BUREAU OF RECLAMATION

CGB-ED-2025-139

Final Supplemental Environmental Assessment

B.F. Sisk Safety of Dams Modification Project

California–Great Basin Region

The U.S. Bureau of Reclamation (Reclamation) has considered the factors mandated by the National Environmental Policy Act (NEPA). This Supplemental Environmental Assessment (SEA) represents Reclamation's good-faith effort to prioritize documentation of the most important considerations required by the statute within the congressionally mandated page limits. This prioritization reflects Reclamation's expert judgement. Any considerations addressed briefly or unaddressed were, in Reclamation's judgement, comparatively not of a substantive nature that meaningfully informed the consideration of environmental effects and the resulting decision on how to proceed.

This SEA represents Reclamation's good-faith effort to fulfill NEPA's requirements within the congressional deadline. This effort is now substantially complete and in Reclamation's expert opinion, has thoroughly considered the factors mandated by NEPA. In Reclamation's judgement, the analysis contained in this SEA is adequate to inform and reasonably explain Reclamation's decision regarding the proposed Federal action.

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Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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APPENDICES

Acronyms and Abbreviations

2019 EIS/R	B.F. Sisk Safety of Dams Modification Project Final Environmental Impact Statement/Environmental Impact Report
BMPs	Best Management Practices
BO	Biological Opinion
CDFW	California Fish and Wildlife Service
CEQA	California Environmental Quality Act
CRLF	California Red Legged Frog
CTS	California Tiger Salamander
CVRWQCB	Central Valley Regional Water Quality Control Board
District	B.F. Sisk Dam/San Luis Reservoir Historic District
DWR	California Department of Water Resources
EA	Environmental Assessment
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
ITP	Incidental Take Permit
NEPA	National Environmental Policy Act
NVS	North Valley Section
NPDES	National Pollutant Discharge Elimination Systems
PA	Programmatic Agreement Among the Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project
Project	B.F. Sisk Safety of Dams Modification Project
Reclamation	Bureau of Reclamation
ROD	Record of Decision, B.F. Sisk Safety of Dams Modification Project
SHPO	State Historic Preservation Office
SJKF	San Joaquin Kit Fox
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLCDUA	San Luis Creek Day Use Area
State Parks	California Department of Parks and Recreation
SVS	South Valley Section
SWPPP	Stormwater Pollution Prevention Plan
TACs	Toxic air contaminants
USFWS	United States Fish and Wildlife Service

1. Introduction

This Supplemental Environmental Impact Statement (SEA) is being prepared by the California Great Basin Reginal Office located in Sacramento, California under environmental documentation number CGB-ED-2025-139. The proposed project is being constructed in a partnership with the California Department of Water Resources in Merced County, California.

1.1 Project Purpose and Need

The U.S. Bureau of Reclamation (Reclamation) proposes to expand the existing B.F. Sisk Safety of Dams Project (Project) to include two areas that are outside of the footprint of the existing Project area: (1) the North Valley Section (NVS) berm extension and two Borrow Areas 20 and 21. The Project footprint expansion is approximately 85.9 acres. Modifications to the Project are needed to address dam stability and safety concerns in the event of seismic activity to reduce public safety concerns and maintain water supply deliveries to state and federal water contractors.

B.F. Sisk Dam is a 382-foot-high zoned compacted earth-fill embankment that is over 3 miles long and impounds San Luis Reservoir, which has a total capacity of more than 2 million acre-feet. The dam was built between 1963 and 1967 and provides supplemental irrigation water storage for the Federal Central Valley Project and municipal and industrial water for the California State Water Project. The dam is owned by Reclamation and operated by the California Department of Water Resources (DWR).

BF Sisk Dam sections run from north to south and include the left abutment; the valley section, which includes the NVS and the south valley section (SVS); and the right abutment. The abutments are primarily founded on bedrock (sandstone, shale, and conglomerate). The NVS and SVS are the alluvial channels of San Luis Creek and Cottonwood Creek impounded by the B.F. Sisk Dam and consist of deposits of sands and gravels with clayey or silty fines. The dam embankment consists of multiple zones, including a rolled earth section of clay, sand, and gravel; a 3-foot-thick layer of rock riprap protecting the upstream face; and a 2-foot-thick rockfill section on the downstream face.

1.1.1 2019 Approved Project

A full description of the Approved Project, referred to as the Crest Raise Alternative, is provided in Section 2.2.3 of the 2019 Approved Project Environmental Impact

Statement/Environmental Impact Report (EIS/EIR)[1]. The Approved Project would include making improvements to the downstream side of the existing dam to enhance its stability and increasing the dam crest height to reduce the potential for water to overtop the dam if seismic-induced slumping were to occur. These improvements would be accomplished by (1) constructing stability berms and downstream crack filters in select areas, (2) adding additional material over the entire area of the existing embankment, (3) installing a new filter around the existing spillway conduit, and (4) extending the spillway conduit to meet the resultant downstream edge of the extended embankment. Construction of three foundation shear keys to anchor the proposed stability berms to underlying bedrock is also part of the Crest Raise Alternative.

1.1.2 2021 Modified Project

The modifications to the Approved Project in the 2021 SEIR/Supplemental EA proposed recreation mitigation activities, additional construction contractor use areas, and additional activities in a construction contractor use area (now Borrow Areas 12 and 14).

The dam stability features, including the stability berms, foundation shear keys, and dam crest raise, remained largely unchanged in the 2021 Modified Project, as did overall assumptions of equipment, personnel, workday schedules, and overall construction schedule. In certain cases, supplemental details or clarification regarding components of the Approved Project, such as eliminating the shear key at the SVS and reducing the depth of other shear keys, were presented to ensure that minor changes in the Approved Project are appropriately defined, but these changes were minor and within the scope of the analysis conducted in the 2019 EIS/EIR.

1.1.3 2025 Modified Project (Proposed Action)

As construction of the 2021 Modified Project has progressed, minor modifications to Project design and construction have been identified to achieve Project objectives. These changes, which define the 2025 Proposed Action and are addressed in this Supplemental Environmental Assessment (SEA) include expansion into new areas that were not part of the Project footprint assumed in the 2019 EIS/EIR or 2021 SEIR/Supplemental EA. The expansion into new areas would occur adjacent to previously assumed work areas; there are no new off-site impacts that would occur outside of the existing B.F. Sisk Dam complex. A map of the 2025 Proposed Action components is shown in Figure 1.

[1] The 2019 BF Sisk Safety of Dams EIS/EIR is available at: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=34281

The 2025 Proposed Action footprint expansion areas involve the following elements, which are further described below: (1) NVS berm extension and (2) Borrow Areas 20 and 21. The extent of the Project footprint expansion areas collectively encompasses approximately 85.9 acres. Table 1 shows footprint expansion acreages associated with these Project components.

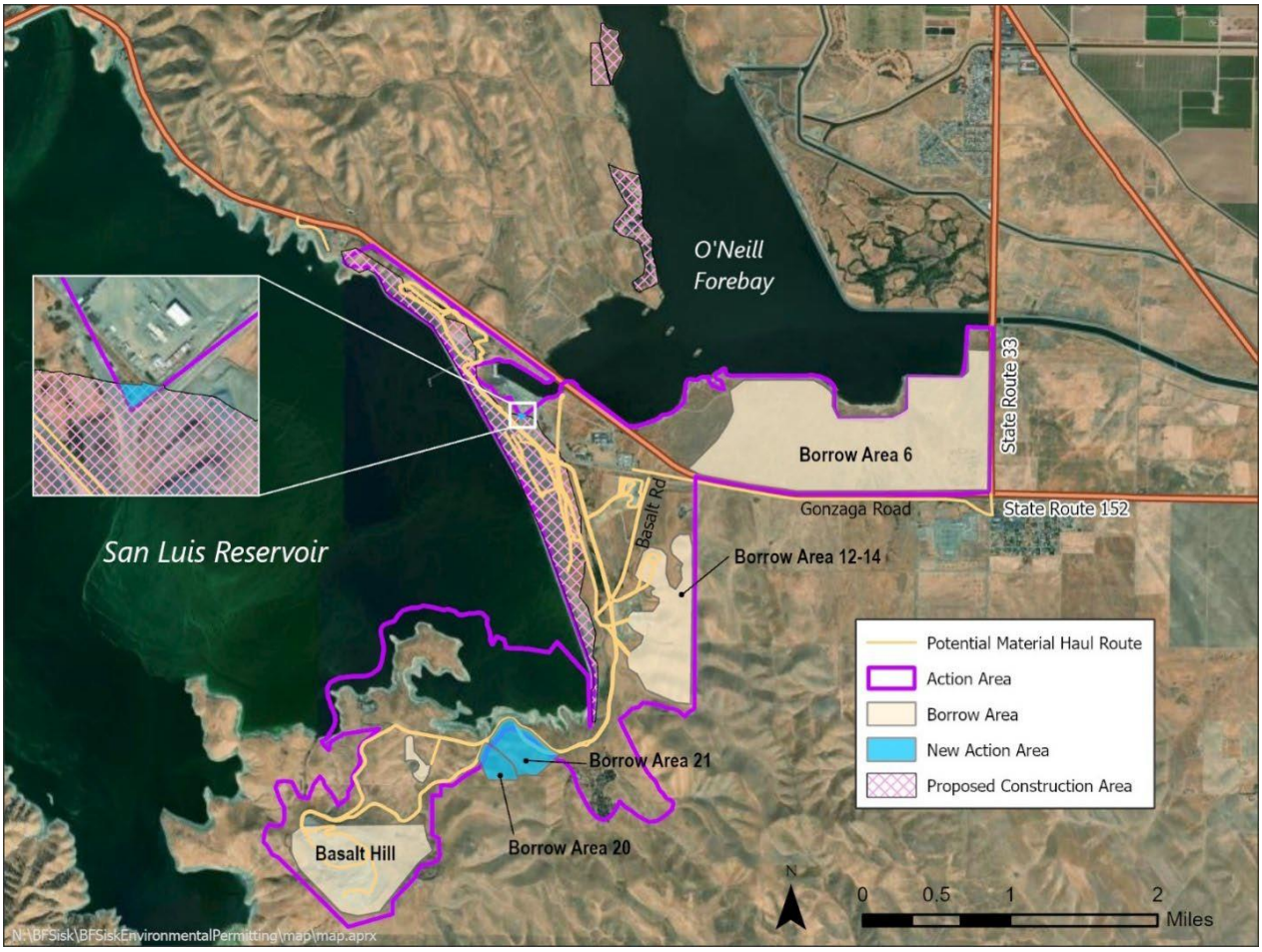

Figure 1. Project Area

1.2 Previous NEPA Documents

Reclamation and DWR completed the 2019 B.F. Sisk Dam Modification Project Final EIS/EIR[2] to jointly comply with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). After circulating a draft document in April 2019 for public review, the Final EIS/EIR was released in August 2019. On December 3,

[2] The 2019 EIS/R is available at: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=34281

2019, Reclamation executed a Record of Decision (ROD) for the Project based on analysis in the 2019 EIS/R summarizing Reclamation's decision to implement the Crest Raise Alternative.

In 2021, Reclamation developed a SEA to address recreation mitigation activities, additional construction contractor use areas, and borrow activities in an existing contractor construction use area identified in the 2019 EIS/R, and executed a Finding of No Significant Impact (FONSI)[3] on August 23, 2021. DWR released a Final SEIR analyzing the proposed modifications under CEQA on June 15, 2021[4]. On April 9, 2025, DWR signed a CEQA Addendum to acknowledge and consider the environmental impacts of the 2025 Proposed Action.

This SEA summarizes expected environmental impacts associated with the Proposed Action (referred to as the Proposed Action) and provides discussion of potential effects to Indian Trust Assets and compliance with the Endangered Species Act (ESA) and National Historic Preservation Act (NHPA).

The 2019 EIS/R and 2021 SEA/EIR are hereby incorporated by reference and links to the complete documents are located in the footnotes.

[3] The 2021 SEA/FONSI is available at: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=34281
[4] The 2021 SEIR is available at: https://ceqanet.opr.ca.gov/2009091004/8

2. Alternatives Including the Proposed Action

2.1 Project Background

The summary of Project activities here serves to contextualize the proposed modifications analyzed in this SEA. Project components that are not specifically described in this SEA have not changed from the description provided in the 2019 EIS/R and 2021 SEA/EIR.

To address the potential for dam failure caused by a seismic event, the B.F. Sisk Dam Safety of Dams Modification Project would raise portions of the dam crest in the SVS and NVS 10 feet to increase the distance between the water surface and the dam crest. The Project includes adding embankment material, constructing stability berms and foundation shear keys, and installing downstream crack filters.

The crack filters would address seismic crack induced erosion risk by the installation of downstream filters (engineered material layers consisting of different material types built into the dam face) across the full width of the dam crest raise on the downstream face of the new embankment material. This feature would help restrict the migration of soil materials through cracks, mitigating the potential for post seismic cracks to induce internal erosion within the dam embankment.

The Project will also include site preparation activities, material quarry and processing, material stockpiling and staging activities, material transport, site cleanup, restoration, and revegetation activities. Site preparation will include moving or grubbing vegetation, stripping, clearing, grading, fence and sign installation, implementation of the best management practice (BMP)s for stormwater pollution prevention, rock crushing facility and containment set-up, and water source establishment.

Material quarry and processing will include developing and improving haul roads for access, excavation, processing, screening, and stockpiling of various type of rock and soil materials within the borrow areas. Heavy equipment, material transport equipment, and a processing plant are expected to be used for these activities. Material will be stockpiled at three designated staging locations and transported to the dam face for use in construction activities.

The Project area totals approximately 4,000 acres within the San Luis Reservoir State Recreation Area (SLRSRA), depicted in Figure 1. The site will be revegetated following completion of construction.

2.2 No Action Alternative

Under the No Action Alternative, Reclamation would complete the B.F. Sisk Safety of Dams Modification Project as described in the 2019 EIS/R and 2021 *SEA/EIR*. No modifications to the project description would be made and the additional risk factors identified during the first phase of construction would not be addressed. This alternative serves as a basis of comparison for understanding potential effects to the environment.

2.3 Proposed Modifications to the Project (Proposed Action)

Reclamation and has identified two proposed modifications to project activities which constitute a change in use from the 2019 EIS/R 2021 *SEA/EIR*: (1) NVS berm extension area and (2) the addition of borrow areas 20 and 21. Table 1 shows footprint expansion acreages associated with the Proposed Action components, as well as acreages associated with Proposed Action components involving a change in use from the 2019 EIS/R and 2021 *SEA and SEIR*.

Table 1. 2025 Proposed Action Acreages

Project Component	**Acres**
Footprint Expansion Areas	
North Valley Section Berm Extension	0.6
Borrow Areas 20 and 21	85.3
Total	**85.9**

2.3.1 North Valley Section Berm Extension

Based on site conditions encountered during the first phase of construction, the original stability berm design was enlarged to provide additional seismic stability of the overall dam structure. Most of this expanded berm footprint occurs in an area that was part of the 2019 Approved Project boundary and assumed as a contractor work area in the 2019 EIS/EIR and SEA/EIR. One small 0.6-acre portion of the berm extension toward the

southern portion of the NVS would extend beyond the original Project boundary, shown in Figure 2 as an inset map.

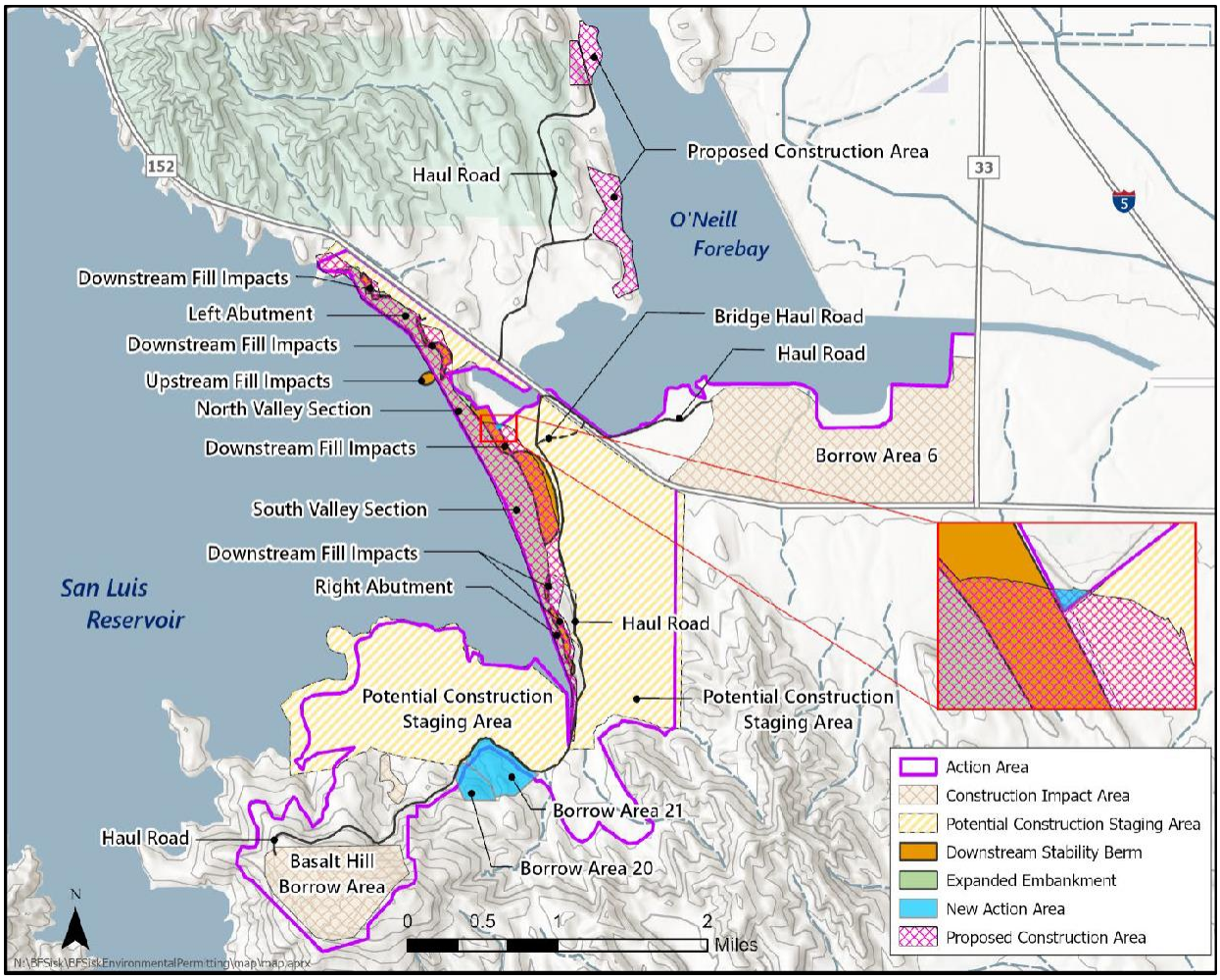

Figure 2- Proposed Action Map

2.3.2 Borrow Areas 20 and 21

Changes to the Project engineering design would require additional fill materials to construct stability berms and the embankment crest raise. Consequently, two new borrow areas, Borrow Areas 20 and 21, are proposed to provide approximately 5 million cubic yards of additional suitable earth-fill material. Shown in Figure 2, these borrow areas would allow for more effective and efficient extraction of borrow materials compared to other available sources due to proximity. Material would be ripped and excavated by heavy equipment and loaded into off-highway haul trucks to transport the materials to areas where stability berms and embankment crest raise are to occur. Excavation would involve removal of approximately 75 vertical feet of earth material within Borrow Areas 20 and 21. This work is expected to occur 24 hours per day, from

2025 through 2032, for a total of 8 years. The removal of 5 million cubic yards of material from these areas will not reduce the hills to level ground and will maintain natural drainage areas.

Figure 2. New Action Area

2.3.4 Modifications to Mitigation Measures

The summary of environmental commitments from the 2019 ROD and updates from the 2021 SEA/EIR are provided in Appendix A. These measures are included in the project description; the environmental analysis below assumes full implementation.

3. Affected Environment and Environmental Consequences

3.1 Introduction

The following sections describe the affected environment in the context of potential environmental resource areas affected by the proposed action. It provides the NEPA analysis of potential environmental consequences anticipated with implementation of the Proposed Action or the No Action alternatives.

Following a description of the Affected Environment for each resource area, an assessment of the potential for effects under NEPA are included in the Environmental Consequences section.

