.3 µg/m ³	35 µg/m ³	34	NA	NA
	PM ₁₀ (daily)	391.3 µg/m ³	150 µg/m ³	10	50 µg/m ³	77
2021	Ozone (1-hour)	0.114 ppm	NA	NA	0.09 ppm	13
	Ozone (8-hour)	0.097 ppm	0.070 ppm	52	0.070 ppm	56
	PM _{2.5} (daily)	265.7 µg/m ³	35 µg/m ³	26	NA	NA
	PM ₁₀ (daily)	218.2 µg/m ³	150 µg/m ³	1	50 µg/m ³	48
2022	Ozone (1-hour)	0.106 ppm	NA	NA	0.09 ppm	2
	Ozone (8-hour)	0.085 ppm	0.070 ppm	25	0.070 ppm	27
	PM _{2.5} (daily)	212.8 µg/m ³	35 µg/m ³	10	NA	NA
	PM ₁₀ (daily)	108.7 µg/m ³	150 µg/m ³	0	50 µg/m ³	17

Year	Pollutant (averaging time)	Maximum concentration ¹	Federal standard	Days exceeding federal standards	State standard	Days exceeding state standard
2023	Ozone (1-hour)	0.104 ppm	NA	NA	0.09 ppm	1
	Ozone (8-hour)	0.083 ppm	0.070 ppm	14	0.070 ppm	14
	PM _{2.5} (daily)	54.2 µg/m ³	35 µg/m ³	3	NA	NA
	PM ₁₀ (daily)	80.8 µg/m ³	150 µg/m ³	NA ²	50 µg/m ³	13

Source: CARB (2024a, 2025a)

Notes: µg/m³ = microgram per cubic meter of air

NA = not applicable

PM_{2.5} = respirable particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = respirable particulate matter less than or equal to 10 microns in diameter

ppm = parts per million

¹ Maximum concentration observed in the Sacramento Valley Air Basin based on national reference or equivalent method, which adjusts observations to standardized conditions to eliminate variability and allow for comparison across locations.

² Insufficient data available to determine the value.

Air quality in the SMAQMD does not consistently meet all applicable air quality standards. The SMAQMD is currently designated as being in non-attainment for state ozone and PM₁₀ (respirable particulate matter less or equal to than 10 microns in diameter) standards and for federal ozone and PM_{2.5} (respirable particulate matter less than or equal to 2.5 microns in diameter; 24-hour) standards (SMAQMD 2024). On March 21, 2025, the Sacramento Metro Federal Non-attainment Area was determined to be in attainment of the 2008 8-hour federal ozone standard, based on 2022–2024 monitoring data (Trinity Consultants 2025). Concurrently, the Federal Register published the interim final decision by the U.S. Environmental Protection Agency (EPA) to stay and defer active and pending sanctions related to the area's previous nonattainment status for the 2008 8-hour federal ozone standard. Before issuing a final determination, the EPA opened a public comment period, which ended on April 21, 2025. On August 21, 2025, the EPA issued its final determination that the Sacramento Metro Area had attained the 2008 8-hour ozone standard; this finding became effective on September 22, 2025 (EPA 2025a). However, this action does not change the area's official nonattainment designation, which remains in place unless and until the State of California submits, and the EPA approves, a formal redesignation request and maintenance plan (EPA 2025b).

The Project Area is designated as being in attainment for state and federal carbon monoxide, PM_{2.5} (annual mean), lead, nitrogen dioxide, and sulfur dioxide standards (SMAQMD 2024). Therefore, criteria air pollutants and precursors of primary concern for construction activity within the Project Area include ozone precursors (e.g., nitrogen oxides, reactive organic gases), fugitive/exhaust dust particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}) (SMAQMD 2020a).

The SMAQMD adopted air quality thresholds of significance for criteria pollutants in 2002, via resolution AQMD2002018 (SMAQMD 2020b). Because SMAQMD emissions thresholds are more stringent than EPA thresholds (EPA 2025c), emissions are considered significant if they exceed the local thresholds. Thresholds established by SMAQMD are shown in Table 2-3.

Table 2-3 Sacramento Metropolitan Air Quality Management District air quality thresholds of significance for construction phase

Pollutant	Thresholds of significance for construction phase
NO _x	85 lbs/day
ROG (VOC)	0 lbs/day
PM ₁₀	80 lbs/day ¹ 14.6 tons/year ¹
PM _{2.5}	82 lbs/day ¹ 15 tons/year ¹
CO	20 ppm or 23 mg/m ₃ (1-hour standard) 9 ppm or 10 mg/m ₃ (8-hour standard)
NO ₂	0.18 ppm or 339 µg/m ₃ (1-hour standard) 0.03 ppm or 57 µg/m ₃ (annual arithmetic mean)
SO ₂	0.25 ppm or 665 µg/m ₃ (1-hour standard) 0.04 ppm or 105 µg/m ₃ (24-hour standard)
GHG as CO ₂ e	1,100 metric tons/year

Source: SMAQMD (2020b).

¹ Threshold when all feasible best available control technology (BACT) and BMPs are applied. If all feasible BACT and BMPs are not applied, the maximum threshold is zero.

Notes: A project is considered significant if emissions exceed California Ambient Air Quality Standard or contribute substantially to an existing or projected violation of a California Ambient Air Quality Standard (CARB 2025b, SMAQMD 2020a).

lbs = pounds

ppm = parts per million

mg/m³ = micrograms per cubic meter

NO_x = nitrogen oxides

ROG = reactive organic gases

VOC = volatile organic compounds

PM_{2.5} = respirable particulate matter (less than or equal to 2.5 microns in diameter)

PM₁₀ = respirable particulate matter (less than or equal to 10 microns in diameter)

CO = carbon monoxide

NO₂ = nitrogen dioxide

SO₂ = sulfur dioxide

GHG = greenhouse gas

CO₂e = carbon dioxide equivalent

In addition to thresholds for criteria pollutants, SMAQMD has adopted a threshold of significance for odors. While there is no numerical standard for this threshold, a project is considered to have a significant adverse odor impact if it could expose a substantial number of people to objectionable odors, or if it is within the recommended odor screening distance for odor-generating facilities (SMAQMD 2009, 2016).

2.3.1.2 Sensitive receptors

Some individuals have heightened health risks associated with exposure to air pollution, and for some air quality constituents, impacts are determined based on the distance to the closest sensitive receptor.

Sensitive receptors include but are not limited to residential areas, schools, and hospitals. The nearest

sensitive receptors to the Project Area are Eddo's Harbor & RV Park, located about 150 ft from the eastern edge of the Project Area, and a few permanent rural residences ranging from 0.25 to 0.68 mi from the Project Area. Other rural residences in the vicinity are greater than 1 mi from the Project Area.

2.3.2 Findings

Project construction details (e.g., duration, timing, equipment use) were analyzed using the California Emissions Estimator Model Version 2022.1.1.33 (CalEEMod) to estimate Project emissions, including exhaust from construction equipment, fugitive dust generated by construction activities, and emissions from vehicle travel over unpaved roads. Operational emissions were not analyzed because there will be no change in operations or maintenance activity following Project construction. The CalEEMod data entry and emissions summary sheets are included as Appendix B.

The modeling was based on the emission sources and construction equipment provided in Table 2-4. Additional model assumptions included implementation of air quality BMPs included as part of the Project in conservation measure **CM-1** (e.g., use of an on-site water truck, speed limits on unpaved roads). Model results for total anticipated Project emissions of criteria pollutants for which the Project region is designated as non-attainment are shown in Table 2-5 and included in detail in Appendix B.

Table 2-4 Project emission sources and quantities used to determine emissions

Emission source	Project quantities
Excavated trench and levee fill material	28,200 cubic yards
Imported levee fill material ¹	139,000 tons
Imported aggregate base	3,300 tons
Imported asphalt concrete	1,900 tons
Fuel-fired construction equipment	Digger Derrick Truck (1) Excavator, CAT 315 (1) Bucket truck (1) Boom truck (1) Compactor, CAT 815 (1) Dozer, CAT D6T (1) Road blade, CAT 160 (1) Scraper, CAT 613 (1) Water truck (1) Haul trucks (270 trips per day) ² Foreman pickups (2)
Employee commute trips	5 to 13 employee trips/day ³ 40 mi one way ⁴

¹ Fill material may alternatively be delivered by barge, depending on contractor needs.

² Maximum trips expected during levee construction phase.

³ Employee trips per day vary by Project phase.

⁴ Estimated employee commute travel distance.

Table 2-5 Estimated Project construction emissions of criteria pollutants for which the Project region is designated as non-attainment

	NO_x (lbs/day)	ROG (lbs/day)	PM₁₀ (lbs/day)	PM_{2.5} (lbs/day)
Maximum Project emissions ¹	10	0.53	19	3
SMAQMD emissions threshold	85	NA ¹	80 ²	82 ³

Source: CalEEMod Version 2022.1.1.33 (2025), SMAQMD (2020b)

Notes: lbs = pounds

NO_x = nitrogen oxides

ROG = reactive organic gases

PM_{2.5} = respirable particulate matter (less than or equal to 2.5 microns in diameter)

PM₁₀ = respirable particulate matter (less than or equal to 10 microns in diameter)

¹ Fill material imported by barge instead of trucks would result in emission levels lower than those predicted for truck transport (Kline and Wooley 2025).

² The SMAQMD has not established a mass emission threshold for ROG/VOC during construction.

³ Threshold when all feasible BACT and BMPs are applied. If all feasible BACT and BMPs are not applied, the maximum threshold is zero.

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Based on air quality modeling, Project construction is expected to result in temporary emissions of ozone precursors (i.e., nitrogen oxides and reactive organic gases) that are below SMAQMD standards and therefore do not conflict with emissions reductions goals outlined in the Air Quality Element of the Sacramento County General Plan, or the Sacramento Metro Air Quality Management District CEQA Guide. BMPs implemented as part of conservation measure **CM-1** (Section 1.4.5) will ensure that emissions of ozone precursors are minimized. There will be no change in emissions associated with long-term Project operations or maintenance activity. The Project will not conflict with or obstruct implementation of an applicable air quality plan, and the temporary emissions of ozone precursors from Project construction will be minimized by implementing conservation measure **CM-1**; therefore, Project impacts will be less than significant.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?

The model results summarized in Table 2-5 demonstrate that emissions resulting from Project construction activities are not expected to exceed thresholds for criteria air pollutants for which the SMAQMD is currently designated as nonattainment (including PM₁₀, PM_{2.5} and ozone precursors [i.e., nitrogen oxides, reactive organic gases]). Implementation of BMPs in conservation measure **CM-1** (Section 1.4.5) will ensure emissions are minimized. There will be no change in long-term operational emissions because of the Project. Although Project construction will result in some emissions for which the SMAQMD is not in attainment, the minimal amount and temporary nature of these emissions will not result in a cumulatively considerable net increase of these pollutants; therefore, Project impacts will be less than significant.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

As described in Section 2.3.1.2, the nearest sensitive receptors to the Project Area are Eddo's Harbor & RV Park and a few permanent rural residences. The Project will not result in substantial diesel particulate emissions (i.e., PM_{2.5} and PM₁₀) (Table 2-5). Implementation of BMPs included in conservation measure **CM-1** (Section 1.4.5) will minimize diesel emissions, and Project construction activities will be temporary, resulting in increased diesel exhaust for approximately 2.5 months. Therefore, impacts associated with exposure of sensitive receptors to substantial pollutant concentrations will be less than significant.

d) Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Project construction is not expected to result in other emissions, such as those leading to objectionable odors, adversely affecting a substantial number of people. Post-construction, the Project will not result in any change to current operation or maintenance activities that would result in additional emissions. The Project will have no additional emission impacts.

2.4 Biological Resources

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	✓	☐	☐
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 Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	✓
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?	☐	☐	☐	✓
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?	☐	☐	✓	☐

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	✓
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?	☐	☐	☐	✓

2.4.1 Environmental setting

Resource evaluations were performed to characterize habitat and identify sensitive biological resources within or near the Survey Area. These evaluations included a desktop review of special-status species with the potential to occur, land cover classification and vegetation mapping, a delineation of potentially jurisdictional waters/wetlands, surveys for special-status plants, and a field habitat assessment for special-status fish and wildlife species. Results of these evaluations were used to inform impact analyses and development of conservation and mitigation measures.

Special-status species are defined in this Initial Study/ Mitigated Negative Declaration (IS/MND) as those that are:

- listed as endangered or threatened, rare, or proposed/candidates for listing under the federal Endangered Species Act (ESA) and/or California ESA;
- designated by CDFW as a Species of Special Concern;
- designated by CDFW as Fully Protected under the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515);
- designated as rare under the California Native Plant Protection Act; and/or
- included on CDFW's Special Vascular Plants, Bryophytes, and Lichens List with a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4 (CDFW 2025c).

Sensitive natural communities (i.e., legacy natural communities in CDFW's California Natural Diversity Database [CNDDB] and vegetation alliances or associations as described in the online version of *A Manual of California Vegetation* (MCV) [MCV; CNPS 2025b]) are defined as vegetation types with a state ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) on CDFW's California Sensitive Natural Communities List (CDFW 2025d).

2.4.1.1 Desktop review

Lists of the special-status plant and wildlife species and sensitive natural communities with the potential to occur within the Survey Area were developed by querying the following resources:

- USFWS's Information for Planning and Conservation portal (USFWS 2025);
- CDFW California Natural Diversity Database¹ (CNDDDB) (CDFW 2025e); and
- California Native Plant Society's (CNPS's) online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2025a).

The CNDDDB and CNPS database queries were each based on a search of the U.S. Geological Survey (USGS) 7.5-minute quadrangles in which the Survey Area is located (Jersey Island) and the surrounding quadrangles (Antioch North, Antioch South, Bouldin Island, Brentwood, Woodward Island, Isleton, Rio Vista, and Birds Landing). The USFWS query was based on the Survey Area.

The following resources were also used to inform evaluations of special-status species with potential to occur within the Survey Area:

- BIOS (CDFW 2025f) by USGS 7.5-minute quadrangle;
- Calflora (Calflora 2025);
- Consortium of California Herbaria (CCH 2025);
- Soil Survey Geographic Database (USDA NRCS 2025a);
- eBird (eBird 2025);
- North American Bat Acoustic Monitoring Portal (Conservation Biology Institute and USFS 2025) (closest grid cells 114067 and 7914, located about 10–15 mi from the Survey Area);
- iNaturalist (iNaturalist 2025); and
- Bumblebee Watch (The Xerces Society 2025).

2.4.1.2 Vegetation mapping and sensitive natural communities

Prior to the reconnaissance-level site assessment, existing data from the Vegetation Classification and Mapping Program (VegCAMP) were reviewed, and it was determined that the Survey Area had been mapped to the alliance level in 2016 (Kreb et al. 2019) following the classification system of the MCV (CNPS 2025b).

During comprehensive botanical surveys conducted in May 2025, the vegetation within the Survey Area was reviewed in the field by two Stillwater Sciences botanists against a combination of existing data from VegCAMP (CDFW 2025g), aerial imagery, and onsite conditions. Refinements to the existing VegCAMP map were made with a focus on assessing the potential for sensitive natural communities and special-status plant species to occur within the Survey Area. The final vegetation types² were cross-walked to

¹ Includes review of Biogeographic Information and Observation System (BIOS) data that provide a visualization of data in the CNDDDB and unprocessed special-status plants and wildlife occurrences that have not been incorporated into the CNDDDB. Sensitive natural communities in the CNDDDB are legacy data only based on the Holland (1986) classifications that have been superseded by the (MCV) (CNPS 2025a) classifications. Vegetation mapping data based on MCV is sometimes included in BIOS for visualization with data source information.

² Using the MCV classification scheme where feasible but not exclusively given the managed nature of the site.

California Wildlife Habitat Relationships habitat types to assist in determining the potential for special-status wildlife to occur within the Survey Area.

The Survey Area is highly managed with activities including maintenance of levees, irrigation ditches, and PG&E utility lines. The levees are maintained under an existing Annual Routine Levee Maintenance Notification No. II-560-92, which facilitates removing vegetation and debris to ensure proper functioning of existing water and flood control infrastructure.

The Survey Area included two vegetation types: Annual/Perennial Naturalized Grassland (12.4 ac; 69% of the Survey Area) and Ruderal Vegetation (3.2 ac; 18% of the Survey Area). Other land cover types within the Survey Area included developed areas (mainly roads) which made up approximately 2.4 ac (13% of the Survey Area) (Table 2-6; Figure 2-1)

Table 2-6 Summary of vegetation and land cover types in the Survey Area

Vegetation and land cover types	Corresponding CWHR habitat types	Acres
Annual/Perennial Naturalized Grassland	Annual grassland	12.4
Ruderal Vegetation	Valley foothill riparian	3.2
Developed	NA	2.4
Total		18.0

Notes: CWHR = California Wildlife Habitat Relationships

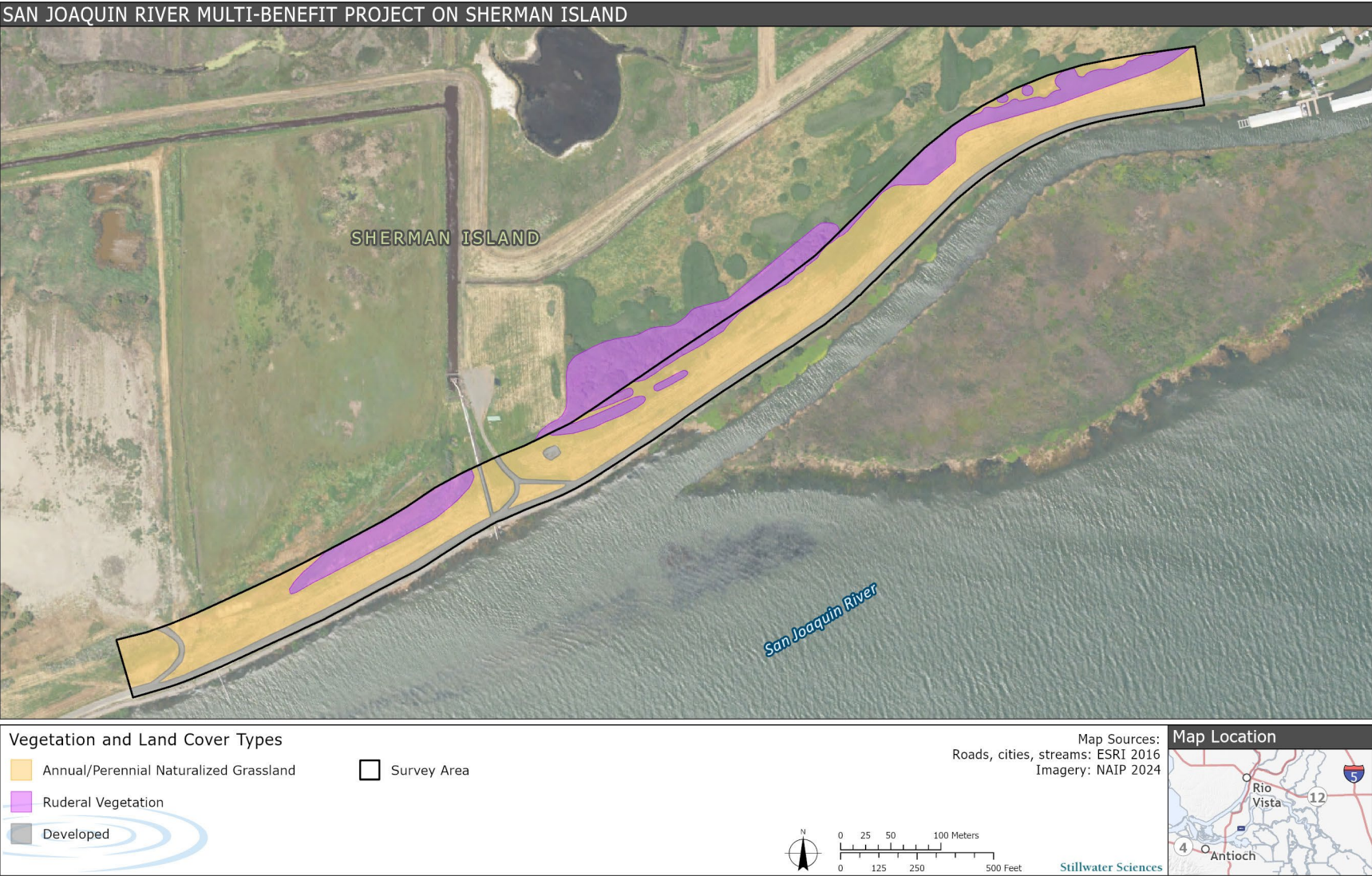


Figure 2-1 **Vegetation and land cover types within the Survey Area**

Annual/Perennial Naturalized Grassland

A total of 12.4 ac of Annual/Perennial Naturalized Grassland represented 69% of the Survey Area (Table 2-6, Figure 2-1). This habitat is dominated by invasive annual and perennial grasses with low cover of forbs. Dominant grass species included *Cynodon dactylon* (Bermuda grass), *Hordeum murinum* (foxtail barley), *Bromus diandrus* (ripgut brome), and *Festuca perennis* (Italian rye grass). The annual/perennial grasslands within the Survey Area are mowed periodically, preventing the establishment shrubs and trees.

Ruderal Vegetation

A total of 3.2 ac of Ruderal Vegetation was documented in 18% of the Survey Area (Table 2-6, Figure 2-1) which includes *Salix lasiolepis* (Arroyo willow) or *Rubus armeniacus* (Himalayan blackberry)³. These areas are periodically cleared or mowed as part of routine maintenance. Managed areas that are periodically dominated by *Salix lasiolepis* include *Rubus armeniacus* in the shrub layer and the following associated species: *Typha latifolia* (broadleaf cattail), *Cyperus eragrostis* (tall flatsedge), *Lythrum hyssopifolia* (hyssop loosestrife), and various other hydrophytic graminoids and forbs. Managed areas that are periodically dominated by *Rubus armeniacus* include sparse cover of graminoid and forb seedlings.

2.4.1.3 Aquatic resources

Stillwater Sciences biologists conducted a preliminary delineation of WOUS, including wetlands, potentially subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) and/or Section 10 of the Rivers and Harbors Act of 1899 (see Section 6.1) in the Survey Area on April 1–3, 2025 in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Supplement) (USACE 2008).

The field delineation of potentially jurisdictional OWUS, including wetlands, was conducted following the methods presented in *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Final Version* (USACE 2025) and the *Rapid Ordinary High Water Mark (OHWM) Identification Data Sheet* (USACE 2024). In addition, guidance from USACE and the EPA on proper interpretation of continuous surface water connection under the CWA was consulted (USACE and EPA 2025). Additional or extended waters and wetland features that may fall under the regulatory purview of CDFW or the Central Valley Regional Water Quality Control Board (CVRWQCB) were also delineated in consideration of California Fish and Game Code (Section 1600 et seq.) and the Porter-Cologne Water Quality Control Act, respectively (Section 6.2). CVRWQCB jurisdiction extends to the top of bank (TOB) and includes areas that meet the agency's regulatory definition of a wetland and CDFW jurisdiction extends to TOB or the upland edge of riparian vegetation, whichever is broader.

The following resources were queried and referenced to inform the delineation:

- USFWS's National Wetlands Inventory online application, Wetlands Mapper (USFWS 2025b);

³ *Rubus armeniacus* is one of the most aggressive invasive plants in California, growing in a wide variety of habitats associated with riparian sites, mesic clearings, disturbed areas, and stock ponds (CNPS 2025).

- U.S. Department of Agriculture Natural Resources Conservation Service’s Soil Survey Geographic Database (USDA NRCS 2025a);
- Hydric Soils List for Sacramento County (USDA NRCS 2025b); and
- National Climatic Data Center’s (NCDC) precipitation and climate records from the Concord Buchanan field weather station (NCDC 2025; USW00023254).

No potentially jurisdictional WOUS were identified within the Survey Area during the field survey; however, the San Joaquin River, a tidally influenced Traditional Navigable Water (TNW), is adjacent to the Survey Area and is likely to be considered a USACE jurisdictional WOUS. Features delineated within the Survey Area that are unlikely to be considered jurisdictional by the USACE or State (i.e., the State Water Resources Control Board [SWRCB] under the Porter-Cologne Water Quality Control Act or CDFW under the California Fish and Game Code Section 1600) include a levee seepage area and temporary ditches. The aquatic resources are considered preliminary until verified by the Sacramento Regulatory Branch of the USACE, which determines CWA jurisdiction of the wetland features in the Survey Area.

2.4.1.4 Special-status plants

Results of the special-status plant database query (Appendix C, Table C-1) were reviewed, and some species were eliminated (e.g., if the species does not occur within the elevation range present on site and/or the required habitat of the species is not present on site). During the reconnaissance-level site assessment on February 6, 2025, botanists from Stillwater Sciences further reviewed the species list and determined whether the habitats present within the Survey Area have the potential to support special-status plant species. After the site assessment, the list of special-status plant species with the potential to occur within the Survey Area was finalized based on the field habitat assessment in combination with information from the background materials referenced above.

This analysis resulted in the following categories of the likelihood for a special-status species to occur within or near the Survey Area:

- No: The Survey Area is outside the known distribution or elevation range for the species, and/or the required habitats are lacking from the Survey Area.
- Unlikely: The known distribution or elevation range for the species overlaps with the Survey Area, but suitable habitat characteristics for the species are generally not present within the Survey Area.
- Yes: The species has been documented within the Survey Area and/or the Survey Area is within the known distribution or elevation range for the species and includes suitable habitat.

The special-status plant species identified from the database queries are presented in Appendix C, Table C-1. Based on a review of habitat associations along with landform, soils, and known elevation range within the Survey Area, it was determined that 36 special-status plants have no potential to occur, 6 are unlikely to occur, and 20 have the potential to occur within the Survey Area (Appendix C, Table 2-7). None of those with the potential to occur within the Survey Area have been previously documented in the Survey Area or Project Area.

Table 2-7 Special-status plants with the potential to occur within the Survey Area

Scientific name	Common name	Status ¹ (Federal/ State/CRPR)	Blooming period
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	–/–/1B.2	March–June
<i>Atriplex coronata</i> var. <i>coronata</i>	crownscale	–/–/4.2	March–October
<i>Atriplex depressa</i>	brittlescale	–/–/1B.2	April–October
<i>Carex comosa</i>	bristly sedge	–/–/2B.1	May–September
<i>Centromadia parryi</i> subsp. <i>parryi</i>	pappose tarplant	–/–/1B.2	May–November
<i>Centromadia parryi</i> subsp. <i>rudis</i>	Parry's rough tarplant	–/–/4.2	May–October
<i>Downingia pusilla</i>	dwarf downingia	–/–/2B.2	March–May
<i>Eryngium jepsonii</i>	Jepson's coyote-thistle	–/–/1B.2	April–August
<i>Eryngium racemosum</i>	Delta button-celery	–/–/1B.1	June–October
<i>Eschscholzia rhombipetala</i>	diamond-petaled California poppy	–/–/1B.1	March–April
<i>Extriplex joaquinana</i>	San Joaquin spearscale	–/–/1B.2	April–October
<i>Fritillaria liliacea</i>	fragrant fritillary	–/–/1B.2	February–April
<i>Hesperis matronalis</i>	hogwallow starfish	–/–/4.2	March–June
<i>Isocoma arguta</i>	Carquinez goldenbush	–/–/1B.1	August–December
<i>Lasthenia conjugens</i>	Contra Costa goldfields	FE/–/1B.1	March–June
<i>Madia radiata</i>	showy golden madia	–/–/1B.1	March–May
<i>Myosurus minimus</i> subsp. <i>apus</i>	little mouseltail	–/–/3.1	March–June
<i>Navarretia leucocephala</i> subsp. <i>bakeri</i>	Baker's navarretia	–/–/1B.1	April–July
<i>Plagiobothrys hystriculus</i>	bearded popcornflower	–/–/1B.1	April–May
<i>Tropidocarpum capparideum</i>	caper-fruited tropidocarpum	–/–/1B.1	March–April

¹ Status (CNPS 2025a):**Federal**

- FE Federally listed as endangered
- No federal status

State

- No state status

CRPR (California Rare Plant Rank) List Ranks

- 1B Plants rare, threatened, or endangered in California and elsewhere
- 2B Plants rare, threatened, or endangered in California, but more common elsewhere
- 3 Needs Review – Plants about which more information is needed
- 4 Plants of limited distribution in California

CRPR Threat Ranks

- 0.1 Seriously threatened in California (high degree/immediacy of threat)
- 0.2 Fairly threatened in California (moderate degree/immediacy of threat)

Stillwater Sciences biologists conducted special-status plant surveys within the Survey Area on May 1 and August 29, 2025. Botanical surveys for special-status plants were comprehensive, conducted during appropriate bloom periods, and followed accepted protocols (USFWS 2000, CDFW 2018).

2.4.1.5 Fish and wildlife

Forty-two special-status fish and wildlife species were identified from database queries as potentially occurring in the Project region (Appendix D). Of these, 30 species have no or low potential to occur in or near the Project Area because no or marginally suitable habitat is present, and/or the Project Area is outside the species' known range. Because the Project does not include in-water work nor work along the waterside of the levee (i.e., work will not extend past the existing levee waterside hinge), special-status fish species are not included in this analysis. Therefore, this analysis focuses on the 12 special-status wildlife species with moderate to high potential to occur within or near the Project Area (Table 2-8).

Table 2-8 Special-status wildlife species with moderate to high potential to occur in the Project Area

Common name Scientific name	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Reptiles				
Northwestern pond turtle <i>Actinemys marmorata</i>	FPT/SSC	Range is from the Oregon border along the coast ranges to the northern San Francisco Bay area as well as the Central Valley, Cascades, and Sierras	Permanent, slow-moving fresh or brackish water with available basking sites and adjacent open habitats or forest for nesting	Moderate. Suitable breeding habitat is present in the grasslands within and adjacent to the Survey Area. Basking habitat is present adjacent to the Survey Area via floating logs in the San Joaquin River, which may increase the potential for the species to be present. Multiple northwestern pond turtles were observed basking at a scour pond on Sherman Island about 2 mi from the Survey Area in 2008 and 2009 (Stillwater Sciences 2009). A more recent occurrence in 2016 includes one turtle located 2 mi from the Survey Area on Sherman Island near the levee and adjacent to the San Joaquin River (CDFW 2024a).
Giant garter snake <i>Thamnophis gigas</i>	FT/ST	Central Valley from the vicinity of Burrell in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno	Sloughs, canals, low- gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	Moderate. Suitable foraging, basking, breeding, and overwintering habitat is present within the Survey Area and includes irrigation ditches, grassy banks, burrows, and high ground protected from flooding. Species may be present basking in the rip-rap of the waterside of the levee and may migrate into the Survey Area. Multiple occurrences on Sherman Island including two in 2016 located about 3 mi from the Survey Area, one in 2010 located 2 mi away from the Survey Area, and one in 1998 located 2 mi away from the Survey Area (CDFW 2024a).
Birds				
Numerous bird species protected under the Migratory Bird Treaty Act (MBTA)	FMBTA/SMBTA	Range encompasses California	Variable including, but not limited to, grasses, shrubs, and trees	High. Suitable habitat for nesting and foraging is present within the Survey Area and includes habitat such as blackberry bushes and grasslands. FMBTA/SMBTA birds including red-winged blackbird, American kestrel, northern mockingbird, and western meadowlark were observed during the February 2025 special-status wildlife assessment, and Sherman Island is known to support numerous others including, but not limited to, mallard, great egret, and Canada goose (Stillwater Sciences 2009).
Northern harrier <i>Circus cyaneus</i>	–/SSC	Year-round resident; scattered throughout California; in the northwest, nests largely within coastal lowlands from Del Norte County south to Bodega Head in Sonoma County, inland to Napa County	Nests, forages, and roosts in wetlands or along rivers or lakes, but also in grasslands, meadows, or grain fields	High. Suitable nesting and foraging habitat are present within the Survey Area and vicinity (i.e., grasslands, lightly grazed pastures on Sherman Island). Grasslands are mowed, reducing the habitat quality for nesting. Multiple occurrences have been documented on Sherman Island. A breeding pair was observed less than a mi from the Survey Area in 2007 and breeding behavior was observed about 5 mi away in 2004 (CDFW 2024a). The species has been observed within the Survey Area in 2015–2025 (eBird 2025) and within a mi in 2017 (iNaturalist 2025).
Swainson’s hawk <i>Buteo swainsoni</i>	–/ST	Summer resident; breeds in lower Sacramento and San Joaquin valleys, the Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	High. Suitable foraging habitat is present within and in the vicinity of the Survey Area, which includes agricultural fields and grasslands. While no suitable nesting habitat is present within the Survey Area, riparian trees for nesting are present in the vicinity. A nesting pair was documented less than 1 mi to the southeast of the Survey Area in 2012 and 2 mi from the Survey Area in 2017 (CDFW 2024a). The species has been documented within the Survey Area in 2016 and 2022 (eBird 2025), and has been documented about 2 mi away in 2024 (iNaturalist 2025).

