# American River Watershed Common Features Water Resources Development Act 2016 Project, Sacramento River Erosion Contract 4

# Draft Supplemental Environmental Impact Report and Draft Supplemental Environmental Assessment

March 2023

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# Preface

The American River Watershed Common Features 2016 Project, Sacramento River Erosion Contract 4, includes critical levee improvements to meet erosion requirements along the Sacramento River east levee in the Little Pocket neighborhood of Sacramento, California. Levee improvements in this reach of the Sacramento River were analyzed in the 2016 American River Watershed Common Features General Reevaluation Report (ARCF GRR) Environmental Impact Statement/Environmental Impact Report (EIS/EIR). This document is arranged as a Supplemental EIR (Part 1) and a Supplemental Environmental Assessment (EA) (Part 2) to the ARCF GRR Final EIS/EIR. The Supplemental EIR was prepared by the Central Valley Flood Protection Board (CVFPB), as the State lead agency under the California Environmental Quality Act (CEQA), and the Supplemental EA was prepared by the U.S. Army Corps of Engineers (USACE) as the lead agency under the National Environmental Policy Act (NEPA).This Supplemental EA/EIR addresses the environmental impacts from project refinements developed by USACE for the Sacramento River Erosion Contract 4 after the ARCF GRR Final EIS/EIR was prepared, approved, and certified.

CEQA and NEPA requirements differ for this analysis, including which project elements require additional environmental analyses and the definition of baselines used to evaluate impacts, hence the need to separate the analyses. The Supplemental EIR and Supplemental EA are combined in this document for efficiency, completeness, and ease of public review and agency decision-making. Installation of bank protection, barging in material, vegetation removal and replanting, and placement of instream woody material placement were fully evaluated in the ARCF GRR EIS/EIR. However, design details specific to the Sacramento River Erosion Contract 4 project are now available. In addition, project refinements have occurred to staging areas, access routes, haul routes, borrow sites, spoils disposal, and bank revetment design that require additional analyses.

The Supplemental EIR analyzes the Sacramento River Erosion Contract 4 project elements at a greater level of design detail than was available in the ARCF GRR Final EIS/EIR in addition to other project refinements to support both CEQA lead and responsible agency decision-making. The impacts from these changes are compared to existing conditions (as of August 2022) to determine impact significance in the Supplemental EIR.

The Supplemental EA analyzes only the Sacramento River Erosion Contract 4 project refinements not previously analyzed in the ARCF GRR Final EIS/EIR, including a staging area and access route, and a modified bank revetment design. All other design features were authorized for construction as their environmental impacts were fully evaluated under NEPA in the ARCF GRR EIS/EIR; Therefore these actions are considered to be part of the updated NEPA No Action Alternative. The impacts of the project refinements are compared to the No Action Alternative to determine impact significance in the Supplemental EA.

The CVFPB and USACE have released the Draft Supplemental EIR and Draft Supplemental EA for public and agency review in accordance with CEQA and NEPA requirements, respectively. After the review period closes, CVFPB and USACE will consider the comments received on their separate documents, prepare responses, and incorporate any modifications into a Final Supplemental EIR to meet CEQA requirements and a Final

Supplemental EA with a Finding of No Significant Impact to meet NEPA requirements for the Sacramento River Erosion Contract 4. Environmental commitments and mitigation measures summarized in the Executive Summary (Table ES-1) apply to the Sacramento River Erosion Contract 4 Project as a whole.

# Part 1

# Draft Supplemental Environmental Impact Report

**American River Watershed Common Features**
**Water Resources Development Act of 2016 Project**
**Sacramento River Erosion Contract 4**

SCH 2005072046

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AB | Assembly Bill |
| APE | Area of Potential Effects |
| ARCF | American River Watershed Common Features |
| ARCF GRR | American River Watershed Common Features General Reevaluation Report |
| BAAQMD | Bay Area Air Quality Management District |
| BACT | Best Available Control Technology |
| Basin Plan | Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin |
| BMPs | Best Management Practices |
| BWFS | Basin-Wide Feasibility Studies |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standards |
| CARB | California Air Resources Board |
| CAS | Climate Adaptation Strategy |
| CAL FIRE | California Department of Forestry and Fire |
| Caltrans | California Department of Transportation |
| CCR | California Code of Regulations |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| City | City of Sacramento |
| CNPS | California Native Plant Society |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2e$ | carbon dioxide equivalent |
| CRHR | California Register of Historical Resources |
| CRPR | California Rare Plant Rank |
| CVFMP | Central Valley Flood Management Planning |
| CVFPB | Central Valley Flood Protection Board |
| CVFPP | Central Valley Flood Protection Plan |
| CWA | Clean Water Act |
| dBA | A-weighted decibels |
| Delta | Sacramento-San Joaquin Delta |

| | |
|---|---|
| DWR | California Department of Water Resources |
| EA | Environmental Assessment |
| EIS/EIR | Environmental Impact Statement/Environmental Impact Report |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| GEI | GEI Consultants, Inc. |
| GHG | Greenhouse gas |
| HOV | High Occupancy Vehicle |
| HMMAMP | Habitat Mitigation, Monitoring, and Adaptive Management Plan |
| HPMP | Historic Properties Management Plan |
| HPTP | Historic Properties Treatment Plan |
| I-5 | Interstate 5 |
| ITS | Intelligent Transportation Systems |
| ICM | Integrated Corridor Management |
| IWM | instream woody material |
| LEBLS | Lower Elkhorn Basin Levee Setback |
| MIAD | Mormon Island Auxiliary Dam |
| MSL | mean sea level |
| MLD | Most Likely Descendant |
| NAAQS | National Ambient Air Quality Standards |
| NAHC | Native American Heritage Commission |
| NEMDC | Natomas East Main Drainage Canal |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NMFS | National Marine Fisheries Service |
| $NO_2$ | nitrogen dioxide |
| $NO_X$ | oxides of nitrogen |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| $O_3$ | ozone |
| O&M | operations and maintenance |
| OHWM | ordinary high water mark |
| PA | Programmatic Agreement |
| PCC | Portland Cement Concrete |
| Pb | lead |

| | |
|---|---|
| PG&E | Pacific Gas and Electric Company |
| Phase I ESA | Phase I Environmental Site Assessment |
| PM | particulate matter |
| PM10 | particulate matter equal to or less than 10 micrometers in diameter |
| PM2.5 | particulate matter equal to or less than 2.5 micrometers in diameter |
| PPV | peak particle velocity |
| PRC | California Public Resources Code |
| proposed project | American River Watershed Common Features 2016 Project |
| RECs | Recognized Environmental Conditions |
| RM | River Mile |
| ROG | reactive organic gases |
| RWQCB | Regional Water Quality Control Board |
| SAFCA | Sacramento Area Flood Control Agency |
| SACOG | Sacramento Area Council of Governments |
| SE | State Endangered |
| SFBAAB | San Francisco Bay Area Air Basin |
| SFP | State Fully Protected |
| SHPO | State Historic Preservation Officer |
| SIPs | State Implementation Plans |
| SLC | California State Lands Commission |
| SMAQMD | Sacramento Metropolitan Air Quality Management District |
| SSC | Species of special concern |
| $SO_2$ | sulfur dioxide |
| SPCCP | Spill Prevention Control and Countermeasures Plan |
| SRA | shaded riverine aquatic |
| SRBPP | Sacramento River Bank Protection Project |
| SRCSD | Sacramento Regional County Sanitation District |
| SREL | Sacramento River East Levee |
| Supplemental EIR | Supplemental Environmental Impact Report |
| SVAB | Sacramento Valley Air Basin |
| SWPPP | Stormwater Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TACs | toxic air contaminants |
| TCRs | Tribal Cultural Resources |
| TCL | Tribal Cultural Landscape |

| | |
|---|---|
| TMS | Transportation Management System |
| UAIC | United Auburn Indian Community of the Auburn Rancheria |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |
| | WCM Water Control Manual |
| WSPGRR | West Sacramento Project General Reevaluation Report |
| WRDA | Water Resources Development Act |
| VELB | valley elderberry longhorn beetle |

# EXECUTIVE SUMMARY

The Central Valley Flood Protection Board (CVFPB), as lead agency under the California Environmental Quality Act (CEQA), has prepared this Supplemental Environmental Impact Report (EIR) to evaluate project refinements to the American River Watershed Common Features (ARCF) 2016 Project, Sacramento River Erosion Contract 4 proposed after the ARCF General Reevaluation Report (GRR) Environmental Impact Statement (EIS)/EIR (USACE 2016) was prepared and the EIR certified in 2016. The project refinements (details on specific levee erosion protection improvements and locations) require supplemental analysis under CEQA because "minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation" (State CEQA Guidelines Section 15163(a)(2) (Cal. Code Regs., tit. 14, § 15163, subd. (a)(2)).

This Supplemental EIR has been prepared to supplement, not replace, the ARCF GRR Final EIS/EIR, and provides only the information necessary to make the previous ARCF GRR Final EIS/EIR adequate for the Sacramento River Erosion Contract 4 component of the ARCF GRR with the proposed refinements. Consequently, public scoping and alternatives analyses are not part of this Supplemental EIR because they have already been sufficiently conducted in compliance with the State CEQA Guidelines during ARCF GRR scoping, preparation of the Draft EIS/EIR, and preparation of the Final EIS/EIR. This Supplemental EIR compares the effects of the proposed project refinements of the Sacramento River Erosion Contract 4 to existing conditions as of August 2022.

## *Areas of Controversy and Issues to be Resolved*

The ARCF GRR Final EIS/EIR identified several areas of controversy based on the comments received during the public scoping period in 2008 and the NEPA and CEQA environmental review processes undertaken by the U.S. Army Corps of Engineers, Sacramento District (USACE), CVFPB, and the Sacramento Area Flood Control Agency (SAFCA) since initial scoping for the ARCF GRR EIS/EIR. Several of these areas of controversy, listed below are applicable to the proposed project refinements:

- Construction-related effects on residents and businesses adjacent to the project levees.
- Construction-related impacts on biological resources.
- Vegetation and tree removal to facilitate levee improvements.
- Effects to cultural resources and resources significant to Native American tribes.
- Impacts to recreational facilities.
- Impacts to endangered species and their habitats.

These areas of controversy were addressed in the ARCF GRR Final EIS/EIR and those areas of controversy that may be applicable to the proposed project refinements are addressed in this Supplemental EIR. The ARCF GRR Final EIS/EIR selected the alternative to be implemented and identified feasible mitigation for each significant impact, and now this

Supplemental EIR evaluates impacts from, and proposes feasible mitigation as necessary for, the proposed project refinements.

### *Public Review of the Supplemental EIR*

The Draft Supplemental EIR is being made available to responsible agencies pursuant to CEQA, and other potentially interested agencies, stakeholder organizations, and individuals, including all entities that have previously requested such notice in writing, for a 45-day review period from March 1 through April 14, 2023. CVFPB and USACE will conduct a virtual public meeting on March 22, 2023, to receive comments on the Draft Supplemental EIR and Draft Supplemental Environmental Assessment (EA).

A Notice of Completion for the Draft Supplemental EIR was filed with the State Clearinghouse, in accordance with the State CEQA Guidelines (Section 15085), and a Notice of Availability of the Draft Supplemental EIR was posted in accordance with State CEQA Guidelines (Section 15087). A public notice was posted in the Sacramento Bee on March 1, 2023, and sent to individuals and parties requesting information regarding the proposed project refinements. All reference documents used in the preparation of this Supplemental EIR, including the 2016 ARCF GRR Final EIS/EIR, have also been made available to the public. This distribution and public noticing ensured that all interested parties had an opportunity to provide written comments on the Draft Supplemental EIR consistent with State CEQA Guidelines (14 Cal. Code Regs., tit. 14, § 15000 et seq.).

Copies of the Draft Supplemental EIR are available for review online at www.sacleveeupgrades.com and www.cvfpb.ca.gov/public-notices. The document may be reviewed at the Sacramento Central Library at 828 I Street, Sacramento, CA 95814.

### *Summary of Environmental Impacts*

**Table ES-1** summarizes the environmental effects analysis, provided in detail in Sections 3.2 through 3.14 of this Supplemental EIR, and includes a listing of impacts, impact significance conclusions before and after mitigation implementation, and mitigation measures. All significant environmental effects ("significant impacts") presented in Table ES-1 were previously presented as such in the ARCF GRR Final EIS/EIR. Consequently, there are no new significant impacts from the proposed project refinements that were not disclosed in the ARCF GRR Final EIS/EIR or the prior Supplemental EIR for the Sacramento Weir and Bypass Widening component of the ARCF 2016 Project and there is no substantial increase in the severity of any significant environmental effect previously presented in the ARCF GRR Final EIS/EIR from the proposed project refinements. Environmental commitments and mitigation measures summarized in this Executive Summary (Table ES-1) apply to the Sacramento River Erosion Contract 4 Project as a whole and not just to the project refinements because it was important to consolidate all mitigation measures for the Sacramento River Erosion Contract 4 for ease of implementation and mitigation monitoring and reporting.

**Table ES-1. Summary of Effects and Mitigation Measures for the Proposed Project**

| Effect | Significance Before Mitigation Measures | Mitigation Measures | Significance After Mitigation Measures |
|---|---|---|---|
| **Geological Resources** | | | |
| Potential Temporary, Short-Term Construction-related Erosion | PS | Mitigation Measure GEO-1: Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices | LTS |
| Potential to Directly or Indirectly Destroy a Unique Paleontological Resource or Site | LTS | None required | LTS |
| **Water Quality** | | | |
| Construction Impacts to Water Quality | S | Mitigation Measure WATERS-1: Compensate for Fill of State and Federally Protected Waters.<br>Mitigation Measure GEO-1: Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices | LTS |
| **Vegetation and Wildlife** | | | |
| Adverse Effects on Riparian Habitat and Waters of the United States | S | Mitigation Measure VEG-1: Retain, Protect, and Plant Trees On-Site;<br>Mitigation Measure VEG-2: Compensate for Riparian Habitat Removal<br>Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat.<br>Mitigation Measure WATERS-1: Compensate for Fill of State and Federally Protected Waters.<br>Mitigation Measure GEO-1: Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices | LTS long term,<br>SU short term |

Notes: NI = No Impact, LTS = Less than Significant, S = Significant, PS = Potentially Significant, SU = Significant and Unavoidable

| Effect | Significance Before Mitigation Measures | Mitigation Measures | Significance After Mitigation Measures |
|---|---|---|---|
| **Fisheries** | | | |
| Adverse Effects on Fisheries | S | Mitigation Measure FISH-1: Implement Measures to Avoid and Minimize Effects on Listed Fish Species.<br>Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat. | LTS |
| **Special-Status Species** | | | |
| Construction Effects on Special-status Species | PS | Mitigation Measure BIRD-1: Implement Measures to Protect Nesting Special-status and Migratory Birds.<br>Mitigation Measure VEG-1: Retain, Protect, and Plant Trees On-Site;<br>Mitigation Measure VEG-2: Compensate for Riparian Habitat Removal<br>Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat.<br>Mitigation Measure TURTLE-1: Implement Measures to Protect Western Pond Turtle<br>Mitigation Measure BAT-1: Implement Measures to Protect Maternity Roosts of Special-status Bats.<br>Mitigation Measure PLANT-1: Implement Measures to Protect Special-status Plants | LTS |

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| Effect | Significance Before Mitigation Measures | Mitigation Measures | Significance After Mitigation Measures |
|---|---|---|---|
| **Cultural Resources** | | | |
| Damage to or Destruction of Built-Environment Historic Properties | NI | None required | NI |
| Damage to or Destruction of Known Prehistoric-Period Archaeological Sites and Tribal Cultural Resources | S | Mitigation Measure CR-1: Resolve Adverse Effects through Programmatic Agreement and Historic Properties Treatment Plan | LTS |
| Potential Damage to or Destruction of Previously Undiscovered Archaeological Sites or Tribal Cultural Resources | PS | Mitigation Measure CR-2: Prepare an Archaeological Discovery Plan and an Archaeological Monitoring Plan;<br>Mitigation Measure CR-3: Conduct Cultural Resources Awareness Training;<br>Mitigation Measure CR-4: Implement Procedures for Inadvertent Discovery of Cultural Material;<br>Mitigation Measure CR-5: In the Event that Tribal Cultural Resources are Discovered Prior to or During Construction, Implement Procedures to Evaluate Tribal Cultural Resources and Implement Avoidance and Minimization Measures to Avoid Significant Adverse Effects | LTS |
| Damage to or Destruction of Human Remains during Construction | PS | Mitigation Measure CR-6: Implement Procedures | LTS |

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| Effect | Significance Before Mitigation Measures | Mitigation Measures | Significance After Mitigation Measures |
|---|---|---|---|
| **Air Quality** | | | |
| Construction Emissions | S | Mitigation Measure AIR-1: Implement the Sacramento Metropolitan Air Quality Management District's Basic Construction Emission Control Practices;<br>Mitigation Measure AIR-2: Implement the Sacramento Metropolitan Air Quality Management District's Enhanced Fugitive PM Dust Control Practices;<br>Mitigation Measure AIR-3: Require Lower Exhaust Emissions for Construction Equipment;<br>Mitigation Measure AIR-4: Use the Air District's Off-Site Mitigation Fee to Reduce NOx Emissions<br>Mitigation Measure AIR-5: Implement Marine Engine Standards | LTS |
| **Climate Change** | | | |
| Temporary, Short-Term Generation of Greenhouse Gas Emissions | S | Mitigation Measure GHG-1: Implement GHG Reduction Measures | LTS |
| Conflict with an Applicable GHG Emissions Reduction Plan and Effects of Climate Change | S | Mitigation Measure GHG-1: Implement GHG Reduction Measures | LTS |
| **Noise** | | | |
| Potential Increase in Ambient Noise Levels or Exposure of Sensitive Receptors to Excessive Noise or Vibration | S | Mitigation Measure NOI-1: Implement Measures to Reduce Construction Noise and Vibration Effects | LTS |

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| Effect | Significance Before Mitigation Measures | Mitigation Measures | Significance After Mitigation Measures |
|---|---|---|---|
| **Recreation** | | | |
| Temporary Changes to Recreational Opportunities during Project Construction Activities | S | Mitigation Measure REC-1: Implement Bicycle and Pedestrian Detours, Provide Construction Period Information on Facility Closures, and Coordinate with the City of Sacramento to Repair of Damage to Bicycle Facilities<br>Mitigation Measure REC-2: Implement Measures to Notify Boaters | LTS |
| **Visual Resources** | | | |
| Changes in Scenic Vistas and Existing Visual Character | S | Mitigation Measure VEG-1: Retain, Protect, and Plant Trees On-Site; Mitigation Measure VEG-2: Compensate for Riparian Habitat Removal<br>Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat.<br>Mitigation Measure VIS-1: Reduce Light Pollution. | LTS long term, SU short term |
| **Hazardous Wastes and Materials** | | | |
| Handling of Hazardous Materials within 0.25 Mile of a School | LTS | None required | LTS |
| Possible Exposure of People and the Environment to Existing Hazardous Materials, Including Cortese-listed Sites | PS | Mitigation Measure HAZ-1: Conduct Phase II Investigations as Needed | LTS |
| Interfere with Emergency Response or Evacuation | LTS | None required | LTS |
| Possible Creation of Wildland Fire Hazards | LTS | None required | LTS |

*Source: GEI Consultants, Inc. 2021*

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# CHAPTER 1 INTRODUCTION

## 1.1 Proposed Project and Environmental Documents

The USACE, CVFPB, and Sacramento Area Flood Control Agency (SAFCA) collectively, the "Project Partners," propose to construct, as a part of the ARCF 2016 Project, Sacramento River Erosion Contract 4 levee improvements (project) consisting of approximately 0.3 miles (1,700 linear feet) of bank protection along the east levee of the Sacramento River in Sacramento, California. Figure 1-1 illustrates the project location. The Sacramento River Erosion Contract 4 is the third of four contracts on the Sacramento River that will be under construction until 2026 to address erosion concerns. Vegetation removal for the Sacramento River Erosion Contract 4 is anticipated to start as early as October 2023, and construction is planned to start in June 2024 and conclude in November 2024, with planting and greening occurring through Spring 2025 and monitoring of the plantings continuing through an establishment period in compliance with resource agency requirements. USACE is the Federal lead agency under the National Environmental Policy Act (NEPA), CVFPB is the State lead agency under CEQA, and SAFCA is a responsible agency under CEQA for approving and carrying out the project.