3.1.1 Resources Not Considered in Detail

Reclamation analyzed the affected environment and determined that the Proposed Action would not have the potential to cause adverse effects to the following resources:

Table 2. Resources Not Considered in Detail

Resource	Discussion
Fisheries	Under the Proposed Action, water supplies would continue to be conveyed through existing facilities either via gravity or electric pumps. There would be no construction or modification of facilities that could result in fisheries impacts.
Traffic and Transportation	Under the Proposed Action, there would be no net change to traffic volume, or the overall quantity of material being transported on site. There would be no new effects beyond what was disclosed in the previous NEPA documents.
Hazards and Hazardous Material	Under the Proposed Action, there would be no increase to the risk of hazards or hazardous material exposure. The previous NEPA documents did find that the Project could result in potential impacts related to interference with an adopted emergency response or evacuation plan, as well as exposure to wildland fires. With the continued implementation of the environmental commitments identified in previous NEPA documents, there would be no new effects beyond what was previously disclosed.
Land Use	There are no established communities in proximity to the Project site. The closest developed community, Santa Nella, is approximately 1.5 miles east of

Resource	Discussion
	the O'Neill Forebay. Furthermore, operation of the Project would be generally consistent with current operations of the water supply infrastructure at San Luis Reservoir. Under the Proposed Action, there would be no effects to Land Use.
Recreation	Under the Proposed Action, there would be no impacts to recreation. The Project Area for the Proposed Action is outside of areas that are available to the public for recreation.
Geology, Seismicity and Soils	Under the Proposed Action, there would be no effects with respect to earthquake faulting, seismic shaking/failure, landslides, unstable geologic unit or soils, expansive soils, erosions, or the loss of known or locally important mineral resources. There will be no new effects beyond what was disclosed in the previous NEPA documents.
Noise	Under the Proposed Action, there would be no new effects associated with noise because the work will be required to implement mitigation measures NOISE-1, NOISE-2, and NOISE-3. With the implementation of these mitigation measures, there will be no new impacts beyond what was disclosed in the previous NEPA documents.
Water Quality and Groundwater	Under the Proposed Action, there will be no impacts associated with water quality and groundwater because the Proposed Action would be required to comply with the provisions of a Construction General Permit and associated Stormwater Pollution Prevention Plan (SWPPP) and would be required to implement low-impact-development standards designed to reduce runoff, treat stormwater, and provide hydromodification management. By complying with these permits, there would be no new effects beyond what was disclosed in the previous NEPA documents.

3.2 Biological (Terrestrial) Resources

3.2.1 Affected Environment

Consultation History

USFWS issued a Biological Opinion (BO) for this Project on August 29, 2019 (08ESMF00-2019-F-1572-2; USFWS 2019). USFWS issued a revised BO for this Project on June 3, 2021, and a memo with revised Conservation Measures on July 14, 2021 (08ESMF00-2019-F-1572-R001; USFWS 2021) and again on May 26, 2022 (2022-0047090).

Consultation resulted in the following determinations of impacts to federally listed species: the Project *may affect, and are likely to adversely affect* the federally listed as endangered San Joaquin kit fox (*Vulpes macrotis mutica;* SJKF), the federally listed as threatened Central California distinct population segment of the California tiger salamander (*Ambystoma californiense;* CTS), and the federally listed as threatened California red-legged frog (*Rana draytonii*, CRLF).

2025 Proposed Action

The Project design includes both conservation measures and mitigation activities, to minimize, avoid, and reduce Project impacts to these federally listed species. The action area does not include any designated critical habitat; impacts to critical habitat are not considered here. Reclamation initiated consultation with the U.S. Fish and Wildlife Service on December 17, 2024, to include the additional 85.9 additional acres of habitat that is currently outside of the Project footprint, bringing the Project area footprint to 4,038 acres.

3.2.2 Environmental Consequences

No Action Alternative

The 2019 EIS/EIR and 2021 SEA/EIR analyses concluded that the Project would result in a substantial adverse effect directly and through habitat modifications on species identified as candidate, sensitive, or special-status species by the California Department of Fish and Wildlife and/or U.S. Fish and Wildlife Service. However, Mitigation Measures TERR-1, TERR-6, TERR-7, TERR-10, TERR-11, TERR-13, TERR-15, SEIR-BIO-1, SEIR-BIO-2, SEIR-BIO-3, SEIR-BIO-4, and SEIR-BIO-6 would reduce these impacts by requiring avoidance or minimization of direct impacts to special-status species during construction, and compensatory mitigation for impacts on special-status plant occurrences and grassland habitat for special-status wildlife.

Beyond these mitigation measures, Reclamation and DWR will ensure the completion of compensatory mitigation activities pursuant to biological species consultation and permits including Clean Water Act Sections 401 and 404, the Endangered Species Act, and the California Endangered Species Act.

These mitigation measures are expected to reduce the Project's impacts to biological resources.

Proposed Action

In October 2024, DWR contracted biologists to prepare a Biological Resources Assessment to support biological resources occurring or potentially occurring within the 2025 Proposed Action footprint area (Appendix B).

Reclamation determined that the proposed action may result in the loss of 85.9 acres of wild oat and brome grassland habitat. Mitigation Measures TERR-1, TERR-6, TERR-7, TERR-10, TERR-11, TERR-13, and TERR-15 reduce direct Project impacts on grassland habitat through avoidance and minimization. With the implementation of these measures, there will be no effects beyond what was included in the previous NEPA documents.

3.3 Air Quality

The 2019 EIS/EIR and 2021 SEA/EIR did not identify significant air quality concerns, after mitigation, related to conflict or obstruction of an air quality plan, violation of ambient air quality standards, increase in criteria air pollutants, and exposure of sensitive receptors to pollutant concentrations. Mitigation Measures AQ-1, AQ-2, and AQ-3 require exhaust and fugitive dust controls to reduce these impacts.

No Action
The impacts would remain consistent with those identified in the 2019 EIS/EIR and 2021 SEA/EIR.

Proposed Action
The 2025 Proposed Action would implement the mitigation measures mentioned above addressing exhaust and fugitive dust controls and air quality. The 2021 SEA/EIR indicated that 7 million cubic yards of earth material would be sourced from borrow areas for construction of the 2021 Modified Project. As reported by Reclamation as evident by the quantity of fill material used on the Project site to date for construction, this estimate is considered conservative; the additional earth material needed for the 2025 Proposed Action would not exceed the amount assumed and analyzed by the 2021 SEA/EIR. Therefore, Project haul trips and associated construction activities are captured in the air quality analysis in the 2021 SEA/EIR.

3.4 Cultural Resources

3.4.1 Affected Environment

Chapters 3.12 and 3.14 of the SEIR/EA provides an updated description of the existing conditions of the affected environment, including the additional areas included as part

of the Proposed Action. The text is incorporated by reference in the footnotes to this document.

3.4.2 Environmental Consequences

No Action Alternative

The 2019 EIS/EIR and 2021 SEA/EIR describe potential impacts to cultural resources associated with the Project - specifically, Project implementation could lead to adverse effects/significant impacts to historic properties and/or historical resources.

Proposed Action

As described in Chapter 3.12 of the SEIR/EA, the Proposed Action, including newly identified areas for the NVS Berm Extension and Borrow areas 20 and 21, have the potential to affect historic properties within the Project area, if they are present. A supplemental cultural resources inventory was conducted in 2025, which included a supplemental records search, field inventory, and additional cultural resources inventory reporting. No previously recorded or unrecorded cultural resources were identified in the newly identified areas during the supplemental cultural resources inventory investigation. Reclamation is currently consulting on the findings of the supplemental cultural resources inventory under the PA, with consulting parties, and will reaffirm the no adverse effect finding.

Therefore, Reclamation does not anticipate the Proposed Action to change the previously identified impacts of the Project on cultural resources.

3.4.3 Executive Order 13007

Reclamation has previously consulted with federally recognized tribes on cultural resources eligible for the National Register, including sites of a sacred nature, with consultations sent in November 2017, March 2019, and August 2019 on actions related to the SOD Project. A consultation for the entire Project was sent on June 16, 2021. No sacred sites have been identified as a result of these consultations. Consultations under Executive Order 13007 are ongoing.

3.4.4 Native American Graves Protection and Repatriation Act (NAGPRA)

During pre-construction geotechnical investigations, an inadvertent discovery was made in June 2020 that required consultation with tribes under NAGPRA. Reclamation conducted consultations with the Yokut NAGPRA Coalition (Coalition) which includes the Picayune Rancheria of Chukchansi, the Santa Rosa Tachi/Yokut, the Table Mountain Rancheria, the Tejon Indian Tribe, and the Tule River Indian Tribe. In consultation with

the Coalition, Reclamation officials determined that, pursuant to 43 CFR 10.6 (a), the geographical and historical evidence for the determination of custody demonstrates that the Yokut tribes are aboriginal to the land from which the human remains were discovered. Disposition of the remains to the Santa Rosa Tachi/Yokut was completed in late 2020. A Plan of Action has been implemented with the Coalition to assist with compliance with NAGPRA on any future discoveries related to the Project on Federal land.

3.5 Indian Trust Assets

3.5.1 Affected Environment

Indian Trust Assets are defined as legal interests in property held in trust by the U.S. government for Indian tribes or individuals, or property protected under U.S. law for Indian tribes or individuals. Pursuant to the April 29, 1994, memorandum "Government-to-Government Relations with Native American Tribal Governments" and Secretarial Order 3215 *Principles for the Discharge of the Secretary's Trust Responsibility*, the Bureau of Reclamation is responsible for assessing the Project's effect on Indian Trust Assets.

3.4.2 Environmental Consequences

No Action Alternative

As described in the 2019 EIS/EIR, there are no Indian Trust Assets within or adjacent to the 2019 Project area.

Proposed Action

The additional project areas that would be incorporated into the Project area under the Proposed Action do not contain any Indian Trust Assets. Therefore, the Project would not impact Indian Trust Assets under either the No Action Alternative or the Proposed Action Alternative.

Appendix A.

2019 EIS/R Mitigation Measures

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
AQ-1	**Reduce emissions from off-road construction equipment by using Tier 4 construction equipment** Impacts on air quality from construction activities will be reduced by using construction equipment compliant with the Tier 4 emission standards for off-road diesel engines instead of the fleet average for the San Joaquin Valley Air Basin. Records will be maintained by the construction contractor that demonstrate that actual emissions would not exceed the San Joaquin Valley Air Pollution Control District's (SJVAPCD) significance criteria and would be submitted to Reclamation monthly. If NOx emissions are forecasted to exceed thresholds, then changes will be made so that the threshold is not exceeded, or work will be stopped.	Reclamation and DWR	Documentation on file with DWR and Reclamation	Prior to and during construction
AQ-2	**Reduce exhaust emissions from on-road trucks** All haul trucks, vendor trucks, or other vehicles operating onsite with on-road engines will meet model year 2015 or better emission standards.	Reclamation and DWR	Documentation on file with DWR and Reclamation and field monitor verification	Prior to and during construction
AQ-3	**Implement Best Available Mitigation Measures for Construction Phase** As required by the SJVAPCD, the project must apply the following best available mitigation measures for the construction phase: 3. All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilize of dust emission using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.	Reclamation and DWR	Documentation on file with DWR and Reclamation and field monitor verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	4. All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. 5. All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. 6. With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition. 7. When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. 8. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. *(The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)* 9. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant. 10. Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday. 11. An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicles trips per day by vehicles with three or more axles shall implement mitigation measures to prevent carryout and trackout.			
GHG-1	Reclamation will require the contractor to purchase carbon offsets before construction activities commence in an amount sufficient to reduce greenhouse gas (GHG) emissions to less than significant levels using DWR significance thresholds; a minimum of 120,575 metric tons carbon dioxide equivalent ($MTCO_2e$) would be required to reduce emissions below the project-level significance threshold. Only emission offsets generated as part of California Air Resources Board's (CARB's) Compliance Offset Protocols (developed for the Assembly Bill 32 cap-and-trade program) may be used to reduce GHG emissions. These protocols assure that offsets are real, permanent, quantifiable, verifiable, enforceable, and additional (Health and Safety Code Section 38562(d)). Registries selling approved offsets include the American Carbon Registry, the Climate Action Reserve, and the Verified Carbon Standard.	Reclamation and DWR	Documentation on file with DWR and Reclamation	Prior to construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
VIS-1	To reduce visual intrusion from light sources, Reclamation shall require the contractors to implement measures to reduce light and glare while meeting minimum safety and security standards. Light reduction measures must include: directing lighting downward to prevent spillover onto nearby areas, utilization of lighting fixtures with directional shielding to focus on areas being lit, and a construction requirement that all lighting in areas not under active construction be shut off. To reduce the amount of glare, building finishes shall be subdued and earth-toned. Onsite mechanical equipment roofing materials, and any exposed vents or flashings must be constructed of non-glare finishes that minimizes reflectivity.	Reclamation and DWR	Field monitor verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
NOI-1	A Noise Control Plan (NCP) will be developed by the construction contractor prior to the start of any construction activities to address increased noise levels as a result of the proposed project and alternatives. The NCP will identify the procedures for predicting construction noise levels at sensitive receptors and will describe the reduction measures required to minimize construction noise. The noise mitigation measures in the NCP will include, but are not limited to: 12. Appropriate level of sound attenuation will be used or constructed to minimize noise levels by at least 3 A-weighted decibels (dBA). Potential sound attenuation measures could include, but are not limited to stationary equipment and stockpiles, or otherwise placed between the source(s) of construction noise and noise-sensitive receptors, as appropriate. The feasible measures will be determined by the construction contractor based on an initial evaluation of each construction site. 13. Contractor will be responsible for maintaining equipment in best possible working condition and outfitting construction equipment with the most effective locally available commercial mufflers or other noise attenuation devices; 14. When feasible, the loudest construction activities will be conducted during Merced County construction noise exempt hours, between 7 a.m. and 6 p.m.; 15. Operation of construction equipment between the hours between 6 p.m. and 10 p.m. will be prohibited within 9,100 feet of the Subdivision off State Route (SR) 152. During the hours between 10 p.m. and 6 a.m. the operation of construction equipment will be prohibited within 9,550 feet of the Subdivision off SR 152. 16. Shutting down equipment that are queued or not in use for 5 minutes or more; 17. Pre-construction meeting with contractors and project managers to confirm that noise mitigation procedures are in place; 18. Signs shall be posted at the construction sites that include permitted construction days and hours, a day and evening contact number for the job site, and a contact number in the event of problems; 19. The public will be kept informed of the construction hours and days; 20. List contact information for complaints and respond to noise complaints; and 21. An on-site complaint and enforcement manager shall respond to and track complaints and questions related to noise.	Reclamation and DWR	NCP on file with Reclamation and DWR. Field monitor verification	Plan development: prior to construction Plan implementation and monitoring: during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
NOI-2	A Blasting Plan for construction shall be prepared and followed that includes the following: 22. Identification of blast officer; 23. Scaled drawings of blast locations, and neighboring buildings, streets, or other locations which could be inhabited; 24. Blasting notification procedures, lead times, and list of those notified. Public notification to potentially affected vibration and nuisance noise receptors describing the expected extent and duration of the blasting; 25. Description of means for transportation and on-site storage and security of explosives in accordance with local, State and Federal regulations; 26. Minimum acceptable weather conditions for blasting and safety provisions for potential stray current (if electric detonation); 27. Traffic control standards and traffic safety measures (if applicable); 28. Required personal protective equipment; 29. Minimum standoff distances and description of blast impact zones and procedures for clearing and controlling access to blast danger; 30. Procedures for handling, setting, wiring, and firing explosives; and procedures for handling misfires per Federal code; 31. Type and quantity of explosives and description of detonation device. 32. Methods of matting or covering of blast area to prevent flyrock and excessive air blast pressure; 33. Description of blast vibration and air blast monitoring programs; 34. Dust control measures in compliance with applicable air pollution control regulations (to interface with general construction dust control plan); 35. Emergency Action Plan to provide emergency telephone numbers and 36. directions to medical facilities. Procedures for action in the event of injury; 37. Material Safety Data Sheets for each explosive or other hazardous materials to be used; 38. Evidence of licensing, experience, qualifications of blasters, and description of insurance for the blasting work 39. A sound attenuation plan shall be prepared outlining sound control measures that would include the use of blasting mats or sound walls; 40. If vibration results in damage to any nearby structures or utilities, or scenic rock faces, blasting shall immediately cease. The stability of segmental retaining walls,	Reclamation and DWR	Blasting Plan on file with Reclamation and DWR Field monitor verification	Plan development: prior to issuing construction contract Plan implementation and monitoring: during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	existing slopes, creek canals, etc. shall be monitored and any evidence of instability due to blasting operations shall result in immediate termination of blasting; 41. Explosive materials shall be delivered in specially built vehicles marked with United Nations (UN) hazardous materials placards. Explosives and detonators shall be delivered in separate vehicles or be separated in compartments meeting Department of Transportation rules within the same vehicle. Vehicles shall have at least two ten-pound Class-A fire extinguishers and all sides of the vehicles display placards displaying the UN Standard hazard code for the onboard explosive materials. Drivers shall have commercial driver licenses with Hazmat endorsements, and drivers shall carry bill-of-lading papers detailing the exact quantities and code dates of transported explosives or detonators; 42. The contractor must comply with U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) table-of-distance requirements (CFR 27, U.S. Department of Justice, Alcohol, Tobacco, Firearms and Explosives Division Part 555) that restrict explosive quantities based on distance from occupied buildings and public roadways. Employees must also comply with the security requirements of the Safe Explosives Act (Title XI, Subtitle C of Public Law 107-296, Interim Final Rule), implemented in March 2003. These requirements require background checks for all persons that use, handle or have access to explosive materials; and responsible persons on a now required Federal explosives license must submit photographs and fingerprints with the application to ATF.			
NOI-3	A pre-construction noise survey will be completed during daytime and nighttime periods at multiple locations across the project area, including identified sensitive receptors, to establish background noise levels at those times. During construction, noise will be periodically monitored at these locations to assess any increases in noise levels that exceed the local noise ordinances. If noise levels are recorded exceeding the background noise level by 10 dBA between 6 p.m. and 10 p.m. or by 5 dBA between 10 p.m. and 7 a.m. or if noise complaints are received, an investigation will be conducted to determine the source of the noise. After the investigation, noise will be reduced using all feasible measures, including mitigation at the receiver impacted by the noise. Potential mitigation at the receiver would include building envelope improvements and acoustical window treatments. All mitigation requirements will be included in bid documents and construction contracts.	Reclamation and DWR	Field monitor verification	Survey: prior to construction Implementation and monitoring of noise reducing measures: during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
TR-1	The following construction management actions will be documented in a temporary traffic control plan developed by the contractor as a requirement that will be included in its construction contract. The temporary traffic control plan will be submitted for California Department of Transportation review and approval during the Encroachment Permit process. Construction contractors shall install signage at intersections identified as dangerous in accordance with the California Manual on Uniform Traffic Control Devices guidelines warning motorists of slow moving construction traffic and lane closures, including SR 152, Basalt Road, and the Romero Visitor Center access road. Signage shall also be posted at these intersections one month in advance to allow motorists time to plan for delays or alternate routes. Construction contractors shall implement dust abatement and perform proper construction traffic management actions, including signage warning motorists of construction activity and traffic controls like flaggers or temporary traffic lights where construction equipment will be entering roadways, to reduce conflicts during periods of high traffic volume in and around each construction site and to avoid conflicts with emergency responders entering and existing the area during an emergency. In addition to the temporary traffic control plan, prior to the initiation of any construction actions, construction contractors shall develop and adhere to a health and safety plan outlining all applicable Occupational Safety and Health Administration requirements, important traffic safety plans including identification of emergency access routes in and through construction areas that would will need to be kept clear at all times during construction. The health and safety plan shall include coordination with emergency service personnel to ensure adequate mitigation for all impacts.	Reclamation and DWR	Field monitor verification and documentation on file with Reclamation and DWR	Traffic Control, and Health and Safety Plan development: Prior to construction. Implementation and monitoring: during construction
HAZ-1	The construction contractor in coordination with the Lead Agencies shall work with the California Department of Parks and Recreation (CDPR) and the Central Valley Regional Water Quality Control Board (RWQCB) to review existing monitoring data of the San Luis Reservoir State Recreation Area (SRA) Leaking Underground Storage Tank (LUST) Cleanup Site to evaluate the potential for interacting with hazardous soil contamination during construction. If the construction contractor and the Lead Agencies (as the responsible party for this potential disturbance) determine that interaction with contaminated soil cannot be avoided and these construction actions could generate a release of this soil to nearby water bodies or elsewhere offsite, the construction contractor shall prepare a Contaminated Soil/Groundwater Remediation Plan. This remediation plan will detail the nature of the contaminants on site, measures required to avoid interaction with these contaminants including if necessary a pre-construction cleanup of the site, and a response	Reclamation and DWR	Documentation on file with Reclamation and DWR, and field verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	action plan in the event of an inadvertent release of contaminated soils from the construction site. This plan will be submitted to the CDPR and the Central Valley RWQCB for review and approval prior to any construction taking place. In addition, the construction contractor shall also prepare a Spill Prevention and Response Plan for preventing spills and responding to chemical or hazardous substance spills. This plan will include spill prevention management, including employee training, hazardous substance inventory, and spill response equipment. The plan will also include a spill response plan, including evacuation procedures, spill containment and cleanup, and reporting a release. Finally, the construction contractor shall prepare a Fire Prevention Plan to prevent a fire from occurring. The plan must include (Occupational Safety and Health Administration 2018): 43. A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard. 44. Procedures to control accumulations of flammable and combustible waste materials. 45. Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials. 46. The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires. 47. The name or job title of employees responsible for the control of fuel source hazards.			
HAZ-2	Construction contracts will include requirements for the contractor to prepare a construction safety plan prior to any construction activities in collaboration with seaplane base personnel to coordinate construction activities including: a schedule, coordination of personnel with aviation radios, and notice requirements. Also, consistent with Mitigation Measure TR-1, the contractor shall coordinate with emergency service personnel to ensure adequate mitigation for all impacts.	Reclamation and DWR	Documentation on file with Reclamation, and DWR	Construction Safety Plan development: Prior to construction. Implementation: during construction
HAZ-3	The construction contractor in coordination with the Lead Agencies shall notify the San Luis Seaplane Base administrator when a Notice to Airmen is required to be issued prior to	Reclamation and DWR	Field monitor verification	During construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	the commencement of construction activities within the seaplane base and when high profile equipment will be used within safety zones.			
HAZ-4	The Lead Agencies will include requirements in all construction contracts requiring the use of spark arrestors on all construction equipment. The contract shall also include requirements for the contractor to educate all construction workers about the risk of starting a wildfire and how to avoid it and who to contact in case a wildfire is started. In addition, restrictions shall be placed on smoking and campfires for any personnel utilizing Basalt Campground.	Reclamation and DWR	Documentation on file with Reclamation and DWR	Prior to and during construction
TERR-1	**Special-status Plant Species and Special-Status Natural Communities** Surveys of the project area for special-status plant species will be conducted during the identifiable blooming period prior to commencement of work. Special-status plants include: Arcuate bush-mallow (blooms April through September), big-scale balsamroot (blooms March through June), California alkali grass (blooms March through May), chaparral harebell (blooms May through June), Congdon's tarplant (blooms May through October), Hall's bush-mallow (blooms May through September), Hispid bird's beak (blooms June through September), Hospital Canyon larkspur (blooms March through June), Lemmon's jewelflower (blooms February through May), Lime Ridge navarretia (blooms May through June), round-leaved filaree (blooms March through May), shining navarretia (blooms April through July), and spiny-sepaled button-celery (bloom April through June). A qualified DWR biologist (qualified biologist) will be present prior to and during construction to ensure avoidance of impacts on special-status plant species and special-status natural communities by implementing one, or more, of the following, as appropriate, per the biologist's recommendation: a. Flag the population or natural community areas to be protected; b. Allow adequate buffers; and/or, c. Time construction or other activities during dormant and/or non-critical life cycle periods. For unavoidable impacts to special-status plant species, compensatory mitigation may be required based on recommendations of the qualified biologist. If any impacts occur to listed plant species, consultation with United States Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW) will be initiated. If deemed necessary based on the type and extent of special-status plant populations affected, compensatory mitigation will entail:	Reclamation, and DWR	Field verification, and documentation on file with Reclamation and DWR.	Prior to construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	48. The protection, through land acquisition or a conservation easement, of a population of equal or greater size and health. Or, 49. If it is not feasible to acquire and preserve a known population of a special-status plant to be impacted, suitable unoccupied habitat capable of supporting the species will be acquired, and used to create a new population. For population creation, the following considerations will also be met: 50. Prior to unavoidable and permanent disturbance to a population of a special-status plant species, propagules shall be collected from the population to be disturbed. This may include seed collection or cuttings, and these propagules will be used to establish a new population on suitable, unoccupied habitat as described above. Transplantation may be attempted but will not be used as the primary means of plant salvage and new population creation. 51. Creation of new populations will require identifying suitable locations and researching and determining appropriate and viable propagation or planting techniques for the species. It will also require field and literature research to determine the appropriate seed sampling techniques and harvest numbers for acquisition of seed from existing populations. *52.* A minimum ten-year monitoring plan with adaptive management will be implemented to document the success of creating new plant populations. Adequate funding for compensatory mitigation will be provided on an agreed-to schedule, following a discussion with the appropriate regulatory agencies, to ensure long-term protection and management of lands acquired or placed under conservation easement.			
TERR-2	**Valley Elderberry Longhorn Beetle** Prior to construction, the known stand of more than 25 elderberry shrubs and surrounding areas with suitable elderberry habitat would be surveyed to determine the current number of elderberry shrubs present, their stem diameters, and, if feasible, the presence and number of exit holes formed by valley elderberry longhorn beetle (VELB) as they exit the branch. Surveys are valid for two years. A 100-foot buffer around construction areas would also be surveyed for elderberry shrubs that could be affected by dust from construction. Areas containing elderberry shrubs with stems greater than 1-inch in diameter would be assumed to provide VELB habitat, protected with fencing, and avoided to the extent possible. Consultation with the USFWS through the Section 7 process may be required if shrubs cannot be avoided during	Reclamation, and DWR	Field verification, and documentation on file with Reclamation and DWR.	Prior to construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	construction. If shrubs cannot be avoided, removal measures would be implemented, including transplanting shrubs to a USFWS-approved conservation area, compensating for habitat loss at a ratio ranging from 1:1 to 8:1 depending on the diameter of the impacted elderberry stems and habitat type that they were removed from (riparian or non-riparian), under an Elderberry Mitigation Plan approved by USFWS, or purchasing credits at a USFWS-approved mitigation bank for VELB.			
TERR-3	**Special-Status Amphibians** Before and during construction: 53. The Proponent shall submit the name and credentials of a DWR biologist qualified to act as construction monitor to USFWS and CDFW for approval at least 15 days before construction work begins. General minimum qualifications are a 4-year degree in biological sciences and experience in surveying, identifying, and handling California tiger salamanders and California red-legged frogs. The qualified biologist shall be present at all times during construction. Consultation with the USFWS through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures. 54. The USFWS and CDFW-approved biologist, under the appropriate Federal and State authorities (e.g. permitting and consultation), shall survey the work sites 2 weeks before the onset of construction. If California tiger salamanders or California red-legged frogs (or their tadpoles or eggs) are found, the approved biologist shall contact USFWS and CDFW to determine whether moving any of these life-stages is appropriate. If USFWS and CDFW approve moving the animals, the biologist shall be allowed sufficient time to move frogs and/or salamanders from the work sites before work begins. If these species are not identified, construction can proceed at these sites. The biologist shall use professional judgment to determine whether (and if so, when) the California tiger salamanders and/or frogs are to be moved. The biologist shall immediately inform the construction manager that work shall be halted, if necessary, to avert avoidable take of listed species. 55. The known location of California red-legged frogs and Willow Spring, the water source for the perennial frog pond, near the borrow area will be avoided during construction with a buffer of 250 feet to avoid modifying aquatic habitat that supports the frog population; or as otherwise approved by the resource agencies.	Reclamation, and DWR	Field verification and documentation on file with Reclamation and DWR.	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	56. Areas impacted by construction will be monitored during construction to identify, capture, and relocate special-status amphibians, if present. 57. Areas beneath construction equipment and vehicles shall be inspected daily, prior to operation, for presence of special-status amphibians under tracks/tires and within machinery. If special-status amphibians are found a qualified biologist will capture and relocate animals from work sites. 58. Appropriate State and Federal permits for handling of special-status species will be acquired 59. If necessary, a detailed amphibian relocation plan will be prepared at least 3 weeks before the start of groundbreaking and submitted to CDFW and USFWS for review. The purpose of the plan is to standardize amphibian relocation methods and relocation sites. 60. A USFWS and CDFW-approved biologist shall be present at the active work sites until special-status amphibians have been removed, and habitat disturbance has been completed. Thereafter, the contractor shall designate a person to monitor onsite compliance with all minimization measures. A CDFW and USFWS-approved biologist shall ensure that this individual receives training consistent with USFWS requirements. 61. The project proponent and its contractors shall install frog-exclusion fencing (i.e., silt fences) around all construction areas that are within 100 feet of any identified ponds that provide potential special-status amphibian aquatic breeding habitat. During and after rain events, an approved biologist will monitor work areas for the presence of special-status amphibians. 62. Reclamation shall provide compensation for permanent and temporary impacts on California tiger salamander and California red-legged frog aquatic habitat. Compensatory mitigation shall be provided for the loss of aquatic breeding sites that will be filled or otherwise directly affected by the project, as well as mitigate for any impacts on associated California red-legged frog upland habitat through compensatory mitigation. If possible, compensatory mitigation areas shall be located within a California red-legged Frog Recovery Area, as identified in the 2002 California Red-legged Frog Recovery Plan (USFWS 2002). 63. The total area, size and number of California red-legged frog or California tiger salamander mitigation ponds to be created will be based on a comparable loss of breeding sites (e.g., a minimum 1:1 replacement ratio) as a result of the project.			