Common name Scientific name	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
White-tailed kite <i>Elanus leucurus</i>	–/SFP	Year-round resident; found in nearly all lowlands of California west of the Sierra Nevada mountains and the southeast deserts	Lowland grasslands and wetlands with open areas; nests in trees near open foraging area	High. Suitable foraging habitat is present within the vicinity of the Survey Area. During the February 2025 special-status wildlife assessment, a white-tailed kite was observed hunting and flying along the Survey Area boundary. No suitable nesting habitat is present within the Survey Area. Occurrences include one on Sherman Island about 4 mi from the Survey Area in 2007 and another 4 mi south, across the San Joaquin River, in the city of Oakley in 2017 (CDFW 2024a).
Golden eagle <i>Aquila chrysaetos</i>	BGEPA/SFP	Species is an uncommon permanent resident and migrant throughout California, except center of Central Valley.	Open woodlands and oak savannahs, grasslands, chaparral, sagebrush flats; nests on steep cliffs or medium to tall trees	Moderate. While there is no suitable nesting habitat in the Survey Area, there is a small amount of foraging habitat present within the Survey Area (i.e., grasslands). CNDDDB occurrences include a nest in a eucalyptus tree 12 mi northwest of the Survey Area from 2014 and a sighting 5 mi southwest from 2008 (CDFW 2024a). The species has been documented on Sherman Island in 2016 (eBird 2025) and on neighboring Bethel Island in 2023 (iNaturalist 2025).
Western burrowing owl <i>Athene cunicularia hypugaea</i>	–/SCE, SSC	Year-round resident throughout much of the state; Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Level, open, dry, heavily grazed or low- stature grassland or desert vegetation with available burrows	Moderate. Suitable nesting and foraging habitat are present within the Survey Area, although the burrows observed during the February 2025 special-status wildlife assessment were small and few in number. The closest and most recent CNDDDB occurrence is about 4 mi south of the Survey Area from 2017 (CDFW 2024a). The owl has also been documented 3 mi south of the Survey Area in 2021 (iNaturalist 2025) and less than 2 mi north of the Survey Area on Sherman Island in 2011 (eBird 2025).
Loggerhead shrike <i>Lanius ludovicianus</i>	–/SSC	Year-round resident in most of California except for the forested coastal slope and the high elevations of the Sierra Nevada, southern Cascade, and Transverse Ranges	Open shrubland or woodlands with short vegetation and and/or bare ground for hunting; some tall shrubs, trees, fences, or power lines for perching; typically nest in isolated trees or large shrubs	High. Suitable nesting, foraging and perching habitat is present within the Survey Area (i.e., bare ground for hunting, shrubs, fences, and power lines). There is a CNDDDB occurrence 4 mi south of the Survey Area from 2003 (CDFW 2024a). The species has been commonly observed on Sherman Island in 2016–2018 (eBird 2025, iNaturalist 2025).
Bank swallow <i>Riparia riparia</i>	–/ST	Summer resident; occurs along the Sacramento River from Tehama County to Sacramento County; along the Feather and lower American rivers; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou counties; small populations near the coast from San Francisco County to Monterey County	Nests in vertical bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam	Moderate. While some suitable foraging habitat is present over the Survey Area, no suitable nesting habitat is present within or near the Survey Area. Occurrences include the species documented 5 mi northeast of the Survey Area in 2000 (CDFW 2024a) and on Sherman Island 3 mi northeast of the Survey Area from 2019 (iNaturalist 2025). There are multiple eBird sightings on Sherman Island with the closest being less than 1 mi of the Survey Area from 2023 (eBird 2025).
Song sparrow (“Modesto” population) <i>Melospiza melodia</i>	–/SSC	Year-round resident; north-central portion of the Central Valley	Emergent freshwater marshes, riparian willow thickets, and riparian forests	Moderate. While their preferred habitat of freshwater marsh is limited within the Survey Area, riparian willow thickets adjacent to the Survey Area are present and provide suitable nesting habitat. CNDDDB occurrences include a sighting 3 mi from the Survey Area on Sherman Island in 2009, right off the northern edge of the island, and 3 mi from the Survey Area in 2008 (CDFW 2024a).
Tricolored blackbird <i>Agelaius tricolor</i>	–/ST, SSC	Permanent resident, but makes extensive migrations both in breeding season and winter; common locally throughout Central Valley and in coastal areas in and south of Sonoma County	Feeds in grasslands and agriculture fields; nesting habitat components include open accessible water, a protected nesting substrate (including flooded or thorny vegetation), and a suitable nearby foraging space with adequate insect prey	Moderate. Foraging and flyover habitat is present within the Survey Area and vicinity (i.e., grasslands, open accessible water nearby). Nesting habitat in the Project Area is small and unsuitable for large colonies and consists of small amounts of cattails in agricultural ditches that are regularly cleared and maintained. Suitable nesting habitat is present outside of the Project Area in adjacent habitats on Sherman Island. The closest CNDDDB occurrence is 9 mi southwest of the Survey Area from 2015 (CDFW 2024a). Occurrences have been documented within the Survey Area in 2017–2018 (eBird 2025).

Common name Scientific name	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Mammals				
Western red bat <i>Lasiurus frantzii</i>	–/SSC	Near the Pacific Coast, Central Valley, and the Sierra Nevada	Roosts in foliage, primarily in riparian trees, such as sycamores and cottonwoods, while less in shrubs; woodlands near streams, fields and orchards; feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands	Moderate. No roosting habitat (i.e., no cottonwoods or sycamores) is present within the Survey Area; however, the closest roosting habitat is cottonwoods about 250 ft away at a recreational vehicle (RV) park. Suitable foraging habitat is present within the Survey Area over grasslands and nearby river corridor. The species was documented acoustically in May 2023 at North American Bat Monitoring Program grid cell (GRTS) 114067 and in June 2022, July 2023, and July 2024 at GRTS 7914 (Conservation Biology Institute and USFS 2025); both grid cells are located about 10–15 mi from the Survey Area. The closest CNDDB occurrence is located 4 mi north of the Survey Area from 1999, and another is documented 5 mi southwest from 1998 (CDFW 2024a).

Notes: mi = mile

^a Status codes:

Federal

- FT = Listed as threatened under the federal Endangered Species Act
- FPT = Federally proposed as threatened
- BGEPA = Federally protected under the Bald and Golden Eagle Protection Act
- FMBTA = Federal Migratory Bird Treaty Act

State

- ST = Listed as Threatened under the California Endangered Species Act
- SCE = State Candidate Endangered
- SSC = CDFW Species of Special Concern
- SFP = CDFW Fully Protected species
- SMBTA = State of California Migratory Bird Treaty Act

2.4.2 Findings

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

2.4.2.1 Special-status plants

There were no candidate, sensitive, or special-status plant species documented in the Survey Area during the comprehensive botanical surveys in 2025. As such, no Project-related effects are expected to occur to special-status plants. A comprehensive list of plants documented in the Survey Area is included in Appendix E.

Various protections would be implemented to minimize the impact of effects on any special-status plant species found prior to construction, including **MM-3** (surveys for special-status plants; avoidance buffers; and a Mitigation and Monitoring Plan as necessary); and **MM-4** (training construction personnel on the potential presence, identification of, and avoidance measures for any special-status plants; Section 1.4.6). With these measures incorporated and with no special-status plant species documented within the Survey Area in 2025, the Project would result in no effects on special-status plants.

2.4.2.2 Special-status fish

The Project does not include in-water work nor work along the waterside of the levee. As such, no Project-related effects are expected to occur on special-status fish species.

2.4.2.3 Special-status wildlife

Direct or indirect effects on wildlife that could occur as a result of the Project include:

- Injury and/or mortality of individuals and/or destruction of nests resulting from collision with vehicles or equipment;
- Abandonment of active nests or displacement from preferred nesting habitat due to removal of vegetation or auditory, vibratory, or visual disturbance;
- Temporary foraging disruption due to auditory, vibratory, or visual disturbance or loss of foraging habitat due removal of vegetation; and
- Impacts on aquatic habitats adjacent to the Project Area from accidental spills of hazardous materials.

These effects could occur during any stage of Project implementation and are detailed in Table 2-9 for the special-status wildlife species with potential to occur within the Project Area.

Table 2-9 Potential Project construction-related effects and minimization measures for special-status wildlife

Common name Scientific name	Status ^a Federal/State	Potential Project construction-related effects on the species and habitat	Life history timing	Inclusion of avoidance and minimization measures to minimize adverse effects on species and habitat
Reptiles				
Northwestern pond turtle <i>Actinemys marmorata</i>	FPT/SSC	Northwestern pond turtles that may occur in or along the San Joaquin River or within the Project Area would likely disperse away from areas undergoing disturbance during Project activities. However, turtles that may use the grasslands and upland habitat within the Project Area could be directly impacted by vehicles or construction equipment strikes during Project activities. Additionally, disturbance and/or compaction of the grasslands present in the Project Area may cause mortality of active nests and overwintering turtles.	Nesting season: late April through the following spring, which includes nest building, eggs incubation, and hatchling emergence in late summer or fall Overwintering: late fall–early spring	Implementation of conservation measures CM-1 (enforce speed limits) and CM-2 through CM-5 (conduct daily wildlife checks and implement measures in the SWPPP; Section 1.4.5) and mitigation measures MM-1 , MM-4 , MM-5 (ground disturbance will be minimized to the extent feasible, provide environmental awareness training, and surveys for northwestern pond turtles and nests; Section 1.4.6), respectively; would reduce potential impacts on the species to less-than-significant levels.
Giant garter snake <i>Thamnophis gigas</i>	FT/ST	Project activities in upland habitat, including staging, clearing, grading, and compacting have the potential to displace, injury, or kill individual giant garter snakes, particularly during the brumation (dormancy) season (typically October to March). However, because the upland habitat within the Project Area largely consists of roadways and other disturbed areas where few suitable burrows were observed, the potential for injury or mortality of a snake is low. Furthermore, giant garter snakes are sensitive to human activities and would typically flee to avoid people or disturbances. While giant garter snakes may be indirectly affected by temporary loss of habitat connectivity, the Project would ultimately result in habitat improvement for the species through revegetation of disturbed areas and creation of hedgerow habitat that would provide opportunity for refuge and cover.	Active season (diurnal): early spring–late fall Breeding: March–April Live young born: mid-July–early September Overwintering: October–March	Implementation of conservation measures CM-1 through CM-5 and mitigation measures MM-1 , MM-2 (mitigate for impacts on habitat protected by Assembly Bill 360), MM-4 , and MM-6 (avoidance and mitigation measures specific to giant garter snake including surveys and a ban on plastic monofilament netting), would minimize the potential for impacts on the species to less-than-significant levels.

Common name Scientific name	Status ^a Federal/State	Potential Project construction-related effects on the species and habitat	Life history timing	Inclusion of avoidance and minimization measures to minimize adverse effects on species and habitat
Birds				
Numerous bird species protected under the federal and state Migratory Bird Treaty Acts (FMBTA/SMBTA)	FMBTA/ SMBTA	Project-related construction activities and vegetation removal during the nesting season for special-status or migratory birds (generally February 15 through September 15) could lead to direct or indirect impacts on bird species or their nesting habitat. Project-related impacts may occur from construction noise (e.g., from heavy equipment, vehicles, generators, or human presence), vibration near ground nests or in nearby trees, vegetation removal (shrubs, ruderal vegetation, trees, or tree trimming), or visual disturbance (e.g., increased human or equipment activity near nests).	Nesting season: February–August	Conservation measures CM-1 , CM-2 , and CM-6 (reduce potential for fire) and mitigation measures MM-1 , MM-2 , MM-4 , and MM-8 (pre-construction nesting bird survey) would reduce potential impacts on the species to less-than-significant levels.
Northern harrier <i>Circus cyaneus</i>	–/SSC	Project-related impacts may occur from construction noise (e.g., from heavy equipment, vehicles, generators, or human presence), vibration near ground nests or suitable foraging habitat, vegetation removal (shrubs and ruderal vegetation) or visual disturbance (e.g., increased human or equipment activity near nests). Direct effects on eggs and/or young could occur as a result of construction activities.	Breeding season: mid-March–early August Nest building: 1–2 weeks Incubation period: 28–36 days Nestling period: 14 days	To avoid direct effects on active nests during construction activities, implementation of MM-1 would limit and ground disturbance to the minimum amount feasible. Conservation measures CM-1 , CM-2 , and CM-6 and mitigation measures MM-2 , MM-4 , and MM-8 would reduce potential impacts on the species to less-than-significant levels.
Swainson’s hawk <i>Buteo swainsoni</i>	–/ST	Project-related impacts may occur from construction noise (e.g., from heavy equipment, vehicles, generators, or human presence), vibration near ground nests or in nearby trees, vegetation removal (shrubs, ruderal vegetation, trees, or tree trimming), or visual disturbance (e.g., increased human or equipment activity near nests).	Breeding season: March–October Nest building: about 2 weeks Incubation period: 34–35 days Nestling period: 17–22 days	To reduce impacts on Swainson’s hawk, conservation measures CM-1 , CM-2 , and CM-6 and mitigation measures MM-1 , MM-2 , MM-4 , MM-8 , as well as the species-specific measure MM-7 (minimize impacts on Swainson’s hawk) would limit the potential for reproductive failure of the target species if nests are discovered prior to the Project. Therefore, with the inclusion of conservation and mitigation measures, potential impacts on migratory and special-status birds would be less-than- significant.

Common name Scientific name	Status ^a Federal/State	Potential Project construction-related effects on the species and habitat	Life history timing	Inclusion of avoidance and minimization measures to minimize adverse effects on species and habitat
White-tailed kite <i>Elanus leucurus</i>	–/SFP	See Swainson’s hawk	Breeding season: February–August Nest building: 1–4 weeks Incubation period: 30–32 days Nestling period: 35–38 days	Same as measures for bird species protected under the FMBTA/SMBTA (see first row under <i>Birds</i>)
Golden eagle <i>Aquila chrysaetos</i>	BGEPA/SFP	Foraging habitat may be disturbed temporarily during Project construction by vegetation removal. While this may lower the quality of foraging habitat for the species, the effects would be temporary, and foraging birds could easily move away from Project-related disturbances to nearby alternative foraging habitat of similar value. Because no suitable nesting habitat is present within the Project Area or vicinity, no effects on nesting would occur.	Breeding season: late January–August Nest building: late January Incubation period: 41–45 days Nestling period: 45–81 days	While the project may temporarily displace foraging eagles to nearby habitat, observations of the species would be documented during the implementation of conservation measure CM-2 and mitigation measure MM-8 . Additionally, implementing conservation and mitigation measures CM-1 , CM-6 , and MM-4 would reduce potential impacts on foraging eagles to less-than-significant levels.
Western burrowing owl <i>Athene cunicularia hypugaea</i>	–/SCE, SSC	Project-related impacts may occur from construction noise (e.g., from heavy equipment, vehicles, generators, or human presence), vibration near ground nests, vegetation removal (shrubs and ruderal vegetation or visual disturbance (e.g., increased human or equipment activity near nests). Direct effects on eggs and/or young could occur if ground disturbance occurs near or at a nest.	Breeding season: February–August Nest building: Several weeks Incubation period: 28–30 days Nestling period: 44–53 days	To avoid direct effects on active nests during construction activities, implementation of MM-1 would limit ground disturbance to the minimum amount feasible. Conservation measures CM-1 , CM-2 , and CM-6 and mitigation measures MM-2 , MM-4 , and MM-8 would reduce potential impacts on the species to less-than-significant levels. Additionally, species-specific mitigation measure MM-9 (pre-construction burrowing owl surveys) would limit the potential for direct effects on active nests and would reduce impacts on the species to less-than-significant levels.
Loggerhead shrike <i>Lanius ludovicianus</i>	–/SSC	See Swainson’s hawk	Breeding season: March–July Nest building: 2–3 days Incubation period: 15–17 days Nestling period: 16–20 days	Same as measures for bird species protected under the FMBTA/SMBTA (see first row under <i>Birds</i>)

Common name Scientific name	Status ^a Federal/State	Potential Project construction-related effects on the species and habitat	Life history timing	Inclusion of avoidance and minimization measures to minimize adverse effects on species and habitat
Bank swallow <i>Riparia riparia</i>	–/ST	While bank swallows may fly over the Project Area to forage in the immediate vicinity where open water is present (e.g., ditches, canals, ponds, rivers), no suitable nesting habitat is present within the Project Area. Potential effects on the species include temporary flyover habitat disturbance as a result of construction noise and risk of collision with construction equipment and/or vehicles.	Breeding season: April–late August Nest building: 1–2 weeks Incubation period: 13–15 days Nestling period: 18–21 days	While the project may temporarily displace bank swallows flying over the Project Area to access nearby foraging habitat, observations of the species would be documented during the implementation of conservation measure CM-2 and mitigation measure MM-8 . Additionally, implementing conservation and mitigation measures CM-1 , CM-3 through CM-5 , and MM-4 would reduce potential impacts on flying bank swallows to less-than-significant levels.
Song sparrow (“Modesto” population) <i>Melospiza melodia</i>	–/SSC	<i>See Swainson’s hawk</i>	Breeding season: late February–mid-July Nest building: about 4 days Incubation period: 12–15 days Nestling period: 9–12 days	Same as measures for bird species protected under the FMBTA/SMBTA (see first row under <i>Birds</i>)
Tricolored blackbird <i>Agelaius tricolor</i>	–/ST, SSC	Foraging habitat may be disturbed temporarily during Project construction by vegetation removal. While this may lower the quality of foraging habitat for the species, the effects would be temporary, and foraging birds could easily move away from Project-related disturbances to nearby alternative foraging habitat of similar value. Since the small amount of poor-quality nesting habitat present is regularly maintained (i.e., cleared) no effects on nesting would occur as a result of the Project.	Breeding season: Mid-March–early August Nest building: about 3 days Incubation period: 11–14 days Nestling period: 11–14 days	Same as measures for bird species protected under the FMBTA/SMBTA (see first row under <i>Birds</i>)

Common name Scientific name	Status ^a Federal/State	Potential Project construction-related effects on the species and habitat	Life history timing	Inclusion of avoidance and minimization measures to minimize adverse effects on species and habitat
Mammals				
Western red bat <i>Lasiurus frantzii</i>	–/SSC	While bats may fly over the Project Area to forage in the immediate vicinity of the Project Area where open water is present (e.g., ditches, canals, ponds, rivers), no suitable roosting habitat is present within the Project Area (most woody vegetation consists of shrubs). No project-related impacts on foraging western red bats are anticipated to occur due to construction work occurring between 7:00 a.m. and 5:00 p.m. (see Project Description—Section 1.4.4), which is outside of their foraging time.	Maternity season: May 1 through August 31 Hibernating season: November 1 through March 31	Not applicable– no effects anticipated

^a Status codes:

Federal

- FT = Listed as threatened under the federal Endangered Species Act
- FPT = Federally proposed as threatened
- BGEPA = Federally protected under the Bald and Golden Eagle Protection Act
- FMBTA = Federal Migratory Bird Treaty Act

State

- ST = Listed as Threatened under the California Endangered Species Act
- SCE = State Candidate Endangered
- SSC = CDFW Species of Special Concern
- SFP = CDFW Fully Protected species

2.4.2.4 Riparian habitat

- b) **Would the Project 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 Wildlife or U.S. Fish and Wildlife Service?**

Given the highly managed nature of the Survey Area there is currently no intact riparian habitat nor sensitive natural communities; therefore Project-related impacts are not anticipated. Moreover, the creation of the 1-ac hedgerow habitat would add riparian habitat to the site and have beneficial effects on wildlife.

2.4.2.5 Aquatic resources

- c) **Would the Project 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?**

No potentially jurisdictional WOUS nor adjacent wetlands were identified within the Survey Area; therefore Project-related impacts are not anticipated.

- d) **Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

The haul routes consist of existing asphalt paved levee roads that provide little habitat value for fish and wildlife. The habitat on the Project's levee is more likely to be used by wildlife, but it does not serve as a significant migratory corridor or nursery site. Any modifications to existing levee infrastructure would be temporary and would not interfere substantially with the movement of any native resident wildlife species or wildlife nursery sites. Additionally, the Project includes creating approximately 1 ac of vegetated habitat that will enhance habitat for native wildlife species in the Project Area. Therefore, potential impacts will be less than significant.

The Project includes modifications to existing levee infrastructure and would not include any in-water work or construction on the waterside of the levee that would block or substantially impede or delay native resident or anadromous fish movement. Further, if incidental material spillage results from Project activities, individual fish occurring outside of the Project Area would be sufficiently mobile to avoid impacted areas and resume normal activities in nearby aquatic habitats. As such, potential impacts of Project activities on fish movement will be less than significant.

2.4.2.6 Local Policies and Plans

- e) **Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Sacramento County Code (480 § 1; Tree Preservation) includes an ordinance to protect native oak trees, which include valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), blue oak (*Quercus*

douglasii), and oracle oak (*Quercus morehus*). No oak trees were documented within the Project Area; thus, there will be no impact.

f) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Project Area is located within the Primary Zone of the Delta and is subject to the Delta Plan (DSC 2024). The Project is consistent with the objectives of the Sacramento County General Plan Open Space Element (Sacramento County 2017b), the Lower Sherman Island Wildlife Area Land Management Plan (CDFW 2025b), the Reclamation District No. 341 Sherman Island Five-Year Plan (Wagner & Bonsignore 2021), and the Sherman Island Belly Wetland Restoration Adaptive Management Plan (DWR and Ducks Unlimited 2020). By increasing and enhancing native vegetation and wildlife habitat on Sherman Island, the Project supports the conservation goals of these plans; therefore, there will be no impact.

2.5 Cultural Resources

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	✓
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	✓	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	✓	☐	☐

2.5.1 Environmental setting

Eileen Barrow & Associates conducted a cultural resources study for the Cultural Resources Area of Potential Effects (APE), which extends along an approximately 0.8-mi-long section of the Sherman Island Levee along the San Joaquin River and includes the levee crown and landside levee toe where rehabilitation and habitat enhancement activities will occur. The study is documented in a report titled *Cultural Resources Study for the San Joaquin Multi-Benefit Project Sherman Island, Sacramento County, California* (Eileen Barrow & Associates 2024) that includes archival research at the North Central Information Center of the California Historical Resources Information System (CHRIS), a search of the NAHC's Sacred Lands File (SLF), outreach to Native American Tribes and individuals identified on a contact list provided by NAHC, a buried archaeological site sensitivity analysis, and a reconnaissance field survey of the APE, which consisted of walking a 5- to 15-meter-wide corridor along the landside foot of the levee and checking the waterside of the levee for structures.

2.5.1.1 Results of Cultural Resources Investigations

The CHRIS records search was completed on September 2, 2024 (File No. SAC-24-143 13016L) and identified one previously recorded cultural resource—P-34-000553 (i.e., the Sherman Island levee)—in the APE. The NAHC's SLF search was completed on August 19, 2024, and was negative for sensitive Native American cultural resources in the APE.

Buried site sensitivity analysis determined that the APE has a low probability of containing buried cultural deposits. The flattening and recompacting of the landside levee slope during Project construction will occur completely within fill soils and is not expected to disturb underlying marsh deposits. Any native soils that may be present within the lean clay and silt beneath the road base have likely been significantly altered by previous levee construction activities, including the placement of fill, use of heavy machinery, and other related ground disturbances. Ancillary Project components such as conduit and siphon modifications and PG&E power pole relocations may involve subsurface excavation that could extend into native soils; however, any native soils encountered are also expected to have been significantly altered by prior construction and infrastructure development.

Professionally qualified archaeological staff from Eileen Barrow & Associates conducted a reconnaissance field survey of the entire APE on September 3, 2024, walking a 5–15-meter-wide corridor along the landside foot of the levee, when possible, and checking the waterside of the levee for any structures. The field survey did not identify any archaeological site soils or specimens. Cultural Resource P-34-000553, the Sherman Island levee, comprised the majority of the APE and was found ineligible for inclusion on the National Register of Historic Places. A concrete pad measuring 60 ft long, 32 ft wide, and 8 inches tall was noted within the APE and was determined to have served as a foundation for a large shed or small barn constructed between 1965 and 1970 and was also found ineligible for inclusion on the National Register of Historic Places.

2.5.2 Findings

a) Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Eileen Barrow & Associates determined that the Sherman Island Levee does not meet the criteria for inclusion on the National Register of Historic Places. Though the levee has not been evaluated for listing on the California Register of Historical Resources, the study did not identify any evidence of archaeological significance or characteristics that would warrant further consideration as a historical resource under CEQA Guidelines §15064.5. Therefore, the Project would not result in a substantial adverse change to a historical resource. The Project will have no impact.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Eileen Barrow & Associates did not identify any unique archaeological resources within the APE and the sensitivity of the area for buried archaeological resources is very low. All Project activities will occur in soils that have been previously disturbed by the construction of the levee system and associated infrastructure. The Project is not anticipated to impact any unique archaeological resources. However,

there remains a possibility of inadvertently discovering unique archaeological resources that may have been introduced within non-native fill soils. If an inadvertent discovery were to occur, it could result in a potentially significant impact. Implementation of mitigation measure **MM-10** would reduce any potential impacts on an inadvertently discovered significant archaeological resource to a less than significant level.

c) Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?

The SLF search for the APE returned negative results, and Eileen Barrow & Associates did not identify any human remains or evidence suggesting the presence of human burials within the APE. All Project activities will occur in soils that have been previously disturbed by the construction of the levee system and associated infrastructure. As a result, the Project is not anticipated to impact any human remains. However, there remains a possibility of encountering previously undiscovered human remains during Project implementation. If an inadvertent discovery of human remains were to occur, it could result in a potentially significant impact on the remains. Implementation of mitigation measure **MM-11** would reduce any potential impacts on inadvertently discovered human remains to a less than significant level.

2.6 Energy

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	☐	☐	✓	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	✓

2.6.1 Environmental setting

Energy sources are either renewable (e.g., solar, wind) or nonrenewable (e.g., fossil fuels) and can be combusted to power vehicles and equipment or converted to electricity as a secondary energy source.

In 2023, California consumed more energy than all other states except Texas, but its per-capita consumption of 174 million British thermal units was the second-lowest in the nation (USEIA 2025). The California Energy Commission, established by the Warren-Alquist Act in 1975 (Section 6.2), has been instrumental in limiting California's energy consumption, particularly via energy efficiency standards that are updated every 3 years in Title 24 (CEC 2025).

The Energy Element of the Sacramento County General Plan outlines policies to promote energy conservation, reduce reliance on nonrenewable sources, and support efficient land use planning. The

Project supports local energy goals by minimizing energy use during construction and avoiding unnecessary fuel consumption.

2.6.2 Findings

- a) **Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?**

Project construction equipment and vehicles will use fossil fuels for power. BMPs included in conservation measure **CM-1** will ensure that construction equipment will be used as efficiently as feasible (e.g., by limiting idling) (Section 1.4.5). Fossil fuel consumption will be on a short-term basis during construction and will not persist upon Project completion. No electricity consumption will be associated with the Project. The impact will, therefore, be less than significant.

- b) **Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

State and local plans such as California Title 24 Building Energy Efficiency Standards and the Energy Element of the Sacramento County General Plan establish energy efficiency standards for actions (e.g., new building construction, retrofitting existing developments) that are not associated with the Project. Accordingly, the Project will not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The Project will have no impact.

2.7 Geology and Soils

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
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.	☐	☐	☐	✓
ii) Strong seismic ground shaking?	☐	☐	☐	✓
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	✓
iv) Landslides?	☐	☐	☐	✓
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	✓	☐

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	✓
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?	☐	☐	✓	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	✓
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	✓

2.7.1 Environmental setting

The Project Area lies on the western edge of the Great Valley geomorphic province. While this province is crossed by few active faults, it is bordered by the Coast Range province to the west, which contains several active fault zones that predominately exhibit right-lateral, strike-slip motion. The closest active faults⁴ designated by the California Geological Survey (CGS) are the Greenville Fault Zone and Green Valley-Concord fault zones, located about 15 and 18 mi to the southwest and west, respectively (CGS 2018a, 2024). The closest potentially active fault is the Midland Fault Zone, which runs north-south through the Delta about 5 mi east of the Project Area (Unruh and Hitchcock 2009). The most recent displacement along this fault is estimated to be early to mid-Quaternary (0.7–2.6 million years before present) (CGS 2010).

The Greenville and Green Valley-Concord faults both have estimated slip rates of 1–5 millimeters per year (Bryant and Cluett 2002a,b). The USGS estimates a 16% probability of an earthquake of magnitude 6.7 or greater occurring on either of these fault systems by the year 2043 (Aagaard et al. 2016). In general, ground rupture hazards do not affect Sacramento County. Delta islands are, however, susceptible to liquefaction because of the presence of shallow groundwater and sandy-peaty soils with low cohesive strength (CGS 2018b, Hopf 2011). Liquefaction or seismically induced waves (i.e., seiches) in Delta channels may damage levees on Delta islands (Hopf 2011).

Sherman Island encompasses approximately 10,000 ac and ranges in elevation from 0 to 23 ft below sea level (DSC 2023). The island is underlain by peat and mud deposits formed through tidal wetland and

⁴ An *active fault* is defined by CGS as a fault having surface displacement within the Holocene epoch, or the past 11,700 years (CGS 2018).

waterway processes. The Project area consists primarily of poorly drained mucky clay mineral soils classified within the Gazwell series (UC Davis and NRCS 2025). The island's soil deposits accumulated throughout the Holocene (<11,000 years before present) atop sand and eolian deposits from the Pleistocene-age Modesto Formation (Atwater 1982a,b; USGS 2002). This process of tidal marshland formation occurred throughout the Delta region until land reclamation began in the late 1800s during Euro-American settlement (Whipple et al. 2012). By the 1930s, draining of marshes and wetlands and extensive levee construction transformed the Delta into an agricultural landscape. These changes in land use allowed for microbial oxidation and depletion of peat, resulting in land-surface subsidence of up to 26 ft below sea level on Delta islands (Drexler et al. 2009). Currently, multiple subsidence reversal and wetland restoration efforts are underway on Sherman Island to mitigate ongoing land-surface loss and enhance carbon sequestration (DSC 2023).

The geotechnical investigation of the Project Area included three Cone Penetration Tests (CPTs) advanced to depths ranging from approximately 65 to 115 ft below existing grade. Previous subsurface exploration was conducted by the DWR in 1956 and by Hultgren-Tillis Engineers in 2015, with soil borings reaching depths of approximately 50 to 100 ft. In 2023, Shannon & Wilson further evaluated subsurface conditions adjacent to Pump Station #3 by advancing two CPTs to depths between approximately 35 and 100 ft (Shannon & Wilson 2025).

2.7.2 Findings

- a) **Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**
- i. **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault?**

The Project Area is not located within an Alquist-Priolo Earthquake Fault Zone (CGS 2024) or a California Earthquake Hazards Zone (California DOC 2024). The Project will not result in operational or land use changes that will cause substantial adverse impacts due to potential rupture of an earthquake fault. The Project will not impact any known earthquake fault; therefore, there will be no impact.

- ii. **Strong seismic ground shaking?**

Although the Project Area is located 15 to 18 mi away from the nearest active faults and lies in a zone with moderately low potential for strong seismic ground shaking (CalOES 2023, California DOC 2023,) a geotechnical investigation has been performed to ensure that appropriate material will be used to improve the levee stability (Shannon & Wilson 2025). Therefore, the Project will not increase the potential for direct or indirect adverse effects related to seismic ground shaking. The Project will have no impact.

- iii. **Seismic-related ground failure, including liquefaction?**

The Project Area lies in the Delta, which is potentially susceptible to seismically induced liquefaction that could result in levee failure and flooding. The Project will not increase the potential for direct or indirect adverse impacts due to seismic-related ground failure. The Project will have no impact.

iv. Landslides?