CVFPB has prepared this Supplemental EIR to evaluate refinements to the Sacramento River Erosion Contract 4 Project that were proposed after the ARCF GRR Final EIS/EIR (USACE 2016) was certified in 2016 and require additional environmental analysis. The elements that require additional environmental analysis include, staging areas, access routes, haul routes, borrow sites, and spoils disposal, and bank revetment design and locations. The ARCF GRR Final EIS/EIR is incorporated into this Supplemental EIR by reference, and summaries of referenced material are provided where required, including in each resource topic section. These elements of Sacramento River Erosion Contract 4 require supplemental analysis under CEQA because "minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation" (State CEQA Guidelines Section 15163(a)(2) (Cal. Code Regs., tit. 14, § 15163, subd. (a)(2)). This Supplemental EIR has been prepared to supplement, not replace, the ARCF GRR Final EIS/EIR, and provides only the information necessary to make the previous ARCF GRR Final EIS/EIR adequate for the proposed project with the proposed refinements. Consequently, public scoping and alternatives analyses are not part of this Supplemental EIR because they have already been sufficiently conducted in compliance with the State CEQA Guidelines during ARCF GRR scoping, preparation of the Draft EIS/EIR, and preparation of the Final EIS/EIR. This Supplemental EIR compares the effects of the refined Sacramento River Erosion Contract 4 Project to existing conditions as of August 2022.

## 1.2 Project Location

The project is located in the City of Sacramento (City), California, along the left bank (when facing downstream) of the Sacramento River (Figure 11-1) near the Little Pocket neighborhood.. The proposed project includes erosion protection work, including bank protection, construction access and staging within the levee prism, the channel and bank of the Sacramento River

## 1.3 Background and Need for Action

The ARCF GRR Final EIS/EIR Section 1.4 contains a comprehensive discussion of the background and need for action that is not repeated here. Additional relevant information since ARCF GRR Final EIS/EIR certification in 2016 is summarized below.

In July 2018, Congress granted USACE construction funding to complete urgent flood control projects under the Bipartisan Budget Act of 2018. ARCF 2016 was identified for urgent implementation, and Congress supplied full funding to allow USACE to implement the much-needed levee improvements as quickly as possible. Although many elements of Sacramento River Erosion Contract 4 were addressed in the ARCF GRR EIS/EIR, impacts associated with some of the work, such as specific erosion protection designs, staging areas, haul routes, borrow sites, and spoils disposal, were not assessed in the ARCF GRR Final EIS/EIR because the specific project design had not yet been developed. Supplemental CEQA analysis is necessary for any actions or effects that were not previously addressed in the ARCF GRR Final EIS/EIR.

The Sacramento River Erosion Contract 4 is the third contract planned to address bank erosion concerns along the Sacramento River east levee and will take place over subsequent years. Sacramento River Erosion Contract 1 included bank protection at a single site at River Mile 55.2L (USACE and CVFPB 2021a). Sacramento River Erosion Contract 2 included approximately 14,950 linear feet of improvements between Miller Park and the Pocket-Greenhaven neighborhood. Sacramento River Erosion Contract 4 (the proposed project for this Supplemental EIR) includes bank protection at a single site in the Little Pocket neighborhood. The anticipated Sacramento River Erosion Contract 3 improvements will be assessed in a future supplemental CEQA document.

## 1.4 Project Purpose, Need, and Objectives

The project purpose, need, and objectives are unchanged from Section 1.4 the ARCF GRR Final EIS/EIR.

## 1.5 Purpose of the Supplemental Environmental Impact Report

This Supplemental EIR describes the existing environmental conditions in the proposed Sacramento River Erosion Contract 4 project area, evaluates the anticipated environmental effects of proposed refinements to the project in the ARCF GRR Final EIS/EIR pertaining to Sacramento River Erosion Contract 4, and identifies mitigation measures to avoid or reduce any significant adverse environmental effects of the proposed refinements to a less-than-significant level where feasible.


**Figure 1-1: Project Location**

This Supplemental EIR has been prepared in accordance with the State CEQA Guidelines. Together with the ARCF GRR Final EIS/EIR, the Supplemental EIR fully discloses the potential environmental effects of the project including the proposed refinements and provides an opportunity for the public to review and comment on this Supplemental EIR.

Section 15162 of the State CEQA Guidelines provides that when an EIR has been certified for a project, a subsequent EIR need not be prepared unless a substantial change in the project, a substantial change with respect to the circumstances under which the project is undertaken, or new information of substantial importance shows that the project would require major revisions to the EIR due to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. Pursuant to State CEQA Guidelines Section 15163, a lead agency may prepare a supplement to an EIR, rather than a subsequent EIR, when conditions that require preparation of a subsequent EIR are met, but "only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation" (State CEQA Guidelines Section 15163). CVFPB has determined that the proposed project meets the requirements in State CEQA Guidelines Sections 15162 and 15163 and, therefore, has prepared this Supplemental EIR. This Supplemental EIR supplements (does not replace) the previously certified ARCF GRR Final EIS/EIR and addresses project modifications, changed circumstances, and new information that could not have been known with the exercise of reasonable diligence at the time the prior document was certified, as required under State CEQA Guidelines Section 15163. Pursuant to the State CEQA Guidelines, the Supplemental EIR need contain only the information necessary to analyze the project modifications, changed circumstances, and new information that triggered the need for additional environmental review.

## 1.6 Public Review of the Supplemental Environmental Impact Report

The Draft Supplemental EIR is being made available to responsible and trustee agencies and the public, including all entities that have previously requested such notice in writing, for a 45-day review period from March 1, 2023. CVFPB will conduct a virtual public meeting on March 22, 2023, to receive comments on the Draft Supplemental EIR.

A Notice of Completion for the Draft Supplemental EIR was filed with the State Clearinghouse, in accordance with State CEQA Guidelines Section 15085, and a Notice of Availability of the Draft Supplemental EIR was posted in accordance with State CEQA Guidelines Section 15087. A public notice was posted in the Sacramento Bee on March 1, 2023, and sent to individuals requesting information regarding the proposed project. All reference documents used in the preparation of this Supplemental EIR, including the 2016 ARCF GRR Final EIS/EIR, have also been made available to the public. This distribution and public noticing ensured that all interested parties have an opportunity to provide written comments on the Draft Supplemental EIR consistent with State CEQA Guidelines.

Copies of the Draft Supplemental EIR were made available for review online at: www.sacleveeupgrades.com and http://cvfpb.ca.gov/public-notices . The document may also be reviewed at the Sacramento Central Library at 828 I Street, Sacramento, CA 95814.

## 1.7 Related Documents

The Sacramento River Erosion Contract 4 is a component of a larger flood risk reduction effort in the Sacramento region. USACE and CVFPB jointly published the ARCF GRR Draft EIS/EIR in March 2015, in accordance with NEPA and CEQA requirements (SCH No. 2005072046). The ARCF GRR Draft EIS/EIR analyzed the impacts of the ARCF GRR to reduce the overall flood risk within the delineated study area. A Final EIS/EIR was issued in January 2016, and comments were received between January 22 and February 22, 2016. A revised Final EIS/EIR was issued in May 2016. The ARCF GRR EIR was certified on June 9, 2016. The Record of Decision for the ARCF GRR was signed by the Assistant Secretary of the Army (Civil Works) on August 29, 2016. The ARCF GRR was authorized by Congress in December 2016.

## 1.8 Decisions Needed

As the CEQA lead agency, CVFPB will consider the information presented in this Supplemental EIR, comments received on this Supplemental EIR, and responses to the significant environmental issues raised in the review and consultation process, along with the entire administrative record (including the administrative record for the 2016 ARCF GRR Final EIS/EIR), when determining whether to certify this Supplemental EIR and approve the revised project.

This Supplemental EIR is also intended to be used by SAFCA, the California Department of Water Resources (DWR), the Central Valley Regional Water Quality Control Board (RWQCB), and the California State Lands Commission (SLC) as responsible agencies under CEQA. DWR (project partner) and SAFCA (non-Federal partner) will provide project funds and oversight. Other agencies will use this SEIR to support permitting decisions and other actions. A Water Quality Certification under Section 401 of the Clean Water Act (CWA) will be required, and RWQCB will consider this Supplemental EIR prior to issuing the water quality certification. An SLC lease may be required prior to constructing and maintaining the project, in which case SLC will consider this Supplemental EIR prior to issuing the lease.

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# CHAPTER 2 PROPOSED PROJECT REFINEMENTS

This section describes proposed refined designs for the bank protection features described in the ARCF GRR Final EIS/EIR that are part of Sacramento River Erosion Contract 4, along with specific construction details, staging, borrow and disposal sites. The construction schedule necessary to construct the project, along with the long-term operations and maintenance (O&M) requirements will be discussed.

The project is intended to restore the structural stability of the levee and maintain public safety. The proposed bank protection design was formulated to ensure the future integrity of the levee system on approximately 0.3 miles (1,700 linear feet) of the Sacramento River east levee near River Mile 55.

## 2.1 Features of Sacramento River Erosion Contract 4

The design for Sacramento River Erosion Contract 4 includes two options for bank protection. In Option 1, USACE would construct traditional bank protection comprised of riprap. In Option 2, USACE would construct a bioengineered improvement instead of riprap from 7 to 13 feet in elevation. The design for both options includes instream woody material. Figure 2-1 illustrates the project site and provides an overview of project features. Figure 2-2 illustrates the typical cross section for Option 1. Figure 2-3 illustrates the bioengineered component in Option 2.

Prior to construction, trees, shrubs, and other vegetation will be removed from the work area during the appropriate work window. A river barge equipped with a clamshell will be used to place rock and shape the bank protection feature, and an excavator will be used to trench keys if necessary.

### 2.1.1 Bank Protection

The proposed rock bank protection is designed to prevent bank erosion and provide resistance against wave wash. The design includes a launchable rock toe to provide resilience against river-bed scour. A secondary objective of the design is to shape the improvement footprints to reduce impacts to habitat. The refined bank protection design will include placing quarry stone at a stable slope of approximately 1.5H:1V. The top of the lower quarry stone slope will begin at elevation 7 feet, and extend to the bottom of the channel, with a minimum thickness of 5 feet. The bank protection includes self-launching rock of an adequate volume to provide toe protection. The design includes two options for bank protection from elevation 7 feet to 13 feet. In Option 1, USACE would construct traditional bank protection comprised of riprap and Option 2 construction consists of a bioengineered improvement instead of riprap. Figure 2-2 illustrates the typical cross section for Option 1. Figure 2-3 illustrates the bioengineered component in Option 2.

Option 1 includes placing quarry stone from elevation 7 feet to approximately 13 feet with a layer of crushed (or “choke”) stone in the top 8 inches to fill voids near the surface. 8

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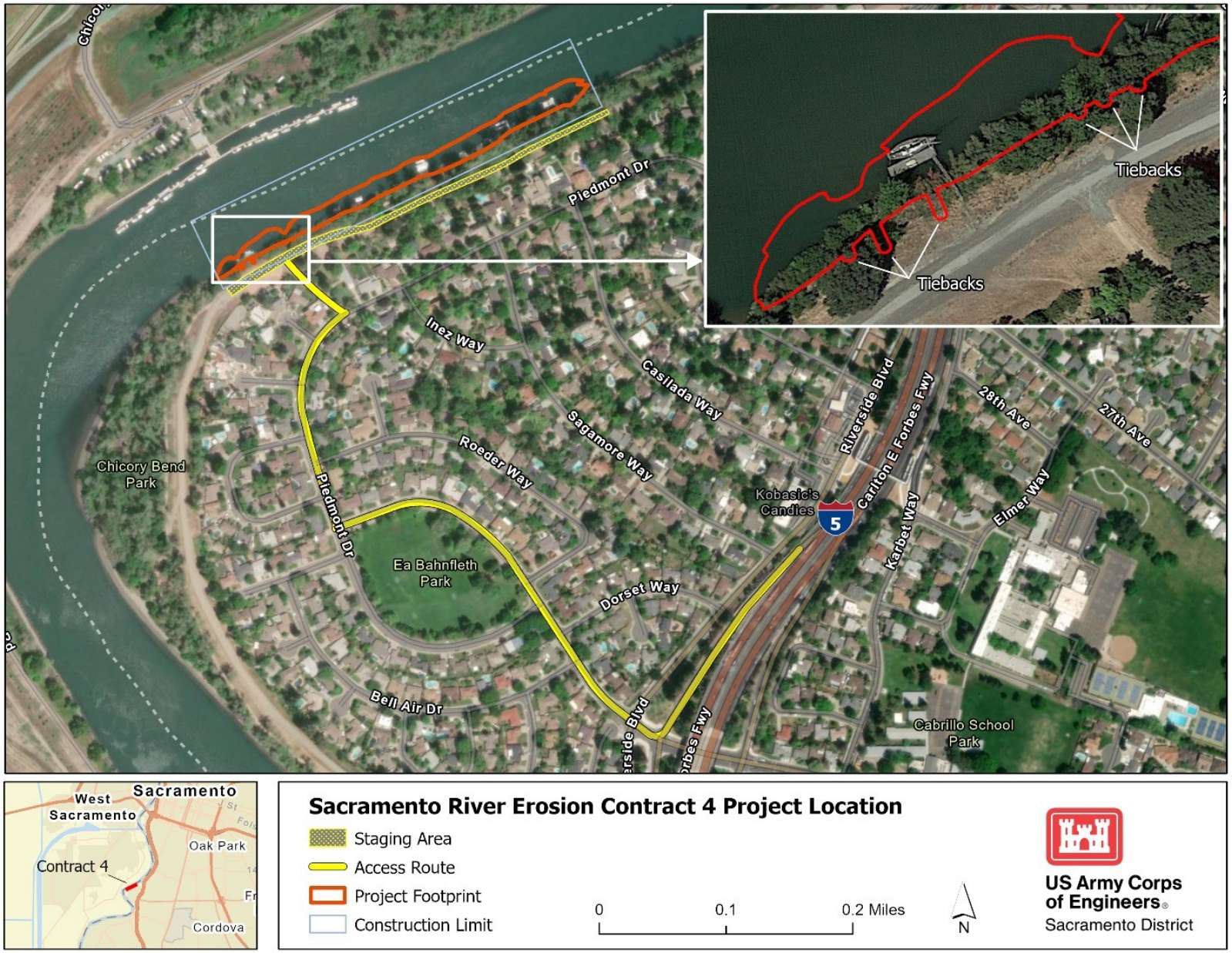


**Figure 2-1: Overview of Project Features**

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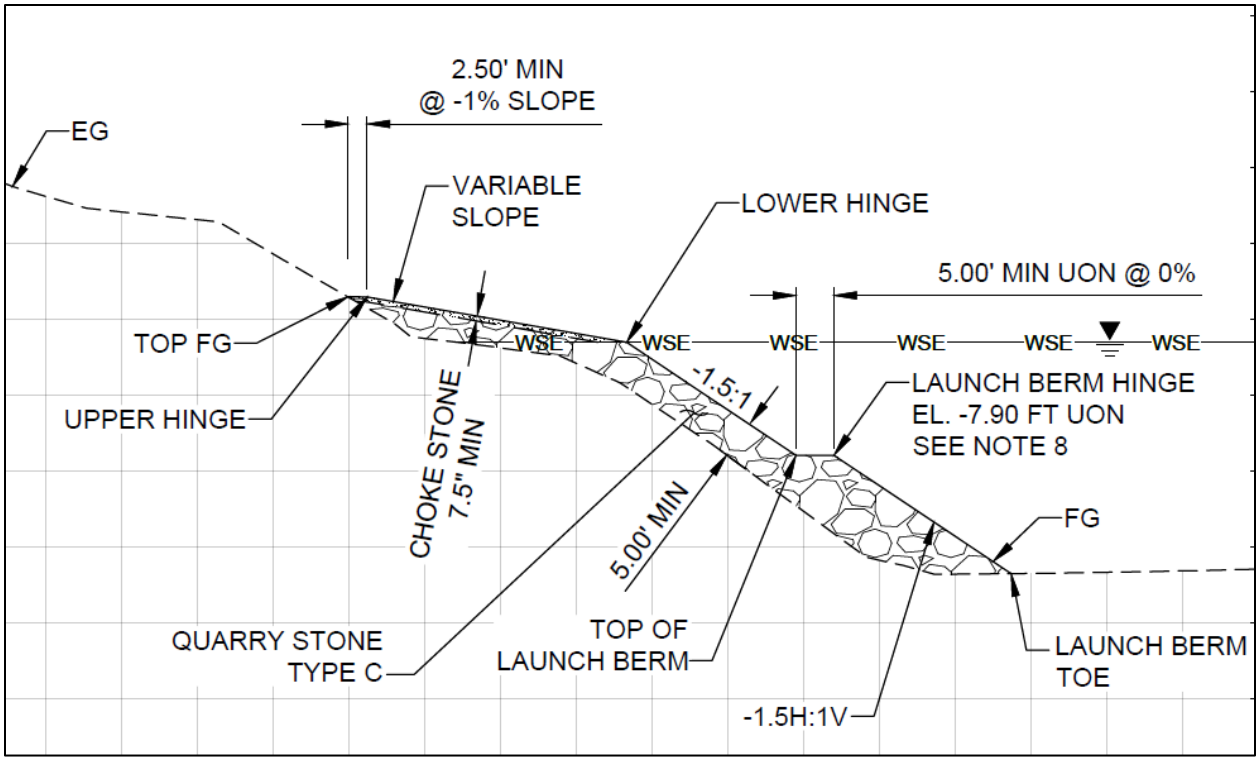
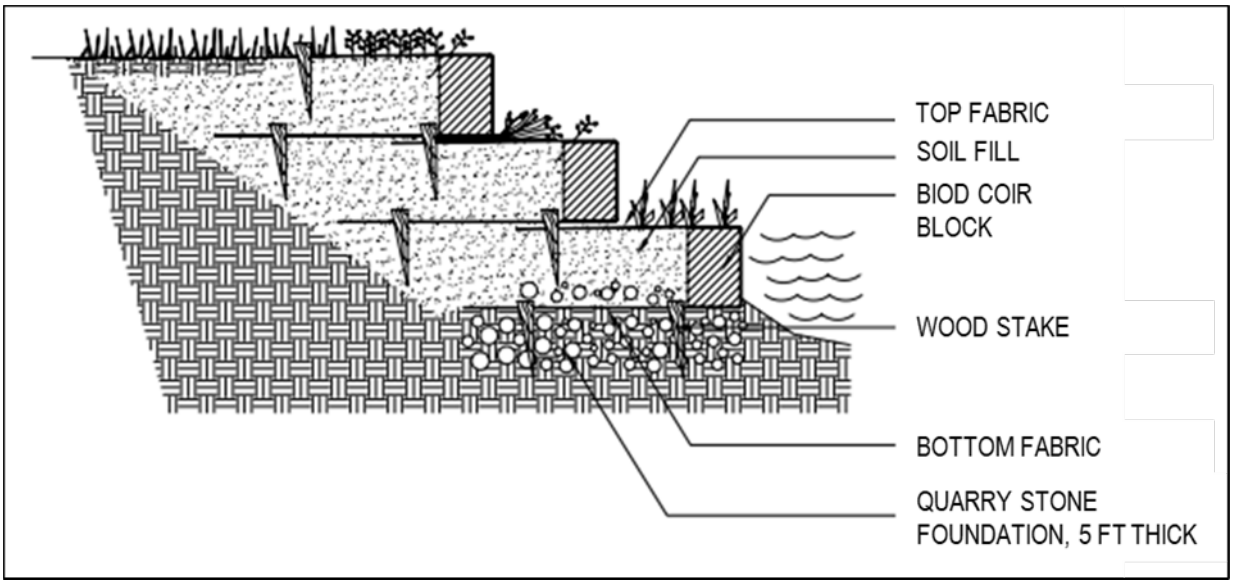



Notes: EG – existing grade; FG – finished grade; UON – unless otherwise noted; WSE – water surface elevation
Source: USACE 2022

**Figure 2-2: Option 1 Cross Section Illustration**

Option 2 would replace the riprap from elevation 7 feet to 13 feet with a bioengineered alternative that would include coir fiber blocks to encourage vegetation to root and stabilize the plantings. The biodegradable coconut coir blocks would be secured by wooden stakes and biodegradable fabric (Figure 2-2). The blocks would be arranged in a step-pattern, starting on top of the rip-rap base and following the grade of the natural riverbank until approximately 13 feet elevation. Beneath the blocks would be soil fill. Native riparian trees and shrubs would be planted into the soil and block system. Over time, root growth would be sufficient to control erosion on this portion of the riverbank. Each block would prevent leakage of the soil fill while providing erosion protection. This method avoids permanent fish and wildlife impacts above the summer water surface elevation at 7 feet by avoiding the placement of rock at this elevation.