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	These ponds shall concurrently satisfy wetland mitigation requirements identified in Mitigation Measure TERR-2. To the degree possible, new mitigation ponds that are created for California red-legged frog and California tiger salamander shall be hydrologically self-sustaining and shall not require a supplemental water supply.			
TERR-4	**Western Pond Turtle** Before construction activities begin, a qualified biologist shall conduct western pond turtle surveys within creeks and in other ponded areas affected by the project. Adjacent upland areas shall also be examined for evidence of nests as well as individual turtles. The project biologist shall be responsible for the survey and for the relocation of pond turtles, if found. Construction shall not proceed until a reasonable effort has been made to capture and relocate as many western pond turtles as possible to minimize take. However, some individuals may be undetected or enter sites after surveys and would be subject to injury or mortality. If a nest is observed, a biologist with the appropriate permits and prior approval from CDFW shall move eggs to a suitable location or facility for incubation, and release hatchlings into the creek system the following autumn.	Reclamation, and DWR	Field verification	Prior to construction
TERR-5	**San Joaquin Whipsnake** Before construction activities begin a qualified biologist shall conduct San Joaquin whipsnake surveys 2 weeks prior to construction activities within work sites and within 100 feet of disturbance areas. A qualified biologist shall relocate any San Joaquin whipsnakes to suitable habitat outside of areas of disturbance. There is possibility of snakes to move into the work sites after pre-construction surveys have checked the area and some individuals could be subject to mortality. If San Joaquin whipsnakes are detected in work sites during construction, activities and equipment travel shall cease in the immediate area of detection until the snake has left work site or has been relocated out of the area by a qualified biologist.	Reclamation, and DWR	Field verification	Prior to construction
TERR-6	**Nesting Bird Surveys** A qualified biologist would conduct nesting bird surveys prior to construction and supervise avoidance of nests during construction. The generally accepted nesting season extends from February 1 through September 15. If an active nest of a special-status bird is found, construction within 300 feet of the nest (500 feet for raptor nests, excluding Swainson's hawk) would be postponed until the nest is no longer active.	Reclamation, and DWR	Field verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
TERR-7	**Swainson's Hawk** Prior to construction, surveys for active Swainson's hawk nests will be conducted in and around all potential nest trees within 0.5 mile of construction areas. If known or active nests are identified through preconstruction surveys or other means, a 0.5 mile no-disturbance buffer shall be established around all active nest sites if construction cannot be limited to occur outside the nesting season (February 15 through September 15). Buffer sizes may be reduced if approved by CDFW and active nest sites are monitored during construction by a qualified biologist. Permanent foraging habitat losses (i.e. grasslands) within one mile of active Swainson's hawk nests shall be compensated by preserving in perpetuity suitable foraging habitat at a ratio of 1:1. This includes permanently disturbed construction sites. The CDFW shall approve the location and types of habitats preserved.	Reclamation, and DWR	Field verification, and documentation on file with Reclamation and DWR.	Prior to and during construction
TERR-8	**Bald and Golden Eagles, and California Condor** The following measures address potential impacts on nesting eagles in the San Luis Reservoir vicinity. Prior to the initiation of construction, an Eagle Conservation Plan will need to be developed that details eagle protection guidelines specific to the San Luis Reservoir construction area. These protections will include, the initiation of pre-construction surveys by a USFWS-approved biologist for golden eagles and bald eagles initiating approximately two years prior to construction continuing through the construction period. These surveys will be completed across an area at a 5-mile radius from where impacts from the project occur, including construction areas. Any nesting sites identified during these surveys would be mapped and monitored for up to ten years, depending on the monitoring specifications identified within the plan. Whenever feasible, construction near recently active nest sites shall start outside the active nesting season. The nesting period for golden eagles is between January 15 and August 15 and bald eagles nest between January 1 and August 15. If groundbreaking activities begin during the nesting period, a qualified biologist shall perform a preconstruction survey 14 to 30 days before the start of each new construction phase to search for eagle nest sites within two miles of proposed activities. If active nests are not identified, no further action is required and construction may proceed. If active nests are identified, the avoidance guidelines identified below shall be implemented. 64. For golden and bald eagles, construction contractors shall observe CDFW and USFWS avoidance guidelines, which stipulate a minimum 660 foot to 0.5-mile buffer zone depending upon the visibility and severity of the activity (e.g., earth-	Reclamation, and DWR	Field verification, and documentation on file with Reclamation and DWR.	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	moving versus blasting) (USFWS 2007). Buffer zones shall remain until young have fledged. A qualified biologist will monitor the nest daily for one week to determine whether construction activities are disturbing nest behavior. If nest behavior appears normal, then weekly monitoring will continue until the nest is no longer active. If the nest appears disturbed, the biological monitor will increase the no-work buffer at their discretion to ensure normal nesting behavior. For activities conducted with agency approval within this buffer zone, a qualified biologist shall monitor construction activities and the eagle nest(s) to monitor eagle reactions to activities. If activities are deemed to have a negative effect on nesting eagles, the biologist shall immediately inform the construction manager that work should be halted, and CDFW and USFWS will be consulted. 65. CDFW and USFWS often allow construction activities that are initiated outside the nesting season to continue without cessation even if raptors such as eagles choose to nest within 500 feet of work activities. Thus, work at the dam construction site may continue if approved by CDFW and USFWS and a qualified biologist monitors the nest site during construction. 66. To compensate for the loss of grassland, which provides suitable foraging habitat for golden eagles and California condors, grasslands shall be enhanced or restored at a minimum ratio of 1:1. Restoration or enhancement of grassland habitat shall be conducted under a USFWS and CDFW-approved restoration/enhancement plan, and may be conducted on lands also used for mitigation for Swainson's hawk and/or San Joaquin kit fox.			
TERR-9	**Burrowing Owl** Prior to construction, surveys for burrowing owls would be conducted in areas supporting potentially suitable habitat. Any occupied burrows shall not be disturbed during the breeding season (February 1 through August 31). A minimum 160-foot-wide buffer shall be placed around occupied burrows during the nonbreeding season (September 1 through January 31), and a 250-foot-wide buffer shall be placed around occupied burrows during the breeding season. Ground- disturbing activities shall not occur within the designated buffers. The project proponent shall implement the measures listed below for grassland habitats to avoid incidental take of burrowing owls. In advance of construction, a qualified biologist shall follow the current CDFW burrowing owl survey guidance to evaluate burrowing owl	Reclamation, and DWR	Field verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	use. Measures shall apply to all construction activities near active nests or within potential burrowing owl nesting habitat, to avoid, minimize, or mitigate impacts on burrowing owls. Breeding season surveys shall be performed to determine the presence of burrowing owls for the purposes of inventory, monitoring, avoidance of take, and determining appropriate mitigation. In California the breeding season begins as early as February 1 and continues through August 31. Under the Burrowing Owl Consortium's multi-phase survey methodology, for areas within 500 feet of construction boundaries, a biologist shall: 1) perform a habitat assessment to identify essential components of burrowing owl habitat, including artificial nest features; 2) perform intensive burrow surveys in areas that are identified to provide suitable burrowing owl habitat, and; 3) perform at least four appropriately-timed breeding season surveys (four survey visits spread evenly [roughly every 3 weeks] during the peak of the breeding season, from April 15 to July 15) to document habitat use. Pre-construction surveys shall be used to assess the owl presence before site modification is scheduled to begin. Generally, initial pre-construction surveys should be conducted within 7 days, but no more than 30 days prior to ground-disturbing activities. Additional surveys may be required when the initial disturbance is followed by periods of inactivity or the development is phased spatially and/or temporally over the project area. Up to four or more survey visits performed on separate days may be required to assure with a high degree of certainty that site modification and grading will not take owls. The full extent of the pre-construction survey effort shall be described and mapped in detail (e.g., dates, time periods, area[s] covered, and methods employed) in a biological report that will provided for review to CDFW. In addition to the above survey requirements, the following measures shall be implemented to reduce project impacts to burrowing owls: 67. Construction exclusion areas (e.g., orange exclusion fence or signage) shall be established around occupied burrows, where no disturbance shall be allowed. During the nonbreeding season (September 1 through January 31), the exclusion zone shall extend at least 160 feet around occupied burrows. During the breeding season (February 1 through August 31), exclusion areas shall extend 250 feet around occupied burrows (or farther if warranted to avoid nest abandonment). 68. If work or exclusion areas conflict with owl burrows, passive relocation of onsite owls could be implemented as an alternative, but only during the nonbreeding season and only with CDFW approval. The approach to owl relocation and burrow			