Except for the levees surrounding the tract, Sherman Island has flat topography and is not susceptible to landslides. As described in Section 1.4, the Project aims to flatten the levee slope to meet the minimum geometry requirement under the Delta-Specific PL 84-99 Standard, which will improve levee stability. The Project will not increase the potential for direct or indirect adverse impacts related to landslides; therefore, the Project will have no impact.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

The Project will remove topsoil during excavation of the levee slope and stripping, clearing, and grubbing activities. During these activities, there will be a minor and temporary increase in the potential for stormwater-related erosion due to exposed surficial soil. To minimize the risk of soil erosion, the Project will implement BMPs in conservation measure **CM-3** (Section 1.4.5) (e.g., limiting construction activities to dry periods). The landside slope will be reconstructed to a finish grade of 3:1 (horizontal:vertical) by placing and compacting levee fill material. Additionally, any areas with bare ground will be re-seeded with a native seed mix. Ultimately, these activities will stabilize the levee and reduce the potential for soil erosion; therefore, impacts of the Project on soil erosion and loss of topsoil will be less than significant.

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Although the Project Area is located on Quaternary Delta mud and peat deposits, which are susceptible to liquefaction, the Project will not result in increased potential for liquefaction. The Project will improve levee stability and will not increase susceptibility to hazards associated with unstable geologic units. Therefore, the Project will have no impact.

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

Soils in the vicinity of the Project (i.e., peat and organic materials) are expansive. Therefore, the Project has been designed to address the potential for expansive soil. Expansive soils will not be used to re-construct the Sherman Island levee. Instead, imported fill material will consist of soil or a soil/rock mixture that is free of deleterious substances (e.g., expansive clay, salts, porous rock) and organic matter. The material will not contain rocks or hard fragments exceeding 6 inches in diameter, and no more than 15% of the material will exceed 1 inch in diameter. The fill will contain a minimum of 10% fines passing the No. 200 sieve and will have a liquid limit of less than 50%. Aggregate base material will conform to the Caltrans Class 2 aggregate base specifications. Fill will be placed in controlled lifts and compacted to engineering standards. As a result, the Project will not increase long-term deformation or pose additional

risks to life or property compared to existing conditions. Therefore, potential impacts related to expansive soils would be less than significant.

- e) **Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

The Project will not use septic tanks or alternative wastewater disposal systems. Therefore, the Project will not impact any on-site wastewater disposal system.

- f) **Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

No unique paleontological resources or geologic features are documented on Sherman Island. The Holocene-age muds and peats that cover much of the island are relatively young and are generally considered to have low potential for the presence of fossils. Geologic units known to contain fossils in the Delta, including the Franciscan, Mehrten, Modesto, and San Pablo formations, have not been mapped at the surface within the Project Area. Additionally, most of the Project excavation work will occur in levees composed of fill material, rather than in undisturbed native soil. The Project will therefore not impact unique paleontological resources or geologic features.

2.8 Greenhouse Gas Emissions

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	✓	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	✓

2.8.1 Environmental setting

Greenhouse gases (GHGs) can absorb and emit infrared radiation, trapping energy in the atmosphere and causing it to warm. Impacts from GHGs are more global than regional and are different from air pollutants that impact only the general area near where they are released. GHGs can occur naturally or as a direct result of human activities. California law defines GHGs as including the following emissions: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride (Health and Safety Code, § 38505(g)). The most common GHG resulting from human activity is carbon dioxide, followed by methane and nitrous oxide.

Assembly Bill (AB) 32 (Section 6.2), the Global Warming Solutions Act of 2006, went into effect in January 2008. This bill required a statewide GHG emissions limit, equal to the 1990 level of 431 million metric tons of carbon dioxide equivalent (MMTCO_{2e}), to be achieved by December 31, 2020.

California's GHG emissions have generally decreased after peaking in 2004, remaining below the AB 32 2020 GHG emissions limit since 2014 (CARB 2024b). California's current climate targets include meeting both the Senate Bill (SB) 32 (Section 6.2) emissions target, which includes reducing emissions by 40% below 1990 levels by 2030, and the AB 1279 (Section 6.2) emissions target, which expanded upon AB 32 by aiming to reduce anthropogenic emissions 85% below 1990 levels by 2045 and achieve carbon neutrality (CalEPA 2025).

In 2022, California's statewide GHG emissions were 371.1 MMTCO_{2e}⁵, which is 9.3 MMTCO_{2e} (2.4%) lower than 2021 levels (CARB 2024c). This continued the long-term trend of declining GHG emissions in California, except for anomalous trends during 2019 to 2021 due to the COVID-19 pandemic. From 2000 to 2022, the carbon intensity of California's economy (carbon pollution per million dollars of gross state product, GSP) decreased by 54.8%, and emissions per GSP declined by 3.1% from 2021 to 2022 (CARB 2024c). The transportation sector consistently emits more GHG than any other sector, accounting for almost 38% of state GHG emissions in 2022. When upstream emissions from oil extraction, petroleum refining, and oil pipelines in California are included in this metric, transportation is responsible for 48.0% of statewide emissions in 2022 (CARB 2024c).

The SMAQMD has adopted a numerical threshold of significance of 1,100 metric tons of CO_{2e} per year for GHG emissions from land use projects (SMAQMD 2020c). Projects whose emissions are expected to meet or exceed the significance criteria will have a potentially significant adverse impact on global climate change. SMAQMD also provides guidance on BMPs and operational screening criteria to support GHG reduction and ensure consistency with state and regional climate goals (SMAQMD 2020c). These measures, along with the County of Sacramento Climate Action Plan (Sacramento County 2024), offer strategies that can be implemented to minimize GHG impacts and contribute to long-term emissions reductions.

2.8.2 Findings

a) **Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Project construction is expected to generate 737 metric tons of CO_{2e} between May and October 2027, as indicated by the CalEEMod results in Appendix B. The Project will not result in changes to long-term GHG emissions following construction. Therefore, short-term impacts involving the generation of GHG emissions during Project construction will be less than significant.

⁵ A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential. Carbon dioxide equivalents are commonly expressed as "million metric tons of carbon dioxide equivalents (MMTCO_{2e}). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated global warming potential (EPA 2012).

b) Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Emissions associated with Project construction will be temporary and will not inhibit attainment of the statewide GHG emissions limit established by AB 1279, as described in Section 6.2. The SMAQMD has adopted a numerical threshold of significance of 1,100 metric tons of CO₂e per year for GHG emissions from land use projects. Additionally, the County of Sacramento Climate Action Plan recommends emission reduction measures, and SMAQMD provides guidance on BMPs and operational screening criteria to support GHG reduction and ensure consistency with state, regional, and county emissions goals. Accordingly, the Project will incorporate measures where possible to limit GHG emissions and protect GHG storage (i.e., carbon sequestration) during or following construction activities (e.g., reduced idling times as stipulated in **CM-1**, re-seeding bare soil with a native seed mix following construction activities as stipulated in **CM-3** [Section 1.4.5]). The Project will not result in changes to long-term GHG emissions following construction. For these reasons, the Project will not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions; there will be no impact.

2.9 Hazards and Hazardous Materials

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	✓	☐
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?	☐	☐	✓	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	✓
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	✓
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?	☐	☐	☐	✓

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	✓
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	✓

2.9.1 Environmental setting

Land uses surrounding the Project Area are predominantly agricultural, recreational, and open space, along with some residential uses. These areas have the potential to contain hazardous substances, particularly petroleum products or pesticides that may have been stored nearby or released into the surrounding environment. Between 2017 and 2019, Sherman Island's census tract had higher use of hazardous and volatile pesticides than 78% of census tracts statewide, with commonly applied chemicals including propanil, malathion, trifluralin, dimethoate, and dimethylamine salt (OEHHA 2025a). Additionally, older gas wells and underground storage tanks used to store petroleum products and other hazardous materials may develop leaks that can lead to contamination of soil or groundwater. The number and type of hazardous waste generators and sites in Sherman Island's census tract is higher than 50% of the census tracts in California (OEHHA 2025b). However, a query of the California Department of Toxic Substances Control's database revealed no known sites in the Project Area with cleanup, permitted, or other hazardous materials statuses (CDTSC 2025). One former cleanup site on Sherman Island had been evaluated under the Formerly Used Defense Site (FUDS) Program but was determined to pose no risk requiring further remediation.

2.9.2 Findings

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Hazardous materials (e.g., diesel fuel) will be used by construction equipment during Project implementation. To minimize the risk of a hazardous material release, the Project will implement hazardous material BMPs, as outlined in conservation measures **CM-4** and **CM-5** (Section 1.4.5). All fuels and other hazardous materials will be handled and stored according to the manufacturer's specifications. The construction equipment staging area will consist of bare ground enclosed by containment measures (e.g., berms or absorbent wattles) to limit the spread of any spills. Secondary containment methods will be used during all refueling activities, which will occur within the staging area whenever feasible. In the event of a spill, crew personnel would stop the spillage at its source, contain the spilled material, and notify Project supervisors and appropriate agency representatives.

The Project will have no potential impacts associated with hazardous material use following Project completion. The Project is consistent with the Sacramento County General Plan's Hazardous Materials Element, including policies that promote safe handling, disclosure, and prevention of hazardous

materials incidents. Impacts related to the transport, use, or disposal of hazardous materials will be less than significant with compliance with applicable regulations and incorporation of conservation measures **CM-4** and **CM-5**.

- b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

As described above, implementation of hazardous material BMPs outlined in **CM-4** and **CM-5** (Section 1.4.5) will occur during Project implementation; therefore, the potential for the Project to create a significant hazard that could impact the public or environment will be less than significant.

- c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

Because no schools are currently located, or proposed to be constructed, within 0.25 mi of the Project Area, the Project will not impact schools; therefore, there will be no impact.

- d) Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

Because no portion of the Project Area is included on a list of hazardous materials sites (CDTSC 2025), the Project will not impact the public or environment by posing risk of exposure to hazardous materials pursuant to Government Code § 65962.5; therefore, there will be no impact.

- e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the project area?**

Because no public-use airports are located within 2 mi of the Project Area, the Project will have no impact.

- f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

In the event of an emergency, residents of Sherman Island, located in the Sacramento County evacuation zone number 81, would evacuate using typical routes, as the levee road will not be closed during construction. All roadway traffic supporting the Project will adhere to applicable laws for motor vehicles and with Sacramento County's Office of Emergency Services. The construction contractor will comply with local fire, police, and medical responders during any emergency. Therefore, the Project will not interfere with emergency response plans or disrupt emergency evacuations. The Project will have no impact.

- g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?**

Sherman Island has been designated by the California Department of Forestry and Fire Protection (CalFire) as an unzoned local responsibility area⁶ with no moderate, high, or very high fire hazard severity zones (CalFire 2025). Accordingly, the Project will not impact people or structures by exposing them a significant risk of loss, injury, or death involving wildland fires. In addition, the Project will implement conservation measure **CM-6** (Section 1.4.5) to reduce the potential for a grass fire. The Project will have no impact.

2.10 Hydrology and Water Quality

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	✓	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	☐	☐	☐	✓
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;	☐	☐	✓	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	✓
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	✓
(iv) impede or redirect flood flows?	☐	☐	☐	✓
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	☐	☐	☐	✓
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	✓

⁶ Local responsibility areas are lands on which neither the state nor the federal government has any legal responsibility for providing fire protection.

2.10.1 Environmental setting

The Project Area spans two hydrologic units: the Threemile Slough–Sacramento River hydrologic unit (Hydrologic Unit Code 180201630703), which is part of the larger Lower Sacramento watershed (Hydrologic Unit Code 18020163), and the Middle River–San Joaquin River hydrologic unit (Hydrologic Unit Code 180400030906), located within the broader San Joaquin Delta watershed (Hydrologic Unit Code 18040003). The Sherman Island East Levee Road serves as the dividing line between these two units (USGS 2025). The Project Area also lies within the Solano Subbasin of the Sacramento Valley Groundwater Basin (DWR Basin No. 5-21.66), a designated groundwater basin subject to the Sustainable Groundwater Management Act. Sherman Island is surrounded by 19.5 mi of Project and non-Project levees maintained by Reclamation District 341 which border the Sacramento River to the north, the San Joaquin River to the south, and Threemile Slough to the east.

All construction activities will occur landward of the waterside hinge of the existing levee, within the Threemile Slough–Sacramento River hydrologic unit. However, portions of the staging area and equipment placement may extend waterside of the hinge, thereby entering the Middle River–San Joaquin River hydrologic unit. The Project Area is bordered by the San Joaquin River on the southern side of Sherman Island. The northern part of the island is bordered by the Sacramento River; the east side by Threemile Slough, and the west side by Mayberry Slough.

The Project Area experiences a Mediterranean climate characterized by hot, dry summers and cool, wet winters. The average total annual rainfall in the Project Area between 1991 and 2024 was 14.9 inches. Rainfall typically occurs between October and June (PRISM Climate Group 2025). Water levels in the adjacent waterways fluctuate daily with tidal action and episodically during flood events coinciding with periods of heavy precipitation and runoff. The Project Area is currently mapped by the Federal Emergency Management Agency as a high-risk flood zone (FEMA 2025).

The typical daily tidal range at Sherman Island varies from approximately Elevation 2 ft to Elevation 6 ft. Extreme low tides can reach near Elevation 1 ft, while extreme high tides may approach Elevation 7 ft (Shannon & Wilson 2025). The District uses Elevation 9.8 ft as the 100-year BFE.

Groundwater levels beneath the levee range from Elevation 1.2 ft to Elevation 3.4 ft (Shannon & Wilson 2025). Within the levee, groundwater levels are generally expected to align with mean tide levels. The interior of Sherman Island lies below sea level, and groundwater levels within the island are regulated through evapotranspiration and pumping. Throughout much of the year, these levels are expected to remain within a few ft of the ground surface.

There are no tsunami risks in the Project Area or vicinity according to the State of California's tsunami hazard area map (California DOC 2025c). Earthquakes along any of the active fault zones in the vicinity of the Project (Section 2.7.1); however, could result in seiches in the waterways in the vicinity of the Project Area.

Water quality objectives and beneficial uses for surface water and groundwater are in the *Water Quality Control Plan for the Central Valley* (Basin Plan) (CVRWQCB 2019). The water quality objectives apply to all surface waters in the Sacramento and San Joaquin river basins, including the waterways near the Project

Area (i.e., Sherman Island). Existing and potential beneficial uses for the Delta include municipal and domestic supply, agricultural supply (irrigation and stock watering), industrial supply (process and service supply), recreation (contact and noncontact), freshwater fish habitat (warm and cold), migration (warm and cold), spawning (warm), wildlife habitat, and navigation. In accordance with Section 303(d) of the CWA, the SWRCB has listed the San Joaquin River along the southeastern edge of Sherman Island as impaired for toxicity, imidacloprid, and water temperature, and the Sacramento River along the northwestern edge of the island as impaired for toxicity, pyrethroids, fipronil, and water temperature (SWRCB 2024). This designation, as specified in the Basin Plan, is assigned to waterbodies where established water quality objectives are not being met or where beneficial uses are not protected. Classification of a waterbody as *impaired* on the 303(d) list triggers the development of a pollution control plan, called a Total Maximum Daily Load. The Total Maximum Daily Load for each water body and associated pollutant serves as the means to attain and maintain water quality standards for the *impaired* water body.

2.10.2 Findings

a) **Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?**

There will be no in-water work associated with the Project. No waterways are located within the Project Area. Excavation will occur along the levee crest and landside slope and will not extend past the existing levee waterside hinge. However, ground disturbance during Project construction could temporarily increase the potential for localized erosion and sediment-laden stormwater runoff. The Project will implement a SWPPP with BMPs to minimize the potential for soil erosion and stormwater runoff (conservation measure **CM-3**, Section 1.4.5) and accidental spills of hazardous materials to enter waterways and groundwater (conservation measures **CM-4** and **CM-5**). With implementation of conservation measures **CM-3** through **CM-5**, impacts on surface or ground water quality will be less than significant.

b) **Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?**

The Project may temporarily and minimally affect pumping efficiency due to the increased elevation of discharge conduits, which could result in slightly reduced flow rates or longer pump run times. However, these impacts are expected to be short-term and operationally manageable. The Project will not substantially alter existing groundwater pumping rates or natural recharge potential in a manner that would impede sustainable groundwater management of the basin. There will be no impact.

c) **Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:**

i) **result in a substantial erosion or siltation on- or off-site?**

Movement of earth and fill material will temporarily disturb soils and alter runoff patterns over a small area on the landside levee slope during Project construction. Appropriate BMPs included in the Project SWPPP will be implemented to minimize potential temporary impacts on waters from erosion during Project construction (conservation measure **CM-3**, Section 1.4.5). The topography of the Project Area will be reconstructed to similar grades and revegetated following Project construction, and no new impervious surfaces will be created. Therefore, there will be no substantial long-term change in erosion or siltation on or off site. The Project will have a less-than-significant impact related to erosion and siltation.

ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

The Project will not substantially alter drainage patterns following construction. Earth-moving activities during construction have the potential to cause minor and temporary alterations to the Project Area's existing drainage patterns but will not result in an increased risk of flooding. The Project will not result in flooding impacts on locations within the Project Area or off-site areas. The Project will have no impact.

iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The Project will not create or contribute runoff water or provide additional sources of polluted runoff; therefore, the Project will have no impact.

iv) impede or redirect flood flows?

Project construction will be completed between May and October, when precipitation and flood risk are low. Construction will occur on the landside of the levee and will not impede or redirect flows in adjacent waterways. Project implementation will not result in long-term changes to flood flow patterns. The Project will have no impact.

d) In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to Project inundation?

The Project Area is not at risk of tsunamis. In the unlikely event of a flood or seiche during Project construction (see Section 2.10.1), implementation of hazardous material BMPs included in the SWPPP (conservation measures **CM-4** and **CM-5**, Section 1.4.5) would minimize the risk of a pollutant release. The Project will not risk release of pollutants following Project construction. The Project will have no impact.

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Project will not conflict with or obstruct the implementation of the Basin Plan (CVRWQCB 2019) or any sustainable groundwater management plan (Solano Collaborative 2021) because it will not chronically lower groundwater levels, reduce groundwater storage, or degrade water quality by

increasing concentrations of constituents of concern (nitrate, arsenic, chloride, total dissolved solids, or hexavalent chromium). The Project will have no impact.

2.11 Land Use and Planning

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Physically divide an established community?	☐	☐	☐	✓
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	✓

2.11.1 Environmental setting

The land-use designation for Sherman Island is Agricultural (Sacramento County 2025a). The Project Area includes 18 ac of land designated as Farmland of Local Importance (Section 2.2.1) and falls within Priority 2 and Priority 3 zones in Sacramento County’s Open Space Vision Diagram, indicating overlap with multiple open space components (i.e., habitat, agriculture, flood protection, or recreation) (Sacramento County 2017b).

Sherman Island is also part of the Delta Primary Zone, as defined by the Delta Protection Act of 1992 (Section 6.2). The Primary Zone includes approximately 500,000 ac of waterways, levees, and farmed lands throughout five counties (DPC 2010). The Land Use and Resource Management Plan for the Primary Zone of the Delta guides planning for the conservation and enhancement of the natural resources of the Delta, while sustaining agriculture and meeting increased recreational demand (DPC 2010).

Sherman Island is located within the boundary covered by the Delta Plan, a comprehensive, long-term management plan for the Delta and Suisun Marsh mandated by the 2009 Delta Reform Act (Section 6.2) (DSC 2024). The Delta Plan includes recommendations for achieving the coequal goals of protecting and enhancing the Delta ecosystem and its unique agricultural, cultural, and recreational characteristics, while providing for a more reliable water supply for California. Delta Plan Policy DP P2 reflects these goals by requiring that local land uses be considered when choosing placement of water or flood facilities or restoring habitats.

Sherman Island is designated as a Very-High Priority Island under the Delta Levees Investment Strategy (DLIS) (DSC 2023). The island’s levees protect State Highway 160, utility infrastructure, water quality and supply, and freshwater wetlands. The Project is consistent with DLIS goals and supports the continued function of these systems.

2.11.2 Findings

a) Would the Project physically divide an established community?

No established communities are located on Sherman Island, and the Project will not change the character of or access to any of the residences or farm buildings on the island; therefore, the Project will not impact or divide any established community.

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

The Project will not result in any long-term changes to land use on Sherman Island; therefore, it will not conflict with any goals or policies in the Sacramento County General Plan (Sacramento County 2011), the Land Use and Resource Management Plan for the Primary Zone of the Delta (DPC 2010), or the Delta Plan. There will be no impact.

2.12 Mineral Resources

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	✓
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	✓

2.12.1 Environmental setting

Few mineral resources of economic value are found in the Delta, though limited extraction of peat and sand/gravel occurs on some Delta islands. No mineral extraction activities currently take place on Sherman Island. Sherman Island is located within the Greater Sacramento Area Production-Consumption Region and has been classified by CGS (CGS 2018c, CGS 2022) into Mineral Resource Zone 1 (MRZ-1) for concrete aggregate. This classification, established pursuant to the California Surface Mining and Reclamation Act of 1975 (SMARA; Section 6.2), indicates that little likelihood exists for the presence of significant concrete aggregate resources (Sacramento County 2017c).

2.12.2 Findings

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No known mineral resources are present within the Project Area; therefore, the Project will have no impact.

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

No known mineral resources are present within the Project Area; therefore, the Project will not conflict with any local general plans, specific plans, or other land use plans and will not impact any locally important mineral resource recovery site. There will be no impact.

2.13 Noise

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project result in:				
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?	☐	☐	☐	✓
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	✓
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?	☐	☐	☐	✓

2.13.1 Environmental setting

Noise can be defined as unwanted or disruptive sound. Pressure waves traveling through air exert a force that is perceived by the human ear as sound, measured in decibels (dB) using monitoring instruments. For context, a whisper measures approximately 30 dB, normal speaking is about 60 dB, and a chain saw is around 110 dB (CDC 2015). Prolonged exposure to noises above 70 dB can lead to adverse impacts, such as hearing loss. Noise levels from localized (i.e., point) sources attenuate with distance at a rate of approximately 6 dB per doubling of distance (FTA 2018). Construction noise levels are often expressed in A-weighted decibels (dBA), a unit that incorporates frequency adjustments to model the human ear's varying sensitivity to different sound frequencies.

Ambient noise on Sherman Island is primarily created by boat traffic along adjacent waterways, recreational activities (e.g., hunting), routine agricultural equipment, and potentially vehicular traffic from Highway 160 on the western side of the island. The closest noise-sensitive receptor to the Project Area is Eddo's Harbor & RV Park, situated approximately 150 ft east of the Project boundary and

potentially housing a small number of long-term or full-time residents. In addition, several permanent rural residences are located between 0.25 and 0.68 mi from the Project Area. Other rural residences in the vicinity are greater than 1 mi from the Project Area.

The Project is exempt from Sacramento County Code (§ 6.68.070) noise standards, provided that all work activities occur between 6:00 a.m. and 8:00 p.m. on weekdays and between 7:00 a.m. and 8:00 p.m. on weekends. However, if unforeseen or unavoidable conditions arise during construction and continuation of work is necessary to complete a specific phase, operations may extend beyond 8:00 p.m. only until that phase is concluded, in order to avoid jeopardizing inspection acceptance or incurring undue financial hardships.

2.13.1.1 Vibration

Vibrations are periodic oscillations of a medium, including groundborne vibrations generated by machinery or construction equipment. These vibrations can lead to groundborne noise, which occurs when objects such as room surfaces resonate in response to ground vibrations. Vibrations are typically measured by their root mean squared velocity, expressed in vibration decibels (VdB). Vibrations become perceptible at approximately 65 VdB, distinctly perceptible around 75 VdB, and become bothersome around 85 VdB (FTA 2018).

Existing vibration levels are relatively low near the Project Area. Vibrations in the vicinity are primarily produced by vehicular traffic, including routine agricultural and maintenance vehicles and equipment.

2.13.2 Findings

- a) **Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

The Sacramento County Code (§ 6.68.090) provides an exemption for construction activities from standard noise level restrictions, provided that such activities occur between 6:00 a.m. and 8:00 p.m. on weekdays and between 7:00 a.m. and 8:00 p.m. on weekends. Project construction activities would take place between 7:00 a.m. and 5:00 p.m. (Section 1.4.6). Therefore, the Project will have no impact.

- b) **Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?**

Vibration levels for heavy equipment and loaded haul trucks to be used during Project construction are not expected to exceed 87 VdB at 25 ft from the source, or 64 VdB at 150 ft from the source (i.e., the distance to the nearest noise-sensitive receptor) (FTA 2018). No equipment used during Project construction is expected to have detectable vibrations at surrounding land uses, including the nearest sensitive receptor. Vibration and noise produced by Project construction activities during daytime hours are also exempt from Sacramento County regulations, and operational vibration or noise levels would not increase following Project construction. No long-term increase in groundborne vibration generation would occur following Project construction. For these reasons, the Project will not result in generation of

excessive groundborne vibration; therefore, the Project will have no impact on groundborne vibrations or sounds.

- 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?**

The Project is not located within the vicinity of a private airstrip or within 2 mi of a public airport or public use airport. Therefore, the Project will have no impact.

2.14 Population and Housing

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	✓
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	✓

2.14.1 Environmental setting

The Project Area is located in a rural part of Sacramento County with low population density. Sherman Island's census tract, which includes neighboring islands and the town of Isleton, had a population of 1,514 as of 2017 (OEHHA 2025c). Land surrounding the Project Area is primarily agricultural, with a few domestic residences outside the Project boundary. Eddo's Harbor and RV Park, about 150 ft from the eastern edge of the Project boundary, may accommodate a small number of long-term or full-time residents.

2.14.2 Findings

- a) **Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

Although the Project will improve infrastructure along Sherman Island levee, it does not include any elements that would induce population growth. Therefore, the Project will not impact population levels.

- b) **Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

The Project will not displace or impact any existing housing or necessitate the construction of replacement housing elsewhere. Therefore, there will be no impact.

2.15 Public Services

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	☐	☐	☐	✓
Fire protection?	☐	☐	☐	✓
Police protection?	☐	☐	☐	✓
Schools?	☐	☐	☐	✓
Parks?	☐	☐	☐	✓
Other public facilities?	☐	☐	☐	✓

2.15.1 Environmental setting

Sherman Island is managed primarily for agriculture and wildlife conservation. The Lower Sherman Wildlife Area contains about 3,100 ac of riparian marshland supporting habitat restoration, waterfowl conservation, and recreational access. There are no other public services on Sherman Island.

2.15.2 Findings

- a) **Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:**

Fire protection?

Police protection?

Schools?

Parks?

Other public facilities?

No fire protection services, police protection services, schools, parks, or other public facilities are located on or have facilities near the Project Area, and access routes will be maintained to allow fire and police protection services to reach the residents and structures on Sherman Island. Therefore, the Project will not impact public services.

2.16 Recreation

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
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?	☐	☐	☐	✓
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	✓

2.16.1 Environmental setting

The Delta waterways surrounding Sherman Island are a recreational resource for boating, fishing, wildlife viewing, camping, picnicking, and hunting. The southwest of the island, known as Lower Sherman Island Wildlife Area, contains about 3,100 ac of riparian marshland (CDFW 2025a). Sherman Lake, located within the Lower Sherman Island Wildlife area west of the Project Area, is approximately 1,840 ac and is also known for fishing and other water sports. Sherman Island is internationally known for windsurfing and kite-boarding due to the river morphology and ideal wind conditions (Sacramento County 2025b) (Figure 1-1).

Sherman Island is accessible from Highway 160, which crosses the island and provides access points, including Sherman Island Road. The island can be reached by taking Highway 160 south from Rio Vista, or by taking the Antioch Bridge from the south. The Lower Sherman Island Wildlife Area is accessible only by boat. The Project Area is not a part of the Regional Park public access area (Sacramento County 2025c). The Project Area is adjacent to Eddo's Harbor & RV Park, a publicly accessible marina, boat launch, and boat storage facility.

2.16.2 Findings

- 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?**

The Project will not alter or impact the use of existing neighborhood or regional parks or of the surrounding recreational areas on Sherman Island. There will be no impact.

b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The Project does not require construction or expansion of recreational facilities that might have adverse physical impacts on the environment. There will be no impact.

2.17 Transportation

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☐	✓
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☐	✓
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	✓
d) Result in inadequate emergency access?	☐	☐	☐	✓

2.17.1 Environmental setting

Sherman Island is accessible via State Route 160, which connects to the city of Antioch through the Antioch Bridge to the south, and to Brannan Island State Recreation Area via the Threemile Slough Bridge to the north. The Project Area can be accessed via the Sherman Island East Levee Road, which runs along the eastern and southern edges of Sherman Island and is open to the public. Construction access within the Project Area will utilize the established roads. The Project will involve reconstructing the existing levee crest roadway and toe berm. The Project vicinity experiences relatively low traffic, with Sherman Island's census tract ranking in the 26th percentile for statewide traffic density in 2017 (OEHHA 2025d). The Project will temporarily increase traffic in the Project vicinity during construction but will not result in long-term changes to any traffic or transportation circulation system.

2.17.2 Findings

a) Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The Project will not conflict with or impact a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. There will be no impact.

b) Would the Project conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

Vehicle miles traveled are not expected to change due to the Project because no detours will be required during Project construction and the Project will not change any transportation system. There will be no impact.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Project will not impact the design or use of roads in the vicinity. There will be no impact.

d) Would the Project result in inadequate emergency access?

Emergency services will continue to have access to Sherman Island via State Route 160, which runs north to south through the western portion of the island, throughout Project construction. Project personnel, including haul truck drivers and equipment operators, will comply with local fire, police, and medical responders during any emergency. Therefore, the Project will not impact access to emergency services.

2.18 Tribal Cultural Resources

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project				
a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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 § 5020.1(k), or	☐	✓	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	✓	☐	☐

2.18.1 Environmental setting

Eileen Barrow & Associates conducted cultural resources investigations for the APE. The study is documented in a report titled *Cultural Resources Study for the San Joaquin Multi-Benefit Project Sherman Island, Sacramento County, California* (Eileen Barrow & Associates 2024), which includes a records search of the CHRIS conducted by the North Central Information Center (NCIC), a SLF search conducted by the NAHC, geoarchaeological sensitivity analyses, and a reconnaissance field survey of the APE. The report also provides detailed precontact, ethnographic, and historic information relevant to the APE.

The APE is located in the ethnographic territory of the Eastern Miwok, a subgroup of the broader Miwok-speaking peoples of Central California (Levy 1978). Their territory extended from the Walnut Creek area eastward through the Sacramento-San Joaquin Delta, north towards Sacramento, eastward to the Sierra Nevada foothills, and ending at the south just north of the Calaveras River (Bennyhoff 1977; Kroeber 1925; Levy 1978; Merriam 1907, as cited in Eileen Barrow & Associates 2024).

Many Tribes, regardless of federal recognition status, maintain enduring traditional and cultural affiliations with the APE and its surrounding lands. These communities have deep spiritual, cultural, and physical connections to their ancestral lands and continue to serve as contemporary stewards of their heritage and landscapes. Tribal presence remains rooted in these homelands, embodying the resilience and continuity of their ancestors through sustained relationships with sacred sites, cultural practices, and history. Each Tribe is committed to preserving and revitalizing its cultural legacy for present and future generations. The Miwok peoples continue to live and thrive throughout the San Francisco Bay Area, affirming their presence and cultural vitality in the region today.

2.18.1.1 Results of Tribal Resources investigation

The CHRIS records search was completed on September 2, 2024 (File No. SAC-24-143 13016L) and identified one previously recorded cultural resource—P-34-000553 (i.e., the Sherman Island levee)—in the APE. The NAHC's SLF search request was submitted to the NAHC on August 19, 2024, and the NAHC's formal response dated August 29, 2024 indicated negative results for sensitive Native American cultural resources in the APE.

On August 27 and 28, 2024, Eileen Barrow & Associates sent outreach letters to the following Native American individuals and groups: Buena Vista Rancheria of Me-Wuk Indians, Calaveras Band of Mi-Wuk Indians, Chicken Ranch Rancheria of Me-Wuk Indians, Confederated Villages of Lisjan, Guidiville Indian Rancheria, Ione Band of Miwok Indians, Jackson Rancheria Band of Miwuk Indians, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Northern Valley Yokut/Ohlone Tribe, Pakan'yani Maidu of Strawberry Valley, United Auburn Indian Community of the Auburn Rancheria, and Wilton Rancheria. No responses were received to the outreach.

On January 23, 2026, the lead agency sent formal notification letters to the above-listed tribes in accordance with Assembly Bill 52 (AB 52) and Section 21080.3.1(d) of the California Public Resources Code (PRC), providing an opportunity to consult regarding the Project. Pursuant to PRC Section 21080.3.1(d), tribes were provided 30 days to respond to the notification. The AB 52 consultation response period ended on February 23, 2026. Wilton Rancheria was the only tribe that requested consultation

A consultation meeting was conducted on March 19, 2026. During the consultation meeting, Wilton Rancheria expressed concerns regarding the potential presence of tribal cultural resources and requested a tribal survey to further evaluate potential cultural resources. A tribal survey was conducted on April 14, 2026, by Wilton Rancheria in coordination with Wagner & Bonsignore to assess potential tribal cultural resources within the Project Area. No significant tribal cultural resources were identified during the survey. Wilton Rancheria provided recommendations, including tribal monitoring during initial ground-disturbing activities. Proposed mitigation measures were subsequently provided to Wilton Rancheria for review, and comments received were incorporated into the CEQA document, as appropriate. Wilton Rancheria reviewed the revised mitigation measures and concurred with concluding consultation on June 12, 2026.