Both options include construction of six tiebacks on the downstream end of the Sacramento River Erosion Contract 4 site and perpendicular to the river. These tiebacks would address erosion caused by historic man-made rock groins in the river channel during high flow events. They will be constructed out of quarry stone and approximate dimensions are 2.5 feet in height, 5 feet wide at the top, and 13 feet wide at the bottom. The tiebacks will be placed on-grade up to an elevation of 26 feet. At the upstream end of the site, riprap will be placed on top of revetment constructed during Sacramento River Erosion Contract 1 in 2022 to tie into the existing surface as smoothly as possible. The downstream end of the bank protection will grade into the existing ground at a 4:1 slope.




Notes: BioD Coir Block: blocks or rolls made of coconut fiber and other durable natural material.
Source: USACE 2022

**Figure 2-3: Illustration of Bioengineered Surface Above 7 Feet in Option 2**

### 2.1.2 In-stream Woody Material

The incorporation of in-stream woody material (IWM) into bank protection designs is a requirement of the ARCF 2016 Project's 2021 National Marine Fisheries Service (NMFS) Biological Opinion (BO) (NMFS 2021). IWM allows for the replacement of in-stream cover for listed fish species that are impacted due to construction. IWM consist of entire trees with root balls and canopies. Trees up to 25 feet tall and 12 inches diameter will be used, depending on site conditions. Hardwood species are typically preferred for IWM as they tend to have slower degradation rates than coniferous species when subject to continual inundation. Potential sources for trees include orchard trees or any trees of adequate size and hardness that will be removed onsite for construction.

The trees will be placed into the quarry stone by the root ball and one half of the tree length, keyed into the quarry stone below the riparian bench, with canopies extended into the water column just below the waterside edge of the riparian bench, and oriented in a downstream direction. The counterweight by the quarry stone will provide adequate protection for the logs to withstand buoyancy and drag forces from incoming flows and debris. The downstream orientation of the IWM is to mimic the natural orientation of downed trees along river systems. The IWM will be placed at 5- to 10- foot spacing in alternative groups of 3 and 4 trees, but not within 50 feet of any boat docks. Tree branches will be oriented to protrude out from the bank protection at the summer mean water surface elevation to provide a visual indication to river users of the presence of the bench and IWM.

### 2.1.3 Boat Docks

Eight private boat docks and similar structures are located in the area where bank protection improvements would be constructed. The CVFPB has requested that the owners remove the docks and ramps from the project footprint in accordance with their permit

agreements. The docks may be returned once construction is complete. Any docks not removed by the owners would be removed and disposed of by the construction contractor. The dock owners were given the option to either remove the dock pilings or leave them in place for the contractor to work around. Because movement or replacement of dock pilings would require new permits and analysis under NEPA and CEQA, it is anticipated that most pilings will remain in place. Following construction of the improvements, property owners may replace docks on the existing pilings in accordance with a valid lease agreement or permit.

### 2.1.4 Utilities

There are four underground electrical lines in the project footprint, and an additional three underground electrical lines nearby. No underground utilities are planned to be removed or replaced as part of the project.

## 2.2 Construction Details

Construction of the proposed project refinements includes the following actions:

- Set up designated temporary construction access and staging areas and mobilize equipment to the staging areas.
- Protect trees and structures that are not removed with fencing or signage.
- Clear and grub the work area, including, but not limited to, removing trees, vegetation, and encroachments along the levee embankment.
- If owners elect not to remove their docks, contractor will remove and dispose remaining docks (piers and piles would not be removed).
- Identify utility locations for protection during project activities.
- Construct bank protection and IWM. Equipment may operate from barges or be brought onto the shore from the barge.
- Demobilize construction equipment. Leave the site free of garbage in a condition similar to the pre-project condition. Seed and place erosion protection measures on the levee landside slope and other disturbed areas.

### 2.2.1 Site Preparation, Access, and Staging

Mobilization, installation of erosion protection measures, and out-of-water earthwork and improvements will begin in late June or early July. Prior to initiating construction, the project area will be enclosed by a temporary fence and lighting will be installed to limit entry into the site and ensure site safety and security. To the greatest extent possible, existing trees will be protected in place, some of which may need to be trimmed. Tree removal and out-of-water site preparation will occur from the top of the levee via landside access. In-water site preparation will occur from July 1 to October 31 and may include removing submerged instream woody debris and fallen trees within the construction footprint. M approved by NMFS and the U.S. Fish and

Wildlife Service (USFWS) to minimize turbidity from construction will be followed prior to any in-water work conducted on the waterside of the levee.

Landside construction access (entrance and exit) will occur at Seamas Avenue and Piedmont Drive as illustrated on Figure 2-1. Limited landside staging will occur on the levee crown and levee road. The construction crews' personally owned vehicles, occasional delivery vehicles, tree removal vehicles and equipment, and construction facilities including the aforementioned fencing and lighting as well as office trailer, portable toilets and hand washing stations will be located within the landside staging area.

Waterside construction will be accessed by barge. Boaters and other water-borne users of the river will be warned of the construction activities by warning buoys placed at both the up- and downstream ends of work areas.

Barges will be pre-loaded with construction materials and construction equipment for in-water staging. The barges will be loaded up to 96 miles downstream and may be rafted together and brought to the project site by a combination of push and/or tugboat. Barges loaded with materials will be brought alongside the crane/excavator barge, and then the material barges will rotate as they are emptied and reloaded. Placement of material will either be by crane with a 100-foot boom or by excavator with long stick and/or boom. Material placement will either be conducted with the equipment on the barge, or equipment may be unloaded from the barge to the shore to place rock from the waterside of the levee.

### 2.2.2 Borrow and Disposal

The construction contractor will acquire construction materials from outside sources. The material will meet USACE requirements as established in the project plans and specifications. The material sources also must have current permits for operation, meet the required environmental standards, and be approved in writing by USACE.

The construction contractor will be responsible for selecting a disposal site located outside the construction limits. This disposal site must have current permits for operation, meet the required environmental standards, and be approved in writing by USACE.

Table 2-1 presents the material requirements for construction of the proposed refinements.

**Table 2-1. Materials Required for Construction of the Project Refinements**

| Material Type | Option 1 | Option 2 |
|---|---|---|
| Grade Stone C (cy) | 22,950 | 2020,113 |
| Choke Stone (cy) | 1,051 | -- |
| Instream Woody Material (ea.) | 113 | 113 |
| Soil (cy) | -- | 2,835 |
| Biotechnical Materials | -- | 1 barge-load |

**Note**: cy = cubic yards, ea. = each.
*Source: USACE 2022*

### 2.2.3 Construction Workers and Schedule

Construction workers will access the work areas along existing freeways, highways, county and city roads, and levee patrol roads. Workers will park on the levee road. Construction hours will comply with the City of Sacramento noise ordinance, which allows construction from 7:00 a.m. to 6:00 p.m. Monday through Saturday, and between the hours of 9:00 a.m. to 6:00 p.m. on Sundays. No work or hauling will take place outside of the construction exemption times without permission applied for and given by the City of Sacramento.

Tree removal is expected to begin in October 2023 and conclude by February 14, 2024.2024 Construction is likely to occur in two phases. The first phase will include mobilization, installation of erosion protection measures, and out-of-water earthwork and improvements. This phase will start in late June or early July 2024 as the winter high flow recedes and the likelihood of rainfall reduces. The construction contractor will submit a mobilization/demobilization work plan to the Project Partners prior to starting the work. The second phase of construction will occur from July 1 to October 31. This will include constructing the bank protection improvements, installation of the IWM, and installation of the temporary erosion control seeding of disturbed areas. Any alterations to the levee prism should be repaired prior to November 1, and all in-water work should be complete by October 31. Greening will occur following the conclusion of construction in November 2024, continuing into the spring of 2025.

### 2.2.4 Demobilization and Cleanup

Demobilization and cleanup will occur in October and November 2024 after construction is complete. The staging areas, landside levee slope, and any other bare earth areas will be reseeded with native grasses and forbs from either the top of the levee via landside access or barge to promote revegetation and minimize soil erosion. Any roads or other access areas damaged by construction activities will be fully repaired and restored to its preconstruction condition. All trash, excess construction materials, and construction equipment will be removed, and the site will be left in a safe and clean condition.

## 2.3 Operations and Maintenance

A vegetation management plan will be developed in coordination with USFWS and NMFS to ensure that native riparian plantings installed within the planting benches are protected, managed, monitored, and maintained for a period of three to five years following installation and ensure that they are on an ecologically sustainable trajectory. This vegetation management plan will be consistent with the Habitat Mitigation, Monitoring, and Adaptive Management Plan developed for the ARCF GRR Final EIS/EIR. The vegetation management plan will identify activities and establish objectives, priorities, and tasks for monitoring, managing, maintaining, and reporting on the established habitats.

Maintenance activities will start immediately following completion of the initial planting. General clean-up maintenance will be performed throughout the year though some activities would vary according to weather and season. Examples of general clean-up and site maintenance include picking up trash, repairing damage due to vandalism, and removing used planting accessories (bamboo stakes, ties, browse guards, etc.). For watering maintenance, crews will

connect the water pump to the irrigation system for each irrigation cycle pursuant to the schedule described in the vegetation management plan. The irrigation system may be partially or entirely removed for seasonal high-water flows. Watering may also occur from a truck on the levee crown or from a boat as needed.

Invasive plant species incursions will be controlled as early as possible to prevent wide-scale establishment and minimize the use of control efforts such as pesticide usage. The techniques available for controlling terrestrial and aquatic species may involve hand or mechanical removal and chemical treatment. Only chemicals approved for use in California in or around aquatic habitats may be used. Crews will weed within the watering basins of the plantings and within an 18-inch radius of each woody and grass associated plant. Invasive species mitigation will prevent nonnative herbaceous growth and soil moisture competition. Maintenance crews will mow weeds to below 6 inches in height during the growing season.

The proposed planting design in Option 2 includes an appropriate mix of local native riparian trees and shrubs. Tree and shrub species were selected based on their ability to establish and be self-sustainable on the riparian bench which may be seasonally inundated and has limited soil volume. Plantings will consist of nursery-propagated species and live pole cuttings. Adaptive management will commence upon completing the plantings and continue as necessary to ensure the success of the on-site plantings. The adaptive management process provides a mechanism by which remedial actions can be implemented if success criteria are not met or fail to persist once the criteria have been met (e.g., because of competition from invasive weeds).

# CHAPTER 3 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

## 3.1 Introduction

### 3.1.1 Approach to Analysis

Each resource topic section includes a brief summary of the analysis contained in the ARCF GRR Final EIS/EIR. Additional information on environmental and regulatory setting is provided for resource topics where necessary to support the supplemental impact analysis. Thresholds used to evaluate the significance of impacts are carried forward from the ARCF GRR Final EIS/EIR and are herein incorporated by reference, with updated thresholds identified as applicable. Although all thresholds are listed, only those thresholds requiring an updated analysis due to new information are discussed. Options 1 and 2 for bank protection would generally have similar impacts; where impacts would differ between Option 1 and Option 2, the different impacts of each option are described. Under each resource, any significance criteria lacking an evaluation section remain unchanged from the ARCF GRR Final EIS/EIR, and the previous analyses remains sufficient.

O&M activities will be unchanged from those that currently occur under pre-project conditions. Levee encroachments and access will continue to be managed as necessary to maintain the integrity and safety of the newly modified levees. Therefore, because no changes are proposed, O&M activities will have no new or substantially more severe significant adverse effects than were analyzed in the ARCF GRR Final EIS/EIR (USACE 2016) and for previous Sacramento River Erosion Contracts (USACE and CVFPB 2021a, 2022a). Therefore, O&M effects are not discussed further in this Supplemental EIR.

Three new topic areas were added to the State CEQA Guidelines in 2018: energy, Tribal Cultural Resources (TCRs), and wildfire. These topic areas were not specifically addressed in the ARCF GRR Final EIS/EIR. These topic areas are addressed in this Supplemental EIR as follows; energy and wildfire are described in Section 3.1.2, “Resource Topics Not Discussed in Detail,” and TCRs are addressed in Section 3.7, “Cultural and Tribal Cultural Resources.”

Mitigation measures that are proposed to reduce significant impacts were included in the ARCF GRR Final EIS/EIR and prior Supplemental EIRs for the Sacramento River Erosion Contracts 1 and 2 and Sacramento River East Levee Seepage and Stability Contracts 3 and 4 (USACE and CVFPB 2021a, 2021b, 2022a, and 2022b). All mitigation measures to reduce impacts of the Sacramento River Erosion Contract 4 are consolidated into this Supplemental EIR document for completeness and to facilitate a single updated and consolidated Mitigation Monitoring and Reporting Program (MMRP) for the Sacramento River Erosion Contract 4 to improve CEQA compliance during mitigation implementation.

### 3.1.2 Resources Not Considered in Detail

Some resources were eliminated from further analysis in this Supplemental EIR because the effects from project refinements were negligible and the Sacramento River Erosion Contract 4 will not create additional impacts to the resources beyond the scope of those addressed at a

program level within the ARCF GRR Final EIS/EIR. Other resources below were eliminated from detailed analysis but were not described in the ARCF GRR Final EIS/EIR and so are discussed below.

### *Energy*

The project refinements will be constructed using typical construction methods and will not include any activities identified as wasteful or having unusually high energy consumption. Operational and maintenance activities and energy use will be similar to existing activities. This topic is not discussed further in this Supplemental EIR.

### *Public Utilities and Service Systems*

As a part of the design process, engineers assessed the project site to determine the presence of underground utility lines that have the potential to be affected by the proposed refinements. Four underground electrical utilities have been identified within the project footprint, with three additional underground utilities nearby. The proposed refinements include limited excavation and the identified underground electrical utilities will not be impacted and will not need to be relocated for the project. However, if any utilities are later identified, disruption to public utilities and service systems will be mitigated with Mitigation Measure UTL-1 below, which was adopted in the ARCF GRR Final EIS/EIR and consolidated in the Supplemental EIR for Sacramento River Erosion Contract 1 (USACE and CVFPB 2021b).

Mitigation Measure UTL-1: Verify Utility Locations, Coordinate with Affected Utility Owners/Providers, Prepare and Implement a Response Plan, and Conduct Worker Training with Respect to Accidental Utility Damage

The Project Partners would implement the measures listed below before construction begins to avoid and minimize potential damage to utilities, infrastructure, and service disruptions during construction.

- Coordinate with applicable utility and service providers to implement orderly relocation of utilities that need to be removed or relocated.
- Provide notification of any potential interruptions in service to the appropriate agencies and affected landowners.
- Verify through field surveys and the use of the Underground Service Alert services the locations of buried utilities in the Project Area, including natural gas, petroleum, and sewer pipelines. Any buried utility lines would be clearly marked in the area of construction (e.g., in the field) and on the construction specifications in advance of any earthmoving activities.
- Before the start of construction, prepare and implement a response plan that addresses potential accidental damage to a utility line. The plan would identify chain-of-command rules for notification of authorities and appropriate actions and responsibilities regarding the safety of the public and workers. A component of the response plan would include worker education training in response to such situations.

- Stage utility relocations during project construction to minimize interruptions in service.
- Communicate construction activities with first responders to avoid response delays due to construction detours.

The construction contractor will follow standard procedures for further identifying underground utilities in the project area to confirm the site conditions. If underground utilities are identified by the utility providers or the City, the contractor will coordinate any necessary BMPs that will need to be implemented. Based on current site data and available information, no effects to public utilities are anticipated during construction.

### *Socioeconomics and Environmental Justice*

The closest residences to the project area are single family homes located immediately adjacent to the project levee in the Little Pocket neighborhood, approximately 150 feet from the riverbank. The levee is located between the construction area along the riverbank and the residences. The residents in these neighborhoods do not meet the demographic characteristics to be considered a low income or minority population. The project will reduce flood risk to all populations protected by the levee and will not create disproportionate benefits or disproportionate adverse effects to residents of nearby single-family and multi-unit housing.

Access to the project site has historically been limited; however, small numbers of homeless individuals sometimes camp along the Sacramento River at the site. Since these groups are transient by nature, the likelihood that a homeless encampment will be active near the project area during construction is difficult to forecast. Such a group could be temporarily disturbed during construction by noise and air pollutant emissions. If homeless encampments are present in areas where construction will occur as part of the project, USACE, CVFPB, and the construction contractor will work with the City and County of Sacramento and the City's Police Department to notify and remove these encampments while construction occurs. Therefore, there will be no Socioeconomic or Environmental Justice impacts from Sacramento River Erosion Contract 4 refinements.

### *Land Use*

The entire Sacramento River east bank and levee are currently zoned for parks and recreation and are encompassed within the overall ARCF 2016 project area. The ARCF GRR Final EIS/EIR analysis found that many homes in the Little Pocket and Pocket areas back up to the levee with little or no land between the levee toe and the fence or backyard, and it was assumed that some acquisition of private property will be required for flood protection levee easements. All property acquisitions will be conducted in compliance with Federal and State relocation law requiring appropriate compensation. Therefore, this effect was determined to be less than significant in the ARCF GRR Final EIS/EIR.

The proposed land use within the project site will be consistent with adopted County and City General Plan policies related to flood risk reduction, land use designations, and zoning codes that apply to each of these sites. There will be no change in these land use designations as a result of project refinement implementation. The project refinements do not occur in an area covered by an approved Habitat Conservation Plan or Natural Community Conservation Plan.

Construction of levee improvements will occur within the existing levee corridor: there is limited hauling proposed along the levee and a single haul route; and staging would occur along the levee top. There are no proposed activities that will physically divide an established community. Therefore, land use impacts will not differ from those identified in the ARCF GRR Final EIS/EIR. This topic is not discussed further in this Supplemental EIR.

### *Transportation and Circulation*

Sacramento River Erosion Contract 4 construction will be undertaken primarily from river barges. Materials and equipment will be carried to the site on river vessels and therefore will not impact vehicle traffic on nearby roadways. The only vehicles with access to the site from area roadways will be the personal vehicles of construction crew members, occasional delivery vehicles, and vehicles and equipment associated with tree removal. Staging will also occur on the landside using equipment and personnel who will access the site via area roadways, however traffic associated with these activities involves a small number of vehicles and will occur over a short duration.