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	closure will vary depending on the number of occupied burrows. Passive relocation shall be accomplished by installing one-way doors on the entrances of burrows within 160 feet of the project area. The one-way doors shall be left in place for 48 hours to ensure the owls have left the burrow. The burrows shall then be excavated with a qualified biologist present. Construction shall not proceed until the project area is deemed free of owls. 69. Unoccupied burrows within the immediate construction area shall be excavated using hand tools, and then filled to prevent reoccupation. The qualified biologist will be present during construction to continue examination of burrows. If any burrowing owls are discovered during the excavation, the excavation shall cease and the owl shall be allowed to escape. Excavation would be completed when the biological monitor confirms the burrow is empty. 70. Artificial nesting burrows will be provided as a temporary measure when natural burrows are lacking. To compensate for lost nest burrows, artificial burrows shall be provided outside the 160-foot buffer zone. The alternate burrows shall be monitored daily for 7 days to confirm that the owls have moved in and acclimated to the new burrow.			
TERR-10	**Tricolored Blackbird** Prior to construction, appropriately timed surveys for tricolored blackbirds would be conducted in areas supporting potentially suitable habitat within 0.25 mile of construction areas. Habitat within 0.25 mile of tricolored blackbird colonies will be avoided during nesting season, which can begin as early as mid-March and extend through August. If colonies cannot be avoided, CDFW shall be consulted to potentially reduce buffer distances with active monitoring during construction by a qualified biologist.	Reclamation, and DWR	Field verification	Prior to construction
TERR-11	**Special-Status Bats** Impacts to special-status bats shall be minimized by performing preconstruction surveys and creating no-disturbance buffers around active bat roosting sites. Before construction activities (i.e., ground clearing and grading, including trees or shrub removal) within 200 feet of trees that could support special-status bats, a qualified bat biologist shall survey for special-status bats. If no evidence of bats (i.e., direct observation, guano, staining, or strong odors) is observed, no further mitigation shall be required. If evidence of bats is observed, the following measures shall be implemented to avoid potential impacts on breeding populations:	Reclamation, and DWR	Field verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	A no-disturbance buffer of 200 feet shall be created around active bat roosts during the breeding season (April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected by the indirect effects of noise and construction disturbances. However, the direct take of individuals will be prohibited. Removal of trees showing evidence of active bat activity shall occur during the period least likely to affect bats, as determined and monitored by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If the exclusion of bats from potential roost sites is necessary to prevent indirect impacts due to construction noise and human activity adjacent, bat exclusion activities (e.g., installation of netting to block roost entrances) shall also be conducted during these periods. If special-status bats are identified in the dam or special allowances must be made to relocate bats, DWR will coordinate the effort in advance with CDFW.			
TERR-12	**San Joaquin Kit Fox** San Joaquin kit fox would be affected by construction activities if animals are harmed or killed by equipment, their movement is blocked or their dens or other habitat is altered or destroyed. Consultation with the USFWS through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures. Prior to construction, a qualified biologist will conduct surveys to identify potential dens more than 4 inches in diameter. A habitat assessment in 2010 found 195 potential kit fox dens in the San Luis Reservoir work area (Reclamation 2010c; see Appendix I, Biological Resources Appendix). If dens are located within the proposed work area, and cannot be avoided during construction activities, a USFWS- and CDFW-approved biologist will determine if the dens are occupied. If occupied dens are present within the proposed work, their disturbance and destruction shall be avoided. Exclusion zones will be implemented following the latest USFWS procedures (USFWS 2011). The Proponent shall implement San Joaquin kit fox protection measures. The following measures, which are intended to reduce direct and indirect project impacts on San Joaquin kit foxes, are derived from the *San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999a) and the *Standardized Recommendations for Protection of the San Joaquin Kit Fox* (USFWS 1999b). The following measures shall be implemented for construction areas at San Luis Reservoir: Preconstruction surveys shall be conducted within 200 feet of work areas to identify potential San Joaquin kit fox dens or other refugia in and surrounding workstations.	Reclamation, and DWR	Field verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	A qualified biologist shall conduct the survey for potential kit fox dens 14 to 30 days before construction begins. All identified potential dens shall be monitored for evidence of kit fox use by placing an inert tracking medium at den entrances and monitoring for at least 3 consecutive nights. If no activity is detected at these den sites, they shall be closed following guidance established in the USFWS *Standardized Recommendations* report (USFWS 1999b). If kit fox occupancy is determined at a given site during the pre-construction surveys or during the construction period, the construction manager should be immediately informed that work should be halted within 200 feet of the den and the USFWS contacted. Depending on the den type, reasonable and prudent measures to avoid effects to kit foxes could include seasonal limitations on project construction at the site (i.e., restricting the construction period to avoid spring-summer pupping season), and/or establishing a construction exclusion zone around the identified site, or resurveying the den a week later to determine species presence or absence. Off-road vehicle and equipment movement will be limited to the project footprint. To compensate for permanent impacts to grassland, which provides habitat for San Joaquin kit fox, lands shall be acquired and covered by conservation easements or mitigation credits shall be purchased at a 2:1 mitigation ration, or other compensation ratios approved by the USFWS and the CDFW.			
TERR-13	**American Badger** Impacts on badgers within annual grasslands and oak woodland at San Luis Reservoir will be minimized through a combination of worker training, preconstruction surveys, and passively or actively relocating animals. Concurrent with other required surveys, during winter/spring months before new project activities, and concurrent with other preconstruction surveys (e.g., kit fox and burrowing owl), a qualified biologist shall perform a survey to identify the presence of active or inactive American badger dens. If this species is not found, no further mitigation shall be required. If badger dens are identified within the construction footprint during the surveys or afterwards, they shall be inspected and closed using the following methodology: When unoccupied dens are encountered outside of work areas but within 100 feet of proposed activities, vacated dens shall be inspected to ensure they are empty and temporarily covered using plywood sheets or similar materials. If badger occupancy is determined at a given site within the work area, work activities at that site should be halted. Depending on the den type, reasonable and prudent measures	Reclamation, and DWR	Field verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	to avoid harming badgers will be implemented and may include seasonal limitations on project construction near the site (i.e., restricting the construction period to avoid spring-summer pupping season), and/or establishing a construction exclusion zone around the identified site, or resurveying the den at a later time to determine species presence or absence. Badgers may be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved exclusion methods. In unique situations it might be necessary to actively relocate badgers (e.g., using live traps) to protect individuals from potentially harmful situations. Such relocation would be performed with advance CDFW coordination and concurrence.			
TERR-14	**Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp** While project design is planned to avoid fill of seasonal wetlands and pools identified as suitable habitat for vernal pool crustaceans, if any vernal pool fairy shrimp or vernal pool tadpole shrimp habitat will be impacted, the project proponent may assume presence of the species. Consultation with the USFWS through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures. Measures may include, but are not limited to, compensating for impacts at a 2:1 ratio for preservation and at a 1:1 ratio for creation.	Reclamation, and DWR	Field verification, and documentation on file with Reclamation and DWR.	Prior to construction
TERR-15	**Contractor Environmental Awareness Training and Site Protection Measures.** All construction personnel working in biologically sensitive areas shall attend an environmental education program delivered by a qualified biologist prior to starting work. The training shall include an explanation as how to best avoid the accidental take of special-status plants and wildlife. The field meeting shall include species identification, life history, descriptions, and habitat requirements. The program shall include an explanation of Federal and State laws protecting endangered species, and avoidance and minimization methods being implemented to protect these species. A qualified biologist will be present on the site at all times during construction. The contractor shall provide closed garbage containers for the disposal of all trash items (e.g., wrappers, cans, bottles, food scraps). Work sites shall be cleaned of litter before closure each day, and placed in wildlife-proof garbage receptacles. Construction personnel shall not feed or otherwise attract any wildlife. No pets, excluding service animals, shall be allowed onsite or in construction areas. Nighttime vehicle traffic shall be kept to a minimum on non-maintained roads with a maximum speed of 15 miles per hour.	Reclamation, and DWR	Field verification	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	To minimize disturbance to wildlife, temporary and permanent exterior lighting shall be installed such that: (a) lamps and reflectors are not visible from beyond the project site, (b) reflective glare will be minimized to the extent feasible; (c) illumination of the project and its immediate vicinity is minimized; (d) lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated; (e) all lighting shall be of minimum necessary brightness consistent with operational safety and security; (f) lights in areas not occupied on a continuous basis (such as maintenance areas) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied, and (g) the plan complies with local policies and ordinances.			
TERR-16	**Mitigation measures for special-status communities, including jurisdictional wetlands or waters, and streambeds and banks regulated by the CDFW, RWQCB, and United States Army Corps of Engineers (USACE), and native grassland.** *Mitigation Measure TERR -16a.* Final project design shall avoid and minimize the fill of wetlands and other waters to the greatest practicable extent. The following actions shall be performed to protect jurisdictional wetlands: 1. The distribution of Federal and State jurisdictional wetlands and waters; streambeds and banks regulated by CDFW; and sensitive habitat regulated by CDFW, shall be defined and avoided to the greatest possible extent. 2. Prior to construction, a qualified biologist shall delineate the extent of jurisdictional areas to be avoided in the field. Reclamation will designate areas to be avoided as "Restricted Areas" and protect them using highly visible fencing, rope, or flagging, as appropriate based on site conditions. No construction activities or disturbance will occur within restricted areas that are designated to protect wetlands. 3. Minimize the removal of riparian and wetland vegetation. Avoid disturbance of riparian and aquatic habitat north of the access road to the dam. 4. Minimize the removal or damage to purple needlegrass grassland. Avoid impacts to native grasslands in the staging area.	Reclamation, and DWR	Field verification, and documentation on file with Reclamation and DWR.	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	Mitigation Measure TERR-16b. Where jurisdictional wetlands and other waters cannot be avoided, to offset temporary and permanent impacts that would occur as a result of the project, restoration and compensatory mitigation shall be provided as described below. A wetland mitigation and monitoring plan shall be developed in coordination with CDFW, USACE, and/or the RWQCB that details mitigation and monitoring obligations for temporary and permanent impacts to wetlands and other waters as a result of construction activities; and other CDFW jurisdictional areas. The plan shall quantify the total acreage affected; provide for mitigation as described below to wetland or riparian habitat; annual success criteria; mitigation sites; monitoring and reporting requirements; and site-specific plans to compensate for wetland losses resulting from the project. Prior to construction, the aquatic structure of wetland and riparian areas to be disturbed will be photo-documented, and measurements of width, length, and depth will be recorded. DWR will recontour and revegetate disturbed portions of jurisdictional areas in areas temporarily affected by construction prior to demobilization by the contractor at the end of project construction. Creek banks will be recontoured to a more stable condition if necessary. Revegetation will include a palette of species native to the watershed area according to a revegetation plan to be developed by Reclamation and submitted to the USACE, CDFW, and RWQCB for approval. Following removal, woody trees habitat acreage would be replanted at a minimum 1:1 ratio, or as determined and agreed upon by the permitting agencies. Interim vegetation or other measures will be implemented as necessary to control erosion in disturbed areas prior to final revegetation. Wetland and other waters impact in the construction area shall be compensated at a ratio of 2:1 or at a ratio agreed upon by the wetland permitting agencies. Compensatory mitigation shall be conducted by creating or restoring wetland and aquatic habitat at an agency-approved location on nearby lands or through purchasing mitigation credits at a USACE and/or CDFW-approved mitigation bank (depending on the resource). If mitigation is conducted on- or off-site, a five-year wetland mitigation and monitoring program for onsite and offsite mitigation shall be developed. Appropriate performance standards may include, but are not limited to: a 75 percent survival rate of restoration plantings; absence of invasive plant species; and a viable, self-sustaining creek or wetland system at the end of five years. A weed control plan for the project to limit the spread of noxious or invasive weeds shall also be developed. This plan would be consistent with current Integrated Pest			

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	Management Plans that are already in practice on lands surrounding the reservoir. Noxious or invasive weeds include those rated as "high" in invasiveness by the California Invasive Plant Council. The plan will include a baseline survey to identify the location and extent of invasive weeds in the project area prior to ground-disturbing activity, a plan to destroy existing invasive weeds in the construction area prior to initiation of ground-disturbing activity, weed-containment measures while the project is in progress, and monitoring and control of weeds following completion of construction.			
REC-1	**REC - 1: Campsite and Facilities Replacement.** Campsites closed at San Luis Reservoir during construction of the Crest Raise Alternative will be replaced at a 1:1 ratio at the San Luis Creek Use Area and then as necessary at the Los Banos Creek Use Area, including six American with Disabilities Act (ADA) accessible campsites and Recreational Vehicle (RV) accommodations. These new replacement campsites would be developed consistent with the new facilities considered in the *San Luis Reservoir SRA Resource Management Plan/General Plan (RMP/GP)* and will not exceed the quantities of new facilities considered in the RMP/GP at each Use Area. The new campsites would be constructed concurrent to the crest construction period during a period of low precipitation in order to reduce the risk of accidental leaks or spills, potential for soil contamination and to minimize erosion of loose materials in construction areas, as per Goal RES-WQ4 in the *San Luis Reservoir SRA RMP/GP* (Reclamation and CDPR 2013): *71.* Design, construct, and maintain buildings, roads, trails, campsites, boat launches and marinas, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion. The new campsites would be constructed within the San Luis Creek use area at the SRA on O'Neill Forebay. Reclamation will include this mitigation requirement in bid documents and construction contracts. In addition, Reclamation will work with CDPR to implement the following measure. The boat launches at the San Luis Creek and Dinosaur Point use areas would be expanded by addition of a launch lane and a boarding float at each area. In addition, a fish cleaning station, public storage lockers, and shower facilities would be developed at San Luis Creek man use area.	Reclamation, and DWR	Documentation on file with Reclamation, and DWR, and field verification	Prior to construction
CR-1	**Mitigation Measure CR-1: Implement a formal agreement document to govern National Historic Preservation Act (NHPA) Section 106 compliance and resolve any adverse effects/significant impacts to cultural resources**	Reclamation	Documentation on file with Reclamation	Prior to and during construction

Measure No.	Mitigation Measure	Responsible Party	Method of Verification	Timing of Verification
	The Reservoir Restriction Alternative fails to meet one of three critical objectives under the Proposed Action because it would result in a reduction in San Luis Reservoir storage capacity that would adversely impact water supply deliveries to Central Valley Project and State Water Project contractors. The Crest Raise Alternative, which is the preferred alternative, meets each of the Proposed Action objectives. As efforts to identify historic properties are unable to be fully completed, and effects on historic properties cannot be fully determined prior to the approval of the Project, an agreement document was negotiated to satisfy NHPA Section 106 compliance. Additional surveys are needed to identify potential historic properties within the area of potential effects. These surveys will be managed under the agreement document. Due to the need for additional surveys, potential adverse effects/significant impacts to historic properties are not fully known. Reclamation negotiated a programmatic agreement with the State Historic Preservation Officer, which was executed on September 12, 2019. Reclamation will complete the additional historic property identification and evaluation efforts under the negotiated programmatic agreement, and any adverse effects to historic properties will be "resolved" through the completion of the Section 106 process, which will satisfy Federal lead agency requirements with respect to National Environmental Policy Act (NEPA). A process to avoid, minimize impacts to, and/or mitigate adverse effects to historic properties was formalized in the programmatic agreement document in compliance with 36 CFR Part 800.6(c). DWR will be a party to this agreement document.			

2021 Modification to 2019 Mitigation Measures

Mitigation Measure	Modification from EIS/R	Measure
SEIR-GHG-1	New measure	**Construction GHG Emissions Reductions** To reduce greenhouse gas (GHG) emissions generated by equipment during construction, the following measures shall be incorporated into the Modified Project[5]: i. The proper tuning and maintenance of all construction equipment in accordance with manufacturer's specifications ii. Where feasible, employing the use of electrical or alternative fueled (i.e., non-diesel) construction equipment, including forklifts, concrete/industrial saws, pumps, aerial lifts, air compressors, and other comparable equipment types to the extent commercially available iii. To reduce the need for electric generators and other fuel-powered equipment, providing on-site electrical hookups for the use of hand tools such as saws, drills, and compressors used for construction where feasible and appropriate iv. Encouraging and providing carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes
SEIR- GHG-2	Replaces GHG-1 in EIS/R	**Construction Emissions** The California Department of Water Resources (DWR) and Bureau of Reclamation (Reclamation) shall retire carbon offsets in a quantity sufficient to offset the Modified Project's construction greenhouse gas (GHG) emissions to below the DWR thresholds of 25,000 metric ton carbon dioxide equivalent (MT CO2e) total and 12,500 MT CO2e per year for Extraordinary Construction Projects, consistent with the performance standards and requirements set forth below. Based on modeling conducted to date, a minimum of 104,537 MT CO2e would be required to reduce emissions below the project-level significance threshold. **Carbon Offset Standards – Eligible Registries, Acceptable Protocols and Defined Terms** "Carbon offset" shall mean an instrument, credit, or other certification verifying the reduction of GHG emissions issued by the Climate Action Reserve, the American Carbon Registry, or Verra (previously, the Verified Carbon Standard). This shall include, but is not limited to, an instrument, credit or other certification issued by these registries for GHG reduction activities within the Merced County region. Offsets from the Clean Development Mechanism (CDM) registry or generated under CDM protocols shall not be purchased or used to satisfy offset requirements. Qualifying carbon offsets presented for compliance with this mitigation measure may be used provided that each registry shall continue its existing practice of requiring the following for the development and approval of protocols or methodologies: i. Adherence to established GHG accounting principles set forth in the International Organization for Standardization (ISO) 14064, Part 2 or the World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD) Greenhouse Gas Protocol for Project Accounting

[5] The term "Modified Project" describes the BF Sisk Safety of Dams Modification Project with the proposed modifications described in the 2021 document.

Mitigation Measure	Modification from EIS/R	Measure
		ii. Oversight of the implementation of protocols and methodologies that define the eligibility of carbon offset projects and set forth standards for the estimation, monitoring and verification of GHG reductions achieved from such projects. The protocols and methodologies shall: a. Be developed by the registries through a transparent public and expert stakeholder review process that affords an opportunity for comment and is informed by science b. Incorporate standardized offset crediting parameters that define whether and how much emissions reduction credit a carbon offset project should receive, having identified conservative project baselines and the length of the crediting period and considered potential leakage and quantification uncertainties c. Establish data collection and monitoring procedures, mechanisms to ensure permanency in reductions, and additionality and geographic boundary provisions d. Adhere to the principles set forth in the program manuals of each of the aforementioned registries, as such manuals are updated from time to time Further, any carbon offset used to reduce the Modified Project's GHG emissions shall be a carbon offset that represents the past or forecasted reduction or sequestration of one MT of CO2e that is "not otherwise required" (California Environmental Quality Act [CEQA] Guidelines Section 15126.4(c)(3)). Each carbon offset used to reduce GHG emissions shall achieve additional, real, permanent, quantifiable, verifiable, and enforceable reductions, which are defined for purposes of this mitigation measure as follows: i. "Additional" means that the carbon offset is not otherwise required by law or regulation, and not any other GHG emissions reduction that otherwise would occur. ii. "Real" means that the GHG reduction underlying the carbon offset results from a demonstrable action or set of actions, and is quantified under the protocol or methodology using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources and sinks within the boundary of the applicable carbon offset project, uncertainty, and the potential for activity-shifting leakage and market-shifting leakage. iii. "Verifiable" means that the GHG reduction underlying the carbon offset is well documented, transparent, and set forth in a document prepared by an independent verification body that is accredited through the American National Standards Institute (ANSI). iv. "Permanent" means that the GHG reduction underlying the carbon offset is not reversible; or, when GHG reduction may be reversible, that a mechanism is in place to replace any reversed GHG emission reduction. v. "Quantifiable" means the ability to accurately measure and calculate the GHG reduction relative to a project baseline in a reliable and replicable manner for all GHG emission sources and sinks included within the boundary of the carbon offset project, while accounting for uncertainty and leakage. vi. "Enforceable" means that the implementation of the GHG reduction activity must represent the legally binding commitment of the offset project developer to undertake and carry it out. The protocols and methodologies of the Climate Action Reserve, the American Carbon Registry, and Verra establish and require carbon offset projects to comply with standards designed to achieve additional, real, permanent, quantifiable, verifiable, and enforceable reductions. The above definitions are provided as criteria and performance standards associated with the use of

Mitigation Measure	Modification from EIS/R	Measure
		carbon offsets. Such criteria and performance standards are intended only to further construe the standards under CEQA for mitigation related to GHG emissions (see, e.g., State of California CEQA Guidelines Section 15126.4[a][c]), and are not intended to apply or incorporate the requirements of any other statutory or regulatory scheme not applicable to the Modified Project (e.g., the California Cap-and-Trade Program).
HAZ-3	This measure was removed since the San Luis Reservoir Seaplane Base is no longer operational.	
SEIR-HAZ-1	New measure	Maintenance of Modified Project buildings, grounds, and infrastructure, including defensible space areas, shall be conducted using firesafe practices to minimize the potential for wildfire ignitions resulting from equipment use. Firesafe practices shall be consistent with California Public Resources Code Sections 4427, 4428, 4431, and 4442. Maintenance activities shall be ceased during periods of high fire hazard (e.g., red flag warnings), except where necessary to maintain public safety and available water supply for fire suppression purposes.
SEIR-HAZ-2	New measure	Campground operations shall be modified during periods of high fire hazard (e.g., red flag warnings) to reduce the potential for wildfire ignitions. Modifications may include, but are not limited to, banning campfires and open flames, and partially or completely closing the campground to the public.
SEIR-BIO-1	Replaces TERR-3 from EIS/R	**Special-Status Amphibians** Before and after construction: • The Modified Project proponent shall submit the name and credentials of a California Department of Water Resources (DWR) biologist qualified to act as construction monitor to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) for approval at least 15 days before construction work begins. General minimum qualifications are a 4-year degree in biological sciences and experience in surveying, identifying, and handling California tiger salamanders and California red-legged frogs. The qualified biologist shall be present at all times during construction. Consultation with the USFWS through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures. • The USFWS- and CDFW-approved biologist, under the appropriate federal and state authorities (e.g., permitting and consultation), shall survey the work sites 2 weeks before the onset of construction. If California tiger salamanders or California red-legged frogs (or their tadpoles or eggs) are found, the approved biologist shall contact USFWS and CDFW to determine whether moving any of these life stages is appropriate. If USFWS and CDFW approve moving the animals, the biologist shall be allowed sufficient time to move frogs and/or salamanders from the work sites before work begins.