Buried site sensitivity analysis determined that the APE has a low probability of containing buried cultural deposits. The flattening and recompacting of the landside levee slope during Project construction will occur completely within fill soils and is not expected to disturb underlying marsh deposits. Any native soils that may be present within the lean clay and silt beneath the road base have likely been significantly altered by previous levee construction activities, including the placement of fill, use of heavy machinery, and other related ground disturbances. Ancillary Project components such as conduit and siphon modifications and PG&E power pole relocations may involve subsurface excavation that could extend into native soils; however, any native soils encountered are also expected to have been significantly altered by prior construction and infrastructure development. As a result, the potential for the Project to encounter intact tribal cultural resources or undisturbed native soil contexts of tribal cultural significance is low.

Professionally qualified archaeological staff from Eileen Barrow & Associates conducted a reconnaissance field survey of the entire APE on September 3, 2024, walking a 5–15-meter-wide corridor along the foot of the levee, when possible, and checking the waterside of the levee for any structures. The field survey did not identify any archaeological site soils or specimens.

2.18.2 Findings

- a) **Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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 § 5020.1(k), or?**

Cultural resources investigations conducted for the Project did not identify any known indigenous cultural resources. Additionally, a search of the NAHC's SLF returned negative results. No evidence of archaeological significance or characteristics was found that would meet the criteria for listing in the California Register of Historical Resources or a local register as defined in Public Resources Code § 5020.1(k). Furthermore, native soils have likely been substantially disturbed, as described above, and Project activities are not expected to affect undisturbed native soils beneath introduced fill.

Mitigation measures **MM-10 and MM-11** require environmental awareness training for construction personnel, which will include tribal cultural resources and procedures for addressing the inadvertent discovery of such resources during ground-disturbing activities. Additionally, **MM-12** requires a tribal monitor from Wilton Rancheria to be present during initial ground-disturbing activities (e.g., clearing and grubbing vegetation) and exploratory trenching activities within the center levee prism along the Project alignment. The impact will, therefore, be less than significant with incorporation of mitigation.

- ii) **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

As described above, no indigenous cultural resources were identified during cultural resources investigations for the Project, and Project activities are not expected to affect native soils below introduced fill. Additionally, the search of the NAHC's SLF search yielded negative results.

Mitigation Measures **MM-10 and MM-11** require environmental awareness training for construction personnel, which will include information on tribal cultural resources and procedures to follow in the event of an inadvertent discovery during excavation. Additionally, **MM-12** requires a tribal monitor from Wilton Rancheria to be present during initial ground-disturbing activities (e.g., clearing and grubbing vegetation) and exploratory trenching activities within the center levee prism along the Project alignment. The impact will, therefore, be less than significant with incorporation of mitigation.

2.19 Utilities and Service Systems

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	✓	☐
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	✓
c) Result in a determination by the wastewater treatment provider, which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	✓

d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	✓	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	✓

2.19.1 Environmental setting

No public wastewater treatment facilities, stormwater drainage facilities, or other public utilities or service systems are located on Sherman Island. Wastewater is managed by private septic systems. Solid waste can be disposed of at landfills and recycling facilities in nearby cities (e.g., Rio Vista, Antioch, Pittsburg).

Pacific Gas & Electric Company (PG&E) provides electricity to Sherman Island via local distribution lines. Ten poles that support PG&E power and AT&T lines need to be relocated to allow Project construction; PG&E and AT&T will reposition the poles within the Project Area and tie them back into existing line (Figure 1-2). The island also contains 37.5 mi of natural gas pipelines and 18.6 mi of electrical transmission lines (DSC 2023) that will be unaffected by the Project.

The California State Legislature passed the Integrated Waste Management Act of 1989 (AB 939; Section 6.2) to minimize the disposal of solid waste. AB 939 established the California Integrated Waste Management Board and required diversion of 25% of solid waste by 1995 and 50% by 2000. The California Integrated Waste Management Board's responsibilities transferred to the California Department of Resources Recycling and Recovery in 2010, and AB 341 (Section 6.2) was enacted in 2011, updating the statewide goal to 75% reduction by 2020. Sacramento County Code Chapter 6.20 establishes the County's broader solid waste management framework, while the County's Construction & Demolition Debris (C&D) Recycling Program enforces waste standards (e.g., minimum 65% of nonhazardous construction and demolition debris to be recycled or reused) and requires project-specific Waste Management Plan for certain types of permitted activities (Sacramento County 2025d). The activities associated with the Project are not subject to these program requirements.

2.19.2 Findings

- a) **Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**

The Project will involve relocating 10 utility poles between Levee Stations 330+00 and 347+00 that currently support PG&E and AT&T lines. PG&E will relocate poles within the Project Area and transfer wires. No transformers will be included in the relocated powerline and no changes to pole size, spacing, or power voltage will occur. To facilitate the transfer of power to the new line, services will be temporarily suspended for approximately 2–3 hours. Affected customers will receive advance notice, and outages will be scheduled during off-peak hours to minimize disruption.

The District will contract with PG&E and AT&T to relocate their respective facilities and will facilitate establishment of the maintenance easement on APN 158-0030-005-0000 from the DWR Real Estate Branch for the new alignment. The utility pole relocation will comply with PG&E and California Public Utilities Commission standards, including General Order 95 for overhead line construction.

The Project will also modify two steel pump discharge conduits used for pump discharge at Levee Stations 355+78 and 355+85, and two irrigation siphons at Levee Stations 336+56 and 366+08. The pipelines will be adjusted to cross the levee crest above the 100-year BFE, consistent with flood safety requirements. Construction will involve localized excavation and installation, with no long-term utility disruption.

The effects associated with relocating 10 utility poles and modifying two pump discharge conduits will be minor and the Project will not impact other utility infrastructure, including water, wastewater, stormwater, or natural gas facilities. The Project impact will, therefore, be less than significant.

b) Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?

The Project will not create a need for an increased water supply following construction. During construction, water trucks may source water from the San Joaquin River. Based on the relatively small amount of water temporarily needed during construction activities, sufficient water will be available for the Project. The Project will not create a need for an increased water supply following construction. There will be no impact.

c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?

The Project will not have an impact on wastewater generation or require the use of a wastewater treatment facility.

d) Would the Project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

To the extent possible, fill removed during the levee excavation will be reused during levee reconstruction. Any remaining materials not suitable for use in Project construction, including plant material or trash generated during construction activities, will be recycled if possible, or disposed of at a nearby off-site waste facility. Because the Project will reuse or recycle materials where feasible and will only generate solid waste temporarily during construction, it will not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. The Project impact from the generation of solid waste will be less than significant.

e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

As indicated in (d) above, the Project will not impact solid waste and will comply with associated federal, state, and local management and reduction statutes and regulations by reusing or recycling materials when possible. There will be no impact.

2.20 Wildfire

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:				
f) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	✓
g) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	✓
h) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment?	☐	☐	☐	✓
i) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	✓

2.20.1 Environmental setting

Within Sacramento County, the highest wildfire risk occurs in the eastern and southeastern foothill regions, where fuel loads, steep slopes, and prevailing wind patterns contribute to elevated fire hazards. In contrast, the Project Area features predominantly flat terrain associated with agricultural use, along with localized elevation changes associated with the raised levee system. Predominantly low-growing grasses, blackberry, willows along edge of project and/or just outside of project line the levee, forming a transitional edge between adjacent pastureland and the levee. CalFire has classified Sherman Island as an unzoned local responsibility area, which is not designated within any moderate, high, or very high fire hazard severity zones (CalFire 2025).

2.20.2 Findings

- a) **If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?**

The Project Area is not located in or near a state responsibility area or on land classified as a very high fire hazard severity zone; therefore it will not impact associated emergency response or evacuation plans.

- b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

The Project is not located in or near a state responsibility area or on land classified as a very high fire hazard severity zone. The Project will lessen the slope of the levee and will not include components that impact or exacerbate wildfire risk.

- c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

The Project is not located in or near a state responsibility area or on land classified as a very high fire hazard severity zone and will not require the installation of associated infrastructure that could impact or exacerbate the risk of wildfire. Therefore, the Project will have no impact.

- d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

The Project is not located in or near a state responsibility area or on land classified as a very high fire hazard severity zone. The Project will stabilize and reduce the slope of the levee and will not increase runoff or otherwise cause instability. Levee repairs will benefit the surrounding area including infrastructure and property by increasing flood protection. Therefore, the Project will have no impact.

2.21 Mandatory Findings of Significance

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
j) 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?	☐	✓	☐	☐
k) 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.)	☐	✓	☐	☐
l) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	✓	☐	☐

- a) Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

As discussed in Section 2.4, the Project has the potential to impact special-status plant and wildlife species as well as their habitats within the Project Area. Impacts on these resources will be limited to a less than significant level with the incorporation of mitigation measures **MM-1** through **MM-9**.

As discussed in Sections 2.5 and 2.18, the potential for cultural or tribal cultural resources to be impacted by the Project is low; however, mitigation measures **MM-10**, **MM-11**, and **MM-12** describe mitigation for an unanticipated discovery of cultural or tribal cultural resources during the excavation.

Therefore, the Project will not substantially degrade the quality of the environment, substantially reduce the habitat of a wildlife species, cause a wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or

endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. Potential impacts on biological and cultural resources will be less than significant with incorporation of the mitigation measures described above.

- 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.)**

The Project has been determined to have no impact on agriculture and forestry resources, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, and wildfire. As such, there is no potential for cumulatively considerable impacts on these resources.

The Project has been determined to have the potential for less-than-significant impacts on aesthetics, air quality, energy, geology and soils, GHG emissions, hazards and hazardous materials, hydrology and water quality, and utilities and service systems temporarily during construction. Routine maintenance activities, including improvements to irrigation and drainage infrastructure, and vegetation management, may be performed by the District on Sherman Island in 2027. These activities would occur elsewhere on Sherman Island on a different levee segment and would not occur concurrently with the Project. As such, the Project’s temporary and mitigated construction effects would not combine with those of the additional maintenance activities to produce cumulatively considerable impacts. Additionally, the Project does not exceed the air quality and GHG thresholds that were determined by SMAQMD in consideration of the potential for cumulative impacts attributable to emissions from multiple projects occurring simultaneously. The potential for cumulatively considerable hydrology and water quality impacts would be minimized by implementation of a SWPPP during construction (conservation measures **CM-3** through **CM-5**); any nearby projects with the potential to impact surrounding waterways would also implement a SWPPP, as required by CWA Section 402. For these reasons, the Project will not have a cumulatively considerable impact on aesthetics, air quality, energy, geology and soils, GHG emissions, hazards and hazardous materials, hydrology and water quality, or utilities and service systems.

In addition, and as described in (a) above, implementation of mitigation measures (**MM-1** through **MM-12**) during construction (e.g., preconstruction surveys) will prevent impacts on biological, cultural, and tribal cultural resources that have the potential to be cumulatively considerable.

For the reasons described above, the Project will not have environmental impacts that are individually limited but cumulatively considerable; cumulative impacts will be less than significant with mitigation.

- c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

As discussed in this IS/MND, the Project, including conservation measures that are incorporated into its design, will have no impact or a less-than-significant impact on aesthetics, agriculture, air quality, cultural resources, energy, geology and soils, GHG emissions, hazards or hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, tribal cultural resources, utilities and services, and wildfire. As such,

the Project's environmental impacts will not cause substantial, adverse impacts on humans, either directly or indirectly; impacts will be less than significant with mitigation.

3 DETERMINATION

On the basis of this evaluation:

I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	☐
I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION has been prepared.	☒
I find that the 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 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 Project, nothing further is required.	☐

4 LIST OF PREPARERS

Table 4-1 lists the preparers of this IS/MND and participants in the related planning, data gathering, and analytical tasks.

Table 4-1 List of preparers

Name	Title	Affiliation	Project role
Martin Berber	Project Engineer	Wagner & Bonsignore	Project management and support
Shaira Soliva	Staff Engineer	Wagner & Bonsignore	Engineering, Project design
Julianna Galindo	Staff Engineer	Wagner & Bonsignore	Engineering, Permitting Support
Lauren Dusek	Senior Wildlife and Fisheries Biologist	Stillwater Sciences	Project Manager, environmental analysis oversight
Krista Orr	Senior Ecologist	Stillwater Sciences	Project Director, environmental analysis oversight
Shayda Abidi	Wildlife and Fisheries Biologist	Stillwater Sciences	Deputy Project Manager, environmental analysis
Kayla Fitzpatrick	Environmental Scientist	Stillwater Sciences	Environmental analysis
Kipp Pow	Botanist	Stillwater Sciences	Environmental analysis (botanical resources)
Nicole Jurjavic	Senior Ecologist	Stillwater Sciences	Environmental analysis oversight (botanical resources)
Krista Orr	Senior Ecologist	Stillwater Sciences	Senior editor
Christine Champe	Senior Wildlife Biologist	Stillwater Sciences	Senior editor
Kelli Wheat Dawson	Document Production	Stillwater Sciences	Formatting
Eileen Barrow, MA, RPA	Archaeologist	Eileen Barrow & Associates	Cultural resources, tribal cultural resources

5 CONSULTATION AND COORDINATION

The Draft IS/MND was circulated to agencies, individuals, and/or organizations known to have a special interest in the proposed Project and was made available to the public for a 30-day review period. The public was notified as follows:

- A Notice of Intent (NOI) to adopt an MND was posted for publication at the District office and filed with Sacramento County Clerk.
- The proposed IS/MND, NOI, and Notice of Completion (NOC), were electronically submitted to the State Clearinghouse via the CEQAnet Web Portal for distribution.
- The proposed IS/MND was distributed electronically by the State Clearinghouse to interested parties.
- Copies of the proposed IS/MND were made available for public review at the offices of Wagner & Bonsignore, Consulting Civil Engineers in Sacramento.

6 COMPLIANCE WITH FEDERAL AND STATE ENVIRONMENTAL LAWS AND REGULATIONS

6.1 Federal

Clean Air Act. Section 176(c) of this act prohibits federal action or support of activities that do not conform to a State Implementation Plan. The Project is not expected to violate any air quality standard, increase air quality violations in the Project region, exceed the U.S. Environmental Protection Agency's general conformity de minimis threshold, or hinder the attainment of air quality objectives in the local air basin. The Project would have no adverse effect on the future air quality of the Project Area and is compliant with this act.

Clean Water Act (Sections 401 and 404). Section 404 of this act requires that prior to Project implementation, a permit be obtained from USACE for fill of WOUS, including wetlands. In compliance with Section 401 of the act, a water quality certification or a waiver of water quality certification needs to be obtained from the Central Valley Regional Water Quality Control Board. All work for the Project will occur on the landside of the levee; therefore, Section 401 and 404 permits are not required.

Endangered Species Act. The ESA prohibits unauthorized take of species listed or proposed for listing as threatened or endangered. The ESA also ensures that the actions of federal agencies do not jeopardize the continued existence of threatened and endangered species. The mitigation measures incorporated into the Project would ensure compliance with the ESA.

Migratory Bird Treaty Act. Protection of migratory birds, their occupied nests, and their eggs is required by the MBTA (16 United States Code 703 et seq.), Title 50 CFR Part 10. The full list of the species protected under the MBTA appears in Title 50 CFR Section 10.13 and includes federally and state-listed migratory birds as well as other non-listed migratory birds. Mitigation measures incorporated into the Project would ensure compliance with the MBTA.

Rivers and Harbors Act (Sections 10 and 14 [codified in Section 408]). The Rivers and Harbors Act prohibits the unauthorized obstruction of any navigable Water of the United States. All features below mean high water are subject to Section 10 of the Rivers and Harbors Act, which requires authorization for the construction of any structure in or over navigable waters. The San Joaquin is considered a TNW by USACE. Section 14 of the Rivers and Harbors Act (codified in and commonly referred to as Section 408) regulates permanent or temporary modifications to USACE public works projects, including federal levees. The Project would not require a Section 10 permit because it would not obstruct a TNW. Additionally, the Project's levee does not fall under federal jurisdiction and would therefore not require a Section 408 Permission Letter from the USACE.

6.2 State

Assembly Bill 32. AB 32 (i.e., the California Global Warming Solutions Act of 2006) required CARB to develop regulations to address global climate change due to GHG emissions. The bill also required attainment of a statewide GHG emissions limit, equal to the 1990 level, by December 31, 2020. As of 2022, statewide GHG emissions (371.1 MMTCO_{2e}) (CARB 2024c) were below the 2020 GHG emissions limit

(431 MMTCO₂e) (CARB 2026). The bill has since been expanded by subsequent state legislation, including AB 1279 and SB 32.

Assembly Bill 1279. Signed into law in 2022, AB 1279 expanded upon AB 32 by specifying an emissions limit that further requires California to reduce statewide GHG emissions to 85% below the 1990 level by 2045. Emissions associated with Project construction would be temporary and will not inhibit attainment of the statewide GHG emissions limits established by AB 1279. .

Assembly Bill 52. AB 52 provides a method for incorporation of Native American tribal knowledge into the CEQA review process via formal consultation. In compliance with AB 52, tribal members or organizations, provided by the NAHC, were contacted for information on the potential for indigenous resources within or near the Project Area. Results of tribal outreach efforts undertaken in support of the Project gave no indication that tribal cultural resources are present within the Project Area.

Assembly Bill 341. AB 341 established regulations requiring commercial business and multi-family residences to implement recycling programs. AB 341 also updated the statewide goal from AB 939 (see Integrated Waste Management Act below) from a 50% reduction in solid waste disposal to a 75% reduction by 2020. The Project would reuse or recycle materials where feasible and would only generate solid waste over the short-term during Project construction, so it would not impair the attainment of solid waste reduction goals.

Assembly Bill 454. The federal Migratory Bird Treaty Act provides for the protection of migratory birds and authorizes states and territories of the United States to make and enforce laws or regulations that give further protection to migratory birds, their nests, and eggs. Existing federal law, as of January 1, 2026, repeals this provision. This bill would instead extend the California Migratory Bird Protection Act indefinitely in the state of California, ensuring protections for migratory birds. AB 454 ensures that California can continue to enforce the protections offered by the federal Migratory Treaty Act, including prohibition against unauthorized intentional and incidental take of species covered by the federal Migratory Treat Act.

California Endangered Species Act. Generally, CDFW administers the state laws providing protection of fish and wildlife resources, including the California ESA. The California ESA parallels the federal ESA and was written to protect state endangered and threatened species. Mitigation measures incorporated into the Project would ensure compliance with the California ESA.

California Environmental Quality Act. This IS/MND has been prepared to comply with CEQA.

California Fish and Game Code Section 1600 et seq. California Fish and Game Code Section 1600 et seq. gives authority to CDFW to regulate activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. Because the Project would include work on the waterside levee below the hinge point or waterside crest, the District is required to notify CDFW. If CDFW were to determine that the Project would have potential adverse effects on fish and wildlife resources, it would issue a Lake and Streambed Alteration Agreement that would include conditions to protect these resources. The Project would therefore comply with this Fish and Game Code section.

California Fish and Game Code Sections 86, 3503, and 3513. California Fish and Game Code Section 86 defines take as hunting, pursuing, catching, capturing, or killing, or attempting to hunt, pursue, catch, capture, or kill. Under Section 3503, it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided. Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests, and Section 3513 makes it is unlawful to take or possess any migratory non-game bird designated under the MBTA. Mitigation measures incorporated into the Project would ensure compliance with these Fish and Game Code sections.

California Fish and Game Code Sections 3511, 4700, 5050, and 5515. California Fish and Game Code Sections 3511, 4700, 5050, and 5515 designated rare fish and wildlife species as Fully Protected in California. This designation provides additional protection to these species from unauthorized take or possession. Mitigation measures incorporated into the Project would ensure compliance with these Fish and Game Code sections.

Delta Protection Act. The Delta Protection Act was established in recognition of the increasing threats to the resources of the Primary Zone of the Delta from urban and suburban encroachment and their potential to impact agriculture, wildlife habitat, and recreational uses. Pursuant to this act, the Land Use and Resource Management Plan for the Primary Zone of the Delta was completed and adopted by the Delta Protection Commission in 1995 (updated in 2002). The Project would not result in urban or suburban encroachment and would, therefore, be in compliance with this act.

Delta Reform Act. The Delta Reform Act created the Delta Stewardship Council to oversee the management of water and environmental resources in the Delta through the development and implementation of the Delta Plan. If it were to be determined that the Project is a covered action, a consistency determination would be obtained from the Delta Stewardship Council.

General Order 95. General Order 95 (GO 95) is a statewide regulation adopted by the California Public Utilities Commission to ensure the safe design, construction, and maintenance of overhead electric and communication lines. GO 95 establishes minimum clearance requirements, structural standards, and fire risk mitigation measures for overhead infrastructure. Compliance with GO 95 is mandatory for utility providers and infrastructure developers and ensures public safety and reliability of electrical systems. The utility pole relocation will adhere to GO 95 standards.

Integrated Waste Management Act (AB 939). The Integrated Waste Management Act made California cities and counties responsible for enacting plans to divert 25% of solid waste by 1995 and 50% by 2000. The Project would reuse or recycle materials where feasible and would only generate solid waste over the short-term during Project construction so would not impair the attainment of solid waste reduction goals.

Native Plant Protection Act. This act directed CDFW to preserve, protect, and enhance native plants. It gave CDFW the authority to designate native plants as endangered or rare and require that landowners who have been notified of state-listed species on their property, and who wish to destroy those plants and their habitat, to provide CDFW with notice to salvage the plants no less than 10 days before destruction occurs. Many of the species designated under the act were subsumed by the California ESA, but there is a subset of species, subspecies, and varieties of plants that were not and are protected as rare

under the act. Mitigation measures that are incorporated into the Project would ensure compliance with this act.

Porter-Cologne Water Quality Control Act. This act was established to protect water quality and beneficial uses of water in California. It requires that National Pollutant Discharge Elimination System and Waste Discharge Requirement permits for point and nonpoint source discharges, respectively, be obtained from the Central Valley Regional Water Quality Control Board to protect water quality in surface waters, groundwater, and wetlands. If it were to be determined that the Project may impact Waters of the United States, then National Pollutant Discharge Elimination System and Waste Discharge Requirement permits would be secured prior to Project implementation, in compliance with this act.

Senate Bill 32. Signed into law in 2016, SB 32 expanded upon the California Global Warming Solutions Act of 2006 (AB 32) by establishing a statewide GHG emissions reduction target of 40% below 1990 levels by 2030. The emissions reduction target established by SB 32 is codified in the California Health and Safety Code (§ 38566) and provides the foundation for California's post-2020 climate policies. Emissions associated with Project construction will be temporary and will not inhibit attainment of the statewide GHG emissions limits established by these bills.

Surface Mining and Reclamation Act. This act includes policies for the regulation of surface mining operations to balance production of state mineral resources with minimization of adverse environmental impacts associated with these activities. In support of these goals, state lands are classified into mineral resource zones based on known or inferred mineral resources. Sherman Island is located within the Greater Sacramento Area Production-Consumption Region and has been classified by CGS (CGS 2018c, CGS 2022) into Mineral Resource Zone 1 (MRZ-1) for concrete aggregate. This classification, established pursuant to SMARA, indicates that little likelihood exists for the presence of significant concrete aggregate resources. Therefore, the Project would not conflict with SMARA policies regarding the protection of mineral resources.

Warren-Alquist Act. This act established the California Energy Commission, the state's primary energy policy and planning agency. The California Energy Commission works to advance state energy policy, encourage energy efficiency, and develop renewable energy. The Project would only use fossil fuels on a short-term basis during construction activities and would include BMPs for energy conservation (e.g., limiting idling time, properly maintaining equipment).

Williamson Act (also known as the California Land Conservation Act). This act allows for the formation of contracts between local governments and private landowners to restrict use of specific parcels to agricultural or related open space land uses. The Project Area is covered by a Williamson Act contract, and land use within the Project Area would not change over the long-term following Project construction.

7 REFERENCES

- Aagaard, B. T., J. L. Blair, J. Boatwright, S. H. Garcia, R. A. Harris, A. J. Michael, D. P. Schwartz, and J. S. DiLeo. 2016. Earthquake outlook for the San Francisco Bay region 2014–2043 (ver. 1.1, August 2016): U.S. Geological Survey Fact Sheet 2016–3020. Available at: <http://dx.doi.org/10.3133/fs20163020>.
- Atwater, B. F. 1982a. Geologic maps of the Sacramento-San Joaquin Delta, California. Miscellaneous field studies map MF-1401. Rio Vista quadrangle. Scale 1:24,000. Available at: https://ngmdb.usgs.gov/Prodesc/proddesc_7126.htm.
- Atwater, B. F. 1982b. Geologic Maps of the Sacramento-San Joaquin Delta, California. Report to accompany Map MF-1401. Available at: <https://pubs.usgs.gov/mf/1401/report.pdf>.
- Bryant, W. A., and S. E. Cluett, compilers. 2002a. Fault number 53b, Greenville fault zone, Marsh Creek-Greenville section. Quaternary fault and fold database of the United States. Available at: <https://earthquake.usgs.gov/static/lfs/nshm/qfaults/Reports/53b.pdf>.
- Bryant, W. A., and S. E. Cluett, compilers. 2002b. Fault number 37, Green Valley fault, in Quaternary fault and fold database of the United States: Available at: https://earthquake.usgs.gov/cfusion/qfault/show_report_AB_archive.cfm?fault_id=37§ion_id=.
- Bury, R. B., H. H. Welsh Jr., D. J. Germano, and D. T. Ashton. 2012. Western pond turtle: Biology, sampling techniques, inventory and monitoring, conservation, and management. Northwest Fauna 7. The Society for Northwestern Vertebrate Biology.
- Calflora: Information on California plants for education, research and conservation. [web application]. 2026. Berkeley, California: The Calflora Database [a non-profit organization]. Available: <https://www.calflora.org/>.
- CARB. 2024a. Table of Ambient Air Quality Standards. Available at: https://ww2.arb.ca.gov/sites/default/files/2024-08/AAQS%20Table_ADA_FINAL_07222024.pdf.
- CARB. 2024b. Current California GHG Emission Inventory Data. Available at: <https://ww2.arb.ca.gov/ghg-inventory-data>.
- CARB. 2024c. California greenhouse gas emissions for 2000 to 2022. Trends of Emissions and Other Indicators. Sacramento, California. Available at https://ww2.arb.ca.gov/sites/default/files/2024-09/nc-2000_2022_ghg_inventory_trends.pdf.
- CARB. 2025a. State area designations describing summary statistics for pollutants. Website. <https://www.arb.ca.gov/adam/trends/trends1.php> [Accessed July 2025].
- CARB. 2025b. California Ambient Air Quality Standards. Website. <https://ww2.arb.ca.gov/resources/background-air-quality-standards>. [Accessed July 2025].
- CARB. 2026c. GHG 1990 Emissions Level & 2020 Limit. Available at: <https://ww2.arb.ca.gov/ghg-2020-limit> [Accessed March 2026].

CDC (Centers for Disease Control and Prevention). 2015. Noise levels by decibels. Available at: <https://stacks.cdc.gov/view/cdc/78630>.

CDFW (California Department of Fish and Wildlife). 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency, Department of Fish and Game.

CDFW. 2018. Protocols for surveying and evaluating impacts to special status native plant populations and sensitive natural communities. California Natural Resources Agency, Sacramento, California

CDFW. 2025a. Lower Sherman Island Wildlife Area. Description. Available at: <https://wildlife.ca.gov/Lands/Places-to-Visit/Lower-Sherman-Island-WA>.

CDFW. 2025b. Lower Sherman Island Wildlife Area Land Management Plan. Available at: <https://wildlife.ca.gov/Lands/Planning/Lower-Sherman-Island-WA>.

CDFW. 2025c. Special vascular plants, bryophytes, and lichens list. Natural Heritage Division, California Department of Fish and Game, Sacramento, California.

CDFW. 2025d. California sensitive natural communities list. Biogeographic Data Branch, CDFW, Sacramento, California. <https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities>.

CDFW. 2025e. California Natural Diversity Database (CNDDDB), Rarefind version 5. CDFW, Sacramento, California. Available at: <https://www.wildlife.ca.gov/data/cnddb/maps-and-data>.

CDFW. 2025f. CNDDDB QuickView Tool. Biogeographic Information and Observation System (BIOS) (Version 6.24.071). California Department of Fish and Wildlife. Available at: <https://wildlife.ca.gov/Data/BIOS>.

CDFW. 2025g. Vegetation Classification and Mapping Program (VegCAMP) Reports & Protocols. Retrieved from <https://wildlife.ca.gov/Data/VegCAMP>.

California DOC (Department of Conservation). 2023. CA High Frequency Shake Potential. Earthquake Shaking Potential for California. Available at: <https://www.arcgis.com/home/item.html?id=eee5a39483604a4c8861e6e6433e009c>.

California DOC (Department of Conservation). 2024. EQ Zapp: California earthquake hazards zone application. Available at: <https://www.conservation.ca.gov/cgs/geohazards/eq-zapp>.

California DOC. 2025a. Important farmland categories. Available at: <https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx>.

California DOC. 2025b. California important farmland finder. California Department of Conservation, Division of Land Resources Protection, Farmland Mapping and Monitoring Program. Available at: <https://maps.conservation.ca.gov/DLRP/CIFF/>.

California DOC. 2025c. California tsunami maps. Available at: <https://www.conservation.ca.gov/cgs/tsunami/maps>.

CDTSC (California Department of Toxic Substances Control). 2025. EnviroStor online map viewer database. Website. <http://www.envirostor.dtsc.ca.gov/> [Accessed August 2025].

California Emissions Estimator Model (CalEEMod), Version 2022.1.1.33. 2025. Available at: <https://www.caleemod.com/model>.

CalEPA (California Environmental Protection Agency). 2025. Climate dashboard. Website. <https://calepa.ca.gov/climate-dashboard/> [Accessed August 2025].

CEC (California Energy Commission). 2025. California Energy Commission: about. Website. <https://www.energy.ca.gov/about> [Accessed August 2025].

CalFire (California Department of Forestry and Fire Protection). 2025. California Fire Hazard Severity Zones (FHSZ). Available at: <https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones>.

CGS (California Geological Survey). 2018a. Special Publication 42. Earthquake fault zones: A guide for government agencies, property owners/developers, and geoscience practitioners for assessing fault rupture hazards in California. Available at: https://www.conservation.ca.gov/cgs/documents/publications/special-publications/SP_042-a11y.pdf.

CGS (California Geological Survey). 2018b. Seismic Hazard Zone Report for the Bouldin Island 7.5-minute Quadrangle, Contra Costa County, California. Available at: https://gmw.conservation.ca.gov/SHP/EZRIM/Reports/SHZR/SHZR_122_Bouldin_Island.pdf.

CGS (California Geological Survey). 2018c. Mineral Land Classification Map of Concrete Aggregate in the Greater Sacramento Area Production-Consumption Region. Available at: https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Reports/SR_245-MLC-SacramentoPCR-2018-Plate01-a11y.pdf.

CGS (California Geological Survey). 2022. Publications of the SMARA Mineral Land Classification Project dealing with mineral resources in California. Mineral Resources Program, Sacramento, California. Available at: <https://www.conservation.ca.gov/cgs/Documents/Publications/SMARA-Publications-California-a11y.pdf>.

CGS (California Geological Survey). 2024. MapService of the Alquist-Priolo Fault Zones defined under the Alquist-Priolo Earthquake Fault Zoning Act. Available at: <https://maps-cnra-cadoc.opendata.arcgis.com/datasets/cadoc::cgs-seismic-hazards-program-alquist-priolo-fault-hazard-zones/explore?location=37.108749%2C-119.787889%2C6.60>.

CNPS (California Native Plant Society). 2025a. Inventory of rare and endangered plants of California. Online database. D. P. Tibor, convening editor. Rare Plant Scientific Advisory Committee, California Native Plant Society, Sacramento, California.

CNPS. 2025b. A Manual of California Vegetation. Online edition. California Native Plant Society, Sacramento, California. <http://www.cnps.org/cnps/vegetation/>.

California OES (Office of Emergency Services). 2023. Earthquake Shaking Potential. Available at: <https://calema.maps.arcgis.com/home/item.html?id=7a97e47b2f4345d3b1118cdefc96d0aa#overview>.