The ARCF GRR Final EIS/EIR includes several measures to reduce the effects of construction activities on traffic and circulation to less-than-significant levels, which were adopted and incorporated into the Sacramento River Erosion Contract 4 Project. These measures have been consolidated into Mitigation Measure TR-1 (CVFPB and USACE 2021b), which is presented below for completeness. The project refinements will result in no further potentially significant impacts or impacts that differ from those identified in the ARCF GRR Final EIS/EIR. This topic is not discussed further in this Supplemental EIR.

Mitigation Measure TR-1: Prepare and Implement a Traffic Control and Road Maintenance Plan

Before the start of project-related construction activities, Project Partners would require the contractor to prepare a Traffic Control and Road Maintenance Plan. This plan would describe the methods of traffic control to be used during construction. All on-street construction traffic would be required to comply with the local jurisdiction's standard construction specifications. The items listed below would be included in the plan and as terms of the construction contracts:

- Follow the standard construction specifications of affected jurisdictions and obtain the appropriate encroachment permits, if required. Incorporate the conditions of the encroachment permit into the construction contract. Encroachment permit conditions would be enforced by the agency that issues the encroachment permit.

- Provide adequate parking for construction trucks, equipment, and construction workers within the designated staging areas throughout the construction period. If inadequate space for parking is available at a given work site, the construction contractor would provide an off-site staging area and as needed, coordinate the daily transport of construction vehicles, equipment, and personnel to and from the work site.

- Proposed lane closures would be coordinated with the appropriate jurisdiction and be minimized to the extent possible during the morning and evening peak traffic periods. Construction specifications would limit lane closures during commuting hours where feasible, and lane closures would be kept as short as possible. If a road must be closed,

detour routes and/or temporary roads would be made to accommodate traffic flows. Signs would be provided to direct traffic through detours.

- Post signs providing advance notice of upcoming construction activities at least 1 week in advance so that motorists are able to avoid traveling through affected areas during these times.

- Provide bicycle detours to allow for continued use by bicycle commuters. Maintain safe pedestrian and bicyclist access around the construction areas at all times. Construction areas would be secured as required by the applicable jurisdiction to prevent pedestrians and bicyclists from entering the work site, and all stationary equipment should be located as far away as possible from areas where bicyclists and pedestrians are present.

- Notify (by means such as physical signage, internet postings, letters, or telephone calls) and consult with emergency service providers to inform them of construction activities, maintain emergency access, and facilitate the passage of emergency vehicles on city streets during construction activities. Emergency vehicle access would be made available at all times.

- The construction contractor would document pre- and post- construction conditions on roadways used during construction. This information would be used to assess damage to roadways used during construction. The contractor would repair all potholes, fractures, or other damages.

- Comply with Caltrans requirements by submitting this Traffic Control and Road Maintenance Plan to Caltrans for review to cover points of access from the State highway system (I-5) for haul trucks and other construction equipment.

### *Hydraulics and Hydrology*

The proposed levee improvements will not alter the present levee alignment in its existing location (fix in place) and will not alter river flows from those expected in the future without project condition (with the exception of the levee improvements reducing the flooding risk and uncontrolled river flows which is a project benefit). There will also be no significant change to or effect on river hydraulics and hydrology with the project in place. Long-term O&M of the project site will not differ under Sacramento River Erosion Contract 4 than under existing conditions and will also have no impact on hydrology and hydraulics. Hydraulic model results show that adding bank protection to the proposed project site will not substantially alter the existing drainage pattern of the site and river therefore not causing erosion on the opposite bank. The proposed project refinements will not create or contribute runoff water which would exceed the capacity of existing, or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff. The proposed project refinements will not place housing within a 100-year flood hazard or expose people or structures to a significant risk of loss, injury, or death involving flooding. The proposed project will not place structures within a 100-year flood hazard area which would impede or redirect flood flows. No effects to hydraulics and hydrology due to the proposed project refinements are anticipated with the exception of improved containment of river flows during potential flood events. This topic is not discussed further in this Supplemental EIR.

#### *Wildfire*

The project site is not located in or near a State Responsibility Area or Very High Fire Hazard Severity Zone in which additional analysis of wildfire hazard would be called for under Appendix G of the State CEQA Guidelines. This topic is not discussed further in this Supplemental EIR.

## 3.2 Geological Resources

### 3.2.1 Environmental and Regulatory Setting

The environmental and regulatory setting in Section 3.2 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and is not repeated.

### 3.2.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

Construction of the ARCF project would include substantial construction and earth-moving activities over large areas that would result in temporary disturbance of soil during the construction period and could expose these disturbed areas to substantial erosion during rainstorms following construction, if not properly restored. This potentially significant impact was reduced to a less-than-significant impact with mitigation.

The ARCF project would not substantially alter the composition of the levees or foundation soils or change their susceptibility to liquefaction. Because of the relatively small likelihood of a flood event and a major earthquake occurring at the same time, and because the expected magnitude of ground-shaking from large regional earthquakes is relatively low in the project site, the potential for failure or significant damage to project structures from seismic issues was determined to be low.

#### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to geological resources if they would expose people or structures to substantial effects involving:

- Rupture of a known earthquake fault, strong seismic shaking, or seismic-related ground failure, including liquefaction;
- Landslides, substantial soil erosion, or permanent loss of topsoil;
- Locating the project on an unstable geologic unit, or on a geologic unit that would become unstable as a result of the project; and/or,
- Locating the project on expansive soil, as defined in the Uniform Building Code.

An additional threshold, not included in the ARCF GRR Final EIS/EIR, is considered in this analysis. The Society of Vertebrate Paleontology (SVP), a national scientific organization of

professional vertebrate paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation (SVP 1995, 1996, 2010, 2019). Most practicing professional paleontologists in the nation adhere to the Society of Vertebrate Paleontology assessment, mitigation, and monitoring requirements, as specified in its standard guidelines.

The proposed project refinements were determined to result in a significant effect related to paleontological resources if they would:

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

- a type specimen (i.e., the individual from which a species or subspecies has been described);

- a member of a rare species;

- a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;

- a skeletal element different from, or a specimen more complete than, those now available for its species; or

- a complete specimen (i.e., all, or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

### *Impact Analysis*

Potential Temporary, Short-Term Construction-Related Erosion

The proposed project refinements involve placing rock protection on the riverbank and do not involve a substantial amount of excavation within the project footprint. Therefore, the project refinements will not cause permanent loss of topsoil or destroy unique paleontological resources or geologic features through earthmoving work.

Construction activities will occur during the season when rainfall is the least likely and river flows are at their lowest, reducing the potential for water erosion. However, construction activities could result in the temporary and short-term disturbance of soil, which could expose

disturbed areas on the waterside of the levee to storm events. This temporary, short-term construction impact will be potentially significant.

Implementing Mitigation Measure GEO-1 will reduce this impact to a less-than-significant level by requiring the preparation and implementation of a SWPPP with appropriate BMPs and the implementation of a Spill Prevention Control and Countermeasures Plan (SPCCP). These actions will enable source control and re-vegetation which will reduce erosion and maintain surface water quality conditions in adjacent receiving waters as well as prevent the discharge of oil into navigable waters.

Potential to Directly or Indirectly Destroy a Unique Paleontological Resource or Site

The proposed project refinements do not involve substantial amounts of excavation and the project area is located in Holocene-aged sediments, which are considered to be of low paleontological potential (USACE 2016). Holocene deposits, in general, contain only the remains of extant, modern taxa (if any resources are present), which are not considered "unique" paleontological resources. The potential to encounter a unique paleontological resource is very low and the impact will be less than significant.

### 3.2.3 Mitigation Measures

The following mitigation measure has been previously adopted for the ARCF 2016 Project (USACE and CVFPB 2021b).

Mitigation Measure GEO-1: Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices.

Prior to the start of earthmoving activities, the Project Partners will obtain coverage under the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) stormwater permit for general construction activity (Order 2009-0009-DWQ), including preparation and submittal of a project-specific SWPPP at the time the Notice of Intent to discharge is filed. The SWPPP shall identify and specify the following:

- the use of an effective combination of robust erosion and sediment control BMPs and construction techniques that shall reduce the potential for runoff and the release, mobilization, and exposure of pollutants, including legacy sources of mercury from project-related construction sites. These may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, inlet protection, perforated riser pipes, check dams, and silt fences;

- the implementation of approved local plans, non-stormwater management controls, permanent post-construction BMPs, and inspection and maintenance responsibilities;

- the pollutants that are likely to be used during construction that could be present in stormwater drainage and non-stormwater discharges, including fuels, lubricants, and other types of materials used for equipment operation;

- the means of waste disposal;
- spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;
- personnel training requirements and procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and
- the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.

Where applicable, BMPs identified in the SWPPP will be in place throughout all site work, construction/demolition activities, and will be used in all subsequent site development activities. BMPs may include, but are not limited to, such measures as those listed below:

- work window- conduct earthwork during low flow periods (June 1 to October 31);
- to the extent possible, stage construction equipment and materials on the landside of the levee in areas that have already been disturbed;
- minimize ground and vegetation disturbance during project construction by establishing designated equipment staging areas, ingress and egress corridors, spoils disposal and soil stockpile areas, and equipment exclusion zones prior to the commencement of any grading operations;
- stockpile soil on the landside of the levee reaches, and install sediment barriers (e.g., silt fences, fiber rolls, and straw bales) around the base of stockpiles to intercept runoff and sediment during storm events. If necessary, cover stockpiles with geotextile fabric to provide further protection against wind and water erosion;
- install sediment barriers on graded or otherwise disturbed slopes as needed to prevent sediment from leaving the project site and entering nearby surface waters;
- install plant materials to stabilize cut and fill slopes and other disturbed areas once construction is complete. Plant materials will include an erosion control seed mixture or shrub and tree container stock. Temporary structural BMPs, such as sediment barriers, erosion control blankets, mulch, and mulch tackifier, will be installed as needed to stabilize disturbed areas until vegetation becomes established;
- conduct water quality tests specifically for increases in turbidity and sedimentation caused by construction activities;
- a copy of the approved SWPPP shall be maintained and available at all times on the construction site; and
- Project Partners will also prepare a SPCCP. A SPCCP is intended to prevent any discharge of oil into navigable water or adjoining shorelines. The contractor will develop

and implement a SPCCP to minimize the potential for adverse effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP will be completed before any construction activities begin. Implementation of this measure will comply with state and Federal water quality regulations. The SPCCP will describe spill sources and spill pathways in addition to the actions that would be taken in the event of a spill (e.g., an oil spill from engine refueling would be immediately cleaned up with oil absorbents). The SPCCP will outline descriptions of containments facilities and practices such as doubled-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures, and spill response kits. It will also describe how and when employees are trained in proper handling procedures and spill prevention and response procedures.

#### *Significance after Mitigation*

The significant impact related to geological resources will be reduced to a less-than-significant level with implementation of Mitigation Measure GEO-1, because the Project Partners will implement proven BMPs to prevent erosion.

## 3.3 Water Quality

### 3.3.1 Environmental and Regulatory Setting

The environmental and regulatory framework and existing conditions described in Section 3.5 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and therefore is not repeated here. Additional, relevant information is provided below.

Designated beneficial uses for the Sacramento River south of the "I" Street Bridge (i.e., the Delta) consist of: municipal and domestic supply, agricultural irrigation and stock watering, industrial processing and service supply, recreation (water contact and non-contact), commercial and sport fishing, warm and cold water freshwater habitat, warm and cold water migration, spawning habitat, wildlife habitat, and navigation (CVRWQCB 2019).

### 3.3.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR determined that using bentonite slurry or Portland cement to construct cutoff walls would pose no threat to groundwater quality, and because no other effects related to groundwater were anticipated, groundwater effects were not evaluated.

Placing revetment along the riverbank by barge would temporarily increase turbidity in the immediate vicinity of the construction area. Additionally, placing revetment in the water could result in a sediment plume, generated from the channel bottom and levee side, becoming suspended in the water and generating turbidity levels above those identified as acceptable by the Central Valley RWQCB Basin Plan. Construction-related effects to surface water quality were determined to be significant. Effects related to temperature increases from loss of vegetation were determined to be less than significant in the short term, and beneficial in the long term.

Construction contractors would be required to prepare and implement a SWPPP and comply with the conditions of the NPDES general stormwater permit for construction activity. The contractor would be required to obtain a permit from the Central Valley RWQCB detailing a plan to control any spills that could occur during construction. In addition, the contractor would be required to monitor turbidity in the adjacent water bodies, where applicable criteria apply, to determine whether turbidity is being affected by construction and to ensure that construction does not increase turbidity levels above ambient conditions, in accordance with the Central Valley RWQCB Basin Plan turbidity objectives. Finally, a SPCCP would also be prepared and implemented. Surface water quality effects would be reduced to be a less-than-significant level after implementation of these mitigation measures.

### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to water quality if they would:

- Violate water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with ground water recharge;
- substantially degrade water quality; or
- alter regional or local flows resulting in substantial increases in erosion or sedimentation.

An additional threshold, not included in the ARCF GRR Final EIS/EIR, is considered in this analysis. The project was determined to result in a significant effect related to water quality if it would:

- Conflict with or obstruct the implementation of a water quality control plan or a sustainable groundwater management plan.

### *Impact Analysis*

Construction Impacts to Water Quality

Construction of the proposed project refinements include placing rock revetment along the riverbank below the ordinary high-water mark (OHWM) of the Sacramento River, as well as installing IWM within the revetment quarry stone. This will temporarily increase turbidity in the vicinity of the construction area. Additionally, placing revetment and IWM could cause temporary sediment plumes, generated from the river bottom and levee side. The use of barges to install the revetment and anchor the IWM could cause additional turbidity in the immediate vicinity of the project. Under the CWA, a Section 401 permit and Section 404(b)(1) alternatives evaluation will be required before work subject to Section 401 below the OHWM begins. After construction is complete, turbidity reductions are expected in the area because there will be less exposed soil to erode and deposit into the river and spaces between the quarry stone will trap sediment over time.

The temporary irrigation system will have a smooth transition between the bankline and the pump's screen structure used in the system will be important to minimize eddies and undesirable flow patterns in the vicinity of the screen that may cause bank or riverbed erosion and increase turbidity. Use of irrigation water pumps are permitted under a Programmatic Section 401 permit obtained from SWRCB for the entire ARCF project.

Temporary, short-term construction-related impacts to water quality will be significant due to the turbidity increases. This impact will be reduced to a less-than-significant level after implementation of Mitigation Measures WATERS-1 and GEO-1 because the Project Partners will implement measures to compensate for fill of protected waters and implement BMPs to prevent erosion.

### 3.3.3 Mitigation Measures

The following mitigation measures have been previously adopted for the ARCF 2016 Project (USACE and CVFPB 2021b).

Mitigation Measure WATERS-1: Compensate for Fill of State and Federally Protected Waters.

In compliance with the CWA, the Project Partners will compensate for fill of State and Federally protected waters to ensure no net loss of functions and values. Water quality certification pursuant to Section 401 of the CWA will be obtained from the Central Valley RWQCB before starting project activities subject to Section 401. Any measures determined necessary during the permitting processes will be implemented, such that there is no net loss of functions and values of jurisdictional waters.

Mitigation may be accomplished through habitat replacement, enhancement of degraded habitat, off-site mitigation at an established mitigation bank, contribution of in-lieu fees, or other methods acceptable to the regulatory agencies, ensuring there is no net loss of waters of the United States. If compensation is provided through permittee-responsible mitigation with additional NEPA and CEQA documentation, a mitigation plan will be developed to detail appropriate compensation measures determined through consultation with USACE and Central Valley RWQCB. These measures will include methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails.

Mitigation Measure GEO-1: Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices.

Please refer to Section 3.2.3 for the full text of this mitigation measure.

#### *Significance after Mitigation*

The significant impact related to water quality will be reduced to a less-than-significant level with implementation of Mitigation Measures WATERS-1 and GEO-1 because the Project Partners will apply appropriate and proven measures to compensate for fill of protected waters and implement BMPs to prevent erosion.

# 3.4 Vegetation and Wildlife

## 3.4.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.6 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and therefore is not repeated here. Additional, relevant information is provided below.

### *Existing Conditions*

The project area consists primarily of riparian and SRA habitat. USFWS defines SRA as near shore aquatic area occurring at the interface between a river and adjacent woody riparian habitat. The principal attributes of SRA habitats include: (1) adjacent bank being composed of natural, eroding substrates which supports riparian vegetation that either overhangs or protrudes into the water; and (2) water containing variable amounts of woody debris such as leaves, logs, branches, and roots; as well as variable depths, velocities, and currents (USFWS 1992).

The riparian habitat in the area consists of mature, well-established trees such as Fremont Cottonwood (*Populus fremontii*), valley oak (*Quercus lobata*), black willow (*Salix gooddingii*), and box elder, Oregon ash (*Fraxinus latifolia*), western sycamore (*Platanus racemosa*), and white alder (*Alnus rhombifolia*). The riparian shrub layer consists of smaller trees and shrubs; representative species commonly observed are poison oak (*Toxicodendron diversilobum*), sandbar willow (*Salix exigua*), and Himalayan blackberry (*Rubus discolor*). Elderberry shrubs (*Sambucus mexicana*), the host plant of the Federally listed valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*) are commonly observed in the riparian habitat along the Sacramento River and have been mapped (see Figure B1 in Appendix B-1). However, all elderberry plants within the project area will be avoided, according to conservation measures outlined in the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (USFWS 2017).

Wildlife inhabiting the project area are dependent upon the trees associated with riparian habitats for vegetation diversity; microclimate conditions; and the availability of water, food, and cover. Several species of raptors, including Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), and great horned owl (*Bubo virginianus*), build their nests in the crowns of cottonwood, valley oak, and other large trees that currently exist on both the landside and waterside of the Sacramento River levees and within the project area. Natural cavities and woodpecker holes provide nesting sites for cavity-nesting species, including wood duck (*Aix sponsa*), common merganser (*Mergus merganser*), American kestrel (*Falco sparverius*), tree swallow (*Tachycineta bicolor*), and western screech owl (*Megascops kennicottii*). Riparian scrub supports large numbers of insects and attracts passerines, including several species of warblers and hummingbirds. Due to the urban development adjacent to the levees in the project area, wildlife is limited primarily to small mammals and various avian species, especially those species that are adapted to human disturbance.

A detailed habitat map is included in Figure B1 in Appendix B.

### 3.4.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR evaluated vegetation, including trees, which would be removed during the bank protection portion of the erosion control. The analysis highlighted effects on avian species, indicated surveys for nesting birds would be conducted, and proposed to mitigate for potential impacts to nesting birds by postponing the removal of trees with active nests until the young have fledged. It also indicated that tree removal would be compensated by planting up to 95 acres of riparian habitat for all Sacramento River projects within ARCF. A System Wide Improvement Framework agreement with the non-Federal sponsor would allow vegetation and encroachment compliance on the landside of the levee to be deferred and addressed by the local maintaining agency at a later time, which would benefit vegetation and wildlife by staggering vegetation removal. However, because it would take many years for compensation habitat to provide the value of habitat that would be removed, the ARCF GRR Final EIS/EIR determined that construction-related vegetation and wildlife impacts would be significant short-term impacts with mitigation and less-than-significant long-term impacts with mitigation.

#### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to vegetation and wildlife if they would cause:

- Substantial loss, degradation, or fragmentation of any natural communities or wildlife habitat;
- Substantial effects on a sensitive natural community, including Federally protected wetlands and other waters of the U.S., as defined by Section 404 of the CWA (this threshold has been updated as described below);
- Substantial reduction in the quality or quantity of important habitat, or access to such habitat for wildlife species;
- Substantial conflict with the American River Parkway Plan, Sacramento County Tree Preservation Ordinance, or the City of Sacramento Protection of Trees Ordinance; or
- Substantial adverse effects on native wood habitats in the American River Parkway, resulting in the loss of vegetation and wildlife.

The following threshold has been updated to reflect the most current State CEQA Guidelines:

- Substantial adverse effect on State and Federally protected waters of the United States, including wetlands, through direct removal, filling, hydrological interruption, or other means.