Mitigation Measure	Modification from EIS/R	Measure
		If these species are not identified, construction can proceed at these sites. The biologist shall use professional judgment to determine whether (and if so, when) the California tiger salamanders and/or California red-legged frogs are to be moved. The biologist shall immediately inform the construction manager that work shall be halted, if necessary, to avert avoidable take of listed species. • The known location of California red-legged frogs and Willow Spring, the water source for the perennial frog pond near the borrow area, shall be avoided during construction with a buffer of 250 feet to avoid modifying aquatic habitat that supports the frog population; or as otherwise approved by the resource agencies. • Areas impacted by construction shall be monitored during construction to identify, capture, and relocate special-status amphibians, if present. • Areas beneath construction equipment and vehicles shall be inspected daily, prior to operation, for presence of special-status amphibians under tracks/tires and within machinery. If special-status amphibians are found, a qualified biologist shall capture and relocate animals from work sites. • Appropriate state and federal permits for handling of special-status species shall be acquired. • If necessary, a detailed amphibian relocation plan shall be prepared at least 3 weeks before the start of groundbreaking and submitted to CDFW and USFWS for review. The purpose of the plan is to standardize amphibian relocation methods and relocation sites. • The USFWS- and CDFW-approved biologist shall be present at the active work sites until special-status amphibians have been removed, and habitat disturbance has been completed. Thereafter, compliance with all minimization measures shall be monitored by an individual who has received training from a CDFW- and USFWS-approved biologist, consistent with USFWS requirements. • The Modified Project proponent and its contractors shall install frog-exclusion fencing (i.e., silt fences) around all construction areas that are within 100 feet of any identified ponds that provide potential special-status amphibian aquatic breeding habitat. During and after rain events, an approved biologist shall monitor work areas for the presence of special-status amphibians. • DWR shall ensure that compensation is provided for permanent and temporary impacts on California tiger salamander and California red-legged frog aquatic habitat. Compensatory mitigation shall be provided for the loss of aquatic breeding sites that will be filled or otherwise directly affected by the Modified Project, as well as mitigate for any impacts on associated California red-legged frog upland habitat through compensatory mitigation. If possible, compensatory mitigation areas shall be located within a California red-legged Frog Recovery Area, as identified in the 2002 California Red-legged Frog Recovery Plan (USFWS 2002). • The total area, size, and number of California red-legged frog or California tiger salamander mitigation ponds to be created will be based on a comparable loss of breeding sites (e.g., a minimum 1:1 replacement ratio) as a result of the Modified Project. These ponds shall concurrently satisfy wetland mitigation requirements identified in Mitigation Measure TERR-16 in the 2019 EIS/EIR. To the degree possible, new mitigation ponds that are created for California red-legged frog and California tiger salamander shall be hydrologically self-sustaining and shall not require a supplemental water supply.

Mitigation Measure	Modification from EIS/R	Measure
SEIR-BO-2	Replaces TERR-5 from EIS/R	**Special-Status Reptiles** Before construction activities begin, a qualified biologist shall conduct special-status reptile (i.e., San Joaquin whipsnake and coast horned lizard) surveys 2 weeks prior to construction activities within work sites and within 100 feet of disturbance areas. A qualified biologist shall relocate any special-status reptiles to suitable habitat outside of areas of disturbance. There is possibility of special-status reptiles to move into the work sites after preconstruction surveys have checked the area and some individuals could be subject to mortality. If special-status reptiles are detected in work sites during construction, activities and equipment travel shall cease in the immediate area of detection until the special-status reptile has left work site or has been relocated out of the area by a qualified biologist.
SEIR-BIO-3	Replaces TERR-9 from EIS/R	**Burrowing Owl** Prior to construction, surveys for burrowing owls shall be conducted in areas supporting potentially suitable habitat. Breeding season surveys shall be performed to determine the presence of burrowing owls for the purposes of inventory, monitoring, avoidance of take, and determining appropriate mitigation. In California, the breeding season begins as early as February 1 and continues through August 31. Under the survey guidelines in the California Department of Fish and Wildlife's (CDFW's) Staff Report on Burrowing Owl Mitigation (CDFG 2012), a biologist shall: 1) perform a habitat assessment to identify essential components of burrowing owl habitat, including artificial nest features; 2) perform intensive burrow surveys in areas that are identified to provide suitable burrowing owl habitat, and; 3) perform at least four appropriately-timed breeding season surveys (four survey visits spread evenly [roughly every 3 weeks] during the peak of the breeding season, from April 15 to July 15) to document habitat use. Preconstruction surveys (referred to as take avoidance surveys in CDFG [2012]) shall be used to assess the owl presence before site modification is scheduled to begin. Generally, initial preconstruction surveys should be conducted within 7 days, but no more than 30 days prior to ground-disturbing activities. Additional surveys may be required when the initial disturbance is followed by periods of inactivity or the development is phased spatially and/or temporally over the Modified Project area. Up to four or more survey visits performed on separate days may be required to assure with a high degree of certainty that site modification and grading will not take owls. The full extent of the preconstruction survey effort shall be described and mapped in detail (e.g., dates, time periods, area[s] covered, and methods employed) in a biological report that shall be provided for review to CDFW. In addition to the above survey requirements, the following measures shall be implemented to reduce Modified Project impacts to burrowing owls: • Construction exclusion areas (e.g., orange exclusion fence or signage) shall be established around occupied burrows, where no disturbance shall be allowed. During the nonbreeding season (September 1 through January 31), the exclusion zone shall extend at least 160 feet around occupied burrows. During the breeding season (February 1 through August 31), exclusion areas shall extend 250 feet around occupied burrows (or farther if warranted to avoid nest abandonment). • If work or exclusion areas conflict with owl burrows, passive relocation of on-site owls could be implemented as an alternative, but only during the nonbreeding season and only with CDFW approval. The approach to owl relocation and

Mitigation Measure	Modification from EIS/R	Measure
		burrow closure will vary depending on the number of occupied burrows. Passive relocation shall be accomplished by installing one-way doors on the entrances of burrows within 160 feet of the Modified Project area. The one-way doors shall be left in place for 48 hours to ensure the owls have left the burrow. The burrows shall then be excavated with a qualified biologist present. Construction shall not proceed until the Modified Project area is deemed free of owls. • Unoccupied burrows within the immediate construction area shall be excavated using hand tools, and then filled to prevent reoccupation. The qualified biologist shall be present during construction to continue examination of burrows. If any burrowing owls are discovered during the excavation, the excavation shall cease and the owl allowed to escape. Excavation shall be completed once the biological monitor confirms the burrow is empty. • Artificial nesting burrows shall be provided as a temporary measure when natural burrows are lacking. To compensate for lost nest burrows, artificial burrows shall be provided outside the 160-foot buffer zone. The alternate burrows shall be monitored daily for 7 days to confirm that the owls have moved in and acclimated to the new burrow.
SEIR-BIO-4	Replaces TERR-12 from EIS/R	**San Joaquin Kit Fox** San Joaquin kit fox would be affected by construction activities if animals are harmed or killed by equipment, their movement is blocked, or their dens or other habitat is altered or destroyed. Consultation with the U.S. Fish and Wildlife Service (USFWS) through the Section 7 process may be required to determine avoidance, conservation, and mitigation measures. Prior to construction, a qualified biologist shall conduct surveys to identify potential dens more than 4 inches in diameter. A multispecies burrow assessment in 2020 located numerous potential San Joaquin kit fox dens in suitable habitat throughout the project site (Dudek 2020). If dens are located within the proposed work area and cannot be avoided during construction activities, a USFWS- and California Department of Fish and Wildlife (CDFW)-approved biologist shall determine if the dens are occupied. If occupied dens are present within the proposed work area, their disturbance and destruction shall be avoided. Exclusion zones shall be implemented following the latest USFWS procedures (USFWS 2011). The Modified Project proponent shall implement San Joaquin kit fox protection measures. The following measures, which are intended to reduce direct and indirect Project impacts on San Joaquin kit foxes, are derived from the San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999) and the Standardized Recommendations for Protection of the San Joaquin Kit Fox (USFWS 2011). The following measures shall be implemented for construction areas at San Luis Reservoir: • Preconstruction surveys shall be conducted within 200 feet of work areas to identify potential San Joaquin kit fox dens or other refugia in and surrounding workstations. A qualified biologist shall conduct the survey for potential kit fox dens 14 to 30 days before construction begins. All identified potential dens shall be monitored for evidence of kit fox use by placing an inert tracking medium at den entrances and monitoring for at least 3 consecutive nights. If no activity is detected at these den sites, they shall be closed following guidance established in the USFWS Standardized Recommendations report (USFWS 2011). • If kit fox occupancy is determined at a given site during the preconstruction surveys or during the construction period, the construction manager should be immediately informed that work should be halted within 200 feet of the den and the

Mitigation Measure	Modification from EIS/R	Measure
		USFWS contacted. Depending on the den type, reasonable and prudent measures to avoid effects to kit foxes could include seasonal limitations on Modified Project construction at the site (i.e., restricting the construction period to avoid spring–summer pupping season), and/or establishing a construction exclusion zone around the identified site, or resurveying the den 1 week later to determine species presence or absence. • Off-road vehicle and equipment movement shall be limited to the Modified Project footprint. • To compensate for permanent impacts to grassland, which provides habitat for San Joaquin kit fox, lands shall be acquired and covered by conservation easements or mitigation credits shall be purchased at a 2:1 mitigation ratio, or other compensation ratios approved by USFWS and CDFW.
SEIR-BIO-5	Replaces TERR-16 from EIS/R	**Mitigation Measures for Special-Status Communities, including Native Grassland and Jurisdictional Wetlands or Waters, and Streambeds and Banks Regulated by CDFW, RWQCB, and USACE** ***SEIR-BIO-5a.*** Final project design shall avoid and minimize the fill of wetlands and other waters to the greatest practicable extent. The following actions shall be performed to protect jurisdictional wetlands: The distribution of federal and state jurisdictional wetlands and waters; streambeds and banks regulated by the California Department of Fish and Wildlife (CDFW); and sensitive habitat regulated by CDFW, shall be defined and avoided to the greatest possible extent. Prior to construction, a qualified biologist shall delineate the extent of jurisdictional areas to be avoided in the field. The Bureau of Reclamation (Reclamation) shall designate areas to be avoided as "Restricted Areas" and protect them using highly visible fencing, rope, or flagging, as appropriate based on-site conditions. No construction activities or disturbance shall occur within restricted areas that are designated to protect wetlands. The removal of riparian and wetland vegetation shall be minimized. The disturbance of riparian and aquatic habitat north of the access road to the dam shall be avoided. The removal or damage to purple needlegrass grassland, gum plant patches and tarweed fields communities within annual grassland, and *Baccharis pilularis*/(*Nassella pulchra–Elymus glaucus–Bromus carinatus)*, and narrowleaf goldenbush communities within scrub/chaparral shall be minimized. Impacts to these communities in the staging area shall be avoided. ***SEIR-BIO-5b.*** Where jurisdictional wetlands and other waters cannot be avoided, to offset temporary and permanent impacts that would occur as a result of the Modified Project, restoration and compensatory mitigation shall be provided as described below. A wetland mitigation and monitoring plan shall be developed in coordination with CDFW, the U.S. Army Corps of Engineers (USACE), and/or the Regional Water Quality Control Board (RWQCB) that details mitigation and monitoring obligations for temporary and permanent impacts to wetlands and other waters as a result of construction activities; and other CDFW-jurisdictional areas. The plan shall quantify the total acreage affected; provide for mitigation as described below to wetland or riparian habitat; annual success criteria; mitigation sites; monitoring and reporting requirements; and site-specific plans to compensate for wetland losses resulting from the Modified Project.

Mitigation Measure	Modification from EIS/R	Measure
		Prior to construction, the aquatic structure of wetland and riparian areas to be disturbed shall be photo-documented, and measurements of width, length, and depth shall be recorded. Reclamation shall recontour and revegetate disturbed portions of jurisdictional areas in areas temporarily affected by construction prior to demobilization by the contractor at the end of Modified Project construction. Creek banks shall be recontoured to a more stable condition if necessary. Revegetation shall include a palette of species native to the watershed area according to a revegetation plan to be developed by Reclamation and submitted to USACE, CDFW, and RWQCB for approval. Following removal, woody trees habitat acreage shall be replanted at a minimum 1:1 ratio, or as determined and agreed upon by the permitting agencies. Interim vegetation or other measures shall be implemented as necessary to control erosion in disturbed areas prior to final revegetation. Wetland and other waters impacts in the construction area shall be compensated at a ratio of 2:1 or at a ratio agreed upon by the wetland permitting agencies. Compensatory mitigation shall be conducted by creating or restoring wetland and aquatic habitat at an agency-approved location on nearby lands or through purchasing mitigation credits at a USACE- and/or CDFW-approved mitigation bank (depending on the resource). If mitigation is conducted on or off-site, a 5-year wetland mitigation and monitoring program for on-site and off-site mitigation shall be developed. Appropriate performance standards may include, but are not limited to a 75% survival rate of restoration plantings; absence of invasive plant species; and a viable, self-sustaining creek or wetland system at the end of 5 years. A weed control plan to limit the Modified Project's potential to spread noxious or invasive weeds shall be developed. This plan would be consistent with current integrated pest management plans that are already in practice on lands surrounding San Luis Reservoir. Noxious or invasive weeds include those rated as "high" in invasiveness by the California Invasive Plant Council. The plan shall include a baseline survey to identify the location and extent of invasive weeds in the Modified Project area prior to ground-disturbing activity, a plan to destroy existing invasive weeds in the construction area prior to initiation of ground-disturbing activity, weed-containment measures while the Modified Project is in progress, and monitoring and control of weeds following completion of construction.
SEIR-BIO-6	New measure	**Avoidance of Bridge-Nesting Birds** Prior to the construction and removal of the temporary haul road under State Route (SR) 152, surface modification treatment (Polytetrafluoroethylene [PTFE] sheeting) shall be applied to the SR-152 bridge to prevent nesting by species such as cliff swallow, black phoebe, and white-throated swift (if weep holes are present). PTFE sheeting shall be installed vertically at the junctures of vertical and overhead surfaces on the sides and underneath the first 75 feet of the SR-152 bridge extending from the southern abutment of the bridge to the north along the bridge. The treatment shall be applied before the nesting season (February 1). In combination with PTFE sheets, broadcast call units playing distress calls from adult cliff swallows may be used to further deter nesting. If used, distress calls should be played for 26 seconds in duration continuously via broadcast call units installed within the nest exclusion area as described in "Methods for Excluding Cliff Swallows from Nesting on Highway Structures" (UC Davis 2009).

Mitigation Measure	Modification from EIS/R	Measure
		During the nesting season, the exclusion treatment shall be supplemented with bi-weekly inspections by a qualified biologist to evaluate treatment integrity, inspect the area for active nests, and subsequently remove any partial nests, as feasible. The 75-foot treatment area has been established as a standard disturbance buffer for cliff swallow, black phoebe, and white-throated swift for work activities that involve heavy machinery and personnel (PG&E 2016).
SEIR-BIO-7	New measure	**Elk Avoidance and Minimization** In order to minimize conflicts between construction activities and tule elk within the Modified Project area, a Tule elk site management plan shall be developed to direct control measures. At a minimum, the plan shall specify that Tule elk shall be directed (herded) from the work area(s) such that they are not confined (trapped) between construction activities and landscape features such as fences, buildings, water bodies, and in particular State Route 152. When herding elk, they should always be provided an escape route to the general south. The California Department of Fish and Wildlife (CDFW) indicates that Tule elk are readily herded by people or vehicles and quickly associate the need to move with specific people or vehicles; the plan should specify that particular vehicles (choose red trucks, for example) or personnel shall be tasked with herding activities. Once elk have been herded away from the construction zone, they will generally stay a comfortable distance from activities. If Tule elk do re-enter the construction zone, then additional herding efforts shall be required. Additionally, during the March and April periods, lone females shall be provided additional monitoring since they may be birthing, though they quickly rejoin the herd within a few days after birthing. Once developed, the plan shall be reviewed by CDFW elk biologists.
SEIR-REC-1	Replaces REC-1 from EIS/R[6]	**Campsite and Facilities Replacement** Campsites closed at San Luis Reservoir during construction of the Crest Raise Alternative shall be replaced at a 1:1 ratio at the San Luis Creek Use Area and then as necessary at the Los Banos Creek Use Area, including six Americans with Disabilities Act (ADA)-accessible campsites and RV accommodations. These new replacement campsites shall be developed consistent with the new facilities considered in the San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) and shall not exceed the quantities of new facilities considered in the San Luis Reservoir SRA RMP/GP at each use area. The new campsites shall be constructed concurrent to the crest construction period during a period of low precipitation in order to reduce the risk of accidental leaks or spills, potential for soil contamination, and to minimize erosion of loose materials in construction areas, as per Goal RES-WQ4 in the San Luis Reservoir SRA RMP/GP (Reclamation and CDPR 2013): • Design, construct, and maintain buildings, roads, trails, campsites, boat launches and marinas, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion. The new campsites shall be constructed within the San Luis Creek Use Area at the SRA on O'Neill Forebay. The Bureau of Reclamation (Reclamation) shall include this mitigation requirement in bid documents and construction contracts.

[6] Mitigation measure REC-1 in the 2019 EIS/R included the expansion of the boat launch at Dinosaur Point Use Area. Since that time, State Parks has indicated the previously proposed expansion of this boat launch is no longer required, as the facility's existing capacity would accommodate any increase in use due to the closure of the Basalt Campground boat launch for the duration of Modified Project construction. As such, modifications to the Dinosaur Point Use Area are no longer included in the Project activities.

Mitigation Measure	Modification from EIS/R	Measure
		In addition, Reclamation shall work with the California Department of Parks and Recreation to implement the following measure: • The boat launch at the San Luis Creek Use Area shall be expanded by adding a launch lane and a boarding float. In addition, a fish cleaning station, public storage lockers, and shower facilities shall be developed at San Luis Creek Use Area.
SEIR-CR-1	New measure consistent with the Programmatic Agreement	**Unanticipated Discovery of Archaeological Resources** Prior to construction, a qualified cultural resources specialist, meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology, shall review the final Modified Project design to confirm impacts to all known cultural resources and/or resources identified to be of importance to consulting Native American tribes, have been considered and addressed. As stipulated by Mitigation Measure CR-1 of the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR), the Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project (Programmatic Agreement) was prepared. This document, specifically the section pertaining to Treatment of Post Review Discoveries, provides that in the event of a post-review discovery during construction or other Modified Project-related activities, the Bureau of Reclamation (Reclamation) in conjunction with California Department of Water Resources (DWR) shall determine if ongoing construction activities will affect a previously unidentified cultural resource that may be eligible for the National Register of Historic Places and California Register of Historical Resources or affect a known cultural resource in an unanticipated manner, and address the discovery or unanticipated effect in accordance with Title 36, Part 800.13(b) of the Code of Federal Regulations (CFR) (Reclamation and SHPO 2019). There remain areas within the Modified Project that have not been subject to cultural resources survey because no activities are presently planned in these areas with potential to impact cultural resources. As stipulated by CR-1 of the 2019 EIS/EIR, should project plans change such that use of these areas could introduce impacts to cultural resources, additional cultural resources survey and evaluation efforts will be performed as stipulated in the Programmatic Agreement shall act as a guide for additional cultural resources survey and evaluation efforts. All construction crews shall be alerted to the potential to encounter sensitive cultural and tribal cultural material. This may occur through inclusion of a cultural resources component within a Worker Environmental Awareness Program or other preconstruction training. Prior to construction, a communication matrix with primary and secondary cultural resources points of contact from Reclamation, DWR, consulting parties, and other pertinent project personnel shall be developed and circulated. A simple overview guide with roles and responsibilities, cultural resource management protocols, and a list of guiding documents shall be prepared as a companion to this communication matrix prior to construction. In the event that archaeological resources (e.g., sites, features, or artifacts) are exposed during construction activities for the Modified Project, all construction work occurring in the vicinity shall immediately stop until a qualified archaeologist can evaluate its significance and determine whether additional study is warranted. A minimum work exclusion buffer should be assumed to be no less than 100 feet, or as otherwise specified by the approved Programmatic Agreement (Reclamation and SHPO 2019) and its future amendments. This buffer may be adjusted by the qualified archaeologist in consultation with the lead agency. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, the presence of imported shell, burned or complete bone, non-local lithic materials,