Central Valley RWQCB (Regional Water Quality Control Board). 2019. The Water Quality Control Plan (Basin Plan) for the Central Valley Region. Fifth edition.

Conservation Biology Institute and USFS (U.S. Department of Agriculture Forest Service). 2025. Bat Acoustic Monitoring Visualization Tool. <https://visualize.batamp.databasin.org/> [Accessed January 2025].

Consortium of California Herbaria [CCH]. 2026. Specimen data from CCH contributing herbaria. Retrieved from Calflora: <https://www.calflora.org/>.

DPC (Delta Protection Commission). 2010. Land Use and Resource Management Plan for the Primary Zone of the Delta. Available at: https://delta.ca.gov/wp-content/uploads/2019/12/Land-Use-and-Resource-Management-Plan-2.25.10_-m508.pdf.

DSC (Delta Stewardship Council). 2023. Sherman Island – Information Sheet. Available at: <https://deltacouncil.ca.gov/pdf/council-meeting/meeting-materials/2023-03-23-item-9-attachment-1-information-sheet.pdf>.

DSC (Delta Stewardship Council). 2024. Delta Plan Five-Year Review 2024. Available at: <https://deltacouncil.ca.gov/pdf/delta-plan/2024-09-26-2024-five-year-review.pdf>.

Drexler, J. Z, C. S. de Fontaine, and T. A. Brown. 2009. Peat accretion histories during the past 6000 years in marshes of the Sacramento-San Joaquin Delta, California, USA. *Estuaries and Coasts* 32: 871–892.

DWR (California Department of Water Resources) and Ducks Unlimited, Inc. 2020. Sherman Island Wetland Restoration Adaptive Management Plan.

eBird. 2025. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org> [Accessed January 2025].

Eileen Barrow & Associates. 2024. Cultural Resources Study for the San Joaquin Multi-Benefit Project Sherman Island, Sacramento County, California.

EPA (U.S. Environmental Protection Agency). 2012. State and Local Climate and Energy Program Glossary of Terms. Available at: https://sor.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do;jsessionid=rbTSMdJ5d0BBndmDmCLxj1tGXibg-eaSAkx_sVpRngs-bL-Dm1lO!28316133?details=&vocabName=State%2FLocal%20Climate%20and%20Energy.

EPA (U.S. Environmental Protection Agency). 2025a. Determination of Attainment by the Attainment Date; 2008 8-Hour Ozone Standards; California; Sacramento Metro Area. Federal Register. Available at: <https://www.federalregister.gov/documents/2025/08/21/2025-15990/determination-of-attainment-by-the-attainment-date-2008-8-hour-ozone-standards-california-sacramento>.

EPA. 2025b. Nonattainment Area Redesignation and Clean Data Policy (CDP). Available at: https://19january2021snapshot.epa.gov/air-quality-implementation-plans/nonattainment-area-redesignation-and-clean-data-policy-cdp_.html?

EPA. 2025c. De Minimis Tables. Available at: <https://www.epa.gov/general-conformity/de-minimis-tables>.

FEMA (Federal Emergency Management Agency). 2025. FEMA Flood Map Service Center. Available at: <https://msc.fema.gov/portal/home>.

FTA (Federal Transit Administration). 2018. Transit noise and vibration impact assessment manual. FTA Report No. 0123. Prepared by John A. Volpe National Transportation Systems Center. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.

Hopf, Frank. 2011. Levee failures in the Sacramento-San Joaquin River Delta: Characteristics and Perspectives. Available at: <https://cawaterlibrary.net/wp-content/uploads/2023/10/HOPF-DISSERTATION.pdf>.

iNaturalist. 2025. Available from <https://www.inaturalist.org> [Accessed January 2025].

Kline, V., and Wooley, D. 2025. Reviving A Green-Marine Trade Corridor on the Sacramento-San Joaquin River Delta: Container Barge Service Linking Ports of Oakland, Stockton & West Sacramento. Available at: https://gspp.berkeley.edu/archived/files/page/M-580_Barge_Service_Revival.docx.pdf.

Levy, Richard. 1978. Eastern Miwok. Pages 398–413 in R. F. Heizer, editor. California. Smithsonian Institution, Washington, D.C.

NCDC (National Climatic Data Center). 2025. Climate data. Website. <http://www.ncdc.noaa.gov/cdo-web/datatools/>.

OEHHA (California Office of Environmental Health Hazard Assessment). 2025a. CalEnviroScreen 4.0 Indicator Maps. Pesticide Use Indicator Results. Available at: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators?views=Pesticide-Use#data_s=id%3AdataSource_31-17c3d04aacd-layer-3%3A203%2Cid%3AdataSource_41-17c4bf84f3f-layer-2~dataSource_27-17c3d786fe4-layer-2~dataSource_40-17c3dec6ede-layer-2%3A1951.

OEHHA (California Office of Environmental Health Hazard Assessment). 2025b. CalEnviroScreen 4.0 Indicator Maps. Hazardous Waste Results. Available at: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators?views=Hazardous-Waste#data_s=id%3AdataSource_31-17c3d04aacd-layer-3%3A203%2Cid%3AdataSource_41-17c4bf84f3f-layer-2~dataSource_30-17c38256c16-layer-1%3A1951%2Cid%3AdataSource_27-17c3d786fe4-layer-2%3A5640.

OEHHA (California Office of Environmental Health Hazard Assessment). 2025c. CalEnviroScreen 4.0 Indicator Maps. Housing Burden Indicator Results. Available at: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators?views=Housing-Burden#data_s=id%3AdataSource_43-17c3e04e8b7-layer-5%3A1951.

OEHHA (California Office of Environmental Health Hazard Assessment). 2025d. CalEnviroScreen 4.0 Indicator Maps. Traffic Impacts Results. Available at: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators?views=Traffic-Impacts#data_s=id%3AdataSource_31-17c3d04aacd-layer-3%3A203%2Cid%3AdataSource_41-17c4bf84f3f-layer-2%3A1951%2Cid%3AdataSource_27-17c3d786fe4-layer-2%3A5640.

ODFW (Oregon Department of Fish and Wildlife). 2020. Visual Encounter Survey Protocol for Western Pond Turtles. Oregon Native Turtle Working Group. Available at: https://www.dfw.state.or.us/conservationstrategy/docs/Appendix_N_VES_Protocol_April_2020.pdf.

PRISM Climate Group. 2025. Time series values for individual locations. Website. <http://prism.oregonstate.edu/explorer/> [Accessed April 2025]. Prepared by PRISM Climate Group, Oregon State University, Corvallis, Oregon.

Reclamation District No. 341. 2025. Sherman Island, Rio Vista, CA. Available at: <https://rd341.specialdistrict.org/sherman-island-rio-vista-ca>.

Sacramento County. 2011. General Plan. Available at: <https://planning.saccounty.gov/PlansandProjectsIn-Progress/pages/generalplan.aspx>.

Sacramento County. 2017a. Sacramento County General Plan. Circulation Element. Available at: <https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/6.%20Circulation%20Element%20Amended%2012-13-17.pdf>.

Sacramento County. 2017b. Sacramento County General Plan. Open Space Element. Available at: <https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/Open%20Space%20Element%20-%20Amended%2009-26-17.pdf>.

Sacramento County. 2017c. Sacramento County General Plan. Conservation Element. Available at: <https://planning.saccounty.gov/LandUseRegulationDocuments/Documents/General-Plan/Conservation%20Element%20-%20Amended%2009-26-17.pdf>.

Sacramento County. 2023. Sacramento County 2023 Crop and Livestock Report. Available at: <https://agcomm.saccounty.gov/Documents/CropandLivestockReports/2023%20Report.pdf>.

Sacramento County. 2024. County of Sacramento Climate Action Plan. Available at: <https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Climate%20Action%20Plan/SEIR%20Documents/2024%20Final%20CAP.pdf>.

Sacramento County. 2025a. Zoning. Sacramento County Open Data. Available at: <https://data.saccounty.gov/datasets/sacramentocounty::zoning/about>.

Sacramento County. 2025b. Regional Parks – Sherman Island. Available at: <https://regionalparks.saccounty.gov/Parks/SacramentoRiverandDelta/Pages/ShermanIsland.aspx>.

Sacramento County. 2025c. Sherman Island Fishing Access. Available at: https://regionalparks.saccounty.gov/Parks/Documents/Sherman_Island_Map.pdf.

Sacramento County. 2025d. Waste Management and Recycling: Construction and Demolition Debris Recycling Program. Available at: <https://wmr.saccounty.gov/Pages/Construction-Demolition-Debris.aspx?>.

SJCOG (San Joaquin Council of Governments). 2018. Draft Programmatic Environmental Impact Report: Aesthetics. Available at: <https://www.sjcog.org/DocumentCenter/View/3869/2018-RTP-SCS-PDEIR-41-Aesthetics-and-Visual-Resources?bidId=>.

- SMAQMD (Sacramento Metropolitan Air Quality Management District). 2009. SMAQMD's Recommended Odor Screening Distances. Available at: <https://www.airquality.org/LandUseTransportation/Documents/Ch7ScreeningDistancesFINAL12-2009.pdf>.
- SMAQMD. 2016. Sacramento Metropolitan Air Quality Management District CEQA Guide. Chapter 7: Odors. Available at: <https://www.airquality.org/LandUseTransportation/Documents/Ch7Odors%20FINAL6-2016.pdf>.
- SMAQMD. 2019. Basic Construction Emission Control Practices (Best Management Practices). Available at: <https://www.airquality.org/LandUseTransportation/Documents/Ch3BasicEmissionControlPracticesBMPSFinal7-2019.pdf>.
- SMAQMD. 2020a. CEQA Guide. Chapter 3: Construction-Generated Criteria Air Pollutant and Precursor Emissions. Available at: <https://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools>.
- SMAQMD. 2020b. SMAQMD Thresholds of Significance Table. Available at: <https://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf>.
- SMAQMD. 2020c. Greenhouse Gas Thresholds for Sacramento County. Available at: <https://www.airquality.org/LandUseTransportation/Documents/SMAQMDGHGThresholds2020-03-04v2.pdf>.
- SMAQMD. 2024. Air Quality Pollutants and Standards. Available at: <https://www.airquality.org/Air-Quality-Health/Air-Quality-Pollutants-and-Standards>.
- Shannon & Wilson. 2025. Geotechnical Investigation Report San Joaquin River Multi-Benefit Project, Station 330+00 – 368+00 Sherman Island, California. Shannon & Wilson No. 113936.
- Solano Collaborative (City of Vacaville Groundwater Sustainability Agency [GSA], Northern Delta GSA, Sacramento County GSA, Solano GSA, Solano Irrigation District GSA). 2021. Solano Subbasin Groundwater Sustainability Plan.
- Stillwater Sciences. 2026. Preliminary Aquatic Resources Delineation for the San Joaquin River Multi-Benefit Project on Sherman Island, Sacramento County, California. Final Report. Prepared by Stillwater Sciences, Berkeley, California, for Wagner & Bonsignore, Sacramento, California.
- Swainson's Hawk Technical Advisory Committee. 2000. Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. Available at: <https://www.wildlife.ca.gov/Conservation/SurveyProtocols#377281284-birds>.
- SWRCB (State Water Resources Control Board). 2024. 2024 California Integrated Report Map. Available at: <https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=f0e4ac76fd0e4a53bebead89339ef3c9>.

Trinity Consultants. 2025. Sacramento Metro Area Attainment Designation for 2008 Ozone NAAQS. Available at: <https://www.trinityconsultants.com/news/sacramento-metro-area-attainment-designation-for-2008-ozone-naaqs>.

UC Davis and NRCS. 2025. SoilWeb: An Online Soil Survey Browser. Available at: <https://casoilresource.lawr.ucdavis.edu/gmap/>.

Unruh, J. R., and C. S. Hitchcock. 2009. Characterization of potential seismic sources in the Sacramento-San Joaquin Delta, California. Prepared by Fugro William Lettis & Associates, Inc. Walnut Creek, California for U.S. Geological Survey, National Earthquake Hazards Reduction Program. Available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/dd_jardins/DDJ-142_Unruh.pdf.

USACE. 2025. National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams. Prepared by USACE, Washington, D.C.

USBR (United States Bureau of Reclamation). 2025. Sherman Island Reclamation District No. 341. Website. <https://rd341.specialdistrict.org/sherman-island-rio-vista-ca> [Accessed June 2025]. Prepared by Sherman Island, Rio Vista, California.

USDA NRCS (U.S. Department of Agriculture Natural Resources Conservation Service). 2025a. Custom soil resource report for Sacramento County, California; Wetland Delineation for the San Joaquin River Multi-Benefit Project on Sherman Island. Available at: https://websoilsurvey.sc.egov.usda.gov/WssProduct/uzg2fysxmui3p04bpckipl4y/GN_00000/20250908_15341703799_16_Soil_Report.pdf.

USDA NRCS. 2025b. National list of hydric soils. Available at: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>.

USEIA (U.S. Energy Information Administration). 2025. Rankings: Total Energy Consumed per Capita, 2021 (million Btu). Available at: <https://www.eia.gov/state/rankings/?sid=US>.

USFWS (U.S. Fish and Wildlife Service). 1997. Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California.

USFWS. 2000. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants.

USFWS. 2022. Programmatic biological and conference opinion California statewide programmatic restoration effort. USFWS, Region 8, Sacramento, California.

USFWS. 2025. Information for Planning and Consultation (IPaC): online project planning tool. <https://ecos.fws.gov/ipac/> [Accessed January 2025].

USGS (U.S. Geological Survey). 2002. Map - Geologic map and map database of northeastern San Francisco Bay Region, California. Available at: <https://geo-nstdi.er.usgs.gov/metadata/map-mf/2403/metadata.html>.

USGS. 2025. Hydrologic units from the watershed boundary dataset. Available at: <https://gispublic.waterboards.ca.gov/portal/home/item.html?id=b6c1bab9acc148e7ac726e33c43402ee>.

Wagner & Bonsignore. 2021. Reclamation District No. 341 Sherman Island Five-Year Plan. Available at: <https://rd341.specialdistrict.org/files/36c2757fc/RD+341+Final+Five-Year+Plan.pdf>.

Whipple, A. A., R. M. Grossinger, D. Rankin, B. Stanford, and R. A. Askevold. 2012. Sacramento-San Joaquin Delta historical ecology investigation: exploring pattern and process. A report of SFEI-ASC's Historical Ecology Program, Publication #672. Prepared by San Francisco Estuary Institute-Aquatic Science Center, Richmond, California for California Department of Fish and Game and Ecosystem Restoration Program. Available at: <http://www.sfei.org/DeltaHEStudy>.

Xerces Society. 2025. Data accessed from Bumble Bee Watch, a collaborative website to track and conserve North America's bumble bees. Available at <https://www.bumblebeewatch.org/>.

APPENDIX A

Project Design Sheets

RECLAMATION DISTRICT NO. 341

SHERMAN ISLAND

SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT

STA 330+00 - STA 368+00

SH-24-1.0-SP

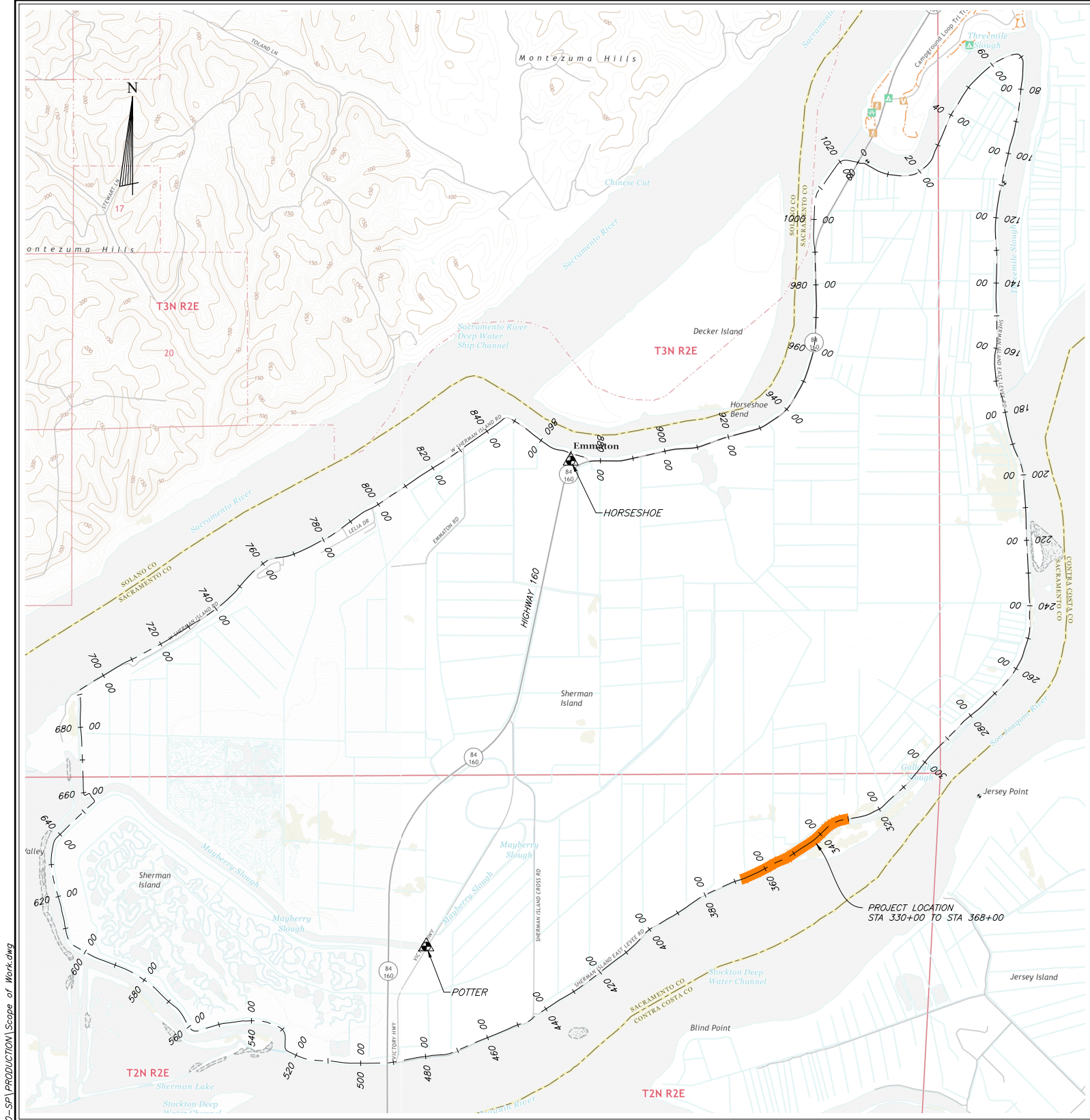
SCOPE OF WORK

Sacramento County

California

WAGNER & BONSIGNORE • CONSULTING CIVIL ENGINEERS • A CORPORATION

2379 GATEWAY OAKS DRIVE, SUITE 100 • SACRAMENTO, CALIFORNIA



G:\Drawings\Reclamation District No 341\SH-24-1.0-SP\PRODUCTION\Scope of Work.dwg
6/29/2026 1:18 PM
Plot Date

BASE MAP PER U.S. GEOLOGICAL SURVEY 7.5 MINUTE QUADRANGLE FOR ANTIOCH NORTH AND JERSEY ISLAND, 2021, WITH PROCESSING FOR ELECTRONIC MAPPING PURPOSES PROVIDED BY CHARTIFF, 2023.



SHEET INDEX

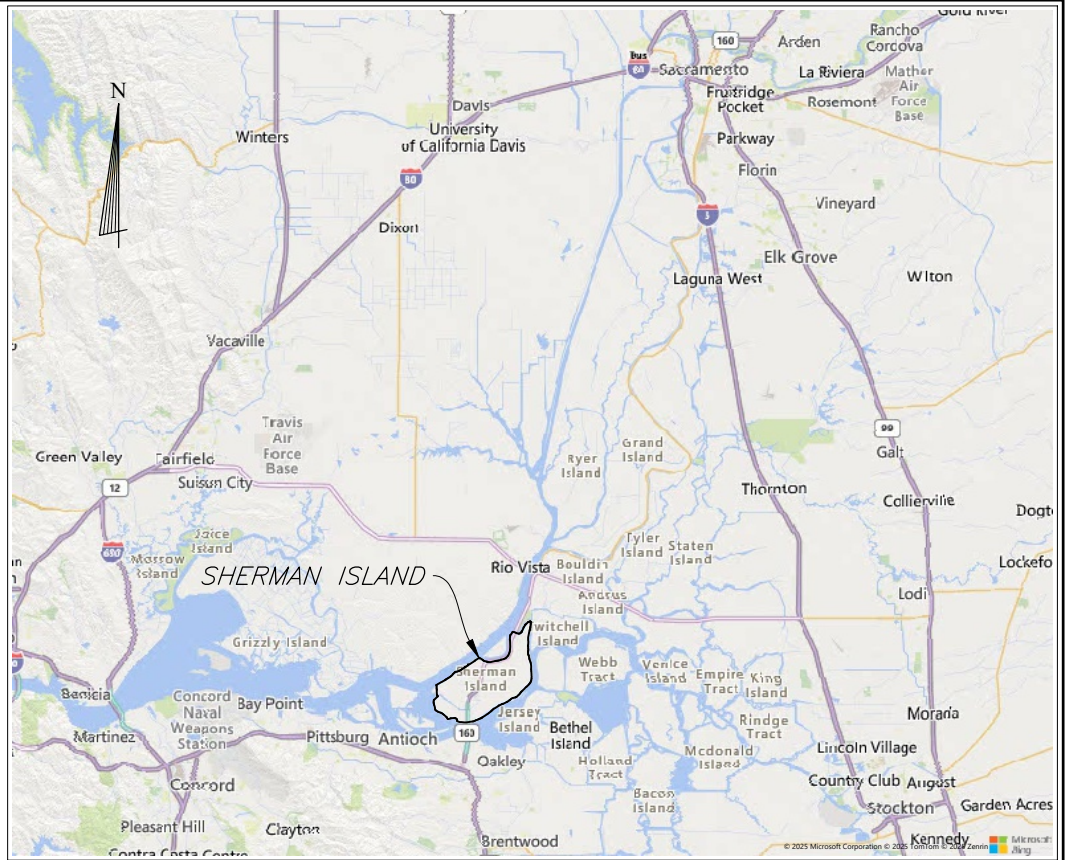
TITLE	SHEET
SHEET INDEX, PROJECT CONTROL, VICINITY MAP AND LOCATION MAP	1
PLAN AND PROFILE	
SHEET INDEX	2
STA 330+00 TO STA 338+00	3
STA 338+00 TO STA 349+00	4
STA 349+00 TO STA 360+00	5
STA 360+00 TO STA 368+00	6
SECTION AND DETAILS	
TYPICAL SECTION AND DETAILS	7

ABBREVIATIONS

ASPH	ASPHALT
AB	AGGREGATE BASE
APN	ASSESSOR'S PARCEL NUMBER
BFE	BASE FLOOD ELEVATION
BNDRY	BOUNDARY
C	CENTERLINE
CONC	CONCRETE
DWR	DEPARTMENT OF WATER RESOURCES
Ø	DIAMETER
E	EASTING
(E)	EXISTING
EG	EXISTING GRADE
ELEV	ELEVATION
FT	FEET
FG	FINISHED GRADE
GB	GRADE BREAK
H	HORIZONTAL
L/S	LANDSIDE
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW
NGS	NATIONAL GEODETIC SURVEY
NO.	NUMBER
N	NORTHING
NTS	NOT TO SCALE
PG&E	PACIFIC GAS AND ELECTRIC COMPANY
PID	PERSONAL IDENTIFIERS
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PVI	POINT OF INTERSECTION
POD	POLYVINYL CHLORIDE
REQ'D	REQUIRED
RF	RIPARIAN FOREST
RSP	ROCK SLOPE PROTECTION
S	SLOPE
SS	SCRUB SHRUB
SF	SQUARE FEET
SPECS	SPECIFICATIONS
STA	STATION
TOC	TOP OF CONCRETE
TOP	TOP OF PIPE
TYP	TYPICAL
V/S	VERTICAL
W/S	WATERSIDE
W/	WITH

LEGEND

---	℄ OF (E) LEVEE
---	℄ OF (N) LEVEE
---	HINGE POINT
---	PROPERTY LINE
---	POWER LINE
---	GRADE BREAK



VICINITY MAP

PROJECT CONTROL

STATION	PID	NORTHING	EASTING	ELEV
HORSESHOE	AE9877	1,791,135.58	6,638,768.70	-1.70
POTTER	AE9869	1,766,307.73	6,634,360.25	-6.80

BASIS OF BEARINGS AND COORDINATES

THE BASIS OF BEARINGS FOR THIS PROJECT IS THE CALIFORNIA COORDINATE SYSTEM, ZONE 2, NAD 83 (EPOCH 2007.00) AS DETERMINED LOCALLY BY A LINE BETWEEN STATION "POTTER" (PID AE9869) AND STATION "HORSESHOE" (PID AE9877).

BASIS OF ELEV

THIS PROJECT IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). STATIONS AND RESPECTIVE ELEV CONstrained TO ARE:

POTTER (PID AE9869, ELEV -6.80)



Know what's below.
Call 811 before you dig.

PRELIMINARY
NOT FOR CONSTRUCTION

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

2379 Gateway Oaks Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
www.wbecorp.com



RECLAMATION DISTRICT NO. 341

SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT

LOCATION MAP, VICINITY MAP,
SHEET INDEX, AND PROJECT CONTROL

SHEET
1
OF
7
SHEETS

G:\Drawings\Reclamation District No 341\SH-24-1.0-SP\PRODUCTION\Scope of Work.dwg
6/29/2026 1:19 PM



REVISIONS			
REF	DESCRIPTION	APVD	DATE

PRELIMINARY
NOT FOR CONSTRUCTION

Designed By
M. BERBER

Drawn By
S. SOLIVA

Checked By
—

Approved By
—

Date
JUNE 2026

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

2379 Gateway Oaks Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
www.wbecorp.com

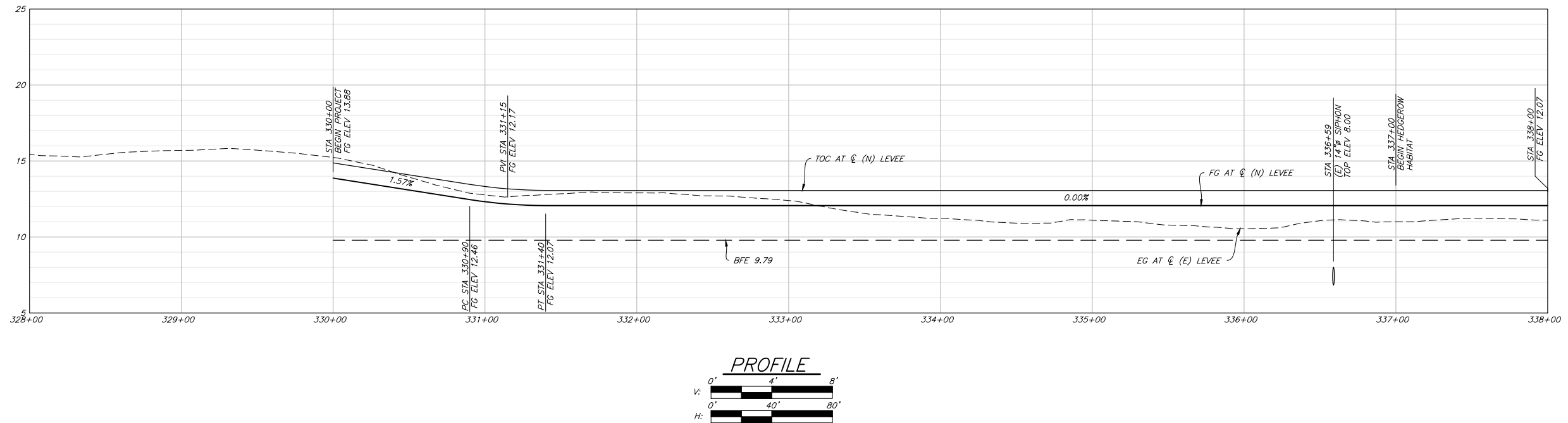
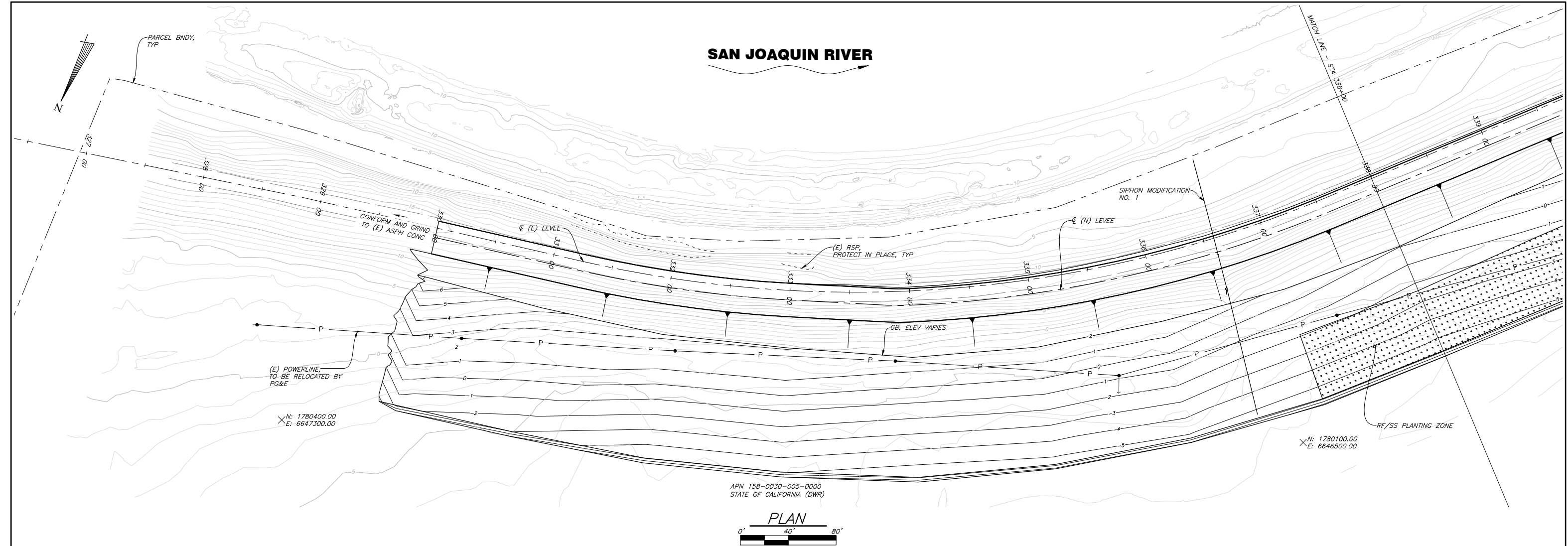
REGISTERED PROFESSIONAL ENGINEER
ROBERT C. WAGNER
No. 52903
CIVIL
STATE OF CALIFORNIA

RECLAMATION DISTRICT NO. 341

SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT

PLAN AND PROFILE
SHEET INDEX

Q:\Drawings\Reclamation District No 341\SH-24-1.0-SP\PRODUCTION\Scope of Work.dwg
6/29/2026
Plot Date



- NOTES**
- L/S BASE TOPOGRAPHY PER AMERICAN AERIAL MAPPING, FLOWN AUGUST 31, 2024.
 - W/S BATHYMETRY PER ETRAC, INC., DATED OCTOBER 2019.