*Impact Analysis*

Adverse Effects on Riparian Habitat and Waters of the United States

Construction of the proposed project refinements including placement of bank protection measures, IWM, and removal and replacement of eight boat docks will impact approximately 3.15 acres of riparian habitat for Option 1 or approximately 2.14 acres of riparian habitat for Option 2. Up to 0.37 acre of tree canopy will be removed for Option 1, potentially including up to 0.37 acre of SRA habitat. Tree removal for Option 1 would be avoided to the maximum extent possible to reduce habitat impact. No tree canopy would be removed as a result of project Option 2. This impact will be significant, as specified in the ARCF GRR Final EIS/EIR.

Approximately 3.15 acres below the OHWM would be affected by placement of rock for erosion protection. Construction work below the OHWM in protected waters of the U.S. requires compliance with CWA Sections 404 and 401. A Section 404(b)(1) alternatives evaluation and Section 401 Notice of Intent (NOI) under the existing Programmatic 401 Permit will be completed prior to the start of construction work below the OHWM that is subject to Section 401, as required by Mitigation Measure Waters-1, along with other measures to compensate for impacts to waters of the US. Mitigation Measure GEO-1 will control erosion, sedimentation, and waste discharge, therefore reducing impacts to vegetation and wildlife. Long-term impacts to vegetation and wildlife will be less than significant with the implementation of the mitigation measures.

Implementation of flood protection activities by public agencies does not require a tree removal permit pursuant to the City of Sacramento Municipal Code. Therefore, there will be no conflict with the City of Sacramento Tree preservation policy or ordinance.

Mitigation Measures VEG-1 and VEG-2 will reduce the long-term impact on vegetation and wildlife (including nesting birds, roosting bats, and fish species within the channel) to less than significant by avoiding impacts, minimizing impacts, and compensating for habitat removal in coordination with USFWS and NMFS. In addition, the installation of the IWM will compensate for some loss of SRA by fish species by providing in-stream shaded/protected habitat. After construction is complete, the project site will be planted with native riparian tree and shrub species. However, the compensation habitat is expected to take many years to provide the value of habitat provided by the vegetation expected to be removed. Therefore, the impacts due to short-term habitat loss will remain significant and unavoidable, as found in the ARCF GRR Final EIS/EIR.

### 3.4.3 Mitigation Measures

The following mitigation measures have been previously adopted for the ARCF 2016 Project (USACE and CVFPB 2021a, 2021b).

Mitigation Measure VEG-1: Retain, Protect, and Plant Trees On-Site

Project designs will be refined to reduce impacts on vegetation and wildlife to the extent practicable. Refinements implemented to reduce the loss of riparian habitat will include reducing the impact footprint, constructing bank protection rather than launchable rock trench whenever

feasible, and incorporating planting areas. Where practicable, trees will be retained in locations where the bank protection and planting benches are constructed. Trees will be protected in place along the natural channel during rock placement. Additional plantings will be installed on the newly constructed benches to provide habitat for fish and avian species. The planting benches will be used where practicable to minimize impacts on fish and wildlife species. The on-site habitat will be created in accordance with the ARCF GRR Habitat Mitigation, Monitoring, and Adaptive Management Plan, which includes conceptual mitigation proposals, performance standards, and adaptive management tasks.

Mitigation Measure VEG-2: Compensate for Riparian Habitat Removal

USACE will implement the following measures to compensate for riparian habitat degradation:

To compensate for the removal of riparian habitat in project Option 1 (up to 0.37 acre), replacement habitat will be created at a ratio of 2:1 to account for the temporal loss of habitat while newly created habitat is growing. Species selected to compensate for the riparian corridor removal will be consistent with the approved list of trees, shrubs, and herbaceous plants native to the Great Valley Mixed Riparian Forest. The replacement habitat will be created in accordance with the ARCF GRR Habitat Mitigation, Monitoring, and Adaptive Management Plan, which includes conceptual mitigation proposals, performance standards, and adaptive management tasks.

The compensation for the temporal loss of riparian vegetation and habitat will be off-site and occur at locations protected in perpetuity, and may include purchase of mitigation bank credits. These sites will be selected and designed in coordination with NMFS and USFWS as part of the consultation under the Endangered Species Act.

Mitigation Measure WATERS-1: Compensate for Fill of State and Federally Protected Waters.

Refer to Section 3.3.3 for the full text of this mitigation measure.

Mitigation Measure GEO-1: Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices.

Refer to Section 3.2.3 for the full text of this mitigation measure.

Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat.

USACE will implement the following avoidance, minimization, and compensation measures.

- For identified designated critical habitat of listed fish species, where feasible, all efforts will be made to compensate for impacts where they have occurred, or elsewhere in the Sacramento or American River Basins. Impacts on designated critical habitat, SRA habitat, and instream components combined, and the compensation value of replacement

habitat will be informed by a qualitative assessment of habitat value from an agency-approved model. The amount of mitigation will be assessed by calculating the area of impact below the OHWM combined with the qualitative model assessment.

- USACE will compensate for SRA habitat losses either by constructing off-site compensation sites, purchase of credits at a NMFS-approved conservation bank where appropriate, or by implementing a combination of the two, and by funding a research grant for green sturgeon. USACE will compensate for lost habitat using NMFS-approved mitigation actions at a 1:1 ratio prior to construction, 2:1 ratio during construction, or a 3:1 ratio if mitigation actions occur after construction. SRA habitat compensation sites will be established in coordination with NMFS and USFWS as part of consultation under Section 7 of the Endangered Species Act for the ARCF GRR. On-site created SRA habitat acreage will also be counted toward offsetting lost SRA habitat.

- As described in the Habitat Mitigation, Monitoring, and Adaptive Management Plan, compensation sites will be monitored, and vegetation will be replaced as necessary based on performance standards described in the plan.

#### *Significance after Mitigation*

The significant long-term impact to vegetation and wildlife will be reduced to a less-than-significant level with implementation of Mitigation Measures VEG-1, VEG-2, WATERS-1, GEO-1, and SRA-1 because the Project Partners will create replacement habitat, use buffering and avoidance measures, and follow outlined procedures for applicable permits to avoid potential impacts to vegetation and wildlife. However, the compensation habitat is expected to take many years to provide the value of habitat provided by the vegetation expected to be removed. Therefore, the impacts due to short-term habitat loss will remain significant and unavoidable, as disclosed in the ARCF GRR Final EIS/EIR.

## 3.5 Fisheries

### 3.5.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.7 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and therefore is not repeated here. Additional, relevant information is provided below.

#### *Existing Conditions*

Native fish species present in the Sacramento River are classified as either anadromous species or resident species. Native anadromous species include four runs of Chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss*), green sturgeon (*Acipenser medirostris*), white sturgeon (*A. transmontanus),* and Pacific lamprey (*Entosphenus tridentatus*). Native resident species include delta smelt (*Hypomesus transpacificus*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento splittail (*Pogonichthys macrolepidotus*), Sacramento sucker (*Catostomus occidentalis*), hardhead (*Arius felis*), California roach (*Hesperoleucus symmetricus*), and rainbow trout (*O. mykiss*). Native resident species can be found throughout the study area in various habitats that include but are not limited to, deep pools, riffles, side channels, swift moving cool water, and slow-moving warm water habitats. A list of the species

that can be found in the waterways within the study area is included in Section 3.7.1 of the ARCF GRR Final EIS/EIR.

Important attributes of the aquatic habitat within the Sacramento River are aquatic vegetation and SRA habitat. Aquatic habitat is represented by floating, submerged, and emergent vegetation, as well as substrate conditions and benthic habitat. Aquatic vegetation serves as protective cover and an invertebrate food production base for nearly all aquatic species. Aquatic vegetation, also known as in-water cover, provides a diversity of microhabitats that promotes high species diversity, species abundance, and a nutrient source for instream invertebrates. Instream invertebrates are a required food source for several native fish species.

SRA habitat is represented by overhead canopy cover. Overhanging SRA habitat provides shade coverage important to the survival of many aquatic organisms, including fish. Overhanging vegetation moderates water temperature, a characteristic of high priority for native fish species of all life stages. Vegetation provides food and habitat for terrestrial and aquatic invertebrates as well as several native fish species. Thus, a broad food base, extensive cover, and habitat niches are supported by SRA and IWM. These values in turn create high fish diversity and abundance (USFWS 1992a).

### 3.5.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

Fisheries-related impacts identified in the ARCF GRR Final EIS/EIR are primarily associated with erosion protection and the resulting temporal loss of SRA habitat. The proposed project may disrupt native fish during rock placement and erosion protection activities by temporarily increasing local noise and turbidity, causing fish to migrate from an area that may be providing habitat and protective cover. As some juvenile species use near shore habitat for cover, the noise and turbidity increases may cause juveniles to migrate toward the main channel/more open areas and would thereby increase their predation risk. Impacts could also result from accidental spill of hazardous materials if water contamination occurs. However, all these potential impacts would be temporary and short-term. Following the completion of construction, the site would return to pre-construction conditions.

#### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to fisheries if they would:

- interfere substantially with the movement of any native resident or migratory fish species or with established native resident or migratory corridors;
- impede the usage of native wildlife nursery sites;
- substantially reduce the habitat of a fish population; and/or
- cause a fish population to drop below self-sustaining levels.

*Impact Analysis*

Adverse Effects on Fisheries

The proposed project refinements will disrupt native fish during rock placement and IWM installation, as well as erosion protection activities, by temporarily increasing local noise and turbidity, causing fish to move away from the area that might be providing habitat and protective cover. As some juvenile species use near shore habitat for protective cover, the noise and turbidity increases may cause juveniles to move away from shore and into the river channel increasing their predation risk.

The placement of rock riprap below the OHWM will occur during the anadromous fishes and delta smelt activity windows, when these fish are less likely to be affected by construction. Project actions may adversely affect winter-run Chinook salmon, Central Valley (CV) steelhead, CV spring- and fall-run Chinook salmon, green sturgeon Distinct Population Segment, and delta smelt due to: (1) incidental take during construction; (2) fragmentation of existing natural bank habitats due to the placement of revetment and IWM; and (3) the potential loss of long-term fluvial functioning necessary for the development and renewal of SRA habitat along the bank.

Impacts to delta smelt were calculated according to the 20211 USFWS BO. Effects to delta smelt will result in 0.71 acre of spawning habitat impacts for project Option 1 and 0.60 acre of spawning habitat impacts for project Option 2. The impact on delta smelt from project Option 1 or Option 2 will be significant, with off-site mitigation as required by Mitigation Measures SRA-1 and FISH-1 reducing this impact to less than significant.

Impacts to salmonids and green sturgeon habitat will result in 3.15 acres or 2.14 acres of habitat impacts to each species for project Option 1 and Option 2, respectively. This impact would be significant. Implementing Mitigation Measures SRA-1 and FISH-1 would reduce this impact to a less-than-significant level.

The on-site plantings in Option 22 and IWM will provide additional shade and cover which are material elements of SRA. The irrigation pump system and fish screen to be installed for the planting bench will conform to that outlined in Mitigation Measure FISH-1. See Section 3.4.3 for Mitigation Measure SRA-1 in reference to measures to reduce impacts to SRA habitat.

### 3.5.3 Mitigation Measures

The following mitigation measure was adopted as Mitigation Measure FISH-1 in the Supplemental EIR for Sacramento River Erosion Contract 2 (USACE and CVFPB 2022a) and incorporates actions included in the 2021 NMFS BO (NMFS 2021).

Mitigation Measure FISH-1: Implement Measures to Avoid and Minimize Effects on Listed Fish Species.

To avoid and minimize effects on listed fish species, the following measures will be implemented by the Project Partners:

- In-water construction activities (all activities below the OHWM including placement of rock revetment) will be limited to the work window of July 1 through October 31. The in-water work window could be extended to November 15 with NMFS approval. If USACE needs to work outside of this window, it will consult with USFWS and NMFS.

- Erosion control measures (BMPs) will be implemented, including a SWPPP and Water Pollution Control Plan, to minimize the entry of soil or sediment into the Sacramento River. BMPs will be installed, monitored for effectiveness, and maintained throughout construction operations to minimize effects on federally listed fish and their designated critical habitat. Maintenance will include daily inspections of all heavy equipment for leaks.

- USACE will stockpile construction materials, such as portable equipment, vehicles, and supplies, at designated construction staging areas and barges.

- USACE will stockpile all liquid chemicals and supplies at a designated impermeable membrane fuel and refueling station with a 110% containment system (container with 10% extra capacity).

- USACE will limit site access to the smallest area possible to minimize disturbance.

- USACE will minimize ground and vegetation disturbance during project construction, and clearly mark project limits, including the boundaries of designated equipment staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones.

- USACE and construction contractors will observe a 20-mile-per-hour speed limit or less within construction areas for all project-related vehicles, except on County roads and on State and Federal highways.

- USACE will secure or remove litter and debris from the project daily. Such materials or waste will be deposited at an appropriate disposal or storage site.

- USACE will immediately (within 24 hours) clean up and report any spills of hazardous materials to the USFWS, NMFS, and California Department of Fish and Wildlife (CDFW). Any such spills, and the success of the efforts to clean them up, shall also be reported in post-construction compliance reports.

- USACE will screen any water pump intakes prior to project activities, such as irrigation or dewatering, to maintain an approach velocity of 0.2 feet per second or less when working in areas that may support Federally listed fish species.

- USACE will participate in an existing Interagency Working Group or work with other agencies to participate in a new Bank Protection Working Group to coordinate stakeholder input into future flood risk reduction actions associated with the ARCF 2016 Project, Sacramento River Erosion Contract 4.

- USACE will coordinate with NMFS during pre-construction engineering and design as future flood risk reduction actions are designed to ensure that conservation measures are

incorporated to the extent practicable and feasible and projects are designed to maximize ecological benefits.

- USACE will include a Riparian Corridor Improvement Plan as part of the project, with the overall goal of maximizing the ecological function and value of the existing levee system in the Sacramento metropolitan area.

- USACE will implement a Habitat Mitigation, Monitoring, and Adaptive Management Plan (HMMAMP) with an overall goal of ensuring that the conservation measures achieve a high level of ecological function and value. The HMMAMP would include:

- Specific goals and objectives and a clear strategy for maintaining all project conservation elements for the life of the project.

- Measures to be monitored by USACE inn compliance with resource agency requirements after construction. USACE will update its O&M manual to ensure that the HMMAMP is adopted by the local sponsor to ensure that the goals and objectives of the conservation measures are met for the life of the project.

- Specific goals and objectives and a clear strategy for achieving full compensation for all project-related impacts on listed fish species.

- USACE will continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting annual meetings and issuing annual reports throughout the construction period as described in the HMMAMP.

- USACE will seek to avoid and minimize adverse construction effects on listed species and their critical habitat to the extent feasible and will implement on-site and off-site compensation actions as necessary.

- For identified designated critical habitat, where feasible, all efforts will be made to compensate for impacts where they have occurred or in close proximity. USACE will develop and implement a compensatory mitigation accounting plan and associated monitoring and adaptive management plans for on-site mitigation efforts. Monitoring for the establishment of riparian tree and shrub species within shaded riparian aquatic habitat is expected to last approximately 5 to 8 years, not to exceed 10 years. Establishment success will be based on criteria determined on a site-by-site basis with NMFS. Once the monitoring period is complete, all vegetation maintenance and monitoring will transfer and be the responsibility of the non-Federal sponsor and local maintaining agency. USACE will continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting meetings and issuing annual reports throughout the construction period.

- USACE will minimize the removal of existing riparian vegetation and IWM to the maximum extent practicable. Where appropriate, removed IWM will be anchored back into place, or if not feasible, new IWM will be anchored in place.

- USACE will minimize the removal of existing vegetation during project-related activities. If needed, removed or disturbed vegetation will be replaced with native

riparian vegetation. USACE will also ensure that the planting of native vegetation would occur as described in the HMMAMP. All plantings must be provided with the appropriate amount of water to ensure successful establishment.

- USACE will provide a copy of the BOs, or similar documentation, to the prime contractor, making the prime contractor responsible for implementing all requirements and obligations included in the documents and for educating and informing all other contractors involved in the project as to the requirements of the BOs. A notification that contractors have been supplied with this information will be provided to NMFS. A NMFS-approved Worker Environmental Awareness Training Program for construction personnel will be conducted by the NMFS-approved biologist for all construction workers before initiating construction activities. The program will provide workers with information on their responsibilities with regard to Federally listed fish, their critical habitat, an overview of the life-history of all the species, information on take prohibitions, protections afforded these animals under the Endangered Species Act (ESA), and an explanation of the relevant terms and conditions of the issued BO. Written documentation of the training will be submitted to NMFS within 30 days of the completion of training.

- USACE will designate a NMFS-approved biologist as the point-of-contact for any contractor who might incidentally take a living, or find a dead, injured, or entrapped threatened or endangered species. This representative will be identified to the employees and contractors during all employee education programs. If lethal take is to occur on any ESA-listed species, USACE and NMFS will be contacted immediately.

- USACE will avoid adverse effects from nighttime construction activities. USACE will use the minimal amount of lighting necessary to safely and effectively illuminate the work areas. USACE will shield and focus lights on work areas and away from the water surface (e.g., Sacramento River), to the maximum extent practicable.

- USACE will conduct acoustic fish monitoring at ARCF sites pre-construction, during construction, and post-construction. For erosion prevention features along the Sacramento River, USACE will conduct telemetry monitoring of green sturgeon for 3 years post-construction. Acoustic telemetry will occur in the ARCF action area and would involve staff monitoring of the real-time telemetry data available online.

- USACE will continue to implement a benthic substrate sampling monitoring program to coincide with the need for the Green Sturgeon Habitat Mitigation and Monitoring Plan. Substrate sampling that will occur in the ARCF action area will include pre-construction, during construction, and post-construction sampling within construction-impacted areas.

- USACE will identify all habitats containing, or with a substantial possibility of containing, listed terrestrial, wetland, aquatic, and/or plant species in the potentially affected project areas. The project will minimize effects by modifying engineering design to avoid potential effects.

- USACE will install IWM on a case-by-case basis where it is compatible with erosion protection measures being installed to provide a portion of the on- site mitigation for lost

SRA from the project. The purpose of IWM is to enhance the structural diversity of the shoreline, with woody material being a component of SRA, and ultimately to maximize the refugia and rearing habitats for juvenile fish.

- USACE will protect in place all riparian vegetation on the lower waterside slope of any levee, unless removal is specifically approved by NMFS, following completion of project construction.

Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat.

Refer to Section 3.4.3 for the full text of this mitigation measure.

#### *Significance after Mitigation*

Implementing Mitigation Measures FISH-1 and SRA-1 will reduce fisheries impacts to a less-than-significant level by limiting in-water work, requiring replacement of SRA and riparian habitat; and actively involving NMFS in mitigation design and implementation.

## 3.6 Special-Status Species

### 3.6.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.8 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and therefore is not repeated here. Additional, relevant information is provided below.

#### *Existing Conditions*

Special-status species evaluated for potential to occur in the study area for the proposed project refinements were identified based on review of current USFWS species lists (USFWS 2021a), resource databases and other information available from NMFS (NMFS 2021), California Natural Diversity Database (CNDDB) occurrences (CDFW 2021), and the California Native Plant Society (CNPS) online inventory (CNPS 2021). (See Appendix B). Additional species addressed in the environmental analysis for projects in the vicinity or in local or State conservation planning efforts were also considered (SRCSD 2014). USACE has reinitiated consultation on the ARCF project, including the Sacramento River Erosion Contract 4 activities, under ESA Section 7. USFWS has recently issued an amended BO for the ARCF project (USFWS 2021b).

A protocol-level special-status plant survey was conducted in the study area in August 2016. One special-status species, woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*), was observed during the survey along the Sacramento River east levee. Five individuals of wooly rose-mallow were observed at two locations along the river shoreline (see habitat and land cover figures in Appendix B-1), but these are not located within the project site for the proposed project refinements.