Mitigation Measure	Modification from EIS/R	Measure
		or other characteristics observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; projectile points; fired-clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending on the nature and the significance of the find under the California Environmental Quality Act (14 CCR 15064.5[f]; California Public Resources Code, Section 21082) and/or Section 106 of the National Historic Preservation Act, it may be appropriate for the qualified archaeologist to simply record the find and allow work to continue. Avoidance should be considered the preferred option for treatment of unanticipated cultural resources. Prior to any ground-disturbing investigative techniques, the feasibility of resource avoidance should be considered. If the discovery proves significant, as determined by the qualified archaeologist in consultation with the lead agency(s) and other consulting parties, additional work, such as testing, data recovery, or other alternatives, may be warranted. The qualified archaeologist shall prepare a report to document compliance with approved mitigation requirements and to DWR/Reclamation standards. This report shall be reviewed by lead agency staff and, once finalized, submitted to a California Historical Resources Information System information center. Reclamation will ensure that any non-Native American Graves Protection and Repatriation Act–related cultural materials and associated records falling under Reclamation's Scope of Collections Statement (Programmatic Agreement, Appendix F) that result from the identification, evaluation, and treatment of historic properties on Reclamation land conducted under the Programmatic Agreement shall be properly maintained in accordance with 36 CFR 79. If there is an adverse effect determined that requires the development of a Historic Properties Treatment Plan (HPTP) under the Programmatic Agreement, Reclamation shall ensure that documentation of the curation of these materials is prepared and provided to parties named in the HPTP specific to the resolution of effects for that historic property as stipulated within the HPTP. Reclamation's responsibilities under the Programmatic Agreement shall continue and shall include follow-up with consulting parties should any changes to the Modified Project occur.
SEIR-CR-2	New measure consistent with the Programmatic Agreement	**Unanticipated Discovery of Human Remains** In the event that Native American human remains, funerary objects, sacred objects, and/or objects of cultural patrimony are inadvertently discovered under or on the surface of Bureau of Reclamation (Reclamation) lands, Reclamation shall follow the procedures outlined in the Native American Graves Protection and Repatriation Act (NAGPRA), as specified in the implementing regulations at Title 43, Section 10.2(d)(1–2) of the Code of Federal Regulations (CFR) and Stipulation X and Appendix E of the Programmatic Agreement Among The Bureau of Reclamation, Interior Region 10 California-Great Basin; and The California State Historic Preservation Officer Regarding Compliance with Section 106 of the National Historic Preservation Act Pertaining to the Implementation of the Safety of Dams B.F. Sisk Dam Project. Reclamation shall ensure that all such NAGPRA cultural items encountered during any undertaking on Reclamation lands are treated in accordance with the requirements at Section 3(c–d) of NAGPRA and the implementing regulations at 43 CFR 10. On State-owned or private lands, in accordance with Section 7050.5 of the California Health and Safety Code, if suspected human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the

Mitigation Measure	Modification from EIS/R	Measure
		site or any nearby area reasonably suspected to overlie adjacent remains shall occur on either federal or State-owned lands until agency approval is provided. On State-owned or private lands, the county coroner shall determine within 2 working days of notification of the discovery whether the remains are human in origin. If the county coroner determines that the remains are, or are believed to be, Native American, the county coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The descendants or authorized representative may, with the permission of the owner of the land, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The most likely descendant shall complete inspection of the remains within 48 hours of being granted access to the site.
SEIR-CR-3	New measure consistent with the Programmatic Agreement	**Archaeological and Native American Monitors and Worker Environmental Awareness Program** The Bureau of Reclamation (Reclamation) has developed a geoarchaeological sensitivity map and supporting summary that identifies areas of elevated potential for encountering buried resources within the area of potential effect; archaeological monitoring shall be required in the higher sensitivity areas identified by this map. Archaeological monitors shall be provided a copy of Reclamation's geoarchaeological sensitivity map and supporting documentation at least 30 days prior to the initiation of ground-disturbing activities. Consulting Native American tribes shall be given the opportunity to monitor in higher sensitivity areas identified as having elevated potential for encountering buried resources. A copy of the geoarchaeological sensitivity map and supporting documentation shall be provided to Native American Monitors at least 30 days prior to the initiation of ground-disturbing activities within areas subject to monitoring. Prior to and during construction, all construction crews shall be alerted to these monitoring requirements and the potential to encounter sensitive cultural and tribal cultural material. This may occur through inclusion of a cultural resources component within a Worker Environmental Awareness Program or other preconstruction training.

Appendix B - Dudek October 2024 Biological Resources Assessment

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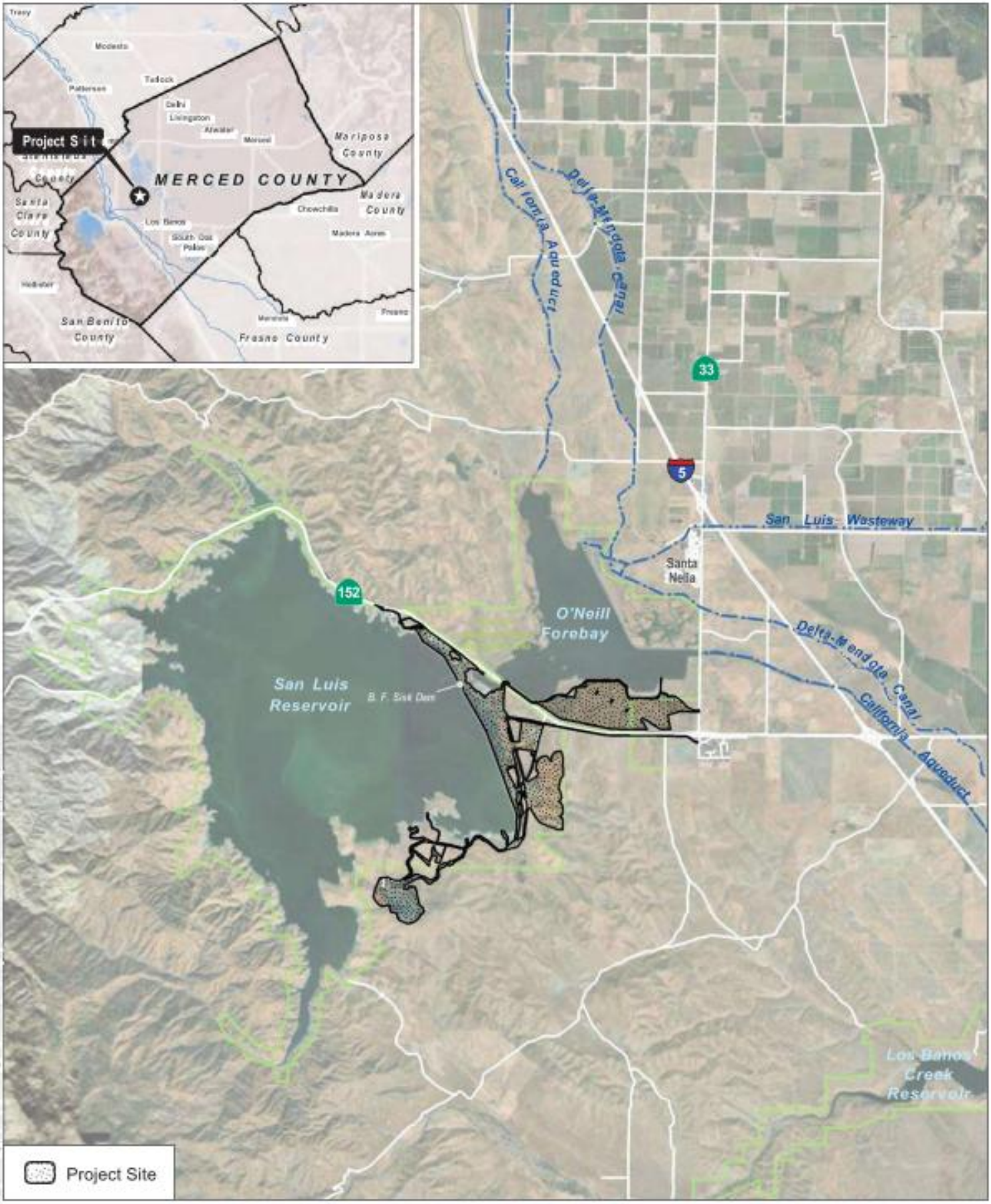


SOURCE: Basemap: ESRI World Imagery
Project Boundary: Reclamation, 3/9/2023
Canals: National Hydrologic Dataset 2020

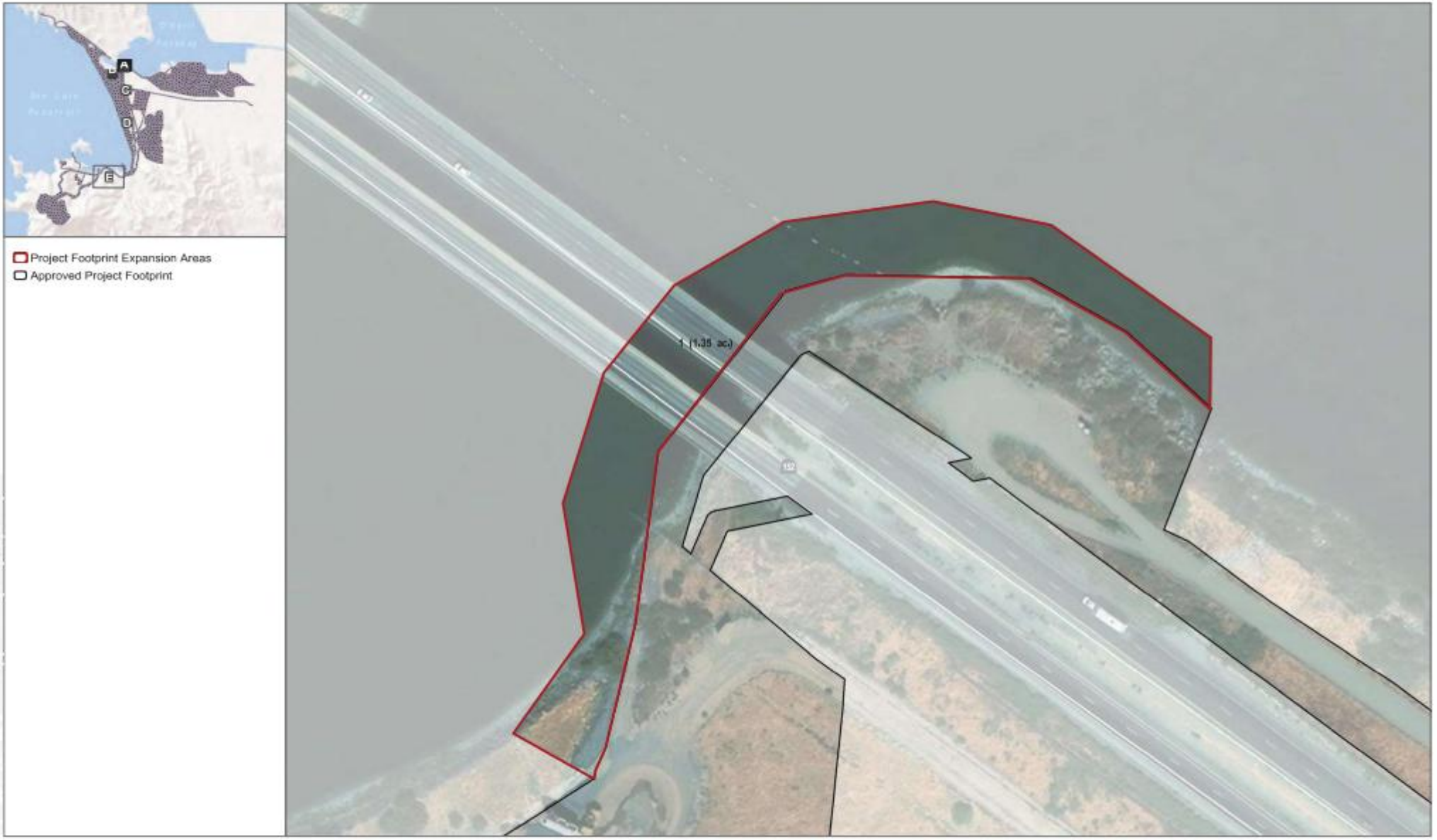
DUDEK

0 1 2 Miles

FIGURE 1

Project Location

BF Sisk SOD Modification Project - Permit Amendment No. 3



SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redemaster, 3/9/2023

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FIGURE 2A

Overview of Project Footprint Expansion Areas

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redpenedon, 3/9/2023

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FIGURE 2B

Overview of Project Footprint Expansion Areas

BF Sisk SOD Modification Project - Permit Amendment No. 3

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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FIGURE 2C

Overview of Project Footprint Expansion Areas

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redamalcar, 3/9/2023

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FIGURE 2D

Overview of Project Footprint Expansion Areas

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redamalon, 3/9/2023

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FIGURE 2E

Overview of Project Footprint Expansion Areas

BF Sisk SOD Modification Project - Permit Amendment No. 3

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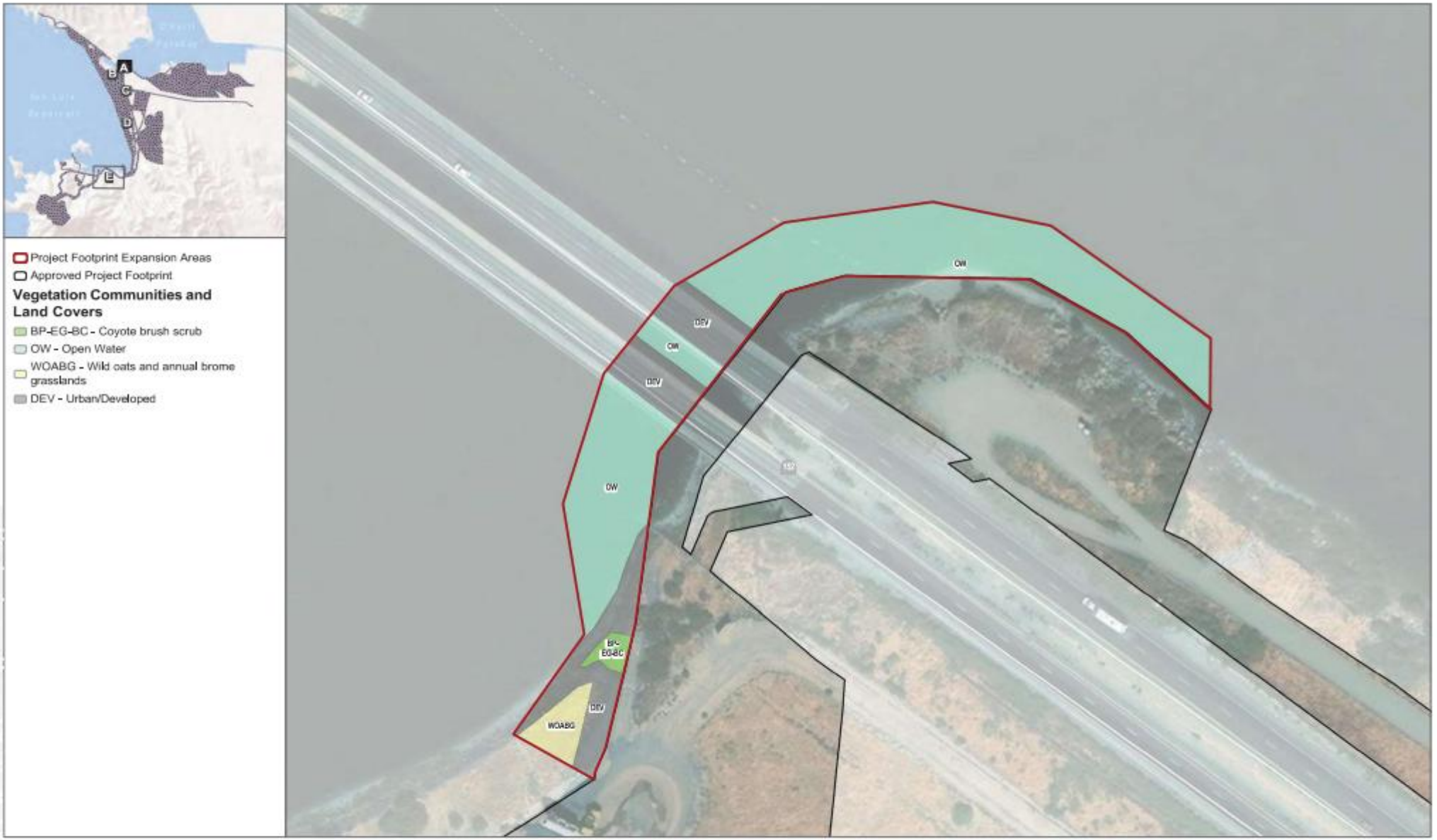

SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redamalon, 3/9/2023

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FIGURE 3A

Vegetation Communities and Land Covers

BF Sisk SCID Modification Project - Permit Amendment No. 3

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redamation, 3/9/2023

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FIGURE 3B

Vegetation Communities and Land Covers

BF Sisk SOD Modification Project - Permit Amendment No. 3

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redlanestor, 3/9/2023

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FIGURE 3C

Vegetation Communities and Land Covers

BF Sisk SOD Modification Project - Permit Amendment No. 3

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redamation, 3/2023

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FIGURE 3D

Vegetation Communities and Land Covers

BF Sisk SOD Modification Project - Permit Amendment No. 3

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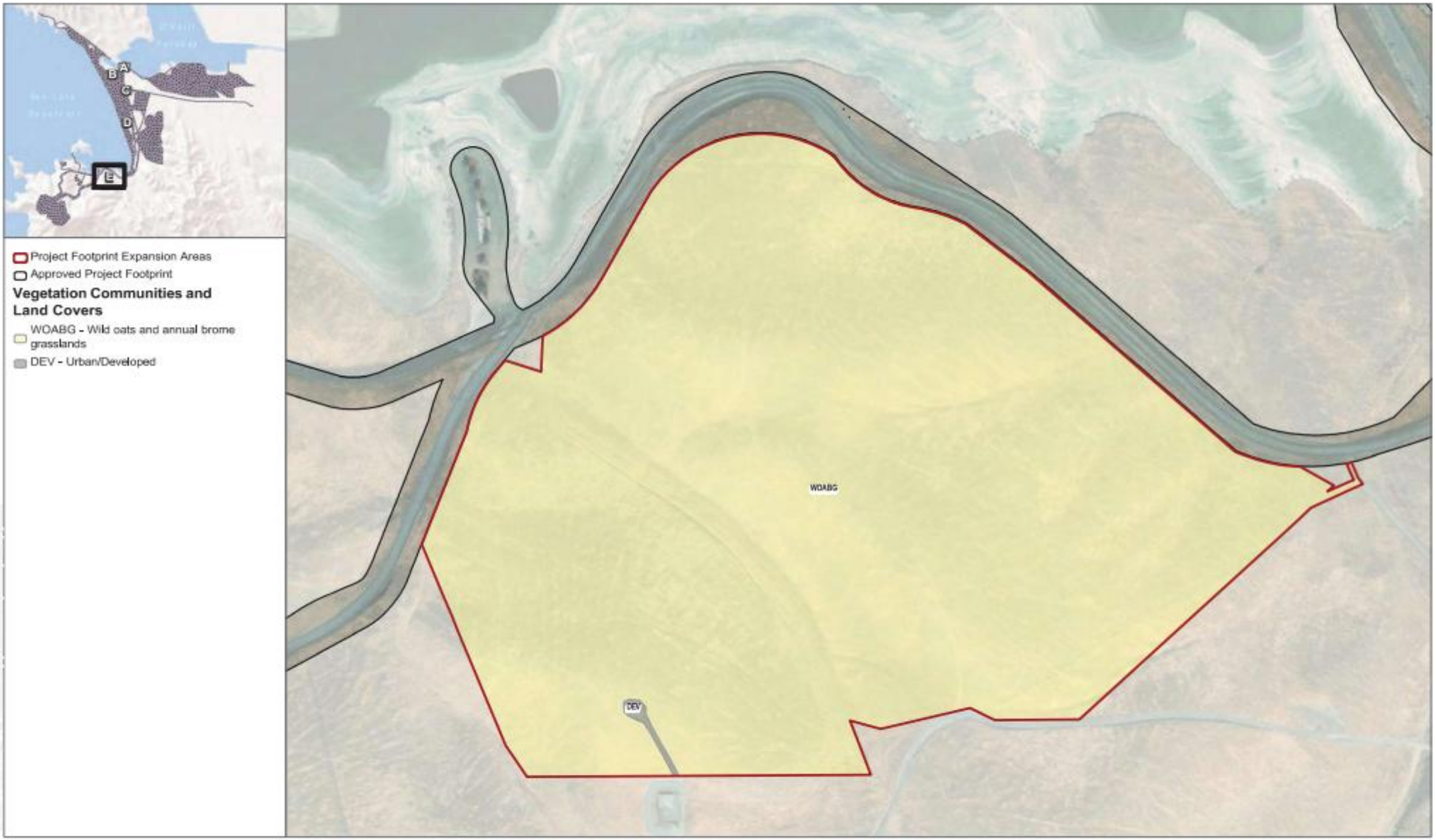

SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redamator, 3/9/2023

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FIGURE 3E
Vegetation Communities and Land Covers
BF Sisk SOD Modification Project - Permit Amendment No. 3