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

**PRELIMINARY
NOT FOR CONSTRUCTION**

Designed By	M. BERBER
Drawn By	S. SOLIVA
Checked By	—
Approved By	—
Date	JUNE 2026

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

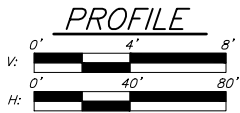
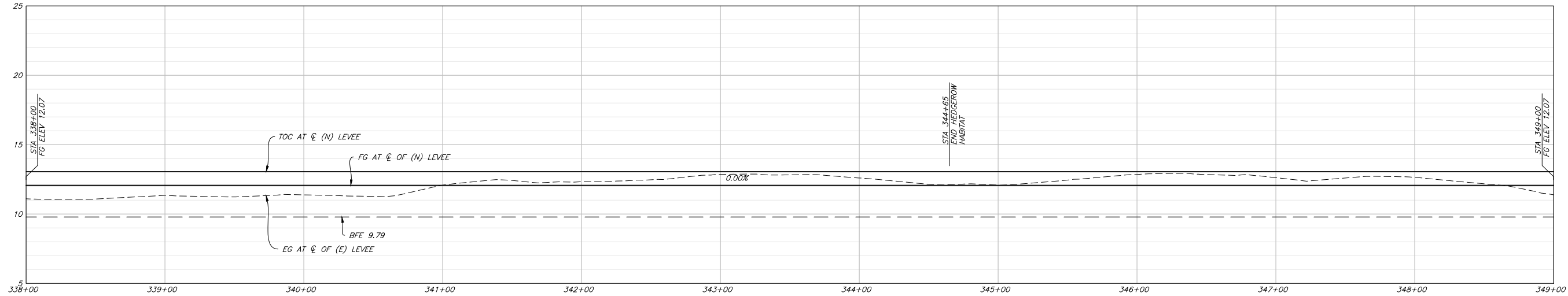
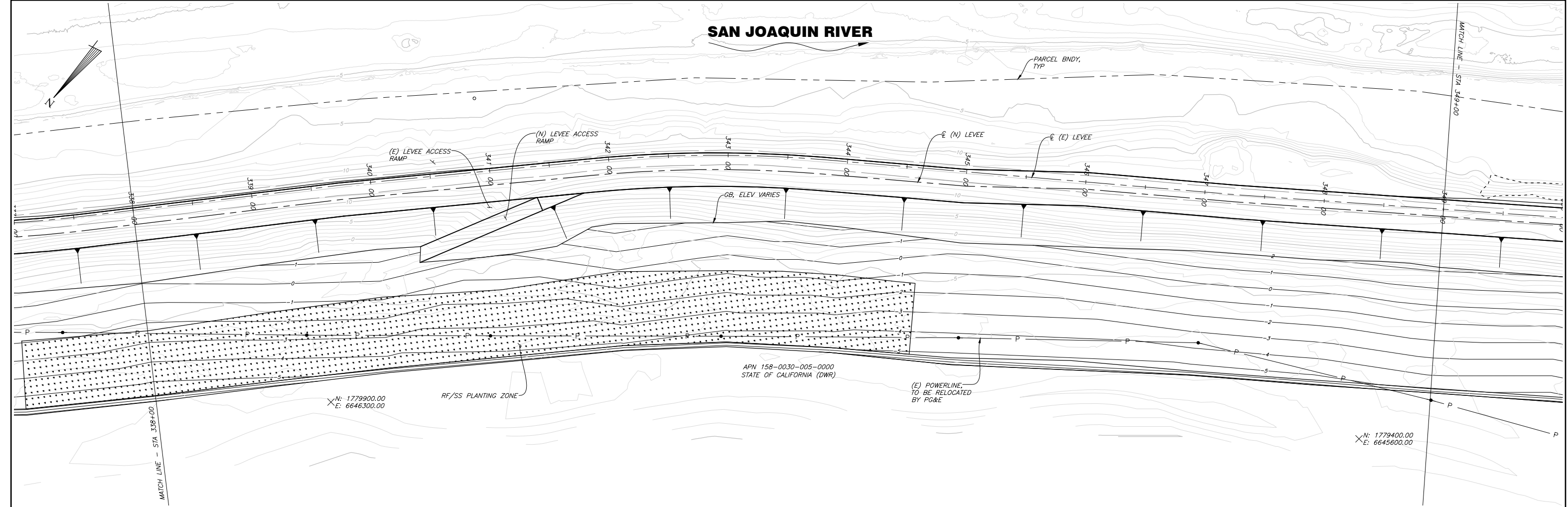
2379 Gateway Oaks Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
www.wbecorp.com



RECLAMATION DISTRICT NO. 341
SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT

**PLAN AND PROFILE
STA 330+00 TO STA 338+00**

SHEET
3
OF
7
SHEETS



Q:\Drawings\Reclamation District No 341\SH-24-1.0-SP\PRODUCTION\Scope of Work.dwg
6/29/2026

- NOTES**
- L/S BASE TOPOGRAPHY PER AMERICAN AERIAL MAPPING, FLOWN AUGUST 31, 2024.
 - W/S BATHYMETRY PER ETRAC, INC., DATED OCTOBER 2019.

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

PRELIMINARY
NOT FOR CONSTRUCTION

Designed By	M. BERBER
Drawn By	S. SOLIVA
Checked By	—
Approved By	—
Date	JUNE 2026

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

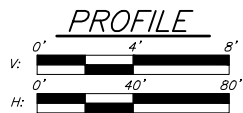
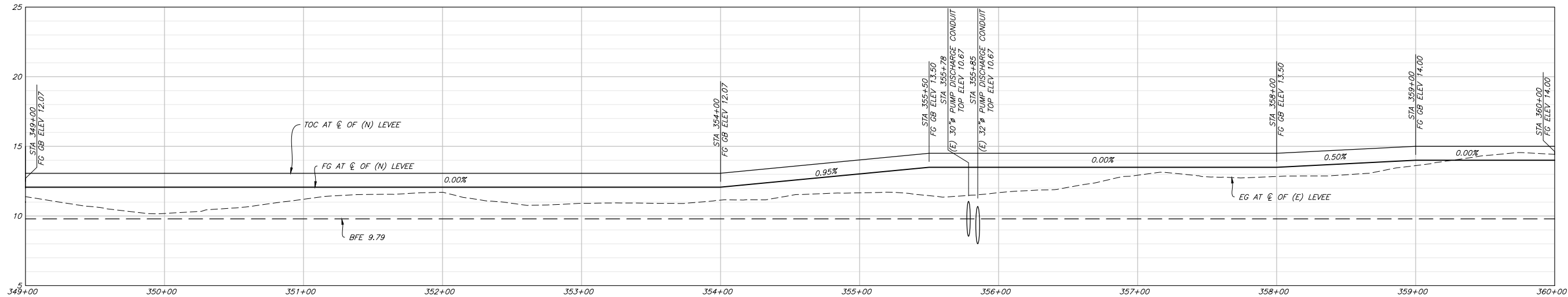
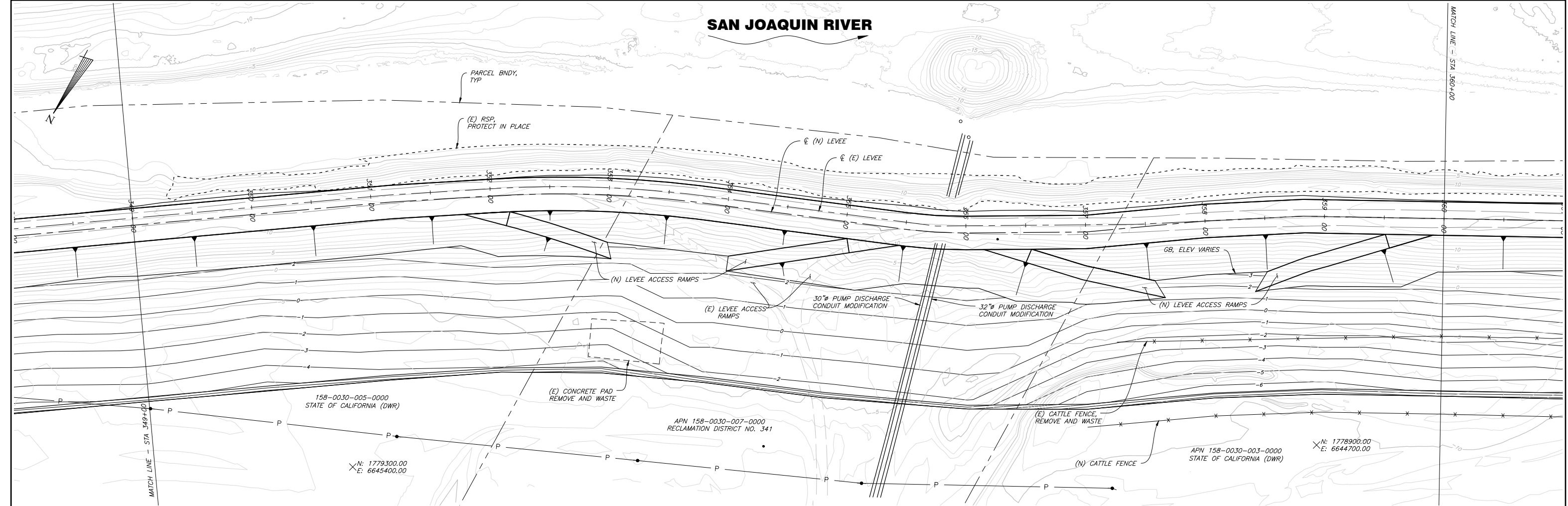
2379 Gateway Oaks Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
www.wbecorp.com



RECLAMATION DISTRICT NO. 341
SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT

PLAN AND PROFILE
STA 338+00 TO STA 349+00

SHEET
4
OF
7
SHEETS



Q:\Drawings\Reclamation District No 341\SH-24-1.0-SP\PRODUCTION\Scope of Work.dwg
6/29/2026

- NOTES**
1. L/S BASE TOPOGRAPHY PER AMERICAN AERIAL MAPPING, FLOWN AUGUST 31, 2024.
 2. W/S BATHYMETRY PER ETRAC, INC., DATED OCTOBER 2019.

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

**PRELIMINARY
NOT FOR CONSTRUCTION**

Designed By	M. BERBER
Drawn By	S. SOLIVA
Checked By	-
Approved By	-
Date	JUNE 2026

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

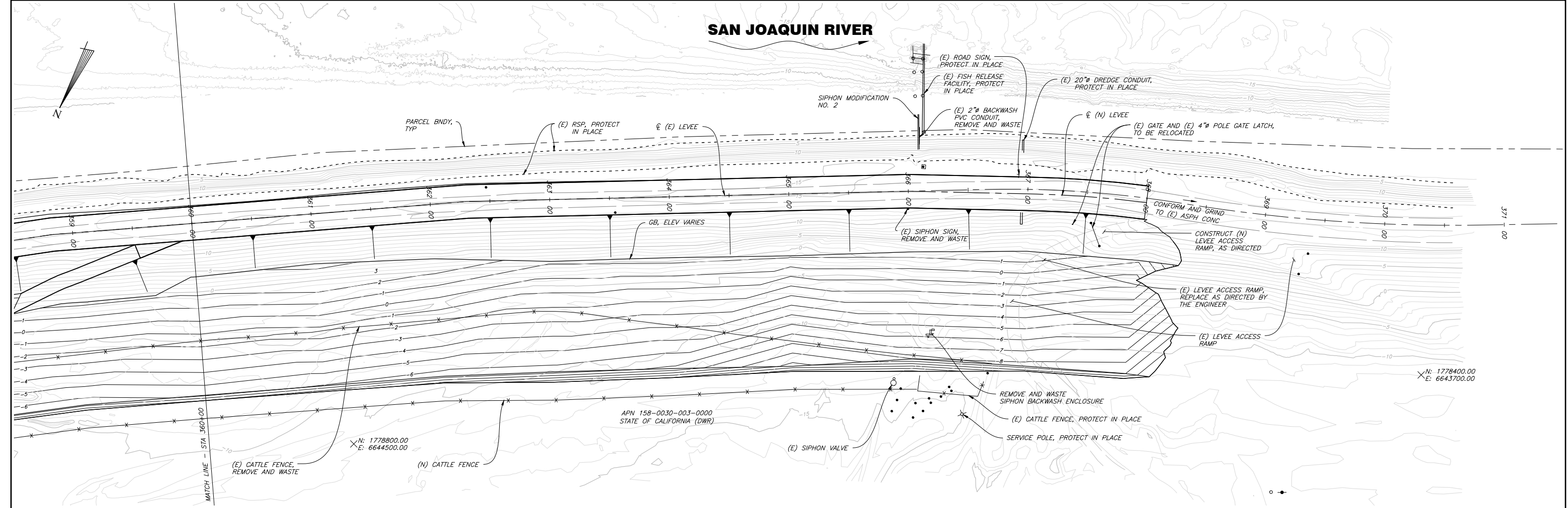
2379 Gateway Oaks Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
www.wbecorp.com



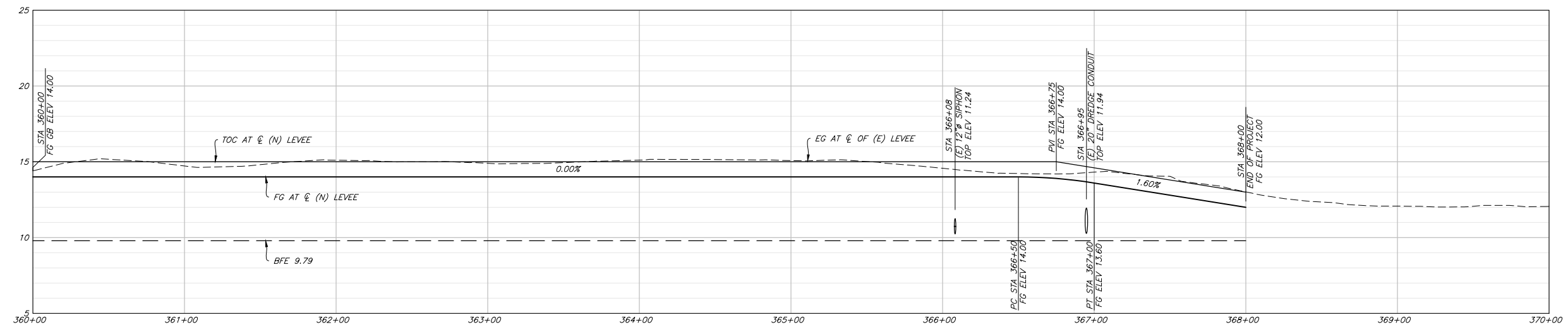
RECLAMATION DISTRICT NO. 341
SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT

**PLAN AND PROFILE
STA 349+00 TO STA 360+00**

SHEET
5
OF
7
SHEETS



PLAN
0' 40' 80'



PROFILE
V: 0' 4' 8'
H: 0' 40' 80'

G:\Drawings\Reclamation District No 341\SH-24-1.0-SP\PRODUCTION\Scope of Work.dwg
6/29/2026

- NOTES
1. L/S BASE TOPOGRAPHY PER AMERICAN AERIAL MAPPING, FLOWN AUGUST 31, 2024.
 2. W/S BATHYMETRY PER ETRAC, INC., DATED OCTOBER 2019.

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

PRELIMINARY
NOT FOR CONSTRUCTION

Designed By	M. BERBER
Drawn By	S. SOLIVA
Checked By	-
Approved By	-
Date	JUNE 2026

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

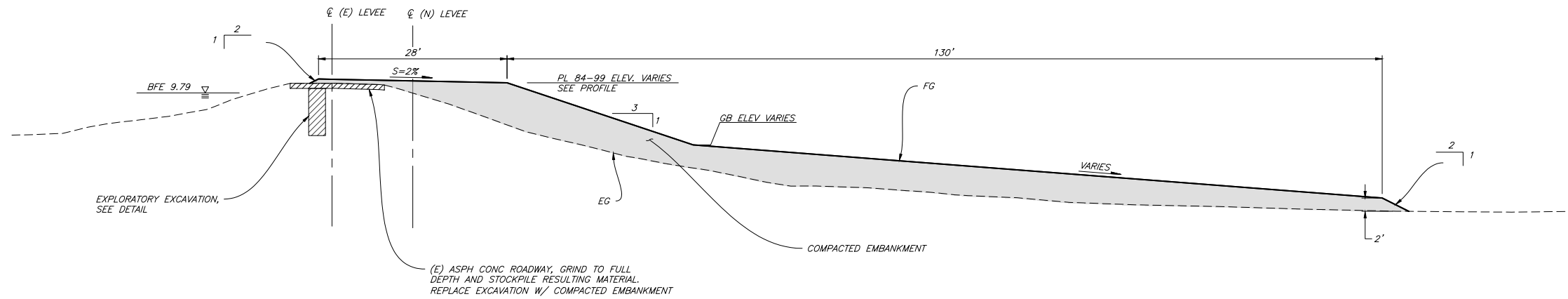
2379 Gateway Oaks Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
www.wbecorp.com



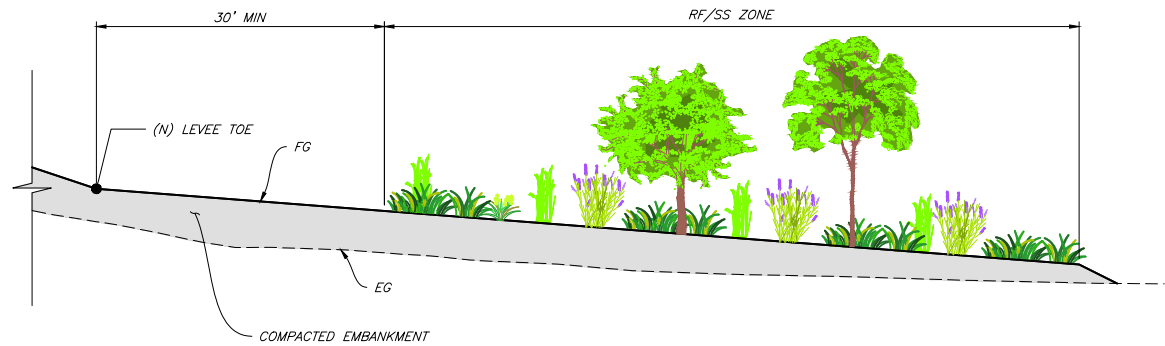
RECLAMATION DISTRICT NO. 341
SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT
PLAN AND PROFILE STA 360+00 TO STA 368+00

SHEET
6
OF
7
SHEETS

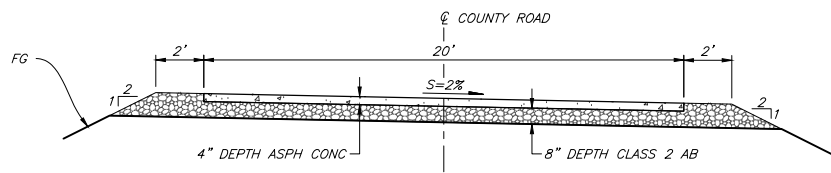
C:\Drawings\Reclamation District No 341\SH-24-1.0-SP\PRODUCTION\Scope of Work.dwg
6/29/2026 1:19 PM



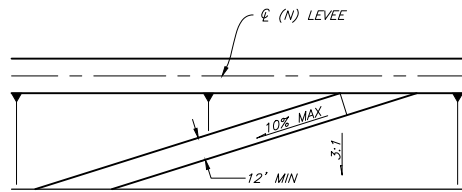
TYPICAL LEVEE EMBANKMENT SECTION



HEDGEROW HABITAT DETAIL

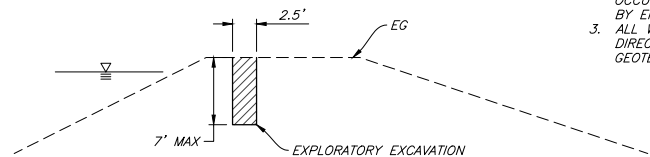


COUNTY ROAD DETAIL



RAMP DETAIL

RAMP SCHEDULE
STA 341+30
STA 352+00
STA 355+00
STA 356+50
STA 359+50
STA 368+00



EXPLORATORY EXCAVATION DETAIL

- NOTES
- (E) ASPH CONC AND AB SHALL BE REMOVED BEFORE TRENCH EXCAVATION.
 - EXCAVATE WITHIN W/S TRAFFIC LANE WHEN POSSIBLE. EXCAVATION MAY OCCUR ON THE L/S IF APPROVED BY ENGINEER.
 - ALL WORK TO PERFORMED UNDER DIRECT SUPERVISION OF GEOTECHNICAL ENGINEER.

REVISIONS			
REF	DESCRIPTION	APVD	DATE

PRELIMINARY
NOT FOR CONSTRUCTION

Designed By	M. BERBER
Drawn By	S. SOLIVA
Checked By	-
Approved By	-
Date	JUNE 2026

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

2379 Gateway Oaks Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
www.wbecorp.com



RECLAMATION DISTRICT NO. 341
SAN JOAQUIN RIVER MULTI-BENEFIT PROJECT
TYPICAL SECTION AND DETAILS

SHEET
7
OF
7
SHEETS

APPENDIX B

California Emissions Estimator Model Emissions Summary Sheets

Sherman Island Summary Report

Table of Contents

- 1. Basic Project Information
 - 1.1. Basic Project Information
 - 1.2. Land Use Types
 - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
- 2. Emissions Summary
 - 2.1. Construction Emissions Compared Against Thresholds
- 6. Climate Risk Detailed Report
 - 6.2. Initial Climate Risk Scores
 - 6.3. Adjusted Climate Risk Scores
- 7. Health and Equity Details
 - 7.3. Overall Health & Equity Scores
 - 7.5. Evaluation Scorecard

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Sherman Island
Construction Start Date	5/3/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.6
Precipitation (days)	21
Location	38.047836, -121.708075
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	715
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.33

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 Linear	0.77	Mile	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-A	Water Exposed Surfaces
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved 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/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12	5.1	151	79	0.54	2.8	373	376	2.6	48	50	—	82,106	82,106	6.7	12	149	86,034
Mit.	12	5.1	151	79	0.54	2.8	362	364	2.6	42	45	—	82,106	82,106	6.7	12	149	86,034
% Reduced	—	—	—	—	—	—	3%	3%	—	11%	11%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.50	0.42	3.9	6.2	0.01	0.20	6.2	6.4	0.19	0.65	0.84	—	1,069	1,069	0.03	0.02	0.03	1,075
Mit.	0.50	0.42	3.9	6.2	0.01	0.20	6.2	6.4	0.19	0.65	0.84	—	1,069	1,069	0.03	0.02	0.03	1,075
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.90	0.53	9.8	6.5	0.03	0.25	18	19	0.23	2.8	3.0	—	4,278	4,278	0.32	0.54	2.9	4,450

Mit.	0.90	0.53	9.8	6.5	0.03	0.25	17	17	0.23	2.2	2.4	—	4,278	4,278	0.32	0.54	2.9	4,450
% Reduced	—	—	—	—	—	—	7%	7%	—	21%	20%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.17	0.10	1.8	1.2	0.01	0.04	3.4	3.4	0.04	0.50	0.55	—	708	708	0.05	0.09	0.49	737
Mit.	0.17	0.10	1.8	1.2	0.01	0.04	3.1	3.2	0.04	0.40	0.44	—	708	708	0.05	0.09	0.49	737
% Reduced	—	—	—	—	—	—	7%	7%	—	21%	20%	—	—	—	—	—	—	—

6. Climate Risk Detailed Report

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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 include implementation of climate risk reduction measures.

7. Health and Equity Details

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	57
Healthy Places Index Score for Project Location (b)	28
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
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.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

Sherman Island Detailed Report

Table of Contents

- 1. Basic Project Information
 - 1.1. Basic Project Information
 - 1.2. Land Use Types
 - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
- 2. Emissions Summary
 - 2.1. Construction Emissions Compared Against Thresholds
 - 2.2. Construction Emissions by Year, Unmitigated
 - 2.3. Construction Emissions by Year, Mitigated
- 3. Construction Emissions Details
 - 3.1. Preconstruction (2027) - Unmitigated
 - 3.2. Preconstruction (2027) - Mitigated
 - 3.3. Levee construction 1 (2027) - Unmitigated
 - 3.4. Levee construction 1 (2027) - Mitigated
 - 3.5. Levee construction 2 (2027) - Unmitigated
 - 3.6. Levee construction 2 (2027) - Mitigated

3.7. Habitat enhancement (2027) - Unmitigated

3.8. Habitat enhancement (2027) - Mitigated

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

8.1. Justifications

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Sherman Island
Construction Start Date	5/3/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.6
Precipitation (days)	21
Location	38.047836, -121.708075
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	715
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.33

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 Linear	0.77	Mile	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-A	Water Exposed Surfaces
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved 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/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12	5.1	151	79	0.54	2.8	373	376	2.6	48	50	—	82,106	82,106	6.7	12	149	86,034
Mit.	12	5.1	151	79	0.54	2.8	362	364	2.6	42	45	—	82,106	82,106	6.7	12	149	86,034
% Reduced	—	—	—	—	—	—	3%	3%	—	11%	11%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.50	0.42	3.9	6.2	0.01	0.20	6.2	6.4	0.19	0.65	0.84	—	1,069	1,069	0.03	0.02	0.03	1,075
Mit.	0.50	0.42	3.9	6.2	0.01	0.20	6.2	6.4	0.19	0.65	0.84	—	1,069	1,069	0.03	0.02	0.03	1,075
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.90	0.53	9.8	6.5	0.03	0.25	18	19	0.23	2.8	3.0	—	4,278	4,278	0.32	0.54	2.9	4,450

Mit.	0.90	0.53	9.8	6.5	0.03	0.25	17	17	0.23	2.2	2.4	—	4,278	4,278	0.32	0.54	2.9	4,450
% Reduced	—	—	—	—	—	—	7%	7%	—	21%	20%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.17	0.10	1.8	1.2	0.01	0.04	3.4	3.4	0.04	0.50	0.55	—	708	708	0.05	0.09	0.49	737
Mit.	0.17	0.10	1.8	1.2	0.01	0.04	3.1	3.2	0.04	0.40	0.44	—	708	708	0.05	0.09	0.49	737
% Reduced	—	—	—	—	—	—	7%	7%	—	21%	20%	—	—	—	—	—	—	—

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	12	5.1	151	79	0.54	2.8	373	376	2.6	48	50	—	82,106	82,106	6.7	12	149	86,034
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.50	0.42	3.9	6.2	0.01	0.20	6.2	6.4	0.19	0.65	0.84	—	1,069	1,069	0.03	0.02	0.03	1,075
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.90	0.53	9.8	6.5	0.03	0.25	18	19	0.23	2.8	3.0	—	4,278	4,278	0.32	0.54	2.9	4,450
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.17	0.10	1.8	1.2	0.01	0.04	3.4	3.4	0.04	0.50	0.55	—	708	708	0.05	0.09	0.49	737

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	12	5.1	151	79	0.54	2.8	362	364	2.6	42	45	—	82,106	82,106	6.7	12	149	86,034
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.50	0.42	3.9	6.2	0.01	0.20	6.2	6.4	0.19	0.65	0.84	—	1,069	1,069	0.03	0.02	0.03	1,075
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.90	0.53	9.8	6.5	0.03	0.25	17	17	0.23	2.2	2.4	—	4,278	4,278	0.32	0.54	2.9	4,450
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.17	0.10	1.8	1.2	0.01	0.04	3.1	3.2	0.04	0.40	0.44	—	708	708	0.05	0.09	0.49	737

3. Construction Emissions Details

3.1. Preconstruction (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-Road Equipment	2.5	2.1	20	22	0.05	0.85	—	0.85	0.78	—	0.78	—	5,793	5,793	0.23	0.05	—	5,813
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	0.07	0.06	0.54	0.60	< 0.005	0.02	—	0.02	0.02	—	0.02	—	159	159	0.01	< 0.005	—	159
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	0.01	0.01	0.10	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	26	26	< 0.005	< 0.005	—	26
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.11	2.4	0.00	0.00	11	11	0.00	1.2	1.2	—	545	545	< 0.005	0.02	1.8	552
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.29	0.29	0.00	0.03	0.03	—	14	14	< 0.005	< 0.005	0.02	14
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	2.2	2.2	< 0.005	< 0.005	< 0.005	2.3
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	0.00	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

3.2. Preconstruction (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-Road Equipment	2.5	2.1	20	22	0.05	0.85	—	0.85	0.78	—	0.78	—	5,793	5,793	0.23	0.05	—	5,813
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.07	0.06	0.54	0.60	< 0.005	0.02	—	0.02	0.02	—	0.02	—	159	159	0.01	< 0.005	—	159
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.10	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	26	26	< 0.005	< 0.005	—	26
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.11	2.4	0.00	0.00	11	11	0.00	1.2	1.2	—	545	545	< 0.005	0.02	1.8	552
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.29	0.29	0.00	0.03	0.03	—	14	14	< 0.005	< 0.005	0.02	14
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	2.2	2.2	< 0.005	< 0.005	< 0.005	2.3
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	0.00	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

3.3. Levee construction 1 (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-Road Equipment	3.8	3.2	30	28	0.05	1.3	—	1.3	1.2	—	1.2	—	5,780	5,780	0.23	0.05	—	5,800
Dust From Material Movement	—	—	—	—	—	—	19	19	—	8.8	8.8	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.3	1.2	< 0.005	0.06	—	0.06	0.05	—	0.05	—	253	253	0.01	< 0.005	—	254
Dust From Material Movement	—	—	—	—	—	—	0.83	0.83	—	0.38	0.38	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	0.03	0.03	0.24	0.22	< 0.005	0.01	—	0.01	0.01	—	0.01	—	42	42	< 0.005	< 0.005	—	42
Dust From Material Movement	—	—	—	—	—	—	0.15	0.15	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.13	0.15	3.5	0.00	0.00	16	16	0.00	1.7	1.7	—	787	787	< 0.005	0.02	2.6	797
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	8.2	1.8	121	48	0.49	1.4	338	340	1.4	37	39	—	75,539	75,539	6.5	12	146	79,437
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.01	0.11	0.00	0.00	0.66	0.66	0.00	0.07	0.07	—	31	31	< 0.005	< 0.005	0.05	32
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	0.36	0.08	5.6	2.1	0.02	0.06	14	14	0.06	1.5	1.6	—	3,311	3,311	0.28	0.53	2.8	3,478
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.12	0.12	0.00	0.01	0.01	—	5.2	5.2	< 0.005	< 0.005	0.01	5.3
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	0.07	0.01	1.0	0.38	< 0.005	0.01	2.6	2.6	0.01	0.28	0.29	—	548	548	0.05	0.09	0.46	576

3.4. Levee construction 1 (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-Road Equipment	3.8	3.2	30	28	0.05	1.3	—	1.3	1.2	—	1.2	—	5,780	5,780	0.23	0.05	—	5,800
Dust From Material Movement	—	—	—	—	—	—	7.4	7.4	—	3.4	3.4	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.3	1.2	< 0.005	0.06	—	0.06	0.05	—	0.05	—	253	253	0.01	< 0.005	—	254
Dust From Material Movement	—	—	—	—	—	—	0.32	0.32	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.03	0.03	0.24	0.22	< 0.005	0.01	—	0.01	0.01	—	0.01	—	42	42	< 0.005	< 0.005	—	42
Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.13	0.15	3.5	0.00	0.00	16	16	0.00	1.7	1.7	—	787	787	< 0.005	0.02	2.6	797
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	8.2	1.8	121	48	0.49	1.4	338	340	1.4	37	39	—	75,539	75,539	6.5	12	146	79,437
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.01	0.11	0.00	0.00	0.66	0.66	0.00	0.07	0.07	—	31	31	< 0.005	< 0.005	0.05	32
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	0.36	0.08	5.6	2.1	0.02	0.06	14	14	0.06	1.5	1.6	—	3,311	3,311	0.28	0.53	2.8	3,478
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.12	0.12	0.00	0.01	0.01	—	5.2	5.2	< 0.005	< 0.005	0.01	5.3
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	0.07	0.01	1.0	0.38	< 0.005	0.01	2.6	2.6	0.01	0.28	0.29	—	548	548	0.05	0.09	0.46	576

3.5. Levee construction 2 (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-Road Equipment	3.8	3.2	30	28	0.05	1.3	—	1.3	1.2	—	1.2	—	5,780	5,780	0.23	0.05	—	5,800
Dust From Material Movement	—	—	—	—	—	—	17	17	—	8.5	8.5	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	2.1	1.9	< 0.005	0.09	—	0.09	0.08	—	0.08	—	396	396	0.02	< 0.005	—	397
Dust From Material Movement	—	—	—	—	—	—	1.2	1.2	—	0.58	0.58	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.38	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	66	66	< 0.005	< 0.005	—	66

Dust From Material Movement	—	—	—	—	—	—	0.22	0.22	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.13	0.15	3.5	0.00	0.00	16	16	0.00	1.7	1.7	—	787	787	< 0.005	0.02	2.6	797
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.17	0.00	0.00	1.0	1.0	0.00	0.11	0.11	—	49	49	< 0.005	< 0.005	0.08	50
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.19	0.19	0.00	0.02	0.02	—	8.1	8.1	< 0.005	< 0.005	0.01	8.2
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	0.00	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

3.6. Levee construction 2 (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-Road Equipment	3.8	3.2	30	28	0.05	1.3	—	1.3	1.2	—	1.2	—	5,780	5,780	0.23	0.05	—	5,800
Dust From Material Movement	—	—	—	—	—	—	6.8	6.8	—	3.3	3.3	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	2.1	1.9	< 0.005	0.09	—	0.09	0.08	—	0.08	—	396	396	0.02	< 0.005	—	397
Dust From Material Movement	—	—	—	—	—	—	0.46	0.46	—	0.23	0.23	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.38	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	66	66	< 0.005	< 0.005	—	66
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—

Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.13	0.15	3.5	0.00	0.00	16	16	0.00	1.7	1.7	—	787	787	< 0.005	0.02	2.6	797
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.17	0.00	0.00	1.0	1.0	0.00	0.11	0.11	—	49	49	< 0.005	< 0.005	0.08	50
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.19	0.19	0.00	0.02	0.02	—	8.1	8.1	< 0.005	< 0.005	0.01	8.2
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	0.00	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

3.7. Habitat enhancement (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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.46	0.38	3.8	5.3	0.01	0.20	—	0.20	0.19	—	0.19	—	801	801	0.03	0.01	—	804
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.23	0.32	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48	48	< 0.005	< 0.005	—	48
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.0	8.0	< 0.005	< 0.005	—	8.0
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.08	0.89	0.00	0.00	6.2	6.2	0.00	0.65	0.65	—	268	268	< 0.005	0.01	0.03	271
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.35	0.35	0.00	0.04	0.04	—	17	17	< 0.005	< 0.005	0.03	17
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	2.7	2.7	< 0.005	< 0.005	< 0.005	2.8
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	0.00	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

3.8. Habitat enhancement (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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	0.38	3.8	5.3	0.01	0.20	—	0.20	0.19	—	0.19	—	801	801	0.03	0.01	—	804

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.23	0.32	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48	48	< 0.005	< 0.005	—	48
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.0	8.0	< 0.005	< 0.005	—	8.0
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.08	0.89	0.00	0.00	6.2	6.2	0.00	0.65	0.65	—	268	268	< 0.005	0.01	0.03	271

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.35	0.35	0.00	0.04	0.04	—	17	17	< 0.005	< 0.005	0.03	17
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	2.7	2.7	< 0.005	< 0.005	< 0.005	2.8
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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)

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. 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
Preconstruction	Linear, Grading & Excavation	5/3/2027	5/14/2027	5.0	10.0	Preparation and utility pole relocation
Levee construction 1	Linear, Grading & Excavation	5/17/2027	6/7/2027	5.0	16	Levee construction, haul phase
Levee construction 2	Linear, Grading & Excavation	6/8/2027	7/12/2027	5.0	25	Levee construction, non-haul phase
Habitat enhancement	Linear, Grading & Excavation	11/1/2027	11/30/2027	5.0	22	Habitat enhancement and planting

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
Preconstruction	Other Construction Equipment	Diesel	Average	1.00	10.0	250	0.42
Preconstruction	Excavators	Diesel	Average	1.00	10.0	98	0.38
Preconstruction	Other Construction Equipment	Diesel	Average	1.00	10.0	330	0.42
Preconstruction	Cranes	Diesel	Average	1.00	10.0	367	0.29
Preconstruction	Other Construction Equipment	Diesel	Average	2.0	16	82	0.42
Levee construction 1	Excavators	Diesel	Average	1.00	10.0	98	0.38
Levee construction 1	Rubber Tired Dozers	Diesel	Average	1.00	10.0	249	0.40
Levee construction 1	Rubber Tired Dozers	Diesel	Average	1.00	10.0	200	0.40
Levee construction 1	Graders	Diesel	Average	1.00	5.0	221	0.41
Levee construction 1	Scrapers	Diesel	Average	1.00	5.0	175	0.48
Levee construction 1	Off-Highway Trucks	Diesel	Average	1.00	10.0	325	0.38

Levee construction 1	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Levee construction 2	Excavators	Diesel	Average	1.00	10.0	98	0.38
Levee construction 2	Rubber Tired Dozers	Diesel	Average	1.00	10.0	249	0.40
Levee construction 2	Rubber Tired Dozers	Diesel	Average	1.00	10.0	200	0.40
Levee construction 2	Graders	Diesel	Average	1.00	5.0	221	0.41
Levee construction 2	Scrapers	Diesel	Average	1.00	5.0	175	0.48
Levee construction 2	Off-Highway Trucks	Diesel	Average	1.00	10.0	325	0.38
Levee construction 2	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Habitat enhancement	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Preconstruction	Other Construction Equipment	Diesel	Average	1.00	10.0	250	0.42
Preconstruction	Excavators	Diesel	Average	1.00	10.0	98	0.38
Preconstruction	Other Construction Equipment	Diesel	Average	1.00	10.0	330	0.42
Preconstruction	Cranes	Diesel	Average	1.00	10.0	367	0.29
Preconstruction	Other Construction Equipment	Diesel	Average	2.0	16	82	0.42
Levee construction 1	Excavators	Diesel	Average	1.00	10.0	98	0.38
Levee construction 1	Rubber Tired Dozers	Diesel	Average	1.00	10.0	249	0.40
Levee construction 1	Rubber Tired Dozers	Diesel	Average	1.00	10.0	200	0.40
Levee construction 1	Graders	Diesel	Average	1.00	5.0	221	0.41
Levee construction 1	Scrapers	Diesel	Average	1.00	5.0	175	0.48
Levee construction 1	Off-Highway Trucks	Diesel	Average	1.00	10.0	325	0.38
Levee construction 1	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42

Levee construction 2	Excavators	Diesel	Average	1.00	10.0	98	0.38
Levee construction 2	Rubber Tired Dozers	Diesel	Average	1.00	10.0	249	0.40
Levee construction 2	Rubber Tired Dozers	Diesel	Average	1.00	10.0	200	0.40
Levee construction 2	Graders	Diesel	Average	1.00	5.0	221	0.41
Levee construction 2	Scrapers	Diesel	Average	1.00	5.0	175	0.48
Levee construction 2	Off-Highway Trucks	Diesel	Average	1.00	10.0	325	0.38
Levee construction 2	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42
Habitat enhancement	Other Construction Equipment	Diesel	Average	2.0	10.0	82	0.42

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Preconstruction	Worker	18	40	LDA,LDT1,LDT2
Preconstruction	Vendor	0.00	0.00	HHDT,MHDT
Preconstruction	Hauling	0.00	0.00	HHDT
Preconstruction	Onsite truck	—	—	HHDT
Levee construction 1	Worker	26	40	LDA,LDT1,LDT2
Levee construction 1	Vendor	0.00	0.00	HHDT,MHDT
Levee construction 1	Hauling	540	40	HHDT
Levee construction 1	Onsite truck	—	—	HHDT
Levee construction 2	Worker	26	40	LDA,LDT1,LDT2
Levee construction 2	Vendor	0.00	0.00	HHDT,MHDT
Levee construction 2	Hauling	0.00	0.00	HHDT
Levee construction 2	Onsite truck	—	—	HHDT
Habitat enhancement	Worker	10.0	40	LDA,LDT1,LDT2
Habitat enhancement	Vendor	0.00	0.00	HHDT,MHDT

Habitat enhancement	Hauling	0.00	0.00	HHDT
Habitat enhancement	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Preconstruction	Worker	18	40	LDA,LDT1,LDT2
Preconstruction	Vendor	0.00	0.00	HHDT,MHDT
Preconstruction	Hauling	0.00	0.00	HHDT
Preconstruction	Onsite truck	—	—	HHDT
Levee construction 1	Worker	26	40	LDA,LDT1,LDT2
Levee construction 1	Vendor	0.00	0.00	HHDT,MHDT
Levee construction 1	Hauling	540	40	HHDT
Levee construction 1	Onsite truck	—	—	HHDT
Levee construction 2	Worker	26	40	LDA,LDT1,LDT2
Levee construction 2	Vendor	0.00	0.00	HHDT,MHDT
Levee construction 2	Hauling	0.00	0.00	HHDT
Levee construction 2	Onsite truck	—	—	HHDT
Habitat enhancement	Worker	10.0	40	LDA,LDT1,LDT2
Habitat enhancement	Vendor	0.00	0.00	HHDT,MHDT
Habitat enhancement	Hauling	0.00	0.00	HHDT
Habitat enhancement	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

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)
Preconstruction	—	—	0.00	0.00	0.00
Levee construction 1	144,200	3,086	0.00	0.00	0.00
Levee construction 2	—	—	0.00	0.00	0.00
Habitat enhancement	—	—	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
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	20	annual days of extreme heat
Extreme Precipitation	2.3	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

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

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

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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 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	38
AQ-PM	20
AQ-DPM	16
Drinking Water	72
Lead Risk Housing	48
Pesticides	78
Toxic Releases	35
Traffic	26
Effect Indicators	—
CleanUp Sites	2.6
Groundwater	77

Haz Waste Facilities/Generators	50
Impaired Water Bodies	92
Solid Waste	36
Sensitive Population	—
Asthma	49
Cardio-vascular	68
Low Birth Weights	23
Socioeconomic Factor Indicators	—
Education	53
Housing	65
Linguistic	21
Poverty	66
Unemployment	73

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	28.32028744
Employed	8.571795201
Median HI	21.2498396
Education	—
Bachelor's or higher	23.67509303
High school enrollment	100
Preschool enrollment	1.873476197
Transportation	—
Auto Access	59.70742974
Active commuting	77.19748492

Social	—
2-parent households	79.69973053
Voting	76.63287566
Neighborhood	—
Alcohol availability	42.64083152
Park access	7.211600154
Retail density	3.002694726
Supermarket access	11.29218529
Tree canopy	66.14910817
Housing	—
Homeownership	70.80713461
Housing habitability	43.47491338
Low-inc homeowner severe housing cost burden	24.72731939
Low-inc renter severe housing cost burden	40.31823431
Uncrowded housing	57.46182471
Health Outcomes	—
Insured adults	43.11561658
Arthritis	0.0
Asthma ER Admissions	63.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	9.0
Cognitively Disabled	7.9
Physically Disabled	3.6

Heart Attack ER Admissions	54.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	94.3
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	92.2
Elderly	4.1
English Speaking	58.3
Foreign-born	22.7
Outdoor Workers	7.3
Climate Change Adaptive Capacity	—
Impervious Surface Cover	88.6
Traffic Density	31.3
Traffic Access	23.0
Other Indices	—
Hardship	67.7
Other Decision Support	—
2016 Voting	70.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	57
Healthy Places Index Score for Project Location (b)	28
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
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

8.1. Justifications

Screen	Justification
Construction: Construction Phases	Estimated phases based on construction information given by Wagner & Bonsignore on 10/20/25.
Construction: Off-Road Equipment	Based on Project information given by Wagner & Bonsignore on 10/20/25.
Construction: Trips and VMT	Based on Project information provided by Wagner & Bonsignore. 40 miles is the estimated trip length based on distance from Stockton.
Construction: On-Road Fugitive Dust	Accounting for any unpaved road in the Project Area. The remainder of the route, including the Sherman Island Levee Road, is paved.

APPENDIX C

**Database Query Results for Special-status Plant Species and Sensitive
Natural Communities Previously Documented in the Project Region**

Table C-1 Database query results for special-status plants and their potential to occur within the Survey Area

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
Vascular plants							
<i>Amsinckia grandiflora</i>	large-flowered fiddleneck	FE/SE/1B.1	CNPS, CNDDDB	(March) April– May	885–1,805 ft.	Cismontane woodlands and valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Arctostaphylos auriculata</i>	Mt. Diablo manzanita	–/–/1B.3	CNPS, CNDDDB	January– March	445–2,135 ft.	On sandstone in chaparral and cismontane woodlands.	No. The Survey Area is outside the species' elevation range.
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	–/–/1B.2	CNPS, CNDDDB	March–June	5–195 ft.	Often on alkaline soils in playas, valley and foothill grasslands, and vernal pools.	Yes. Suitable habitat is present within the Survey Area.
<i>Atriplex cordulata</i> var. <i>cordulata</i>	heartscale	–/–/1B.2	CNPS, CNDDDB	April–October	0–1,835 ft.	Sometimes in saline environments and/or on alkali soils in chenopod scrub, meadows and seeps, sandy soils in valley and foothill grasslands.	No. Suitable habitat is not present within the Survey Area.
<i>Atriplex coronata</i> var. <i>coronata</i>	crownscale	–/–/4.2	CNPS	March– October	5–1,935 ft.	Often on alkaline and/or clay soils in chenopod scrub, valley and foothill grassland, and vernal pools.	Yes. Suitable habitat is present within the Survey Area.
<i>Atriplex depressa</i>	brittlescale	–/–/1B.2	CNPS, CNDDDB	April–October	5–1,050 ft.	Often on alkaline and/or clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and vernal pools.	Yes. Suitable habitat is present within the Survey Area.
<i>Blepharizonia plumosa</i>	big tarplant	–/–/1B.1	CNPS, CNDDDB	July–October	100–1,655 ft.	Usually on clay soils, dry slopes of valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Brasenia schreberi</i>	watershield	–/–/2B.3	CNPS, CNDDDB	June– September	0–7,220 ft.	Lakes, ponds, slow-flowing streams, and freshwater marshes and swamps (Jepson Flora Project 2025).	No. Suitable habitat is not present within the Survey Area.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
<i>Calandrinia breweri</i>	Brewer's calandrinia	–/–/4.2	CNPS	(January) March–June	35–4,005 ft.	Often in burned and/or disturbed areas. Sometimes in sandy and/or loamy soils in chaparral and coastal scrub.	No. Suitable habitat is not present within the Survey Area.
<i>Calochortus pulchellus</i>	Mt. Diablo fairy-lantern	–/–/1B.2	CNPS, CNDDB	April–June	100–2,755 ft.	Chaparral, cismontane woodland, riparian woodlands, valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Carex comosa</i>	bristly sedge	–/–/2B.1	CNPS, CNDDB	May– September	0–2,050 ft.	Mesic areas of coastal prairie and valley and foothill grasslands; marshes, swamps, and sometimes lake margins.	Yes. Suitable habitat is present within the Survey Area.
<i>Centromadia parryi</i> subsp. <i>parryi</i>	pappose tarplant	–/–/1B.2	CNPS, CNDDB	May– November	0–1,380 ft.	Often on alkaline soils in chaparral, coastal prairie, coastal salt marshes and swamps, meadows and seeps, vernal mesic areas of valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Centromadia parryi</i> subsp. <i>rudis</i>	Parry's rough tarplant	–/–/4.2	CCNPS	May–October	0–330 ft.	Generally, on alkaline soils in valley and foothill grasslands and vernal pools. Sometimes in roadsides, seeps, and other vernal mesic areas.	Yes. Suitable habitat is present within the Survey Area.
<i>Chloropyron molle</i> subsp. <i>molle</i>	soft salty bird's-beak	FE/SR/1B.2	CDFW, CNPS, USFWS	June– November	0–10 ft.	Coastal salt marshes and swamps.	No. Suitable habitat is present just outside the Survey Area along the shoreline of the San Joaquin River.
<i>Cicuta maculata</i> var. <i>bolanderi</i>	Bolander's water-hemlock	–/–/2B.1	CNPS, CNDDB	July– September	0–655 ft.	Freshwater, brackish, and coastal wetlands, marshes, and swamps (Jepson Flora Project 2025).	Unlikely. Ditches and mesic areas within the Survey Area may support this species, but vegetation in these areas is maintained, highly disturbed, and/or has high cover of invasive plants.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
<i>Convolvulus simulans</i>	small-flowered morning-glory	–/–/4.2	CNPS	March–July	100–2,430 ft.	Generally found in seeps on clay and/or serpentine soils in openings of chaparral, coastal scrub, and valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Cryptantha hooveri</i>	Hoover's cryptantha	–/–/1A	CNPS, CNDDDB	April–May	30–490	Inland dunes, sandy areas of valley and foothill grasslands.	No. Suitable habitat is not present within the Survey Area.
<i>Downingia pusilla</i>	dwarf downingia	–/–/2B.2	CNPS, CNDDDB	March–May	5–1,460	Mesic areas of valley and foothill grassland, vernal pools.	Yes. Suitable habitat is present within the Survey Area.
<i>Eleocharis parvula</i>	small spikerush	–/–/4.3	CNPS	(April) June– August (September)	5–9,910 ft.	Freshwater, brackish, and coastal wetlands, marshes, and swamps (Jepson Flora Project 2025).	Unlikely. Ditches and mesic areas within the Survey Area may support this species, but vegetation in these areas is maintained, highly disturbed, and/or has high cover of invasive plants.
<i>Eriogonum nudum</i> var. <i>psychicola</i>	Antioch Dunes buckwheat	–/–/1B.1	CNPS, CNDDDB	July–October	0–65 ft.	Inland dunes.	No. Suitable habitat is not present within the Survey Area.
<i>Eriogonum truncatum</i>	Mt. Diablo buckwheat	–/–/1B.1	CNPS, CNDDDB	April– September (November– December)	10–1,150 ft.	Sandy areas of chaparral, coastal scrub, and valley and foothill grasslands.	No. Suitable habitat is not present within the Survey Area.
<i>Eriophyllum jepsonii</i>	Jepson's woolly sunflower	–/–/4.3	CNPS, CNDDDB	April–June	655–3,365 ft.	Sometimes on serpentine in chaparral, cismontane woodland, and coastal scrub.	No. The Survey Area is outside the species' elevation range.
<i>Eryngium jepsonii</i>	Jepson's coyote- thistle	–/–/1B.2	CNPS	April–August	10–985 ft.	Valley and foothill grasslands and vernal pools on clay soils.	Yes. Suitable habitat is present within the Survey Area.
<i>Eryngium racemosum</i>	Delta button- celery	–/SE/1B.1	CNPS, CNDDDB	(May) June– October	10–100 ft.	Vernally mesic clay depressions in riparian scrub.	Yes. Suitable habitat is present within the Survey Area.
<i>Erysimum capitatum</i> var. <i>angustatum</i>	Contra Costa wallflower	FE/SE/1B.1	CNPS, CNDDDB	March–July	10–65 ft.	Inland dunes.	No. Suitable habitat is not present within the Survey Area.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
<i>Eschscholzia rhombipetala</i>	diamond-petaled California poppy	–/–/1B.1	CNPS, CNDDB	March–April	0–3,200 ft.	Alkaline clay soils in valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Extriplex joaquinana</i>	San Joaquin spearscale	–/–/1B.2	CNPS, CNDDB	April–October	5–2,740 ft.	Generally on alkaline soils in chenopod scrub, meadows and seeps, playas, and valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Fritillaria agrestis</i>	stinkbells	–/–/4.2	CNPS, CNDDB	March–June	35–5,100 ft.	Generally on clay soils, sometimes serpentine, in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Fritillaria liliacea</i>	fragrant fritillary	–/–/1B.2	CNPS, CNDDB	February–April	10–1,345 ft.	Often on serpentine soils in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Galium andrewsii</i> subsp. <i>gatense</i>	phlox-leaf serpentine bedstraw	–/–/4.2	CNPS	April–July	490–4,755 ft.	Generally on rocky, serpentine soils in chaparral, cismontane woodland, and lower montane coniferous forest.	No. The Survey Area is outside the species' elevation range.
<i>Helianthella castanea</i>	Diablo helianthella	–/–/1B.2	CNPS, CNDDB	March–June	195–4,265 ft.	Generally on azonal soil and in partial shade. Usually in rocky areas of broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Hesperervax caulescens</i>	hogwallow starfish	–/–/4.2	CNPS	March–June	0–1,655 ft.	Sometimes on mesic, alkaline clay soils in valley and foothill grassland, and shallow vernal pools.	Yes. Suitable habitat is present within the Survey Area.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
<i>Hesperolinon breweri</i>	Brewer's western flax	–/–1B.2	CNPS, CNDDB	May–July	100–3,100 ft.	Usually on serpentine soils in chaparral, cismontane woodland, and valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	woolly rose- mallow	–/–1B.2	CNPS, CNDDB	June– September	0–395 ft.	Often in riprap on sides of levees in freshwater marshes and swamps.	No. Suitable habitat is present just outside the Survey Area in the riprap along the shoreline of the San Joaquin River.
<i>Isocoma arguta</i>	Carquinez goldenbush	–/–1B.1	CNPS, CNDDB	August– December	5–65 ft.	Alkaline soils in valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	FE/–1B.1	CNPS, CNDDB	March–June	0–1,540 ft.	Mesic areas of cismontane woodland, alkaline playas, valley and foothill grassland, and vernal pools.	Yes. Suitable habitat is present within the Survey Area.
<i>Lasthenia ferrisiae</i>	Ferris' goldfields	–/–4.2	CNPS	February–May	65–2,295 ft.	Vernal pools on alkaline clay soils.	No. The Survey Area is outside the species' elevation range.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	–/–1B.2	CNPS, CNDDB	May–July (August– September)	0–15 ft.	Brackish and freshwater marshes and swamps.	No. Suitable habitat is present just outside the Survey Area along the shoreline of the San Joaquin River.
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	–/SR1B.1	CNPS, CNDDB	April– November	0–35 ft.	Brackish and freshwater marshes and swamps and riparian scrub.	No. Suitable habitat is not present within the Survey Area. A CNDDB occurrence overlaps with the Survey Area, but only because the location data is imprecise; habitat for the species is only present along the shoreline of the San Joaquin River which is outside of the Survey Area.
<i>Limosella australis</i>	Delta mudwort	–/–2B.1	CNPS, CNDDB	May–August	0–10 ft.	Usually in streambanks and muddy or sandy intertidal banks, brackish and freshwater marshes and swamps, and riparian scrub.	No. Suitable habitat is present just outside the Survey Area along the shoreline of the San Joaquin River.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
<i>Lupinus albifrons</i> var. <i>abramsii</i>	Abrams' lupine	–/–/3.2	CNPS	April–June	410–6,560 ft.	Sometimes on serpentine in broadleaved upland forest, chaparral, coastal scrub, lower montane coniferous forest, and valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Madia radiata</i>	showy golden madia	–/–/1B.1	CNPS, CNDDDB	March–May	80–3,985 ft.	Cismontane woodland and valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Malacothamnus hallii</i>	Hall's bushmallow	–/–/1B.2	CNPS, CNDDDB	(April) May–September (October)	35–2,495 ft.	Chaparral and coastal scrub.	No. Suitable habitat is not present within the Survey Area.
<i>Myosurus minimus</i> subsp. <i>apus</i>	little mousetail	–/–/3.1	CNPS	March–June	65–2,100 ft.	Valley and foothill grasslands and alkaline vernal pools.	Yes. Suitable habitat is present within the Survey Area.
<i>Navarretia heterandra</i>	Tehama navarretia	–/–/4.3	CNPS	April–June	100–3,315 ft.	Mesic areas of valley and foothill grassland and vernal pools.	No. The Survey Area is outside the species' elevation range.
<i>Navarretia leucocephala</i> subsp. <i>bakeri</i>	Baker's navarretia	–/–/1B.1	CNPS, CNDDDB	April–July	15–5,710 ft.	Mesic areas of cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools.	Yes. Suitable habitat is present within the Survey Area.
<i>Navarretia nigelliformis</i> subsp. <i>radians</i>	shining navarretia	–/–1B.2	CNPS, CNDDDB	(March) April–July	215–3,280 ft.	Sometimes on clay soils in cismontane woodland, valley and foothill grassland, and vernal pools.	No. The Survey Area is outside the species' elevation range.
<i>Oenothera deltoides</i> subsp. <i>howellii</i>	Antioch Dunes evening-primrose	FE/SE/1B.1	CNPS, CNDDDB	March–September	0–100 ft.	Inland dunes.	No. Suitable habitat is not present within the Survey Area.
<i>Piperia michaelii</i>	Michael's rein orchid	–/–/4.2	CNPS	April–August	10–3,000 ft.	Chaparral, cismontane woodland, closed-cone coniferous forest, coastal bluff scrub, coastal scrub, and lower montane coniferous forest.	No. Suitable habitat is not present within the Survey Area.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
<i>Plagiobothrys hystriculus</i>	bearded popcornflower	–/–/1B.1	CNPS, CNDDDB	April–May	0–900 ft.	Often in vernal swales, margins of vernal pools, and mesic areas of valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Potamogeton zosteriformis</i>	eel-grass pondweed	–/–/2B.2	CNPS, CNDDDB	June–July	0–6,105 ft.	Lakes, ponds, slow-flowing streams, and freshwater marshes and swamps (Jepson Flora Project 2025).	No. Suitable habitat is not present within the Survey Area.
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	–/–/1B.2	CNPS, CNDDDB	May–October (November)	0–2,135 ft.	Shallow ponds, ditches, freshwater marshes and swamps.	Unlikely. Ditches and mesic areas within the Survey Area may support this species, but vegetation in these areas is maintained, highly disturbed, and/or has high cover of invasive plants.
<i>Scutellaria galericulata</i>	marsh skullcap	–/–/2B.2	CNPS, CNDDDB	June–September	0–6,890 ft.	Lower montane coniferous forest, marshes and swamps, and mesic areas of meadows and seeps.	Unlikely. Ditches and mesic areas within the Survey Area may support this species, but vegetation in these areas is maintained, highly disturbed, and/or has high cover of invasive plants.
<i>Scutellaria lateriflora</i>	side-flowering skullcap	–/–/2B.2	CNPS, CNDDDB	July–September	0–1,640 ft.	Shallow, alkaline ponds and lakes. Mesic areas of meadows and seeps, marshes and swamps.	Unlikely. Ditches and mesic areas within the Survey Area may support this species, but vegetation in these areas is maintained, highly disturbed, and/or has high cover of invasive plants.
<i>Senecio aphanactis</i>	chaparral ragwort	–/–/2B.2	CNPS, CNDDDB	January–April (May)	50–2,625 ft.	Sometimes on alkaline soils in chaparral, cismontane woodland, and coastal scrub.	No. Suitable habitat is not present within the Survey Area.
<i>Senecio hydrophiloides</i>	sweet marsh ragwort	–/–/4.2	CNPS	May–August	0–9,185 ft.	Mesic areas of lower montane coniferous forest, and meadows and seeps.	No. Suitable habitat is not present within the Survey Area.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
<i>Sidalcea keckii</i>	Keck's checkerbloom	FE-/1B.1	CNPS, CNDDDB	April–May (June)	245–2,135 ft.	Generally on clay and/or serpentine soils in cismontane woodland and valley and foothill grasslands.	No. The Survey Area is outside the species' elevation range.
<i>Stuckenia striata</i>	broadleaf pondweed	-/-/2B.3	CNPS, CNDDDB	(June) July– August	0–7,005 ft.	Marshes and swamps, lakes, ponds, rivers, and drainage canals (Jepson Flora Project 2025).	Unlikely. Ditches and mesic areas within the Survey Area may support this species, but vegetation in these areas is maintained, highly disturbed, and/or has high cover of invasive plants.
<i>Symphyotrichum lentum</i>	Suisun Marsh aster	-/-/1B.2	CNPS, CNDDDB	(April) May– November	0–10 ft.	Brackish and freshwater marshes and swamps.	No. Suitable habitat is not present within the Survey Area. A CNDDDB occurrence overlaps with the Survey Area, but only because the location data is imprecise; habitat for the species is only present along the shoreline of the San Joaquin River which is outside of the Survey Area.
<i>Tropidocarpum capparideum</i>	caper-fruited tropidocarpum	-/-/1B.1	CNPS, CNDDDB	March–April	5–1,495 ft.	Alkaline hills in valley and foothill grasslands.	Yes. Suitable habitat is present within the Survey Area.
<i>Viburnum ellipticum</i>	oval-leaved viburnum	-/-/2B.3	CNPS, CNDDDB	May–June	705–4,595 ft.	Chaparral, cismontane woodland, and lower montane coniferous forest.	No. The Survey Area is outside the species' elevation range.

Scientific name	Common name	Status ¹ (Federal/State /CRPR)	Source	Bloom period ^{2,3}	Elevation ²	Habitat association ²	Potential to occur in the Project Area or Survey Area
Non-vascular plants							
<i>Anomobryum julaceum</i>	slender silver moss	–/–/4.2	CNPS, CNDDb	NA	330–3,280 ft.	Damp rock and soil outcrops of broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest. Usually on roadsides and roadcuts.	No. The Survey Area is outside the species' elevation range.

¹ Status:

Federal

- No federal status
- FE Federally Endangered

State

- No state status
- SR State Rare
- SE State Endangered

CRPR List Ranks List 1A Presumed Extirpated or Extinct — Plants presumed extirpated in California and either rare or extinct elsewhere.

List 1B Rare or Endangered — Plants rare, threatened, or endangered in California and elsewhere, with the majority also being endemic to California.

List 2B Rare or endangered in California — Plants rare, threatened, or endangered in California but common elsewhere.

List 3 Needs Review — Plants about which more information is needed.

List 4 Uncommon in California — Plants of limited distribution, a watch list.

CNPS Threat Ranks:

- 0.1 Seriously threatened in California — Over 80% of occurrences threatened / high degree and immediacy of threat.
- 0.2 Moderately threatened in California — 20-80% of occurrences threatened / moderate degree and immediacy of threat.
- 0.3 Not very threatened in California — Less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known.

² CNPS 2025a except where otherwise noted.

³ Months in parentheses are uncommon; NA = Not applicable (CNPS 2025a)

Table C–2 Database query results for sensitive natural communities and their potential to occur within the Survey Area

Natural community (Holland 1986)	Status ¹ (Global rank/ State rank)	Habitat description ²	Potential to occur within the Survey Area?
Alkali Meadow	G3/S2.1	Dominated by a limited species mix of salt-tolerant, perennial grasses, sedges, and forbs. Vegetative cover varies from dense to fairly sparse and is usually low growing, but occasionally up to 1 meter (m). Growing and flowering occurs from late spring to early fall.	No.
Alkali Seep	G3/S2.1	Occur in permanently saturated or wet alkaline seeps. Low-growing perennial herbs, usually forming relatively complete cover, growing throughout the year in areas with mild winters. Species diversity is low and generally consists of <i>Distichlis spicata</i> (salt grass), <i>Najas marina</i> (Marine water nymph), <i>Nitrophila occidentalis</i> (boraxweed), <i>Ruppia maritima</i> (ditch grss), <i>Stuckenia striata</i> (broadleaf pondweed), <i>Stuckenia pectinata</i> (Sago pondweed), <i>Zannichellia palustris</i> (horned pondweed).	No.
Cismontane Alkali Marsh	G1/S1.1	Dominated by perennial, emergent monocots to 2 m tall. Vegetative cover is often complete and dense. Characteristic species include salt grass, <i>Anemopsis californica</i> (yerba mansa), <i>Elymus triticoides</i> (beardless wild rye), <i>Frankenia salina</i> (alkali heath), <i>Salicornia pacifica</i> (pickleweed), <i>Juncus</i> spp. (rushes), <i>Carex</i> spp. (sedges), and <i>Typha</i> spp. (cattails).	No.
Coastal and Valley Freshwater Marsh	G3/S2.1	Permanently flooded freshwater areas dominated by perennial, emergent monocots to 4-5 m tall, often forming completely closed canopies. Characteristic taxa include sedges, <i>Cyperus</i> spp. (flatsedges), <i>Eleocharis</i> spp. (spike rushes), <i>Scirpus</i> spp. (bulrushes), <i>Typha</i> spp. (cattails), <i>Phragmites australis</i> (common reed), and hydrophytic forbs.	No. There are small patches within the Survey Area that include these characteristic species; however, the patch sizes are significantly smaller than the minimum mapping unit required by CDFW for sensitive natural communities.
Coastal Brackish Marsh	G2/S2.1	Permanently saturated, brackish areas dominated by perennial, emergent monocots to 2 m tall. Cover is often dense and generally consists of <i>Carex harfordii</i> (Monterey sedge), <i>Carex obnupta</i> (slough sedge), salt grass, pickleweed, rushes, bulrushes, and cattails.	No.
Northern Claypan Vernal Pool	G1/S1.1	On lower terraces and basin rims. Pools may be small (a few square meters) or quite large (covering several hectares). Hardpan soils are circumneutral to alkaline and more or less saline.	No.
Stabilized Interior Dunes	G1/S1.1	NA ³	No.

Natural community (Holland 1986)	Status ¹ (Global rank/ State rank)	Habitat description ²	Potential to occur within the Survey Area?
Valley Needlegrass Grassland	G3/S3.1	A floristically distinct formation of the California Valley Grassland, characterized by the dominance of native perennial bunchgrasses, with <i>Stipa pulchra</i> (purple needlegrass), being a key species, and found in areas with fine-textured soils, that are moist in winter and dry in summer.	No.

¹ Rank (CNPS 2025b):
 Global/State Rank
 G1 S1: Fewer than 6 viable occurrences worldwide/ statewide, and/ or up to 518 hectares
 G2 S2: 6–20 viable occurrences worldwide/ statewide, and/ or between 518–2,590 hectares
 G4 S4: 81–300 viable occurrences worldwide/ statewide, and/ or between 10,000–50,000 hectares
 Additional Threat Ranks
 Very threatened

² Source: Holland (1986)

³ No habitat description of this sensitive natural community.