Focused surveys of elderberry shrubs were conducted in 2017 and 2020 to evaluate potential impacts of the proposed project on VELB. No elderberry shrubs are present in the

project site for the proposed project refinements. No additional protocol-level special-status wildlife surveys have been conducted.

Listed fish species with potential to occur within the study area are described in Section 3.5, “Fisheries.” Special-status terrestrial species with potential to occur within the study area, and described in this section, that have the potential to occur in or adjacent to the project site are:

- valley elderberry longhorn beetle; Federal Threatened (FT)
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*); FT; State Endangered (SE)
- Swainson’s hawk (*Buteo swainsoni*); State Threatened (ST)
- white-tailed kite (*Elanus leucurus*); State Fully Protected (SFP)
- purple martin (*Progne subis*); Species of special concern (SSC)
- western pond turtle (*Actinemys marmorata*); (SSC)
- Sanford's arrowhead (*Sagittaria sanfordii*); California Rare Plant Rank (CRPR) 1B.2
- woolly rose-mallow; CRPR 1B.2
- bat species protected by the California Fish and Game Code

### 3.6.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR determined that Sacramento River east levee improvements could result in mortality and indirect effects from loss of habitat for VELB and loss and disturbance of habitat for western yellow-billed cuckoo, burrowing owl, Swainson’s hawk, white-tailed kite, purple martin, and common migratory birds. Project effects on Federal special-status species were addressed in consultation with USFWS, and a BO was issued on September 11, 2015 (08ESMF00-2014-F-0518). However, following USACE’s reinitiation of consultation with USFWS in 2020, an updated BO was issued on March 31, 2021 (08ESMF00-2014-F-0518-R003). A total of 50 elderberry shrubs were estimated to be in the Sacramento River east levee project site during preparation of the ARCF GRR Final EIS/EIR. Construction-related effects on VELB from the loss of elderberry shrubs were determined to be significant.

Effects of construction activities and habitat loss on special-status birds were determined to be significant in the ARCF GRR Final EIS/EIR. Mitigation measures were identified to avoid impacts on nesting special-status birds, nesting migratory birds, and occupied burrowing owl burrows, and habitat replacement would reduce long-term habitat effects to less than significant.

### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to special-status species if they would:

- Have a substantial direct or indirect reduction in growth, survival, or reproductive success of species listed or proposed for listing as threatened or endangered under the Federal or State ESA;
- Have a substantial direct mortality, long-term habitat loss, or lowered reproductive success of federally or State-listed threatened or endangered animal or plant species or candidates for Federal listing;
- Result in a direct or indirect reduction in the growth, survival, or reproductive success of substantial populations of Federal species of concern, State-listed endangered or threatened species, plant species listed by the CNPS, or species of special concern or regionally important commercial or game species; or
- Have an adverse effect on a species' designated critical habitat.

### *Impact Analysis*

Construction Effects on Special-Status Species

*Valley Elderberry Longhorn Beetle (VELB)*

Focused surveys of elderberry shrubs were conducted in 2017 and 2020 to evaluate potential impacts of ARCF project improvements along the Sacramento River East Levee on VELB. No elderberry shrubs were identified present on the project site. Therefore, no mitigation is required. However, elderberry shrubs are fast-growing and may colonize the project site before implementation of the project. If elderberry shrubs must be removed to construct the project, mitigation (including avoidance, transplanting, and compensatory mitigation) will be accomplished as described in VELB-1 and impacts will remain less than significant.

*Other Special-Status Bird Species (Western Yellow-Billed Cuckoo, Swainson's Hawk, White-Tailed Kite, and Purple Martin)*

Trees along the Sacramento River east levee and adjacent narrow riparian corridor along the river support a number of active nest sites of Swainson's hawk. This corridor also provides suitable nesting and/or foraging habitat for other special-status birds, such as western yellow-billed cuckoo, white-tailed kite, and purple martin. Nesting habitat for Swainson's hawk, white-tailed kite, and purple martin occurs throughout the study area for the proposed project refinements. The study area is outside the nesting range of yellow-billed cuckoo, but transient individuals could use the area during migration. The 2021 USFWS BO concluded that construction activities along the Sacramento River have the potential to adversely affect individual western yellow-billed cuckoos due to project noise (USFWS 2021).

Suitable habitat is primarily at and adjacent to the bank protection and waterside staging areas. Tree removal to accommodate construction of bank protection and planting benches, and staging area use, discussed in Section 3.4, "Vegetation and Wildlife," will reduce the amount of habitat available to these species and could destroy active nests, resulting in loss of eggs and young. In addition, noise and visual disturbance from construction activities could disturb nearby active nests, potentially resulting in nest failure. Implementing Mitigation Measure BIRD-1, VEG-1, VEG-2, and SRA-1 will reduce potentially significant effects on special-status and other migratory birds to a less-than-significant level by minimizing removal of vegetation with active nests, implementing protective buffers around active nests, monitoring to ensure that birds and their young are not adversely affected by project activities, and replacing or compensating for riparian habitat removal.

*Western Pond Turtle*

Western pond turtle inhabits rivers, pond, wetlands, and irrigation ditches for aquatic habitat and sandy or grassland areas for upland habitat. This species nests in upland areas within one-quarter mile of aquatic habitat. Construction of bank protection areas could affect basking turtles along the waterside, or turtles could also be crushed or entombed if construction equipment causes burrows to collapse. This would be a potentially significant impact. Implementing Mitigation Measure TURTLE-1 will reduce potentially significant effects to a less-than-significant level on western pond turtles by requiring surveys and avoidance measures to avoid harm to individual turtles.

*Special-Status Bats*

Several species of bat are identified by CDFW as species of special concern. In addition, all bat species are protected as non-game mammals under the California Fish and Game Code. Mature trees that may provide suitable roost cavities for pallid bat (*Antrozous pallidus*) and other trees with suitable foliage for roosting by western red bat (*Lasiurus blossevillii*) occur in and adjacent to staging areas and levee improvement areas. Mature valley oak trees within the project site may provide high-quality pallid bat roosting habitat. Although the likelihood is relatively low, it is possible this habitat would support a maternity colony; therefore, removal of a maternity colony during tree removal under Option 1 could result in loss of a large number of individuals of special-status bats, potentially having a substantial adverse impact on the local population. Option 2 would not result in this potential loss because trees would not be removed. Implementing Mitigation Measure BAT-1 will reduce potentially significant effects on roosting special-status bats to a less-than-significant level by implementing appropriate buffers around active roosts that could be affected by project refinement activities.

*Special-Status Plants*

No special-status plants were located within the project site according to surveys conducted in 2016. However, due to the age of the surveys and the potential for changed conditions between 2016 and the start of vegetation removal in late 2023 or construction in 2024, impacts to special-status plants would be potentially significant. Mitigation Measure PLANT-1

would reduce this impact to a less-than significant level by requiring pre-construction surveys, avoidance, and buffers through the duration of project construction.

### 3.6.3 Mitigation Measures

The following mitigation measures have been previously adopted for the ARCF 2016 Project (USACE and CVFPB 2021b).

Mitigation Measure VELB-1: Implement Current USFWS Avoidance, Minimization, and Compensation Measures for Valley Elderberry Longhorn Beetle.

The Project Partners would implement the following measures in accordance with the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (USFWS 2017) to reduce effects on valley elderberry longhorn beetle:

- Fencing. All areas to be avoided during construction activities would be fenced and/or flagged as close to construction limits as feasible.
- Avoidance area. To the extent feasible, activities that may damage or kill an elderberry shrub (e.g., trenching, paving, etc.) would be avoided within 20 feet from the drip-line of the shrub.
- Worker education. A qualified biologist would provide training for all contractors, work crews, and any onsite personnel on the status of valley elderberry longhorn beetle, its host plant and habitat, the need to avoid damaging elderberry shrubs, and the possible penalties for noncompliance.
- Construction monitoring. A qualified biologist would monitor the work area at appropriate intervals to assure that all avoidance and minimization measures are implemented.
- Timing. To the extent feasible, activities within 165 feet of an elderberry shrub would be conducted outside of the valley elderberry longhorn beetle flight season (March to July).
- Trimming. To the extent feasible, elderberry shrub trimming would occur between November and February and avoid the removal of any branches or stems greater than or equal to 1-inch in diameter.
- Chemical Usage. Herbicides would not be used within the drip-line, and insecticides would not be used within 100 feet of an elderberry shrub. All chemicals would be applied using a backpack sprayer or similar direct application method.
- Mowing. Mechanical weed removal within the drip-line of elderberry shrubs would be limited to the season when adults are not active (August to February) and would avoid damaging the shrub.
- Transplanting. To the extent feasible, elderberry shrubs would be transplanted when the shrubs are dormant (November through the first 2 weeks in February) and after they have lost their leaves. Exit-hole surveys will be completed immediately before transplanting. A

qualified biologist would be on-site for the duration of transplanting activities to assure compliance with avoidance and minimization measures and other conservation measures.

- Compensation. Effects would be compensated at ratios ranging from 1:1 to 3:1, depending on the compensation approach and circumstances of the affected shrubs. Affected area would be re- vegetated with appropriate native plants.

Mitigation Measure BIRD-1: Implement Measures to Protect Nesting Special-Status and Migratory Birds

The Project Partners would implement the following measures to minimize potential effects on active nests of Swainson's hawk, white-tailed kite, purple martin, and other migratory birds:

- Before on-site project activities begin, all construction personnel would participate in a worker environmental awareness program. A qualified biologist would inform all construction personnel about the life history of Swainson's hawk and the importance of nest sites.

- For Swainson's hawk, follow the survey guidelines for the Swainson's Hawk Technical Advisory Committee 2000. If active nests are found within 0.5 miles of construction activities, consult with CDFW on further action including buffer areas, mitigation, and monitoring.

- For purple martin and white-tailed kite, a survey would also be conducted for active nests within 500 feet of construction activities. For all other migratory birds, the survey would cover active nests within 100 feet of construction activities. These surveys could be conducted concurrent with Swainson's hawk surveys, so long as one survey is conducted no more than 48 hours from the initiation of project activities. If the biologist determines that the area surveyed does not contain any active nests, construction activities, including removing or pruning trees and shrubs, the project can commence.

- For any active migratory bird nest found, a protective buffer would be established and implemented until the nest is no longer active. The size of the buffer would be determined based on the species, nest stage, type, and intensity of project disturbance in the nest vicinity, presence of visual buffers, and other variables that may affect susceptibility of the nest to disturbance. A qualified biologist would monitor the nest during project activities to confirm effectiveness of the buffer and adjust the buffer as needed to ensure project activities do not adversely affect behavior of adults or young. Buffers would be marked in the field by a qualified biologist using high visibility flagging tape or other means that are effective in clearly delineating the buffers.

- Tree and shrub removal and other clearing, grading, and construction activities that remove vegetation would not be conducted during the nesting season (generally February 15 to September 30, depending on the species and environmental conditions for any given year). If construction activities that require tree and shrub removal occur during the nesting season, the Project Partners will implement surveys as described in this measure. If active nests are encountered, protective buffers would be implemented as described.

Mitigation Measure VEG-1: Retain, Protect, and Plant Trees On-Site

Refer to Section 3.4.3 for the full text of this mitigation measure.

Mitigation Measure VEG-2: Compensate for Riparian Habitat Removal

Refer to Section 3.4.3 for the full text of this mitigation measure.

Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat.

Refer to Section 3.4.3 for the full text of this mitigation measure.

Mitigation Measure TURTLE-1: Implement Measures to Protect Western Pond Turtle

The Project Partners will implement the following measures, to avoid and minimize effects on western pond turtle:

- A qualified biologist would conduct a pre-construction survey within 7 days before the start of project activities. If no western pond turtles are observed, USACE would document that information for the file, and no additional measures would be required.
- If western pond turtles are observed on land within the construction footprint during project activities, USACE would stop work within approximately 200 feet of the turtle, and a qualified biologist would be notified immediately. If possible, the turtle would be allowed to leave on its own and the qualified biologist would remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, with prior CDFW approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at least 200 feet outside the construction footprint. If a western pond turtle nest is unintentionally uncovered during project activities, work would stop in the vicinity of the nest and USACE would contact CDFW to determine the appropriate next steps.

Mitigation Measure BAT-1: Implement Measures to Protect Maternity Roosts of Special-Status Bats

The Project Partners will implement the following measures, to avoid and minimize effects on special-status bats:

- Wherever feasible, USACE will conduct construction activities outside of the pupping season for bats (generally April 1 to August 31).
- USACE or its designated environmental personnel will specify which trees slated for removal contain suitable bat roosting habitat. Trees indicated for removal that are not identified as suitable bat habitat can be removed using normal methods.
- When possible, removal of trees identified as providing suitable roosting habitat should be conducted during seasonal periods of bat activity when evening temperatures are

above 45 degrees Fahrenheit and/or no more than ½ inch of rainfall within 24 hours occurs.

- Live trees that are indicated to contain roosting habitat shall be removed in a two-phase process. The first day, under the supervision of the biological monitor, remove limbs and branches that do not contain cavities, cracks, crevices, or deep bark fissures that can provide roosting habitat. On the second day remove the remainder of tree by gently lowering the tree to the ground, under the supervision of the biological monitor and leave material undisturbed for 48-hours. If it is not feasible to remove a tree using the two-phased approach, limbs containing habitat features should be removed and gently lowered to the ground in a location where they are not likely to be crushed or disturbed by the felling of the tree and left undisturbed for the next 48-hours.

- Standing dead trees or snags with habitat features should be removed over a single day by gently lowering the tree or snag to the ground. The tree or snag should be left undisturbed on the site for the next 48-hours.

- For trees containing suitable bat roosting habitat that will be trimmed, trimming shall be conducted in the presence of a biological monitor. If trimming results in the removal of vegetation that contains potential bat habitat, vegetation should be gently lowered to the ground and left near the tree for 48-hours prior to removal, if feasible. If the vegetation cannot be left for 48-hours, the biological monitor shall survey the vegetation for presence of bats. If any bats are found within the vegetation, the vegetation must be left for 48-hours (or CDFW should be called for guidance regarding relocation of the bat dependent on urgency for removal).

- If removal of trees must occur during the bat pupping season, within 30 days of tree removal activities, all trees to be removed will be surveyed by a qualified biological monitor for the presence of features that may function as special-status bat maternity roosting habitat. Trees that do not contain potential special-status maternity roosting habitat may be removed. For trees that contain suitable special-status bat maternity roosting habitat, surveys for active maternity roosts shall be conducted by the designated biological monitor in trees designated for removal. The surveys shall be conducted from dusk until dark.

- If any special-status species bat maternity roost is located, appropriate buffers must be established by clearly marking the buffer area. The buffer area must be a minimum of 100 feet outside the tree containing the maternity roost. No contract activities shall commence within the buffer areas until the end of pupping season (September 1st) or the biological monitor confirms that the maternity roost is no longer active.

- If construction activities must occur within the buffer, the biological monitor must monitor activities either continuously or periodically during the work, which will be determined by the biological monitor. The biological monitor would be empowered to stop activities that, in their opinion, would cause unanticipated adverse effects on special-status bats. If construction activities are stopped, the biological monitor would inform USACE, and CDFW would be consulted to determine appropriate measures to implement to avoid adverse effects.

Mitigation Measure PLANT-1: Implement Measures to Protect Special-status Plants

The Project Partners will implement the following measures, to avoid and minimize effects on special-status plants:

- Preconstruction surveys will be conducted by a qualified botanist in suitable habitat to determine the presence of any special-status plants. Surveys will be conducted at an appropriate time of year during which the species are likely to be detected, which would likely be during the blooming period.
- If special-status plant species are found during preconstruction surveys, the habitat will be marked or fenced as an avoidance area during construction. A no-work buffer of 25 feet will be established. If a buffer of 25 feet is not possible, the next maximum possible distance will be fenced off as a buffer.
- If special-status plant species cannot be avoided during construction, USACE will coordinate with the resource agencies to determine additional appropriate mitigation measures.

*Significance after Mitigation*

The significant construction impact to special-status species will be reduced to a less-than-significant level with implementation of Mitigation Measures BIRD-1, VEG-1, VEG-2, SRA-1, TURTLE-1 BAT-1, and PLANT-1 because the Project Partners will conduct surveys and use buffering and avoidance measures throughout construction activities to avoid potential impacts to these species.

## 3.7 Cultural and Tribal Cultural Resources

### 3.7.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.9 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and therefore is not repeated here. Additional, relevant information is provided below.

The area in which cultural resources are identified and in which potential effects on historic properties (those cultural resources determined to be eligible for listing on the National Register of Historic Places [NRHP] or California Register of Historic Resources [CRHR]) are analyzed is called the project boundary. The project boundary for the Sacramento River Erosion Contract 4 includes the project footprint (the area where any ground-disturbance will occur), such as bank excavation, rip-rap placement, IWM placement, and staging areas. This also includes the area in which built-environment resources could be affected physically, including through vibration. No permanent substantial visual or auditory changes will occur from project implementation; therefore, no area of indirect effect (the area in which changes in the visual or auditory setting may occur) has been identified. The vertical extent of the project boundary is variable but has the potential to include subsurface cultural resources.

The project boundary for the Sacramento River Erosion Contract 4 contains numerous remains of past human activity ranging from Native American sites to flood control structures and may contain Native American human interments. Such materials can be found at many locations on the landscape. USACE has consulted with the State Historic Preservation Officer (SHPO) and other parties and as a result has executed a Programmatic Agreement (PA). The PA establishes the process USACE shall follow for compliance with Section 106 of the National Historic Preservation Act (NHPA), taking into consideration the views of the signatory and concurring parties and interested Native American Tribes. The PA stipulates time frames and document review procedures; delineation of project boundaries; development of a Historic Properties Management Plan (HPMP) to guide identification, evaluation, and findings of effect; Historic Property Treatment Plans (HPTPs) to identify treatment for Historic Properties that will be adversely affected; a process to guide limited geotechnical investigations; Native American consultation procedures; and other processes and implementation procedures. The term "historic property" refers to any cultural resource that has been found eligible for listing, or is listed, in the NRHP. The term "historical resource" refers to any cultural resource that has been found eligible for listing, or is listed, in the CRHR.

### *Native American Consultation*

Native American Consultation Conducted by USACE

USACE is the lead Federal agency responsible for compliance with Section 106 of the NHPA and has conducted all consultations with Native American Tribes and interested parties according to the PA and HPMP developed for the ARCF 2016 Project. Several Native American Tribes and interested parties were contacted during development of the PA and provided with general information about the ARCF 2016 Project. Consultations specifically related to the Sacramento River Erosion Contract 4 and its refinements are a continuation of the ongoing process.

Native American Tribes identified in the PA have been contacted and provided a description of Sacramento River Erosion Contract 4. Letters describing Contract 4 and containing maps of the project boundary were mailed to consulting Native American Tribes on November 3, 2021.

Native American consultation conducted by USACE is on-going, including discussions with the United Auburn Indian Community (UAIC) regarding best practices during construction and monitoring arrangements.

Native American Consultation Conducted by Sacramento Area Flood Control Agency

SAFCA also has consulted with local Native American Tribes as part of CEQA compliance related to Sacramento River east levee improvements (SAFCA was the CEQA lead agency in 2015). In March 2015, SAFCA conducted a tour of portions of the Sacramento River east levee for the interested tribes. Native American representatives who attended the tour included Marcos Guerrero (UAIC), Kyle Dutschke (Ione Band of Miwok Indians), Melissa Baring (Ione Band of Miwok Indians), Antonio Ruiz, Jr. (Wilton Rancheria), Kara Perry (Shingle Springs Band of Miwok Indians), and Daniel Fonseca (Shingle Springs Band of Miwok Indians).