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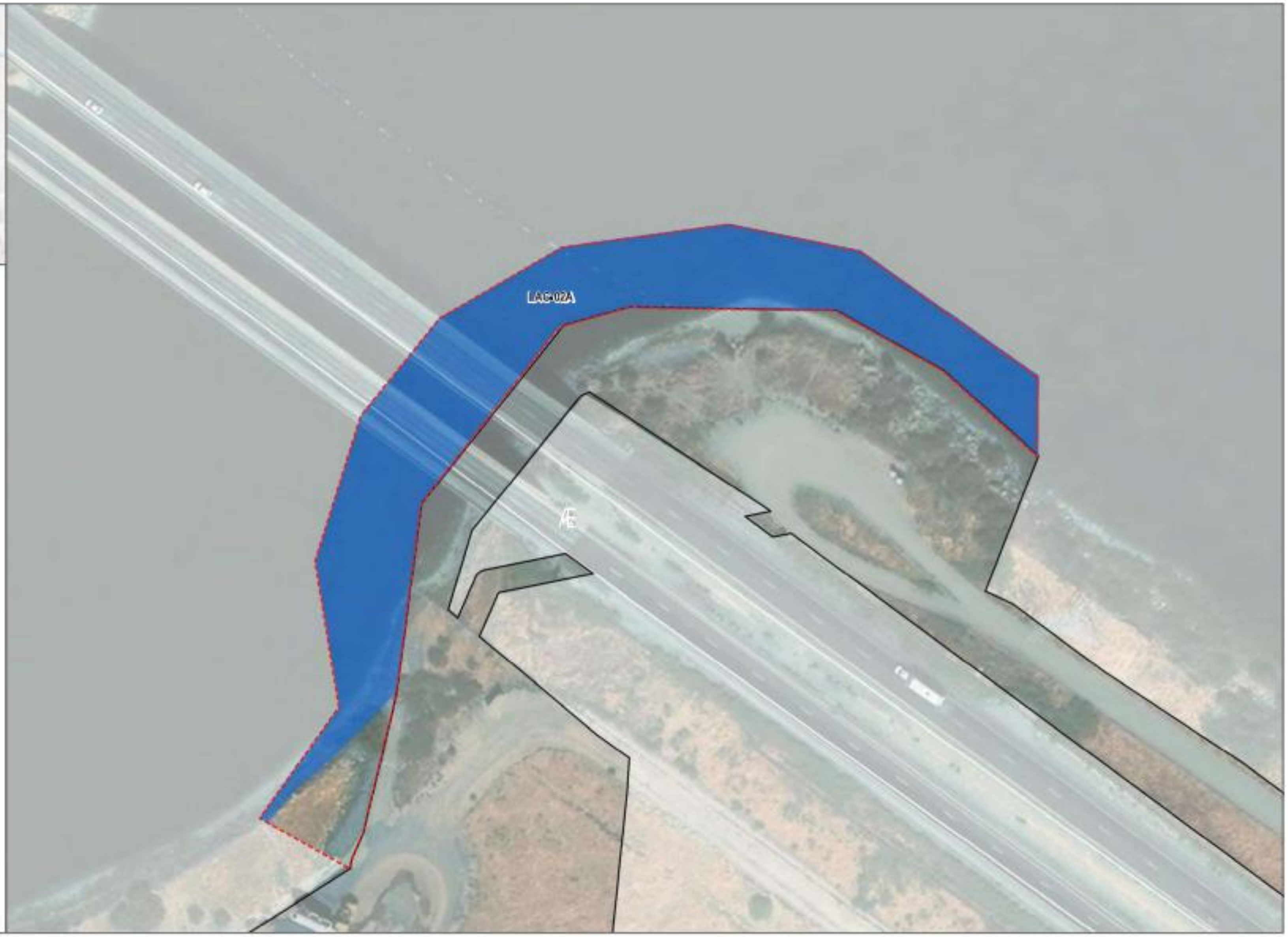
Project Footprint Expansion Areas
Approved Project Footprint

CDFW-Jurisdictional Aquatic Resources

Lacustrine
LAC-02A: 1.2 acres

Note: The jurisdictional status of features shown in this figure should be considered preliminary until verified by the CDFW.



SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/6/2023

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FIGURE 4A
Delineation of CDFW-Jurisdictional Aquatic Resources

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Project Footprint Expansion Areas

Approved Project Footprint

CDFW-Jurisdictional Aquatic Resources

Constructed Ditch

D-05A: 0.08 acre

D-50: 0.05 acre

Note: The jurisdictional status of features shown in this figure should be considered preliminary until verified by the CDFW.

SOURCE: Basemap: ESRI World Imagery; Project Boundary: Redamalon, 3/9/2023

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FIGURE 4B

Delineation of CDFW-Jurisdictional Aquatic Resources

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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FIGURE 4C
Delineation of CDFW-Jurisdictional Aquatic Resources

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Project Footprint Expansion Areas

Approved Project Footprint

CDFW-Jurisdictional Aquatic Resources

No CDFW-Jurisdictional Aquatic Resources occur within this Espansion Area

Note: The jurisdictional status of features shown in this figure should be considered preliminary until verified by the CDFW.

SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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FIGURE 4D

Delineation of CDFW-Jurisdictional Aquatic Resources

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SOURCE: Basemap: ESRI World Imagery; Project Boundary; Reclamation; 3/6/2023

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FIGURE 4E
Delineation of CDFW-Jurisdictional Aquatic Resources

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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FIGURE 5A

Special-Status Species Habitat: California Tiger Salamander

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Project Footprint Expansion Areas
Approved Project Footprint
Upland Habitat

SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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0 300 600 Feet

FIGURE 5B

Special-Status Species Habitat: California Tiger Salamander

BF Sisk SOD Modification Project - Permit Amendment No. 3

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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FIGURE 5C

Special-Status Species Habitat: California Tiger Salamander

BF Sisk SOD Modification Project - Permit Amendment No. 3

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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FIGURE 6A

Special-Status Species Habitat: San Joaquin Kit Fox

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SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/9/2023

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FIGURE 6B

Special-Status Species Habitat: San Joaquin Kit Fox

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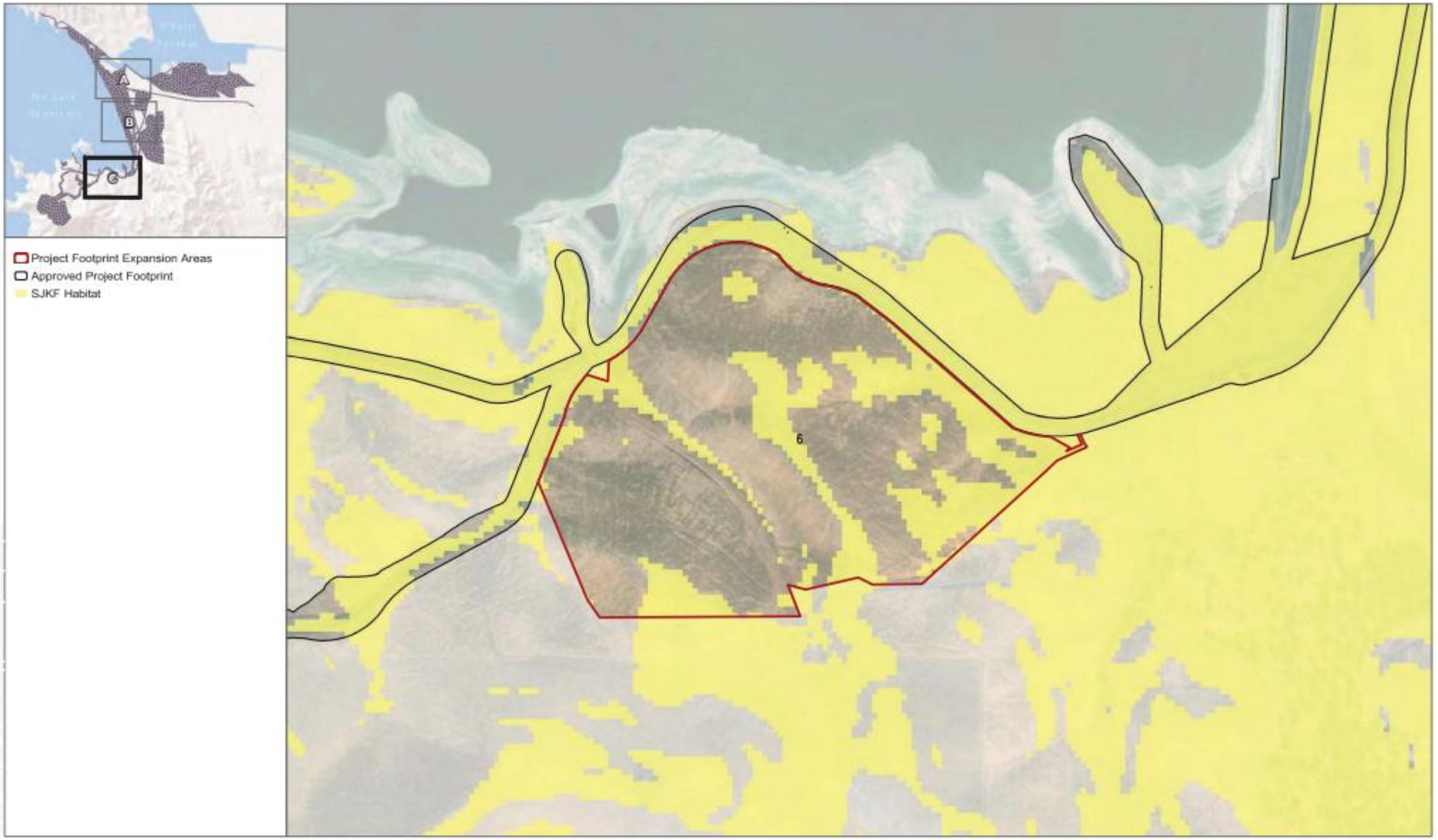

SOURCE: Basemap: ESRI World Imagery; Project Boundary: Reclamation, 3/2023

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FIGURE 6C
Special-Status Species Habitat: San Joaquin Kit Fox
BF Sisk SOD Modification Project - Permit Amendment No. 3

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Appendix A

Representative Photographs

Photograph 1: West-facing facing view of wild oats and annual brome grasslands in eastern portion of expansion area 5 (August 6, 2024).

Photograph 2: North-facing view of wild oats and annual brome grasslands in expansion area 5(August 6, 2024).

Photograph 3: Northwest-facing view of wild oats and annual brome grasslands at southern end of expansion area 7 (August 6, 2024). Unlike other expansion areas, several active California ground squirrel burrows were observed here.

Photograph 4: North-facing view of wild oats and annual brome grasslands in expansion area 4 (August 6, 2024).

Photograph 5: East-facing view of coyote brush scrub and wild oats and annual brome grasslands in expansion area 3 (August 6, 2024).

Photograph 6: Northwest-facing view of upland mustards or star-thistle fields in expansion area 2 (adjacent to existing DWR Civil Maintenance Yard) (August 6, 2024).

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Appendix B

Special-Status Plant Species Potential to Occur in Project Footprint Expansion Areas

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur in Project Footprint Expansion Areas
Atriplex cordulata var. *cordulata*	heartscale	None/None/1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland; Alkaline (sometimes)/annual herb/ Apr–Oct/0–1,835	Low potential to occur. There is suitable grassland habitat but no chenopod scrub, meadows, or seeps. The only Californian Natural Diversity Database (CNDDB) occurrence in the region[1] is a 1937 observation northwest of Volta along Highway 33 on alkaline soils in association with alkali heath (*Frankenia* sp.) and pickleweed (*Salicornia* sp.); this occurrence is now considered possibly extirpated (CDFW 2024; Occ. No. 17). This species was not observed during 2020 or 2023 rare plant surveys.
Atriplex coronata var. *vallicola*	Lost Hills crownscale	None/None/1B.2	Chenopod scrub, Valley and foothill grassland, Vernal pools; Alkaline/ annual herb/Apr–Sep/165–2,080	Low potential to occur. Although suitable grassland habitat is present, this species appears to be restricted to the Carrisalito Flat area within the region.[1] The two most recent CNDDB occurrences of this species are in the Piedra Azul Conservation Bank on the margins of alkaline badlands habitat (CDFW 2024; Occ. No. 120 and 121). Alkaline soils are present in the Project area, but range from slightly alkaline to moderately alkaline (USDA 2024). This species was not observed during 2020 or 2023 rare plant surveys.
Atriplex minuscula	lesser saltscale	None/None/1B.1	Chenopod scrub, Playas, Valley and foothill grassland; Alkaline, Sandy/ annual herb/May–Oct/50–655	Not expected to occur. Although suitable grassland habitat is present, this species is not known to occur within the region.[1] The closest CNDDB occurrence is a historical record with unspecified locational information, mapped by CNDDB approximately 12 miles to the east (CDFW 2024; Occ. No 42). Alkaline soils are present in the Project area, but range from slightly alkaline to moderately alkaline (USDA 2024). This species was not observed during 2020 or 2023 rare plant surveys.
Campanula exigua	chaparral harebell	None/None/1B.2	Chaparral/annual herb/May–June/ 900–4,100	Not expected to occur. Chaparral habitat is absent from the project footprint expansion areas. This species is only known from one historical CNDDB

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur in Project Footprint Expansion Areas
				occurrence in the region,[1] approximately 10 miles to the southwest (CDFW 2024; Occ. No. 5). This species was not observed during 2020 or 2023 rare plant surveys.
Caulanthus lemmonii	Lemmon's jewelflower	None/None/1B.2	Pinyon and juniper woodland, Valley and foothill grassland/annual herb/ Feb–May/260–5,180	Low potential to occur. Although suitable grassland habitat is present, this species is only known from one CNDDB occurrence in the region.[1] This 1986 occurrence recorded the species growing on steep slopes above Los Banos Creek (CDFW 2024; Occ. No. 48). This species was not observed during 2020 or 2023 rare plant surveys.
Chloropyron molle ssp. *hispidum*	hispid bird's-beak	None/None/1B.1	Meadows and seeps, Playas, Valley and foothill grassland; Alkaline/ annual herb (hemiparasitic)/June–Sep/5–510	Low potential to occur. There are no occurrences of this species in the Project vicinity[2] but there are some in the region.[1] Although suitable grassland habitat is present, the closest presumed extant CNDDB occurrence is located approximately 6 miles to the northeast in a fork of San Luis Creek in alkaline soil (CDFW 2024; Occ. No. 2). Alkaline soils are present within the project area, however only range from slightly alkaline to moderately alkaline (USDA 2024). This species was not observed during 2020 or 2023 rare plant surveys.
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	None/None/1B.2	Chaparral, Cismontane woodland, Coastal scrub/perennial herb/Apr–June/640–3,590	Low potential to occur. Marginal scrub habitat is present and there is only one occurrence in the region.[1]This 1995 occurrence is located approximately 7 miles to the north in Quinto Creek Canyon (CDFW 2024; Occ. No. 3). This species was not observed during 2020 or 2023 rare plant surveys.
Delphinium recurvatum	recurved larkspur	None/None/1B.2	Chenopod scrub, Cismontane woodland, Valley and foothill grassland; Alkaline/perennial herb/Mar–June/10–2,590	Low potential to occur. Suitable grassland habitat is present, and this species is known to occur within the region.[1] However, the closest CNDDB occurrence is located approximately 8 miles to the southeast along Salt Creek (CDFW 2024; Occ. No

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur in Project Footprint Expansion Areas
				3). This species was not observed during 2020 or 2023 rare plant surveys.
Eryngium spinosepalum	spiny-sepaled button-celery	None/None/1B.2	Valley and foothill grassland, Vernal pools/annual / perennial herb/Apr–June/260–3,195	Known to occur. This species was observed during 2020 and 2023 rare plant surveys and occurs at or near the eastern boundary of the South Valley Section (SVS) Berm Extension expansion area. Two stands were mapped during 2023 rare plant surveys on April 20 and June 8: one composed of 6 plants overlapping the eastern expansion area boundary and one composed of 15 plants approximately 9 feet southeast of the eastern corner of the expansion area.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/1B.1	Marshes and swamps, Playas, Vernal pools/annual herb/Feb–June/5–4,000	Not expected to occur. No suitable chaparral or cismontane woodland habitat is present within the project footprint expansion areas and this species is not known to occur within the region.[1]
Malacothamnus hallii	Hall's bush-mallow	None/None/1B.2	Chaparral, Coastal scrub/perennial deciduous shrub/(Apr)May–Sep(Oct)/35–2,490	Low potential to occur. While this species is known to occur within the region,[1] only marginal scrub habitat is present. The nearest CNDDB occurrence is approximately 3.8 miles to the west on the northwest side of the San Luis Reservoir near State Route 152 (CDFW 2024; Occ, No. 29). The species was not observed during 2020 or 2023 rare plant surveys
Navarretia gowenii	Lime Ridge navarretia	None/None/1B.1	Chaparral/annual herb/May–June/590–1,000	Not expected to occur. While this species is known to occur within the region,[1] no suitable chaparral habitat is present. This species is only known from one historical CNDDB occurrence in the region,[1] approximately 10 miles to the northwest (CDFW 2024; Occ. No. 1).
Navarretia nigelliformis ssp. *radians*	shining navarretia	None/None/1B.2	Cismontane woodland, Valley and foothill grassland, Vernal pools; Clay (sometimes)/annual herb/(Mar)Apr–July/215–3,280	Low potential to occur. Although suitable grassland habitat is present, cismontane woodland and vernal pool habitat is absent from the project footprint expansion areas. The closest CNDDB occurrence is

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur in Project Footprint Expansion Areas
				a historical record approximately 2.5 miles to the south along Billie Wright Road (CDFW 2024; Occ. No. 11). This species was not observed during 2020 or 2023 rare plant surveys.
Puccinellia simplex	California alkali grass	None/None/1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Alkaline, Flats, Lake Margins, Vernally Mesic/annual herb/Mar–May/5–3,050	Low potential to occur. Although suitable grassland habitat is present, vernal pool habitat is absent from the project footprint expansion areas. The closest CNDDB occurrence is a 1986 observation approximately 3.5 miles to the south in the vicinity of Los Banos Valley (CDFW 2024; Occ. No. 30). This species was not observed during 2020 or 2023 rare plant surveys.
Sagittaria sanfordii	Sanford's arrowhead	None/None/1B.2	Marshes and swamps/perennial rhizomatous herb (emergent)/May–Oct(Nov)/0–2,130	Not expected to occur. Marsh habitat is absent from the project footprint expansion areas and this species is only known from one CNDDB occurrence in the region.[1] This 1948 occurrence is 1 mile east of Gustine near Modesto Properties Gun Club and approximately 12 miles to the northeast (CDFW 2024; Occ. No 53). This species was not observed during 2020 or 2023 rare plant surveys.
Senecio aphanactis	chaparral ragwort	None/None/2B.2	Chaparral, Cismontane woodland, Coastal scrub; Alkaline (sometimes)/annual herb/Jan–Apr(May)/50–2,620	Low potential to occur. Although marginal scrub habitat is present, this species is only known from one CNDDB occurrence in the region.[1] This 2003 occurrence is west of Ortigalita Creek approximately 12 miles to the southeast (CDFW 2024; Occ. No. 23). This species was not observed during 2020 or 2023 rare plant surveys.
Streptanthus insignis ssp. *lyonii*	Arburua Ranch jewelflower	None/None/1B.2	Coastal scrub/annual herb/Mar–May/755–2,805	Low potential to occur. Marginal scrub habitat is present within the project footprint expansion areas, and this species is known to occur within the region.[1] The closest CNDDB occurrence is located approximately 5 miles to the south in coastal scrub near the South Fork of Los Banos Creek (CDFW

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur in Project Footprint Expansion Areas
				2024; Occ. No. 10). This species was not observed during 2020 or 2023 rare plant surveys.
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	None/None/2B.2	Marshes and swamps/perennial rhizomatous herb (aquatic)/May–July/985–7,050	Not expected to occur. Marsh habitat is absent from the project footprint expansion areas and this species is only known from one CNDDB occurrence in the region.[1] This 1948 occurrence recorded the species growing in a drainage ditch 0.25 miles south of Ingomar, approximately 7 miles to the northeast (CDFW 2024; Occ. No. 2). This species was not observed during 2020 or 2023 rare plant surveys.