APPENDIX D

Database Query Results for Special-status Fish and Wildlife Species Previously Documented in the Project Region

Table D-1 Database query results for special-status fish and wildlife species previously documented and their potential to occur within the Survey Area

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Invertebrates					
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	CDFW	FE/-	California Central Valley from Tehama County in the north to Merced County in the south; one outlying population in Ventura County's Interior Coast Ranges; found up to 5,577 ft in elevation	Relatively large, turbid freshwater vernal pools (playa pools) in annual grasslands	None. No vernal pool habitat in Survey Area. A CNDDDB occurrence includes a sighting 9 mi northwest from Survey Area in 2019, where it was found in an alkaline vernal pool (CDFW 2024a). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located 16 mi from the Survey Area.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	CDFW, USFWS	FT/-	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County	Vernal pools; also found in sandstone rock outcrop pools	None. No vernal pool habitat in Survey Area. Most recent occurrence was 9 mi northwest of Survey Area in 2019 (CDFW 2024a). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located 10 mi from the Survey Area.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	CDFW, USFWS	FE/-	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds	None. No vernal pool habitat in Survey Area. Most recent occurrence was 9 mi northwest of Survey Area in 2019 (CDFW 2024a). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located 20 mi from the Survey Area.

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Western bumble bee <i>Bombus occidentalis</i>	CDFW	–/SCE	Historically throughout northern California and adjacent states; the once common populations of central California have largely disappeared (Evans et al. 2008)	Forages on flowering plants in meadows and forested openings; abandoned rodent burrows are used for nests and hibernation sites for queens; common plant genera used for foraging include, but are not limited to, <i>Ceanothus</i> , <i>Centaurea</i> , <i>Chrysothamnus</i> , <i>Cirsium</i> , <i>Geranium</i> , <i>Grindellia</i> , <i>Lupinus</i> , <i>Melilotus</i> , <i>Monardella</i> , <i>Rubus</i> , <i>Solidago</i> , and <i>Trifolium</i>	Low. The Survey Area is within the historical range of the species, but not within the known current range. While there is a low potential to occur plant genera used by the Western bumble bee for floral resources (<i>Centaurea</i> , <i>Cirsium</i> , <i>Rubus</i>) were observed during the May 2025 vegetation mapping and special-status plant survey albeit in limited quantities. The most recent occurrence is located 90 mi away from the Survey Area in 2024 (Xerces Society 2025), while there is a closer CNDDDB occurrence 4 mi southwest of the Survey Area, it and much older (1979) (CDFW 2024a).
Crotch's bumble bee <i>Bombus crotchii</i>	CDFW	–/SCE	Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of central and southwestern California	Inhabits open grassland and scrub habitats. Nests are often located underground in abandoned rodent burrows, or above ground in tufts of grass, rock piles, or tree cavities; common plant genera used for foraging include, but are not limited to, <i>Antirrhinum</i> , <i>Asclepias</i> , <i>Chaenactis</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , <i>Eriogonum</i> , <i>Lupinus</i> , <i>Medicago</i> , <i>Phacelia</i> , <i>Salvia</i> .	Low. Although the Survey Area is within the species' current and historical range, nesting and foraging habitat is minimal within the Survey Area (i.e., rodent burrows within grassland habitat) and plant genera used by Crotch's bumblebee for floral resources (<i>Asclepias</i> and <i>Medicago</i>) were observed albeit in limited quantities during the May 2025 vegetation mapping and special-status plant survey. The most recent occurrence is located 23 mi from the Survey Area from 2024 (Xerces Society 2025). The most recent CNDDDB occurrence is located about 30 mi southwest of the Survey Area from 2015 (CDFW 2024a). Historical occurrences are from 4 mi away in 1926 and 14 mi away in 1951 (CDFW 2024a).

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	USFWS	FT/–	Riparian habitat in the Central Valley below 915 m (3,000 ft), most commonly in lowlands between 0 and 152 m (500 ft)	Riparian and oak savanna habitats with host plant <i>Sambucus</i> sp. (blue elderberry)	None. No elderberry species were observed within the Survey Area during the May 2025 vegetation mapping and special-status plant survey. The most recent occurrence is 24 mi northwest of the Survey Area from 2013 (CDFW 2024a). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located 43 mi from the Survey Area.
Lange's metalmark butterfly <i>Apodemia mormo langei</i>	CDFW	FE/–	Antioch Sand Dunes in Contra Costa County	Dunes; larval food plant is nakedstem buckwheat (<i>Eriogonum nudum</i> subsp. <i>auriculatum</i>); adult nectar plants include buckwheat, butterweed (<i>Senecio douglasii</i>) and snakeweed (<i>Gutierrezia divergens</i>)	None. No dune habitat nor nakedstem buckwheat were observed within the Survey Area during the May 2025 vegetation mapping and special-status plant survey. The most recent CNDDDB occurrence is 2 mi west of the Survey Area from 2008 (CDFW 2024a). Additional occurrences are documented less than 1 mi from the Survey Area in both 2018 and 2021 (iNaturalist 2025).
Delta green ground beetle <i>Elaphrus viridis</i>	CDFW	FT/–	Only known to occur in Solano County	Grassland habitat interspersed with vernal pools	None. The Survey Area is out of the current range for the species, and no vernal pool habitat is present. The most recent CNDDDB occurrence is 15 mi northwest of the Survey Area from 2023 (CDFW 2024a). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located 15 mi from the Survey Area.

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Fish					
North American green sturgeon: southern DPS <i>Acipenser medirostris</i>	CDFW	FT/–	Present in estuaries such as San Francisco, San Pablo, Suisun, and Humboldt bays and Sacramento-San Joaquin Delta; spawn in the Sacramento and San Joaquin rivers	Spawns in large river mainstem pools with cool water and cobble, clean sand, or bedrock substrate; in San Francisco Bay adults tend to utilize water depths less than 10 m (33 ft) to swim near the surface or forage along the sea floor	None. The Project does not include in-water work nor work along the waterside of the levee. Final critical habitat has been designated for this species in the adjacent San Joaquin River.
Sacramento perch <i>Archoplites interruptus</i>	CDFW	–/SSC	Endemic to central valley waters but currently restricted from the majority of its native range; widespread stocking has led to introduced populations in the Klamath, Pit, Walker, and Owens River basins	Sloughs, slow moving rivers, and lakes that provide warm water (18°C) during spawning	None. The Project does not include in-water work nor work along the waterside of the levee.
Delta smelt <i>Hypomesus transpacificus</i>	CDFW, USFWS	FT/SE	Found only in the Sacramento-San Joaquin Estuary, including the lower reaches of Sacramento and Napa rivers; the Delta including Suisun Bay, Goodyear, Suisun, Cutoff, First Mallard, and Montezuma sloughs	Estuarine or brackish waters up to 18 parts per thousand (ppt); spawn in shallow brackish water upstream of the mixing zone (zone of saltwater-freshwater interface) where salinity is around 2 ppt	None. The Project does not include in-water work nor work along the waterside of the levee. Final critical habitat has been designated for this species in the adjacent San Joaquin River.
Longfin smelt, San Francisco Bay-Delta DPS <i>Spirinichus thaleichthys</i>	CDFW, USFWS	FE/ST	San Francisco estuary from Rio Vista or Medford Island in the Delta as far downstream as South Bay; concentrated in Suisun, San Pablo, and North San Francisco bays; historical populations in Humboldt Bay, Eel River estuary, and Klamath River estuary	Adults associated with nearshore coastal areas, large bays, and estuaries, and migrate into lower portions of freshwater streams and rivers to spawn; juveniles and adults rear in estuarine habitats, with smolts preferring deep-water channels	None. The Project does not include in-water work nor work along the waterside of the levee. Critical habitat has not been designated for this species.

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Steelhead, Central Valley DPS <i>Oncorhynchus mykiss irideus</i>	CDFW	FT/–	The Sacramento and San Joaquin Rivers and their tributaries	Rivers and streams with cold water, clean gravel of appropriate size for spawning, and suitable rearing habitat; typically rear in freshwater for one or more years before migrating to the ocean	None. The Project does not include in-water work nor work along the waterside of the levee. Final critical habitat has been designated for this species in the adjacent San Joaquin River.
Amphibians					
California tiger salamander, central California DPS <i>Ambystoma californiense</i>	USFWS/CDFW	FT/ST	Fragmented populations in the Central Valley and Sierra foothills from northern Yolo County to northwestern Kern County and Tulare County, and along the Coast Ranges from San Mateo County to Central San Luis Obispo.	Grassland, oak savannah, or edges of woodland that provide subterranean refuge (typically mammal burrows); breeds in nearby temporary ponds, vernal pools, or slow-moving parts of streams	Low. No suitable breeding habitat (vernal pools, ponds, streams) are present within the Survey Area. No occurrences have been documented within 5 mi. The closest CNDDDB occurrence is located 5 mi southwest of the Survey Area from 1983 (CDFW 2024a). The most recent CNDDDB occurrence is located 70 mi south of the Survey Area from 2023 (CDFW 2024a). Other occurrences include: 11 mi from the Survey Area in 2007, 10 mi away in 2003, and many others 7 mi or farther from the Survey Area (CDFW 2024a). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located 15 mi from the Survey Area.
Western spadefoot <i>Spea hammondi</i>	USFWS	FPT/SSC	Near Redding, south throughout the Central Valley and nearby foothills; Coast Ranges south of Monterey Bay; and coastal southern California south of the Transverse Mountains and west of the Peninsular Mountains	Areas with sparse vegetation and/or short grasses in friable soils; primarily in washes, river floodplains, alluvial fans, playas, alkali flats, among grasslands, chaparral, or pine-oak woodlands; breeds in ephemeral pools, cattle ponds, slow sections of streams, and other shallow water bodies with low levels of canopy cover.	Low. No breeding habitat is present within the Survey Area, and upland habitats (i.e., areas with sparse vegetation, grasslands) are suboptimal. The closest CNDDDB occurrence is 16 mi from the Survey Area from 1922, and the most recent is 61 mi from the Survey Area from 2024 (CDFW 2024a).

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Foothill yellow-legged frog, Central Coast clade <i>Rana boylei</i>	CDFW	FT/SE	South from the San Francisco Bay through the Diablo Range and down the peninsula through the Santa Cruz and Gabilan Mountains in the Coast Range east of the Salinas Valley	Shallow tributaries and mainstems of perennial streams and rivers, typically associated with cobble or boulder substrate	None. The Survey Area is outside the species' known range and habitats associated with the species are not present. The Project does not include in-water work nor work along the waterside of the levee, where the species would be more likely to be present, upstream of the Survey Area where salinity levels are lower in the San Joaquin River. Most recent CNDDB occurrence is 56 mi southwest of Survey Area from 2023, and the closest CNDDB occurrence is 12 mi from the Survey Area from 1953 (CDFW 2024a). An additional occurrence is 20 mi from the Survey Area from 2023 (iNaturalist 2025). Critical habitat has not been designated for this species.
California red-legged frog <i>Rana draytonii</i>	CDFW/USFWS	FT/-	Largely restricted to coastal drainages on the central coast from Mendocino County to Baja California; in the Sierra foothills south to Tulare and possibly Kern counties	Breeds in still or slow-moving water with emergent and overhanging vegetation, including wetlands, wet meadows, ponds, lakes, and low-gradient, slow moving stream reaches with permanent pools; uses adjacent uplands for dispersal and summer retreat	None. The Survey Area is outside the species' known range The frog was not documented during monitoring activities on Sherman Island in 2017 and 2018 (Stillwater Sciences 2009). The most recent CNDDB occurrence is 51 mi northwest of the Survey Area from 2024, and the closest CNDDB occurrence is 8 mi from the Survey Area from 2005 (CDFW 2024a). An additional, more recent occurrence is 4 mi south of the Survey Area from 2023 (iNaturalist 2025). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located 17 mi from the Survey Area.

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Northwestern pond turtle <i>Actinemys marmorata</i>	CDFW	FPT/SSC	Range is from the Oregon border along the coast ranges to the northern San Francisco Bay area as well as the Central Valley, Cascades, and Sierras	Permanent, slow-moving fresh or brackish water with available basking sites and adjacent open habitats or forest for nesting	Moderate. See Section 3.3.
Northern California legless lizard <i>Anniella pulchra</i>	CDFW	–/SSC	Fragmented populations in the San Joaquin Valley, from Contra Costa County to Ventura County	Sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces; warm, moist, loose soil for burrowing	None. The Survey Area is located just north of the species' known range, and no suitable habitat is present. Nearby occurrences include one 3 mi away from 2015, 3 mi away from 2011, and 4 mi away from 2005 (CDFW 2024a).
Giant garter snake <i>Thamnophis gigas</i>	CDFW, USFWS	FT/ST	Central Valley from the vicinity of Burrell in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno	Sloughs, canals, low- gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	Moderate. See Section 3.3.
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	CDFW	FT/ST	Inner coast range, mostly Contra Costa and Alameda counties; additional records in San Joaquin and Santa Clara counties	Chaparral (northern coastal sage scrub and coastal sage) and rocky outcrops; may venture into adjacent habitats including grassland, oak savanna, and woodlands	None. The Survey Area is outside the species' known range and no suitable habitat is present. The species has not been documented within 5 mi of the Survey Area. One occurrence is from 10 mi southwest of the Survey Area in 2005, 10 mi away in 2006, and 25 mi away in 2018 (CDFW 2024a). A more recent occurrence is documented 7 mi southwest of the Survey Area from 2019 (iNaturalist 2025).

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Numerous bird species protected under the Migratory Bird Treaty Act (MBTA)	USFWS	FMBTA/SMBT A	Range encompasses California	Variable including, but not limited to, grasses, shrubs, and trees	High. See Section 3.3.
Northern harrier <i>Circus cyaneus</i>	CDFW	–/SSC	Year-round resident; scattered throughout California; in the northwest, nests largely within coastal lowlands from Del Norte County south to Bodega Head in Sonoma County, inland to Napa County	Nests, forages, and roosts in wetlands or along rivers or lakes, but also in grasslands, meadows, or grain fields	High. See Section 3.3.
Swainson's hawk <i>Buteo swainsoni</i>	CDFW	–/ST	Summer resident; breeds in lower Sacramento and San Joaquin valleys, the Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	High. See Section 3.3.
White-tailed kite <i>Elanus leucurus</i>	CDFW	–/SFP	Year-round resident; found in nearly all lowlands of California west of the Sierra Nevada mountains and the southeast deserts	Lowland grasslands and wetlands with open areas; nests in trees near open foraging area	High. See Section 3.3.
Golden eagle <i>Aquila chrysaetos</i>	CDFW	BGEPA/SFP	Species is an uncommon permanent resident and migrant throughout California, except center of Central Valley.	Open woodlands and oak savannahs, grasslands, chaparral, sagebrush flats; nests on steep cliffs or medium to tall trees	Moderate. See Section 3.3.

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
California black rail <i>Laterallus jamaicensis coturniculus</i>	CDFW	–/ST, SFP	Northern San Francisco Bay area (primarily San Pablo and Suisun bays) and Sacramento-San Joaquin Delta	While large tidally-influenced marshes with saline to brackish water is preferred for the species, due to habitat degradation across the state, the species have been known to move into freshwater marshes when the preferred tidally-influenced habitat is not present. Vegetation associations include pickleweed (<i>Salicornia virginica</i>), bulrush (<i>Schoenoplectus</i> spp.), cattail (<i>Typha</i> spp.), or rushes (<i>Juncus</i> spp.); peripheral vegetation at and above mean high higher water necessary to protect nesting birds during extremely high tides.	Low. No suitable marsh habitat within the Survey Area; low quality, fragmented marsh along the San Joaquin River. CNDDB occurrences include one 2 mi south of the Survey Area from 2014 and one 6 mi east of the Survey Area from 2005 (CDFW 2024a).
California Ridgway's rail <i>Rallus obsoletus obsoletus</i>	USFWS	FE/SE, SFP	Predominantly in the tidal marshes of the San Francisco estuary: South San Francisco Bay, North San Francisco Bay, San Pablo Bay, and sporadically throughout the Suisun Marsh area east to Browns Island	Salt and brackish water marshes, typically dominated by pickleweed (<i>Salicornia virginica</i>) and Pacific cordgrass (<i>Spartina foliosa</i>).	None. The Survey Area is outside the species' known current range, and no suitable habitat is present. The closest CNDDB occurrence is located 15 mi west of the Survey Area from 1994 (CDFW 2024a). An additional occurrence is documented 6 mi west of the Survey Area from 1998 (eBird 2025).
Mountain plover <i>Charadrius montanus</i>	CDFW	–/SSC	Winter visitor; found in the Central Valley south of Yuba County along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego counties; parts of Imperial, Riverside, Kern, and Los Angeles counties	Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grain fields	Low. The Survey Area is outside the typical range for the species. The most recent CNDDB occurrence is 12 mi north of the Project Area from 2024 (CDFW 2024a). One historical occurrence is on Sherman Island from 2011 (eBird 2025).

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	CDFW	FT/SSC	Species nests in locations along the California coast, including the Eel River in Humboldt County; nests in the interior of the state in the Central Valley, Klamath Basin, Modoc Plateau, and Great Basin, Mojave, and Colorado deserts; winters primarily along coast	Barren to sparsely vegetated beaches, barrier beaches, salt-evaporation pond levees, and shores of alkali lakes; also nests on gravel bars in rivers with wide flood plains; needs sandy, gravelly, or friable soils for nesting	Low. The preferred suitable habitat of sandy beaches is not present within the Survey Area. The only potential nesting habitat is in the form of the levee road gravel margins, which is suboptimal. Foraging habitat is likewise fragmented and suboptimal within the Survey Area. Furthermore, the Project does not include in-water work nor work along the waterside of the levee, where the species would be more likely to be present. No potential for the species to be present nesting, and low potential for presence flying over. The closest and most recent CNDDDB occurrence is 8 mi northwest of the Survey Area from 2023 (CDFW 2024a). Another occurrence is located 10 mi northwest of the Survey Area from 2014 (iNaturalist 2025). Final critical habitat has been designated for this species and is not present within the Survey Area; final critical habitat is located about 35 mi from the Survey Area.
Western burrowing owl <i>Athene cunicularia hypugaea</i>	CDFW	–/SCE, SSC	Year-round resident throughout much of the state; Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Level, open, dry, heavily grazed or low- stature grassland or desert vegetation with available burrows	Moderate. See Section 3.3.
Loggerhead shrike <i>Lanius ludovicianus</i>	CDFW	–/SSC	Year-round resident in most of California except for the forested coastal slope and the high elevations of the Sierra Nevada, southern Cascade, and Transverse Ranges	Open shrubland or woodlands with short vegetation and and/or bare ground for hunting; some tall shrubs, trees, fences, or power lines for perching; typically nest in isolated trees or large shrubs	High. See Section 3.3.

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Bank swallow <i>Riparia riparia</i>	CDFW	–/ST	Summer resident; occurs along the Sacramento River from Tehama County to Sacramento County; along the Feather and lower American rivers; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou counties; small populations near the coast from San Francisco County to Monterey County	Nests in vertical bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam	Moderate. See Section 3.3.
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	CDFW	–/SSC	San Francisco Bay region	Brackish marsh, riparian woodland/swamp, freshwater marsh, and salt marsh often near upland habitats	Low. The Survey Area and nearby vicinity is outside the typical range. for the subspecies. The closest CNDDDB occurrence is 6 mi west of the Survey Area from 2004 (CDFW 2024a).
Song sparrow ("Modesto" population) <i>Melospiza melodia</i>	CDFW	–/SSC	Year-round resident; north-central portion of the Central Valley	Emergent freshwater marshes, riparian willow thickets, and riparian forests	Moderate. See Section 3.3.
Suisun song sparrow <i>Melospiza melodia maxillaris</i>	CDFW	–/SSC	Resident of Suisun Bay	Brackish-water marshes	Low. The Survey Area and nearby vicinity is outside the subspecies' typical range and limited marsh habitat is present. While the Survey Area is outside the typical range, there has been a historical occurrence at the Lower Sherman Island Wildlife Area, which is located about 5 mi west of the Survey Area (CDFW 2024a).

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Tricolored blackbird <i>Agelaius tricolor</i>	CDFW	–/ST, SSC	Permanent resident, but makes extensive migrations both in breeding season and winter; common locally throughout Central Valley and in coastal areas in and south of Sonoma County	Feeds in grasslands and agriculture fields; nesting habitat components include open accessible water, a protected nesting substrate (including flooded or thorny vegetation), and a suitable nearby foraging space with adequate insect prey	Moderate. See Section 3.3.
California least tern <i>Sternula antillarum browni</i>	CDFW	FE/SE, SFP	Pacific coast from San Francisco to Baja California	Sparsely vegetated coastal beaches and estuaries near shallow waters, above high tide line	Low. This species has the potential to fly over the Survey Area; however, no nesting or foraging habitat is present. Additionally, while a portion of Sherman Island is within the species' current range, the Survey Area is not. A nesting colony is present 8 mi northwest of the Survey Area and documented from 2023 (CDFW 2024a). An occurrence is also documented 10 mi north of the Project Area from 2021 (iNaturalist 2025).
Mammals					
Western red bat <i>Lasiurus frantzii</i>	CDFW	–/SSC	Near the Pacific Coast, Central Valley, and the Sierra Nevada	Roosts in foliage, primarily in riparian trees, such as sycamores and cottonwoods, while less in shrubs; woodlands near streams, fields and orchards; feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands	Moderate. See Section 3.3.

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
Pallid bat <i>Antrozous pallidus</i>	CDFW	–/SSC	Throughout California except for elevations greater than 3,000 m in the Sierra Nevada	Roosts in rock crevices, cavities in live or dead trees, mines, caves, and a variety of vacant and occupied buildings; feeds in a variety of upland habitats and most frequently in riparian, open oak savannah, and open mixed deciduous forest	Low. No roosting habitat (e.g., mines, caves, buildings) is present in the Survey Area. Foraging habitat is present in the form of grasslands. There is one historical (1929) CNDDDB occurrence more than 13 mi away (CDFW 2024a). No acoustic recordings of the bat from the two closest grid cells (114067 and 7914) located about 10–15 mi from the Survey Area (Conservation Biology Institute and USFS 2025). The only documented occurrence is from 12 mi southwest of the Survey Area in 2022 (iNaturalist 2025).
Salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	CDFW	FE/SE, SFP	San Pablo, Suisun, and San Francisco bays in Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, and San Mateo counties	Tidal salt marshes; depend on dense cover, preferring pickleweed (<i>Salicornia pacifica</i>) and saltgrass (<i>Distichlis spicata</i>)	Low. The Survey Area does not support tidal salt marsh; fragmented patches of saltgrass were noted during the February 2025 Special-Status Wildlife Assessment, but no pickleweed was observed. An occurrence is documented 6 mi northwest of the Survey Area from 2004, 7 mi northwest of the Survey Area from 2015, and 8 mi northwest of the Survey Area from 2022; all occurrences note pickleweed salt marsh habitat (CDFW 2024a).
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	CDFW	FE/ST	San Joaquin Valley floor and surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi mountains	Annual grasslands or open areas dominated by scattered brush, shrubs, and scrub	None. The Survey Area is just north of the species' known range. The closest CNDDDB occurrence is 8 mi southwest of the Survey Area from 1995 (CDFW 2024a).

Common name Scientific name	Query sources	Status ^a Federal/State	Distribution in California	Habitat association	Likelihood to occur in Survey Area
American badger <i>Taxidea taxus</i>	CDFW	–/SSC	Throughout the state except in the humid coastal forests of Del Norte County and the northwest portion of Humboldt County	Shrubland, open grasslands, fields, and alpine meadows with friable soils	Low. None of the burrows observed during the February 2025 Special-Status Wildlife Assessment were of suitable size for this species, and while some habitats associated with the species are present within the Survey Area (i.e., open grasslands and shrub lands), they are not abundant. CNDDB occurrences include one burrow 7 mi south of the Survey Area in 2007, one 8 mi south of the Survey Area from 2006 and one 10 mi south from 2002 (CDFW 2024a). A burrow was documented 10 mi southwest of the Survey Area in 2024 (iNaturalist 2025).

Notes: mi = mile
DPS = distinct population segment
CDFW = California Department of Fish and Wildlife
USFWS = U.S. Fish and Wildlife Service

^a Status codes:

Federal

FE = Listed as endangered under the federal Endangered Species Act
FT = Listed as threatened under the federal Endangered Species Act
FPT = Federally proposed as threatened
BGEPA = Federally protected under the Bald and Golden Eagle Protection Act
FMBTA = Federal Migratory Bird Treaty Act

State

SE = Listed as endangered under the California Endangered Species Act
ST = Listed as threatened under the California Endangered Species Act
SCE = State candidate endangered
SSC = CDFW species of special concern
SFP = CDFW fully-protected species
SMBTA = State of California Migratory Bird Treaty Act

APPENDIX E

Comprehensive List of Vascular Plant Species Documented during Special-status Botanical Surveys for the Project

Table E-1 Comprehensive list of plant species observed during the botanical survey in the Sherman Island Survey Area

Scientific name Common name	Family	Nativity	Cal-IPC rating	Wetland indicator status (Arid West)
<i>Ambrosia psilostachya</i> Western ragweed	Asteraceae	Native	NA	FACU
<i>Arundo donax</i> Giant reed	Poaceae	Naturalized	High	FACW
<i>Asclepias</i> sp. Milkweed	Apocynaceae	Native	NA	NA
<i>Atriplex prostrata</i> Fat-hen	Chenopodiaceae	Naturalized	None	FACW
<i>Atriplex semibaccata</i> Australian saltbush	Chenopodiaceae	Naturalized	Moderate	FAC
<i>Avena fatua</i> Wild oat	Poaceae	Naturalized	Moderate	NL/UPL
<i>Brassica nigra</i> Black mustard	Brassicaceae	Naturalized	Moderate	NL/UPL
<i>Bromus catharticus</i> Rescue grass	Poaceae	Naturalized	None	NL/UPL
<i>Bromus diandrus</i> Ripgut grass	Poaceae	Naturalized	Moderate	NL/UPL
<i>Bromus hordeaceus</i> Soft chess	Poaceae	Naturalized	Limited	FACU
<i>Carduus pycnocephalus</i> subsp. <i>Pycnocephalus</i> Italian thistle	Asteraceae	Naturalized	Moderate	NL/UPL
<i>Centaurea solstitialis</i> Yellow star-thistle	Asteraceae	Naturalized	High	NL/UPL
<i>Cirsium vulgare</i> Bull thistle	Asteraceae	Naturalized	Moderate	FACU
<i>Conium maculatum</i> Poison hemlock	Apiaceae	Naturalized	Moderate	FACW
<i>Convolvulus arvensis</i> Bindweed, orchard morning-glory	Convolvulaceae	Naturalized	None	NL/UPL
<i>Cynara cardunculus</i> Artichoke thistle	Asteraceae	Naturalized	Moderate	NL/UPL
<i>Cynodon dactylon</i> Bermuda grass	Poaceae	Naturalized	Moderate	FACU

Scientific name Common name	Family	Nativity	Cal-IPC rating	Wetland indicator status (Arid West)
<i>Cyperus eragrostis</i> Tall flatsedge	Cyperaceae	Native	NA	FACW
<i>Dysphania botrys</i> Jerusalem oak	Chenopodiaceae	Naturalized	None	FACU
<i>Elymus triticoides</i> Beardless wild-rye	Poaceae	Native	NA	FAC
<i>Epilobium ciliatum</i> Fringed willowherb	Onagraceae	Native	NA	FACW
<i>Erigeron canadensis</i> Horseweed	Asteraceae	Native	NA	FACU
<i>Euthamia occidentalis</i> Western goldenrod	Asteraceae	Native	NA	FACW
<i>Festuca myuros</i> Rattail sixweeks grass	Poaceae	Naturalized	Moderate	FACU
<i>Festuca perennis</i> Rye grass	Poaceae	Naturalized	Moderate	FAC
<i>Foeniculum vulgare</i> Fennel	Apiaceae	Naturalized	Moderate	NL/UPL
<i>Heliotropium curassavicum</i> var. <i>oculatum</i> Seaside heliotrope	Heliotropiaceae	Native	NA	FACU
<i>Helminthotheca echioides</i> Bristly ox-tongue	Asteraceae	Naturalized	Limited	FAC
<i>Hordeum murinum</i> Wall barley	Poaceae	Naturalized	Moderate	FACU
<i>Juncus mexicanus</i> Mexican rush	Juncaceae	Native	NA	FACW
<i>Lactuca serriola</i> Prickly lettuce	Asteraceae	Naturalized	None	FACU
<i>Lemna minor</i> Common duckweed	Araceae	Native	NA	OBL
<i>Lepidium latifolium</i> Perennial pepperweed	Brassicaceae	Naturalized	High	FAC
<i>Lotus corniculatus</i> Birds-foot trefoil	Fabaceae	Naturalized	None	FAC
<i>Lythrum hyssopifolia</i> Hyssop loosestrife	Lythraceae	Naturalized	Moderate	NL/UPL

Scientific name Common name	Family	Nativity	Cal-IPC rating	Wetland indicator status (Arid West)
<i>Malva parviflora</i> Cheeseweed	Malvaceae	Naturalized	None	NL/UPL
<i>Malvella leprosa</i> Alkali-mallow	Malvaceae	Native	NA	FACU
<i>Medicago polymorpha</i> Burclover	Fabaceae	Naturalized	Limited	FACU
<i>Melilotus albus</i> White sweetclover	Fabaceae	Naturalized	None	FACU
<i>Myoporum laetum</i> Ngaio tree	Scrophulariaceae	Naturalized	Moderate	FACU
<i>Paspalum dilatatum</i> Dallis grass	Poaceae	Naturalized	None	FAC
<i>Persicaria amphibia</i> Water smartweed	Polygonaceae	Native	NA	OBL
<i>Persicaria lapathifolia</i> Willow weed	Polygonaceae	Native	NA	FACW
<i>Phragmites australis</i> Common reed	Poaceae	Native	NA	FACW
<i>Phyla nodiflora</i> Turkey tangle fogfruit	Verbenaceae	Native	NA	FACW
<i>Plantago major</i> Common plantain	Plantaginaceae	Naturalized	None	FAC
<i>Populus fremontii</i> subsp. <i>Fremontii</i> Fremont cottonwood	Salicaceae	Native	NA	FAC
<i>Raphanus sativus</i> Cultivated radish	Brassicaceae	Naturalized	Limited	NL/UPL
<i>Rubus armeniacus</i> Himalayan blackberry	Rosaceae	Naturalized	High	FAC
<i>Rumex crispus</i> Curly dock	Polygonaceae	Naturalized	Limited	FAC
<i>Salix exigua</i> Narrowleaf willow	Salicaceae	Native	NA	FACW
<i>Salix gooddingii</i> Goodding's willow	Salicaceae	Native	NA	FACW
<i>Salix lasiolepis</i> Arroyo willow	Salicaceae	Native	NA	FACW

Scientific name Common name	Family	Nativity	Cal-IPC rating	Wetland indicator status (Arid West)
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i> Common tule	Cyperaceae	Native	NA	OBL
<i>Silybum marianum</i> Milk thistle	Asteraceae	Naturalized	Limited	NL/UPL
<i>Solanum americanum</i> American black nightshade	Solanaceae	Native	NA	FACU
<i>Sonchus asper</i> subsp. <i>Asper</i> Prickly sow thistle	Asteraceae	Naturalized	None	FAC
<i>Sonchus oleraceus</i> Common sow thistle	Asteraceae	Naturalized	None	UPL
<i>Sorghum halepense</i> Johnson grass	Poaceae	Naturalized	None	FACU
<i>Tragopogon porrifolius</i> Salsify	Asteraceae	Naturalized	None	NL/UPL
<i>Trifolium fragiferum</i> Strawberry clover	Fabaceae	Naturalized	None	FAC
<i>Typha latifolia</i> Broad-leaved cattail	Typhaceae	Native	NA	OBL
<i>Urtica dioica</i> Stinging nettle	Urticaceae	Native	NA	FAC
<i>Vicia villosa</i> Hairy vetch	Fabaceae	Naturalized	None	NL/UPL
<i>Xanthium orientale</i> Common cocklebur	Asteraceae	Native	NA	FAC

Notes: Cal-IPC – California Invasive Plant Council

NA = Not applicable

FAC = Facultative

FACU = Facultative Upland

FACW = Facultative Wetland

OBL = Obligate Wetland

NL = Not listed

UPL = Upland