UAIC has provided SAFCA and USACE with a sensitivity map of the ARCF 2016 project site which illustrated general areas that the Tribe has identified as sensitive for Native American resources, such as cultural landscapes.

On August 28, 2015, SAFCA conducted a field review of SAFCA's Sacramento River east levee project footprint with representatives of UAIC, USACE, and contracted archaeologists. In October 2015, SAFCA conducted a follow-up field review of selected portions of the Sacramento River east levee project footprint with representatives of UAIC and contracted archaeologists.

Native American Consultation under CEQA

In September 2015, the Native American Heritage Commission (NAHC) sent an updated list of Native American contacts for SAFCA's Sacramento River east levee project boundary and also the updated results of a search of their Sacred Lands File. The NAHC indicated that no sacred sites were identified as a result of their Sacred Lands File search, although UAIC has indicated that records of sacred sites have been sent to the NAHC. However, following the discovery of human remains on the ground surface during a surface inspection of the project boundary by representatives of UAIC on May 25, 2016, the NAHC designated UAIC as the Most Likely Descendant (MLD) for the project.

UAIC has continued to consult with SAFCA and its consultant. UAIC has identified three locations as culturally sensitive areas within the project boundary. These resources are described below under, "Identified Cultural Resources."

CVFPB, as the CEQA lead agency, is continuing to conduct consultation with culturally affiliated Native American Tribes under the California Natural Resource Agency Tribal Coordination Policy. The California Natural Resources Agency adopted the California Natural Resource Agency Final Tribal Coordination Policy on November 20, 2012, which was developed in response to Governor Brown's September 19, 2011, Executive Order B-10-11. CVFPB has adopted this Policy. As such, Native American consultation will be conducted in accordance with the Policy adopted by CVFPB. The purpose of the Policy is to ensure effective, meaningful, and mutually beneficial government-to-government consultation, communication, and coordination between CVFPB and tribal entities relative to activities under CVFPB's jurisdiction that may affect tribal communities. CVFPB sent letters containing a description of Sacramento River Erosion Contract 4 to Native American tribes, including those already identified by the NAHC on January 24, 2023. CVFPB will continue to conduct consultation with the Native American contacts to identify cultural resources important to Native Americans, including TCRs as defined in California Public Resources Code 21074, which may be present in the project area.

### *Identified Cultural Resources*

Based on the results of the records search and archival research, archaeological and Native American surveys, Native American consultation, and geoarchaeological excavation, the following resources have been reported within the APE for the Sacramento River Erosion Contract 4.

Archaeological Resources

No archaeological resources have been identified within the Sacramento River Erosion Contract 4 project boundary.

Native American-Identified Sensitive Locations

During consultation, UAIC provided a confidential map illustrating areas of concern, which include the project site for Sacramento River Erosion Contract 4. These areas of concern were not characterized as archaeological sites, but rather as areas identified by UAIC with an elevated sensitivity for the presence of resources important to the Tribe. The UAIC-identified sensitive areas contain one known/recorded pre-contact archaeological site (CA-SAC-42) and could potentially encompass additional unknown buried resources. The UAIC-identified areas are confidential. Native American consultation is ongoing, in accordance with the requirements of the PA. These locations have not been evaluated for NRHP or CRHR eligibility due to a lack of information about the nature of the resources.

Tribal Cultural Resources

One Traditional Cultural Landscape (TCL) was identified that includes the entire project boundary as well as the broader landscape surrounding the Sacramento River: P-34-005225/Sacramento River TCL. The Sacramento River TCL encompasses both banks of the lower Sacramento River from just south of Knights Landing in Sutter and Yolo counties in the north to Sherman Island in the Delta in the south. The character-defining elements of this landscape, according to the site record form, are the waterways, tule habitat, fisheries, and other wildlife. This site has previously been recommended to be eligible for listing on the NRHP, and thus potentially the CRHR; however, the identified resource attributes of this site consist entirely of natural resources such as waterways and natural habitat. Formal evaluation of this resource is beyond the scope of the current phase, so for the purpose of this analysis it is considered eligible for the CRHR.

Built-Environment Resources

One historic-era (more than 45 years old) built-environment resource is located within the Sacramento River Erosion Contract 4 project boundary: SREL Levee Unit 115 (P-34-002143).

Sacramento River East Levee (Levee Unit 115)

Levee Unit 115 is approximately 10 miles long, beginning just south of Sutterville Road. The waterside slope of this earthen levee is covered by vegetation, including mature trees and some riprap. The landslide slope is also covered by vegetation. Fences, steps, pipes, and portions of residential parcels occur on the levee or have been built to the levee toe. The levee crown is approximately 20 feet wide. The material on the crown varies and includes gravel and steel railroad tracks.

As part of the 2020 ARCF Project SREL Contract 1 (COE120203C), Levee Unit 115 was inventoried and evaluated as eligible for listing in the NRHP under criterion A (CRHR criterion 1) at the national level of significance, as a contributor to a larger district within the context of

flood management, one of the four major themes for built environment resources identified in the HPMP (GEI 2017:6-25). The period of significance begins in 1917, the year the U.S. Congress approved the flood control act, marking the first comprehensive plan for flood management in California. The period of significance ends in 1968, a 50-year cutoff date, as allowed in the HPMP (GEI 2017:6-28). In November 2019, the SHPO concurred with the findings that Levee Unit 115 is eligible for the NRHP (Polanco 2019). This makes it also eligible for the CRHR.

## 3.7.2 Environmental Impacts

### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR identified Historic Properties and potential Historic Properties through records searches and a sensitivity analysis. The inventory of Historic Properties in the ARCF GRR Final EIS/EIR did not include intensive pedestrian surveys, archaeological excavation, or identification of locations of importance to Native Americans, and analyzed a different APE from that identified for the Sacramento River Erosion Contract 4.

The ARCF GRR Final EIS/EIR concluded that levee improvements along the Sacramento River east levee project would result in significant adverse effects to Historic Properties. The ARCF GRR Final EIS/EIR also concluded that the significant effects to cultural resources would be reduced to a less-than-significant level under NEPA through implementation of the Stipulations in the ARCF PA. The impact would remain significant and unavoidable under CEQA.

### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to cultural and tribal cultural resources if they would:

- Alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the NRHP so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished; or
- Cause a substantial adverse change in the significance of a historic property through the physical demolition, destruction, relocation, or alteration of the historic property of its immediate surroundings such that the significance of the resource would be materially impaired.

Under California law, effects to a historic resource or unique archeological resource are considered to be significant if they:

- Materially impair the significance of a historic resource or unique archeological resource, or
- Require the demolition of a historic resource.

Two additional significance thresholds not included in the ARCF GRR Final EIS/EIR are considered in this analysis. The project was determined to result in a potentially significant effect under CEQA if it would:

- disturb any Native American human remains, including those interred outside of formal cemeteries; or
- result in a substantial adverse change in the significance of a Tribal Cultural Resource (as defined in California Public Resources Code [PRC] Section 21074 and above) when compared against existing conditions.

### *Methodology*

For those resources recommended to be eligible for listing in the NRHP/CRHR, analysis of the effects or likely effects was based on evaluation of the changes to the existing Historic Properties that would result from implementing the proposed project refinements. In making a determination of the effects to Historic Properties, consideration was given to:

- Specific changes in the characteristics of Historic Properties in the project boundary,
- The temporary or permanent nature of changes to Historic Resources and the visual area around the Historic Resources, and
- The existing aspects of integrity that are retained by Historic Resources in the project boundary and how those aspects relate to the specific significant characteristics that make a Historic Resources eligible for listing in the NRHP/CRHR.

An assessment of effects for the purposes of this Supplemental EIR is made only for those resources determined to be eligible or recommended to be eligible for listing in the NRHP/CRHR. Resources that have been determined to be eligible for listing in the CRHR, are listed in the CRHR, or are recommended to be eligible for listing are referred to as historical resources. Resources that have been found or recommended to be ineligible for listing in the CRHR are not considered further in this Supplemental EIR. Similarly, because isolated artifacts are generally not considered to be potentially eligible for listing in the NRHP or CRHR and because an assessment of effects for the purposes of this Supplemental EIR is made only for those resources determined to be eligible for listing in the NRHP/CRHR or that are listed in the NRHP/CRHR, isolated artifacts are not considered to be historical resources and an assessment of effects on those resources is not necessary. Therefore, isolated artifacts are not considered further in this Supplemental EIR.

This evaluation of potential effects on cultural resources is based on detailed information compiled since the ARCF GRR Final EIS/EIR was prepared, as described above under "Environmental and Regulatory Setting." The effects analysis considered the following factors related to the Sacramento River Erosion Contract 4: project elements, including construction of levee improvements, placing of IWM, staging areas, and potential effect mechanisms; the area that would be temporarily and permanently disturbed; known or potential locations of cultural resources, including locations identified by culturally affiliated Native Americans as cultural landscapes; and Traditional Cultural Properties, sacred sites, or other sensitive resources. In

particular, the significance of each affect was evaluated in terms of its potential effect on resources that are eligible or potentially eligible for listing in the NRHP/CRHR. The mitigation identified in the ARCF GRR Final EIS/EIR for potential impacts to cultural resources included implementing stipulations of the ARCF PA. Where feasible, more specific measures (but consistent with the ARCF PA) are identified below to reduce adverse effects. Where there are uncertainties about resource boundaries, eligibility for listing, and project effects, processes for determining boundaries, eligibility, and effects stipulated in the PA and associated HPMP will be implemented.

USACE has not concluded determinations of NRHP eligibility based on consultation with the SHPO and other ARCF PA Parties and therefore the impact analysis presented in this document does not reflect consensus findings under Section 106 of the NHPA as implemented through the ARCF PA. In accordance with the ARCF PA, confirmation of NRHP eligibility and findings of effect and appropriate mitigation will be made through consultation between USACE, SHPO, and other Consulting Parties to the PA as appropriate prior to initiating construction of the proposed project, including the Sacramento River Erosion Contract 4 refinements.

### *Impact Analysis*

Damage to or Destruction of Built-Environment Historic Properties

The proposed project refinements will have No Adverse Effect to the Sacramento River East Levee Unit 115 because the addition of erosion protection improvements will not affect the aspects of setting, feeling, or association that make up the integrity of the resources. This impact will be less than significant.

Damage to or Destruction of Known Precontact-Period Archaeological Sites and Tribal Cultural Resources

Erosion counter measures will not include substantial ground excavation. However, even limited earth-moving activities could result in damage to or destruction of Native American-identified TCRs. Due to regulatory restrictions on excavation within the levee prism and Native American preference for not conducting archaeological testing within certain locations, the exact boundaries and constituents of Native American-identified TCRs are not fully known. This impact will be potentially significant. Implementing Mitigation Measures CR-1, CR-2, CR-3, CR-4, and CR-5 will reduce the potential for a significant effect resulting from inadvertent damage to or destruction of TCRs to a less-than-significant level, because these measures require that if TCRs are encountered prior to or during project-related construction activities, appropriate treatment and protection measures must be implemented

The Sacramento River TCL is assumed to be eligible for the NRHP and CRHR based on the recommendation included in the original site record form. The only attributes described for this resource are elements of natural environment such as waterways and natural habitats. Because the project refinements will not significantly affect the natural environment composing this resource and will not change the environment, setting, or integrity of this resource, the Sacramento River TCL will not be adversely affected by the project refinements and no mitigation is required.

Potential Damage to or Destruction of Previously Undiscovered Archaeological Sites or Tribal Cultural Resources

Cultural resources investigations have identified potential TCRs in the project boundary. Based on available information, other areas in the project boundary are also potentially sensitive for unknown buried archaeological resources and TCRs, and there remains the possibility that previously unknown archaeological resources or TCRs could be discovered during project construction and inadvertently damaged. This impact will be significant. Implementing Mitigation Measures CR-1, CR-2, CR-3, CR-4, and CR-5 will reduce the potential for a significant effect resulting from inadvertent damage to or destruction of presently undocumented archaeological resources and TCRs to a less-than-significant level, because these measures require that if archaeological resources or TCRs are discovered prior to or during project-related construction activities, appropriate treatment and protection measures must be implemented.

Damage to or Destruction of Human Remains during Construction

The project boundary and vicinity are known to contain significant precontact archaeological sites, including sites with human burials. Native American human remains could be encountered during earth-moving activities associated with the proposed project refinements. This is a potentially significant effect. Implementing Mitigation Measure CR-6 will reduce the potential for a significant effect resulting from inadvertent damage to or destruction of presently undocumented human remains to a less-than-significant level because it requires that if human remains are discovered during project-related construction activities, disturbances in the area of the find must be halted and appropriate treatment and protection measures must be implemented, including consultation with the NAHC, MLD, and landowners if the remains are determined to be Native American, in compliance with California Health and Safety Code Section 7050 et seq. and PRC Section 5097.9 et seq.

### 3.7.3 Mitigation Measures

The following mitigation measure has been previously adopted for the ARCF 2016 Project (USACE and CVFPB 2021b).

Mitigation Measure CR-1: Resolve Adverse Effects through Programmatic Agreement and Historic Properties Treatment Plan (HPTP).

For Historic Properties which will be adversely affected by implementation of the project (pending concurrence of eligibility and finding of effect in the ARCF PA consultation process), USACE shall consult with the SHPO and interested Native American Tribes in accordance with the ARCF PA and associated HPMP to develop a HPTP. The HPTP shall specify measures that will be implemented to resolve the adverse effects to the Historic Properties and shall constitute mitigation for the effects to these resources. USACE shall implement the terms described in the HPTP.

Mitigation Measure CR-2: Prepare an Archaeological Discovery Plan and an Archaeological Monitoring Plan.

In accordance with the procedures described in Section 9.2 of the ARCF HPMP, a discovery plan shall be prepared by USACE and included in the construction contractor's specifications. The discovery plan shall specify what actions are required to be taken by the contractor in the event of an archaeological discovery and describe what actions USACE may take in the event of a discovery.

In accordance with the procedures described in Section 9.3.9 of the ARCF HPMP, an archaeological monitoring plan shall be developed for the project. This plan shall identify the locations of known Historic Properties as well as sensitive areas designated for archaeological monitoring and shall include methods and procedures for monitoring and the procedures to be followed in the event of a discovery of archaeological materials.

Mitigation Measure CR-3: Conduct Cultural Resources Awareness Training.

In accordance with the procedures described in Section 9.1 of the ARCF HPMP, USACE shall require the contractor to provide a cultural resources and tribal cultural resources sensitivity and awareness training program for all personnel involved in project construction, including field consultants and construction workers. The training shall be developed in coordination with an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology (36 CFR Part 61), as well as culturally affiliated Native American tribes. USACE may invite Native American representatives from interested culturally affiliated Native American tribes to participate. The training shall be conducted before any project-related construction activities begin in the APE and shall include relevant information regarding sensitive cultural resources and Tribal Cultural Resources, including applicable regulations, protocols for avoidance, and consequences of violating Federal and State laws and regulations.

The training shall also describe appropriate avoidance and impact minimization measures for cultural resources and Tribal Cultural Resources that could be located in the APE and shall outline what to do and who to contact if any potential cultural resources or Tribal Cultural Resources are encountered. The training shall emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and shall discuss appropriate behaviors and responsive actions, consistent with Native American tribal values.

Mitigation Measure CR-4: Implement Procedures for Inadvertent Discovery of Cultural Material.

If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, any human remains, bottle glass, ceramics, and building remains); Tribal Cultural Resources; sacred sites; or landscapes is made at any time during project-related construction activities, the Project Partners and other interested parties, shall develop appropriate protection and avoidance measures where feasible. These procedures shall be developed in accordance with the ARCF PA and HPMP, which specifies procedures for post-review discoveries. Additional measures, such as development of HPTPs prepared in accordance with the PA and HPMP, may be necessary if avoidance or protection is not possible.

Mitigation Measure CR-5: In the Event that Tribal Cultural Resources are Discovered Prior to or During Construction, Implement Procedures to Evaluate Tribal Cultural Resources and Implement Avoidance and Minimization Measures to Avoid Significant Adverse Effects.

California Native American Tribes that are traditionally and culturally affiliated with the geographic area in which the project is located may have expertise concerning their Tribal Cultural Resources (California PRC Section 21080.3.1). As was done during Supplemental EIR preparation, culturally affiliated Tribes shall be further consulted concerning Tribal Cultural Resources that may be impacted, if these types of resources are discovered prior to or during construction. Further consultation with culturally affiliated Tribes shall focus on identifying measures to avoid or minimize impacts on any such resources discovered during construction. If Tribal Cultural Resources are identified in the APE prior to or during construction, the following performance standards shall be met before proceeding with construction and associated activities that may result in damage to or destruction of Tribal Cultural Resources:

- Each identified Tribal Cultural Resource will be evaluated for CRHR eligibility through application of established eligibility criteria (CCR 15064.636), in consultation with interested Native American Tribes.
- If a Tribal Cultural Resource is determined to be eligible for listing in the CRHR, the Project Partners will avoid damaging the Tribal Cultural Resource in accordance with California PRC Section 21084.3, if feasible. If CVFPB determines that the project may cause a substantial adverse change to a Tribal Cultural Resource and measures are not otherwise identified in the consultation process, the following are examples of mitigation steps capable of avoiding or substantially lessening potential significant impacts to a Tribal Cultural Resource or alternatives that will avoid significant impacts to a Tribal Cultural Resource. These measures may be considered to avoid or minimize significant adverse impacts:

    i. Avoid and preserve resources in place, including, but not limited to, planning construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

    ii. Treat the resource with culturally appropriate dignity, taking into account the Tribal cultural values and meaning of the resource, including, but not limited to, the following:

        a. Protect the cultural character and integrity of the resource.

        b. Protect the traditional use of the resource.

        c. Protect the confidentiality of the resource.

        d. Establish permanent conservation easements or other interests in real estate, with culturally appropriate management criteria for the purposes of preserving or using the resources or places.

        e. Protect the resource.

Mitigation Measure CR-6: Implement Procedures for Inadvertent Discovery of Human Remains.

To minimize adverse effects from encountering human remains during construction, the Project Partners shall implement the following measures:

- In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the Project Partners shall immediately halt potentially damaging excavation in the area of the burial and notify the Sacramento County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48-hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (California Health and Safety Code Section 7050[c]). After the coroner's findings have been made, the archaeologist and the NAHC-designated MLD, in consultation with the landowner, shall determine the ultimate treatment and disposition of the remains.

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

    - record the site with the NAHC or the appropriate Information Center, and

    - record a document with the county in which the property is located.

If agreed to by the MLD and the landowner, CVFPB or CVFPB's authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance. If the NAHC is unable to identify an MLD, or if the MLD fails to make a recommendation within 48-hours after being granted access to the site, CVFPB or CVFPB's authorized representative may also reinter the remains in a location not subject to further disturbance. If CVFPB rejects the recommendation of the MLD and mediation by the NAHC fails to provide measures acceptable to CVFPB. CVFPB shall implement mitigation for the protection of the burial remains. Construction work in the vicinity of the burials shall not resume until the mitigation is completed.

#### *Significance after Mitigation*

Implementing Mitigation Measure CR-1 will reduce potentially significant impacts to known cultural resources to a less-than-significant level by requiring the Project Partners to implement an agreed-upon process to resolve adverse effects. Other significant cultural and tribal resources impacts will be reduced to a less-than-significant level with implementation of Mitigation Measures CR-2 through CR-6, which prescribe processes for addressing the potential to affect previously unknown resources.

## 3.8 Air Quality

### 3.8.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.11 of the ARCF GRR Final EIS/EIR and Section 3.8 of the Sacramento River Erosion Contract 2 Supplemental EIR (USACE and CVFPB 2022) are applicable to the analysis in this Supplemental EIR and incorporated by reference.