Source: CDFW 2024.
Notes:
1 Region is defined as the U.S. Geological Survey (USGS) 7.5-minute San Luis Dam quadrangle in which the Project is located, and the eight surrounding USGS quadrangles (Crevison Peak, Howard Ranch, Ingomar, Pacheco Pass, Volta, Mariposa Peak, Los Banos Valley, and Ortigalita Peak N).
2 Vicinity is defined as the USGS 7.5-minute San Luis Dam quadrangle in which the Project is located.
Status Legend:
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California but more common elsewhere
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

References

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Appendix C

Special-Status Wildlife Species Potential to Occur in Project Footprint Expansion Areas

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
Invertebrates				
longhorn fairy shrimp	*Branchinecta longiantenna*	FE/None	Sandstone outcrop pools, alkaline grassland vernal pools, and pools within alkali sink and alkali scrub communities.	Not expected to occur. Suitable pools absent from project footprint expansion areas. This species is extremely rare and known from only a small number of widely separated occurrences, the closest of which is from a roadside ditch 2 miles north of Los Banos (USFWS 2005; specific location suppressed by the California Natural Diversity Database [CNDDB]). There are no CNDDB occurrences for this species within the region.[1]
vernal pool fairy shrimp	*Branchinecta lynchi*	FT/None	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats.	Not expected to occur. Seasonal pools that could potentially support this species occur between Gonzaga Road and State Route (SR) 152 north of the California Department of Water Resources (DWR) Maintenance Yard (approx. 0.3 miles southeast of expansion area no. 1) but are absent from the project footprint expansion areas. There are no CNDDB occurrences for this species within the region.[1]
vernal pool tadpole shrimp	*Lepidurus packardi*	FE/None	Ephemeral freshwater habitats including alkaline pools, clay flats, vernal lakes, vernal pools, and vernal swales.	Not expected to occur. Seasonal pools that could potentially support this species occur between Gonzaga Road and SR-152 north of the DWR Maintenance Yard (approx. 0.3 miles southeast of expansion area no. 1) but are absent from the project footprint expansion areas. This species is only known from one CNDDB occurrence in the region.[1] This 2016 occurrence was from the San Luis National Wildlife Refuge approximately 11 miles to the northeast (CDFW 2024b; Occ. No. 52).
monarch - California overwintering population	*Danaus plexippus plexippus* pop. 1	FC/None	Wind-protected tree groves with nectar sources and nearby water sources. Most known overwintering sites are within 1.5 miles of the Pacific Ocean or San Francisco Bay.	Not expected to occur. No suitable overwintering trees are located within the project footprint expansion areas, additionally, this species is not known from the CNDDB in the region.[1]

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT/None	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* ssp. *caerulea*).	Low potential to occur. Elderberry shrubs occur 0.3 miles south of expansion area no. 7 at Basalt Hill but no larval exit holes or adults have been observed in these shrubs (ESA 2018, Dudek unpublished data). This species is only known from one CNDDB occurrence in the region.[1] This 1987 occurrence was from the Los Banos Creek approximately 5.3 miles to the south (CDFW 2024a; Occ. No. 44).
Crotch's bumble bee	*Bombus crotchii*	None/PSE/None	Open grassland and scrub communities supporting suitable floral resources.	Moderate potential to occur. Suitable grassland habitat with abundant floral resources for foraging occurs in the project footprint expansion areas. Coyote brush scrub habitat may support nesting. There are no known CNDDB occurrences in the region[1] but the Bumble Bee Watch (2024) database contains six verified sightings in Merced County.
Fish				
steelhead - south-central California coast DPS	*Oncorhynchus mykiss irideus* pop. 9	FT/None	Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead.	Not expected to occur. This species is only known from one CNDDB occurrence in the region.[1] This 2004 occurrence was from the Arroyo Dos Picachos approximately 11 miles to the southwest (CDFW 2024a; Occ. No. 41).
Delta smelt	*Hypomesus transpacificus*	FT/SE	Sacramento–San Joaquin Delta; seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay.	Not expected to occur. The project footprint expansion areas are outside the species' known range and the species is not known to occur in the region.[1]
Amphibians				
California tiger salamander – central California DPS	*Ambystoma californiense* pop. 1	FT/ST, WL	Annual grassland, valley–foothill hardwood, and valley–foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and	Assumed to occur. Known to occur in the region.[1] Suitable aquatic breeding habitat occurs approximately 0.5 miles west of the project footprint expansion areas at Willow Springs Pond. The nearest CNDDB occurrence is an April 1992 observation approximately 2.2 miles southeast of

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
			man-made pools if predatory fishes are absent.	the Borrow Area 21 expansion area (CDFW 2024a; Occ. No. 106).
western spadefoot	*Spea hammondii*	None/SSC	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture.	High potential to occur. Seasonal pools or drainages that could potentially support breeding by this species occur in expansion areas 2 and 3 and grassland and all of the project footprint expansion areas provide suitable upland habitat. The nearest CNDDB occurrence is an April 1992 observation approximately 2.2 miles to the southeast (CDFW 2024a; Occ. No. 1280).
foothill yellow-legged frog – central coast DPS	*Rana boylii* pop. 4	FT/SE	Rocky streams and rivers with open banks in forest, chaparral, and woodland.	Low potential to occur. The project footprint expansion areas lack rocky stream and riverine habitat. There are multiple CNDDB occurrences in the region,[1] but all are over 35 years old. The nearest CNDDB occurrence is a 1943 collection along Romero Creek, approximately 3 miles to the north (CDFW 2024a; Occ. No. 101).
California red-legged frog	*Rana draytonii*	FT/SSC	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands.	Assumed to occur. Known to occur in Willow Springs Pond (ESA 2018), approximately 0.5 miles west of the westernmost project footprint expansion area. The three project footprint expansion areas south of the reservoir are within 1 mile of this pond and therefore provide upland habitat for this species.
Reptiles				
northwestern pond turtle	*Actinemys marmorata*	FPT/SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter.	Low potential to occur. Suitable aquatic habitat is absent from the project footprint expansion areas but occurs nearby (e.g., Willow Springs Pond). The nearest CNDDB occurrence is a June 1985 observation at Los Banos Reservoir, approximately 5 miles to the southeast (CDFW 2024a; Occ. No. 496).
blunt-nosed leopard lizard	*Gambelia sila*	FE/FP, SE	Sparsely vegetated alkali and desert scrub, including semi-	Low potential to occur. Marginal scrub habitat occurs in the project footprint expansion areas but

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
			arid grasslands, alkali flats, and washes.	there are no recent occurrences in the vicinity,[2] and the site is located on the periphery of the species' range. Most extant occurrences are associated with the San Joaquin Valley floor farther to the south. A CNDDB observation for this species from 1931 overlaps with the project footprint expansion areas (CDFW 2024a; Occ. No. 117).
coast horned lizard	*Phrynosoma blainvillii*	None/SSC	Open areas of sandy soil in valleys, foothills, and semi-arid mountains, including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland communities.	Not expected to occur. The project footprint expansion areas do not contain suitable habitat. There are no CNDDB occurrences in the region.[1]
northern California legless lizard	*Anniella pulchra*	None/SSC	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils.	Low potential to occur. The project footprint expansion areas lack sandy or loose soils typically associated with this species. Additionally, this species is only known from one CNDDB occurrence in the region.[1] This 1942 occurrence was from the vicinity of Ortigalita Creek, approximately 10 miles southeast of the project footprint expansion areas (CDFW 2024a; Occ. No. 124).
San Joaquin whipsnake (coachwhip)	*Masticophis flagellum ruddocki*	None/SSC	Open, dry, treeless areas including grassland and saltbush scrub.	High potential to occur. Suitable grassland habitat for this species occurs on the project footprint expansion areas. There are six CNDDB occurrences from 1985 and 1988 near Los Banos Reservoir and Los Banos Valley, approximately 5 miles to the southeast (CDFW 2024a).
giant gartersnake	*Thamnophis gigas*	FT/ST	Freshwater marsh habitat and low-gradient streams; also uses canals and irrigation ditches.	Low potential to occur. Freshwater marsh habitat is absent from the project footprint expansion areas and the nearest CNDDB occurrence is approximately 7 miles to the northeast (CDFW 2024a; Occ. No. 153). The Sisk SOD Modification

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
				Project site is within the range of this species as mapped by USFWS (2024) but is outside the San Joaquin Basin recovery unit (east of Interstate 5) where it is presumed extant.
Birds				
California condor	*Gymnogyps californianus*	FE/FP, SE	Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (*Sequoiadendron giganteus*); forages in relatively open habitats where large animal carcasses can be detected.	Not expected to occur. The project footprint expansion areas do not contain suitable habitat. There are no CNDDB occurrences in the region.[1]
Swainson's hawk (nesting)	*Buteo swainsoni*	None/ST	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	High potential to occur (foraging). Annual grassland in the project footprint expansion areas provide high-quality foraging habitat. Not expected to occur (nesting). Dudek biologists have observed this species nesting north of SR-152 approximately 1 mile west of the Project site (2023–2024) and in an ornamental conifer at the Reclamation entrance gate (2024), but no nests have been observed on the Project site and the project footprint expansion areas do not contain suitable nest trees.
golden eagle (nesting and wintering)	*Aquila chrysaetos*	None/FP, WL	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats.	High potential to occur (foraging). Suitable foraging habitat (open grassland with ground squirrels) occurs on the project footprint expansion areas and this species is known to occur in the site vicinity[2] (Dudek 2019). Not expected to occur (nesting). The project footprint expansion areas do not contain suitable nest trees.
northern harrier (nesting)	*Circus hudsonius*	BCC/SSC	Nests in open wetlands (marshy meadows, wet lightly-	Known to occur (foraging). This species was observed on four occasions foraging within the

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
			grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats.	project site during 2020 surveys, and the project footprint expansion areas contain suitable foraging habitat. Moderate potential to occur (nesting). Annual grassland with tall and dense ground cover in the project footprint expansion areas provides moderate-quality nesting habitat. However, no nests have been observed on the project site to date.
bald eagle (nesting and wintering)	*Haliaeetus leucocephalus*	FPD/FP, SE	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains.	Low potential to occur (foraging). Suitable open water foraging habitat occurs in expansion area no. 1 but species more likely to forage closer to known nest sites near O'Neill Forebay (approx. 2.1 miles to the northwest) and Cottonwood Bay (approx. 4.6 miles to the northwest), where Dudek biologists observed active nests in 2024. Open water habitat absent from remaining expansion areas. Not expected to occur (nesting). The project footprint expansion areas do not contain suitable nest trees.
burrowing owl	*Athene cunicularia*	BCC/SSC	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows.	High potential to occur. Dudek biologists observed a single owl approximately 425 feet north of the Borrow Area 17 Geotechnical Investigation area in October 2022 and October 2023, but have not observed any owls on the project site during the nesting season. The project footprint expansion areas provide high-quality foraging habitat but contain very few ground squirrel burrows suitable for nesting. The nearest CNDDB occurrence is a 2003 observation of two wintering adults approximately 0.5 miles southeast of the intersection between Basalt Road and Gonzaga Road (CDFW 2024a; Occ. No. 859).

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
loggerhead shrike (nesting)	*Lanius ludovicianus*	None/SSC	Nests and forages in open habitats with scattered shrubs, trees, or other perches.	Known to occur (foraging). Dudek biologists regularly observe this species on the Project site and five individuals were observed during the August 6, 2024, assessment of the project footprint expansion areas, which provide high-quality foraging habitat. High potential to occur (nesting). Coyote brush scrub provides high-quality nesting habitat for this species.
tricolored blackbird (nesting colony)	*Agelaius tricolor*	BCC/SSC, ST	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberrry; forages in grasslands, woodland, and agriculture.	High potential to occur (foraging). The project footprint expansion areas contain high-quality grassland foraging habitat. Low potential to occur (nesting). A large nesting colony of this species was observed in a patch of thistles and willows below and west of the southern end of the dam in 2020 and 2023 (Dudek 2020, 2023). This area is outside the project footprint expansion areas and there is limited potential for nesting to occur in the project expansion areas unless dense thistle stands become established in the future.
Mammals				
pallid bat	*Antrozous pallidus*	None/SSC/WBWG: H	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees.	High potential to occur. Detected during passive acoustic surveys for nearby Gonzaga Ridge Wind Repowering Project (Dudek 2019). Suitable foraging and roosting (i.e., SR-152 bridge) habitat occurs in the project footprint expansion areas.
western mastiff bat	*Eumops perotis californicus*	None/SSC	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is	Low potential to occur. Suitable foraging habitat present but there are no rocky cliffs or tunnels in the project footprint expansion areas. There is only known one CNDDB occurrence in the region.[1] This 1994 occurrence was from a roost site detected in the Los Banos Creek drainage approximately 5

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
			vertical or nearly vertical, trees, and tunnels	miles south of the project footprint expansion areas (CDFW 2024a; Occ. No. 122).
western red bat	*Lasiurus blossevillii*	None/SSC/WBWG: H	Forest, woodland, riparian, mesquite bosque, and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	High potential to occur (foraging only). Detected during passive acoustic surveys of the Sisk SOD Modification project site in 2018 (ESA 2018) but the project footprint expansion areas do not contain suitable foliage roosting habitat.
hoary bat	*Lasiurus cinereus*	None/None/ WBWG: M	Forest, woodland riparian, and wetland habitats; also juniper scrub, riparian forest, and desert scrub in arid areas; roosts in tree foliage and sometimes cavities, such as woodpecker holes	High potential to occur (foraging only). Detected during passive acoustic surveys for nearby Gonzaga Ridge Wind Repowering Project (Dudek 2019) but the project footprint expansion areas do not contain suitable foliage roosting habitat.
silver-haired bat	*Lasionycteris noctivagans*	None/None/ WBWG: M	Old-growth forest, maternity roosts in trees, large snags 50 feet aboveground; hibernates in hollow trees, rock crevices, buildings, mines, caves, and under sloughing bark; forages in or near coniferous or mixed deciduous forest, stream or river drainages.	Known to occur (foraging only). Detected during passive acoustic surveys by Dudek from June 29–July 2, 2020, but the project footprint expansion areas do not contain suitable forest habitat for roosting.
western small-footed myotis	*Myotis ciliolabrum*	None/None/ WBWG: M	Arid woodlands and shrublands, but near water; roosts in caves, crevices, mines, abandoned buildings	Known to occur (foraging). Detected during passive acoustic surveys for nearby Gonzaga Ridge Project (Dudek 2019) and the project footprint expansion areas provide suitable foraging habitat. Moderate potential to occur (roosting). The SR-152 bridge provides moderate-quality roosting habitat, since this and other myotis species "sometimes" use bridges for roosting (Johnston et al. 2019).
little brown myotis	*Myotis lucifugus*	None/None/ WBWG: M	Mid- to high-elevation forests, montane chaparral, wet meadow; day roosts in trees,	Known to occur (foraging). Detected during passive acoustic surveys for nearby Gonzaga Ridge Project

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
			under rocks or wood, occasionally in caves; hibernation roosts in caves and mines	(Dudek 2019) and the project footprint expansion areas provide suitable foraging habitat. Moderate potential to occur (roosting). The SR-152 bridge provides moderate-quality roosting habitat, since this and other myotis species "sometimes" use bridges for roosting (Johnston et al. 2019).
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	FE/SE	Alkali sink/open grassland habitats; sands and saline sandy soils in chenopod scrub	Not expected to occur. Alkali sink scrub with sandy soils absent from the Project site and project footprint expansion areas. There are no known CNDDB occurrences in the region.[1]
mountain lion	*Puma concolor*	None/SCT/Specially Protected Mammal	Occurs in nearly all habitat types in California except xeric regions of Mojave and Colorado Deserts and agricultural regions of the Central Valley. More abundant in riparian areas and brushy stages of most habitat types.	Low potential to occur. Mountain lions are unlikely to occur around the project footprint expansion areas due to generally unsuitable habitat. More suitable mountain lion habitat exists west of the San Luis Dam area in more mountainous and woodland habitat. There are no CNDDB occurrences for this species in the region[1] (CDFW 2024a).
American badger	*Taxidea taxus*	None/SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	High potential to occur. This species was observed on the Project site during 2020 surveys. Suitable grassland habitat occurs in the project footprint expansion areas, although no active dens were observed during the August 2024 field assessment.
San Joaquin kit fox	*Vulpes macrotis mutica*	FE/ST	Grasslands and scrublands, including those that have been modified; oak woodland, alkali sink scrubland, vernal pool, and alkali meadow	High potential to occur. The project footprint expansion areas contain suitable grassland habitat for this species and is assumed to be occupied based on suitable habitat and prey and recent occurrences in the vicinity[2] (Constable et al. 2009; USFWS 2019). The CNDDB includes a 1975 occurrence within the project footprint expansion areas at the western end of the Medeiros Use Area, a 1989 occurrence adjacent to the site at the southeastern corner of the Medeiros Use Area, and several 2005 occurrences within 3 miles

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur in Project Footprint Expansion Areas
				south of project footprint expansion areas (CDFW 2024a; Occ. No. 875, 550, and 125 and 127, respectively).

Sources: CDFW 2024a, 2024b; ESA 2018; Dudek 2019, 2020.
Notes: DPS = distinct population segment
[1] Region is defined as the U.S. Geological Survey (USGS) 7.5-minute San Luis Dam quadrangle in which the Project is located, and the other surrounding USGS 7.5-minute quadrangles (Crevison Peak, Howard Ranch, Ingomar, Pacheco Pass, Volta, Mariposa Peak, Los Banos Valley, and Ortigalita Peak NW).
[2] Vicinity is defined as the USGS 7.5-minute San Luis Dam quadrangle in which the Project is located.
Status Legend:
FE: Federally listed as endangered
FT: Federally listed as threatened
FDL: Federally delisted
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC: California species of special concern
FP: California Fully Protected species
WL: California Watch List species
SE: State listed as endangered
ST: State listed as threatened
BGEPA: Bald and Golden Eagle Protection Act
PSE: Proposed state listed as endangered
PST: Proposed state listed as threatened
SCT: State candidate threatened
WBWG: Western Bat Working Group
H: High
M: Medium

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Appendix C. Consultation and Coordination

Agencies and Persons Consulted

Reclamation consulted with the USFWS, DWR, and the State Historic Preservation Officer (SHPO) in the preparation of this Supplemental Environmental Assessment.

Endangered Species Act

Reclamation provided a Biological Assessment (BA) to the U.S. Fish and Wildlife Service (USFWS) on April 2, 2019 (Reclamation 2019) that considered effects to federally listed species and designated critical habitat from the Project. USFWS issued a Biological Opinion (BO) for this Project on August 29, 2019 (08ESMF00-2019-F-1572-2; USFWS 2019).

Subsequently, Reclamation and DWR identified five proposed modifications to Project activities: the construction a new campground, facility upgrades within the San Luis Creek Day Use Area, additional activities in a contractor use area (Borrow Areas 12 and 14), an additional contractor use area, and additional improvement to the dike on the north end of the dam and requested re-initiation of consultation on December 29, 2020 (Reclamation 2020).

Reclamation determined that the proposed modifications to the Project do not alter the determinations of impacts to federally listed species: the Project *may affect, and are likely to adversely affect* the federally listed as endangered San Joaquin kit fox (*Vulpes macrotis mutica;* SJKF), the federally listed as threatened Central California distinct population segment of the California tiger salamander (*Ambystoma californiense;* CTS), and the federally listed as threatened California red-legged frog (*Rana draytonii*, CRLF). The Project design includes both conservation measures and mitigation activities, to minimize, avoid, and reduce Project impacts to these federally listed species. The action area does not include any designated critical habitat; impacts to critical habitat were not considered.

USFWS issued a revised BO for this Project on June 3, 2021, and a memo with revised Conservation Measures on July 14, 2021 (08ESMF00-2019-F-1572-R001; USFWS 2021).

Reclamation requested re-initiation of consultation with the U.S. Fish and Wildlife Service on December 17, 2024, to include the additional 85.9 additional acres of habitat

that is currently outside of the Project footprint, bringing the Project area footprint to 4,038 acres.

National Historic Preservation Act

Under Section 106 of the NHPA, Federal agencies must consider effects to eligible resources ("historic properties") from the proposed undertaking, affording the Advisory Council a reasonable opportunity to comment on such undertakings. This involves consultation with SHPO and other parties. This includes identification of cultural resources eligible for the National Register, assessment of adverse effects to eligible properties, and resolution of adverse effects. The implementing regulations at 36 CFR Part 800 define procedures to meet Section 106 responsibilities through consultation among the Federal agency and other parties with an interest in the effects on historic properties.

NHPA Section 106 defines significant archaeological or historical resources as those which are listed on, or eligible for listing on, the National Register. Eligible properties are those that retain sufficient integrity and meet one or more of the following criteria: "(a) are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) that have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR § 60.4).

As described above in Section 3.11.2, Reclamation is currently consulting on the supplemental cultural resources inventory and will confirm the no adverse effect finding under the PA with consulting parties and the SHPO.

Appendix D-References

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