### 3.8.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR determined that construction emissions could exceed the SMAQMD emission threshold for NOx, depending on the method of material delivery, and that exceeding this threshold would be a significant effect. After accounting for a 20 percent reduction in NOx from implementing mitigation in the form of Sacramento Metropolitan Air Quality Management District (SMAQMD) Enhanced Exhaust Control Practices, construction-related emissions still could exceed the SMAQMD emission thresholds for NOx. Therefore, USACE will obtain an off-site mitigation credit for project-related NOx emissions in the Sacramento Valley Air Basin (SVAB), which would reduce the effect to a less-than-significant level.

Nearby sensitive receptors, especially residences and schools located downwind of the levee improvement sites, could be exposed to dust generated during construction activities and temporary and short-term diesel particulate emissions (i.e., toxic air contaminants [TACs]) from on-site heavy-duty equipment and on-road haul trucks). The potential effect was determined to be significant. Mitigation would be implemented in the form of $PM_{10}$ and $PM_{2.5}$ dust modeling; measures to control fugitive dust emissions if the project with refinements exceeds SMAQMD thresholds; and weekly and monthly surveys to ensure that emissions from all off-road diesel-powered equipment used at the improvement sites do not exceed 40 percent opacity for more than 3 minutes in any 1 hour. These measures would reduce the effect to less than significant.

It was determined that although odors associated with diesel exhaust emissions from the use of on-site construction equipment may be noticeable from time to time by adjacent receptors, the odors would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Furthermore, as required by California Air Resources Board (CARB) Regulation 13 CCR 2449(d)(3), no in-use off-road diesel vehicles may idle for more than 5 consecutive minutes. Therefore, this effect was determined to be less than significant, and

implementation of the other air quality mitigation measures would further reduce odorous exhaust emissions.

### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to air quality if they would:

- conflict with, or obstruct implementation of, the applicable air quality plan;
- violate any air quality standard or substantial contribution to existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment area under NAAQS and CAAQS;
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

Local air district (SMAQMD and BAAQMD) significance thresholds used in this analysis are presented in Tables 3.8-2 and 3.8-3, respectively, and General Conformity *de minimis* thresholds that apply to the project are presented in Table 3.8-4. The ARCF GRR Final EIS/EIR identified construction of the ARCF project over a longer timeline (10 years compared to 5 years as currently proposed). As a result, the reduced project timeline will increase annual air emissions for the ARCF Project as a whole. This document therefore includes a revised comparison to the General Conformity *de minimis* standards.

**Table 3.8-2. Sacramento Metropolitan Air Quality Management District Thresholds of Significance for Construction**

| Pollutant | Threshold |
|---|---|
| Oxides of Nitrogen (NOx) | 85 pounds per day |
| Respirable Particulate Matter ($PM_{10}$) | Fugitive dust BACT/BMPs and 80 pounds per day, 14.6 tons per year |
| Fine Particulate Matter ($PM_{2.5}$) | Fugitive dust BACT/BMPs and 82 pounds per day, 15 tons per year |

**Notes**: BACT = Best Available Control Technology; BMPs = Best Management Practices
*Source: Sacramento Metropolitan Air Quality Management District 2020*

**Table 3.8-3. Bay Area Air Quality Management District Thresholds of Significance for Construction**

| Pollutant | Threshold |
|---|---|
| Oxides of Nitrogen (NOx) | 54 pounds per day |
| Reactive Organic Gases (ROG) | 54 pounds per day |
| Respirable Particulate Matter ($PM_{10}$) - Exhaust | 82 pounds per day |

| | |
|---|---|
| Fine Particulate Matter ($PM_{2.5}$) - Exhaust | 54 pounds per day |

**Notes**: BACT = Best Available Control Technology; BMPs = Best Management Practices
*Source: Sacramento Metropolitan Air Quality Management District 2020*

**Table 3.8-4. General Conformity *de minimis* Thresholds - Sacramento Federal Nonattainment Area**

| Pollutant | Threshold (tons per year) |
|---|---|
| Carbon Monoxide (CO) | 100 |
| Oxides of Nitrogen (NOx) | 25 |
| Volatile Organic Compounds (VOC)/Reactive Organic Gases (ROG) | 25 |
| Respirable Particulate Matter ($PM_{10}$) | 100 |
| Fine Particulate Matter ($PM_{2.5}$) | 100 |

*Sources: 40 CFR 93 Section 153 (b)(1); Sacramento Metropolitan Air Quality Management District 2021*

### *Impact Analysis*

The ARCF GRR Final EIS/EIR analysis found less-than-significant impacts related to consistency with air quality plans, fugitive dust, exposure of sensitive receptors to toxic air contaminants, and odors. The analysis in the ARCF GRR Final EIS/EIR adequately addresses exposure to toxic air contaminants and odors for the Sacramento River Erosion Contract 4 with refinements, and they are not discussed further in this Supplemental EIR.

Construction Emissions

Air quality emissions will be generated by heavy equipment constructing the proposed project and refinements, hauling of material from the borrow source to the project area (including both truck and barge transportation) construction worker trips, and other construction-related trips. There will be no change in O&M emissions associated with the proposed project and refinements. Air emissions were modeled using SMAQMD's Road Construction Emissions Model version 8.1.0, and Harborcraft, Dredge and Barge Emission Factor Calculator (refer to Appendix A for modeling data). The total estimated air emissions for the proposed project and refinements are presented in Tables 3.8-5 and 3.8-6. As shown in Tables 3.8-5 and 3.8-6, the emissions resulting from the proposed project and refinements will potentially exceed the local air district thresholds for $NO_x$. Avoidance, minimization, and mitigation measures identified as Mitigation Measures AIR-1, AIR-2, AIR-3, AIR-4, and AIR-5 will be implemented to reduce these impacts to less-than-significant levels.

**Table 3.8-5. Emissions Estimates for the Proposed Project and Refinements – Sacramento Valley Air Basin**

| Pollutant | Unmitigated/Mitigated (pounds per day) | Unmitigated/Mitigated (tons per year) | Significance Threshold |
|---|---|---|---|
| ROG | 26.1 / 25.2 | 0.27 / 0.23 | N/A |
| $NO_x$ | **335 / 328** | 3.16 / 2.88 | 85 pounds/day |
| $PM_{10}$ | 18.4 / 18.1 | 0.18 / 0.18 | 80 pounds/day and 14.6 tons/year |
| $PM_{2.5}$ | 15.8 / 15.6 | 0.14 / 0.13 | 82 pounds/day and 15 tons/year |

**Notes**: Bold numbers indicate concentrations above thresholds.
NOx = oxides of nitrogen; $PM_{10}$ = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases.
Sacramento Metropolitan Air Quality Management District (SMAQMD) considers construction activities unlikely to generate substantial quantities of carbon monoxide (SMAQMD 2019).
CEQA significance thresholds for PM assume that fugitive dust Best Available Control Technology/Best Management Practices are implemented in accordance with SMAQMD guidance

**Table 3.8-6. Emissions Estimates for the Proposed Project and Refinements – San Francisco Bay Area Air Basin**

| Pollutant | Barge Emissions (pounds per day) | Significance Threshold (pounds per day) |
|---|---|---|
| ROG | 23.8 | 54 |
| $NO_x$ | **408** | 54 |
| $PM_{10}$ | 18.4 | 82 |
| $PM_{2.5}$ | 16.4 | 84 |

**Notes**: Bold numbers indicate concentrations above thresholds.
NOx = oxides of nitrogen; $PM_{10}$ = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases.

Tables 3.8-7 and 3.8-8 present combined emissions for the proposed project refinements and the other components of the ARCF 2016 Project that are anticipated to be constructed during calendar year 2024, for comparison to General Conformity *de minimis* standards in effect in each air basin. For purposes of General Conformity, the entire ARCF 2016 Project is considered a single action. As shown in Tables 3.8-7 and 3.8-8, implementing avoidance and minimization measures described in Mitigation Measures AIR-1, AIR-2, AIR-3, and AIR-5 will reduce emissions by requiring use of equipment with advanced emission controls and BMPs, but not below the *de minimis* standards for $NO_x$ in the Sacramento Federal Ozone Nonattainment Area. Mitigation Measure AIR-4 requires payment of fees to offset $NO_x$ emissions, resulting in less-than-significant impacts.

**Table 3.8-7. 2024 Annual Emissions Estimates for the ARCF 2016 Project with Refinements – Sacramento Valley Air Basin**

| Project Component | ROG Unmitigated | NOx Unmitigated | $PM_{10}$ Unmitigated | $PM_{2.5}$ Unmitigated | ROG Mitigated | NOx Mitigated |
|---|---|---|---|---|---|---|
| Sacramento River Erosion Contract 2 | 1.09 | 14.24 | 1.71 | 0.81 | 0.85 | 10.45 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Sacramento River Erosion Contract 4 | 0.27 | 33.16 | 00.18 | 0.14 | 0.23 | 22.88 |
| Sacramento Weir | 1.51 | 14.16 | 44.71 | 9.78 | 1.10 | 6.28 |
| Total ARCF 16 Project Emissions | 2.87 | **61.56** | 46.6 | 10.73 | 2.18 | **39.61** |
| **General Conformity *de minimis* Thresholds** | 25 | 25 | 100 | 100 | 25 | 25 |

**Notes**: Bold numbers indicate concentrations above thresholds.
CO = carbon monoxide; NOx = oxides of nitrogen; $PM_{10}$ = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases.
Unmitigated and Mitigated data is presented in tons per year.

**Table 3.8-8. 2024 Emissions Estimates for the ARCF 2016 Project with Refinements – San Francisco Bay Area Air Basin**

| Project | ROG Unmitigated | NOx Unmitigated | $PM_{10}$ Unmitigated | $PM_{2.5}$ Unmitigated | ROG Mitigated | NOx Mitigated |
|---|---|---|---|---|---|---|
| Sacramento River Erosion Contract 2 | 0.53 | 9.02 | 0.41 | 0.36 | 0.53 | 9.02 |
| Sacramento River Erosion Contract 4 | 0.01 | 00.20 | 0.01 | 0.01 | 0.01 | 00.20 |
| Sacramento Weir | 0.21 | 3.64 | 0.16 | 0.15 | 0.21 | 3.64 |
| Total ARCF 16 Project Emissions | 0.75 | 12.86 | 0.58 | 0.52 | 0.75 | 12.86 |
| **General Conformity *de minimis* Thresholds** | 100 | 100 | 100 | 100 | 100 | 100 |

**Notes**: Bold numbers indicate concentrations above thresholds.
CO = carbon monoxide; NOx = oxides of nitrogen; $PM_{10}$ = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases.
Unmitigated and Mitigated data is presented in tons per year.

Avoidance and minimization measures will be implemented to reduce criteria pollutant emissions and mitigation measures (including payment of fees) will be implemented to reduce air quality impacts to less-than-significant levels. The measures described below will reduce criteria pollutant emissions, diesel particulate emissions, and fugitive dust associated with construction activities. As a result, there will be no short- or long-term significant impacts to air quality in the region due to construction of the ARCF, including the Sacramento River Erosion Contract 4 and its refinements.

### 3.8.3 Mitigation Measures

The following mitigation measures have been previously adopted (USACE and CVFPB 2021b). Tables 3.8-5 and 3.8-6 show estimated emissions of the proposed project with refinements, after implementing the avoidance, minimization, and mitigation measures shown below in Mitigation Measures AIR-1 through AIR-5. Tables 3.8-7 and 3.8-8 show estimated emissions of the ARCF 2016 Project, including the Sacramento River Erosion Contract 4 with refinements, that will be constructed in 2024, after implementing avoidance and minimization measures shown below in Mitigation Measures AIR-1 through AIR-3.

Mitigation Measure AIR-1: Implement the Sacramento Metropolitan Air Quality Management District's Basic Construction Emission Control Practices.

SMAQMD requires that all projects, regardless of their significance, implement the following measures to minimize the generation of fugitive PM dust. The Basic Construction Emission Control Practices shall include measures to control fugitive PM dust pursuant to SMAQMD Rule 403, as well as measures to reduce construction-related exhaust emissions. USACE shall require its contractors to comply with the basic construction emission control practices listed below for all construction-related activities occurring in SMAQMD jurisdiction.

- Water all exposed surfaces two times daily or more, as needed. Exposed surfaces include but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover, or suitably wet soils and other materials on haul trucks transporting soil, sand, or other loose material on the site. Cover any haul trucks that travel along freeways or major roadways.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speed on unpaved roads to 15 miles per hour.
- Complete pavement of all roadways, driveways, sidewalks, parking lots to be paved as soon as possible.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (required by CCR, Title 13, Sections 2449[d][3] and 2485).
- Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. Have the equipment checked by a certified mechanic and determined to be running in proper condition before it is operated.

Mitigation Measure AIR-2: Implement the Sacramento Metropolitan Air Quality Management District's Enhanced Fugitive PM Dust Control Practices.

SMAQMD recommends that construction projects that would exceed or contribute to the mass emissions threshold for $PM_{10}$ implement the Enhanced Fugitive PM Dust Control Practices, as applicable to the project. As the construction activities for the proposed project will involve substantial material movement activities and will be located in proximity of residential receptors, The Project Partners shall require construction contractors to implement the Enhanced Fugitive PM Dust Control Practices listed below to help reduce potential fugitive PM dust emissions.

*Soil Disturbance Areas*

- Water exposed soil with adequate frequency for continued moist soil; however, do not overwater to the extent that sediment flows off the site.
- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 miles per hour.
- Install wind breaks (e.g., plant trees, solid fencing) on windward side(s) of construction areas.
- Plant vegetative ground cover (fast germinating native grass seed) in disturbed areas as soon as possible and water appropriately until vegetation is established.

*Unpaved Roads (Entrained Road Dust)*

- Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the site.
- Treat site accesses with a 6- to 12-inch layer of wood chips, mulch, or gravel to a distance of 100 feet from the paved road to reduce generation of road dust and road dust carryout onto public roads.
- Post a publicly visible sign with the telephone number and person to contact at USACE regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of SMAQMD also will be visible to ensure compliance.

Mitigation Measure AIR-3: Require Lower Exhaust Emissions for Construction Equipment.

The Project Partners shall require contractors to use a fleet-wide average of 90 percent Tier 4 emissions vehicles for off-road construction equipment and on-road haul trucks must be equipped with 2010 or newer engines. Tier 0 and uncontrolled engines are prohibited for use in the project. In order to demonstrate compliance with this requirement

- The construction contractor shall submit to USACE and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that would be used an aggregate of 8 or more hours during any portion of the construction project.
- The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The construction contractor shall provide the anticipated construction timeline including start date, and the name and phone numbers

of the project manager and the on-site foreman. This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. The SMAQMD Construction Mitigation Tool can be used to submit this information. The inventory shall be updated and submitted monthly throughout the duration of the project, except for any 30-day period in which no construction activity occurs.

- The construction contractor shall provide a plan for approval by USACE and SMAQMD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet average of 90 percent Tier 4 emissions vehicles. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

- SMAQMD's Construction Mitigation Tool can be used to identify an equipment fleet that achieves this reduction. The construction contractor shall ensure that emissions from all off-road diesel-powered equipment used in the project area do not exceed 40 percent opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented and a summary provided monthly to USACE and SMAQMD. A visual survey of all in-operation equipment shall be made at least weekly. A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed, as well as the dates of each survey.

- Use the Construction Mitigation Tool to track $PM_{10}$ emissions and mileage traveled by on-road trucks, reporting results to USACE and SMAQMD on a monthly basis.

Mitigation Measure AIR-4: Use the Air District's Off-site Mitigation Fee to Reduce $NO_x$ Emissions.

The Project Partners shall implement the measures listed below to reduce $NO_x$ construction-related emissions.

Pursuant to air district thresholds of significance, if the projected construction-related emissions exceed the NOx threshold of significance, based on the equipment inventory and use, USACE shall contribute to SMAQMD's and/or BAAQMD's off-site mitigation fee program sufficiently to offset the amount by which the project's $NO_x$ emissions exceed the threshold. If emissions for the ARCF 2016 Project in any given year would exceed the de minimis threshold of 25 tons per year, USACE would enter into an agreement with SMAQMD and/or BAAQMD to purchase offsets for all NOx emissions in any year that projected emissions would exceed the threshold. The determination of the estimated mitigation fees shall be conducted in coordination with SMAQMD and/or BAAQMD before any ground disturbance occurs for any phase of project construction. (USACE anticipates purchasing offsets for $NO_x$ emissions in 2023 and 2024 because the ARCF 2016 Project is forecast to exceed the *de minimis* threshold. Estimated fees for the Sacramento River Erosion Contract 4 project are $37,350 annually to BAAQMD for

emissions in the SFBAAB.) All mitigation fees shall be paid prior to the start of construction activity to allow air districts to obtain emissions reductions for the proposed project. If there are changes to construction activities (e.g., equipment lists, increased equipment usage or schedules), USACE shall work with SMAQMD and BAAQMD to ensure emission calculations and fees are adjusted appropriately.

Mitigation Measure AIR-5: Implement Marine Engine Standards

The Project Partners shall encourage the use of EPA adopted Tier 3 and Tier 4 standards for newly built marine engines in 2008. The Tier 3 standards reflect the application of technologies to reduce engine PM and $NO_x$ emission rates. Tier 4 standards reflect application of high-efficiency catalytic after-treatment technology enabled by the availability of ultra-low sulfur diesel.

The Project Partners will use Tier 2 and 3 marine engines standards where available to reduce marine exhaust emissions. Due to uncertainty as to the availability of Tier 4 marine engines within the required project timeline, this mitigation measure does not require the use of Tier 4 marine engines. However, should they become available during the appropriate construction periods, the use of these engines will be required in order to further lower project emissions.

#### *Significance after Mitigation*

The significant impact to air quality will be reduced to a less-than-significant level with implementation of Mitigation Measures AIR-1, AIR-2, AIR-3, AIR-4, and AIR-5 because the Project Partners will implement proven measures to reduce exhaust emissions and fugitive dust, and mitigation fees will be paid to offset any remaining emissions.

## 3.9 Climate Change

### 3.9.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.12 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and therefore is not repeated here.

### 3.9.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

Project-related GHG emissions would exceed thresholds, and this effect was determined to be less than significant after implementation of mitigation measures to reduce and offset construction-related GHG emissions. Because the ARCF 2016 Project would not conflict with or obstruct the implementation of GHG emission reduction plans, its effect was determined to be less than significant. Furthermore, project implementation would increase the likelihood that the flood management system could accommodate future flood events as a result of climate change, and therefore the project would improve the resiliency of the levee system with respect to changing climatic conditions, potentially reducing exposure of property or persons to the effects of climate change.

### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project would result in a potentially significant impact to climate change if they would:

- Conflict with an applicable plan adopted for the purpose of reducing GHG emissions. SMAQMD has local jurisdiction over the project site. In October 2014, the SMAQMD adopted a resolution that recommends GHG thresholds of significance as follows:
- Construction phase of projects: 1,100 metric tons of carbon dioxide equivalent ($CO_2e$) per year;
- Operational phase of land development projects: 1,100 metric tons of $CO_2e$ per year;
- Stationary source projects: 10,000 direct metric tons of $CO_2e$ per year; or
- Generate GHG gas emissions, either directly or indirectly, that may have a significant impact on the environment.

SMAQMD recommends that GHG emissions from construction activities should be quantified and disclosed, that a determination regarding the significance of these GHG emissions should be made based on a threshold determined by the lead agency, and that BMPs should be incorporated to reduce GHG emissions during construction, as feasible and applicable.

### *Impact Analysis*

Temporary, Short-Term Generation of Greenhouse Gas Emissions

The proposed project will emit an estimated 546 metric tons of $CO_2e$ during project construction in 2024. This does not exceed the threshold of 1,100 metric tons of $CO_2e$ recommended by SMAQMD for construction phases and applied by USACE to this analysis and will be a less-than-significant impact for the Sacramento River Erosion Contract 4 project, although annual emissions for the ARCF 2016 Project as a whole would exceed the threshold and would be significant. Implementing Mitigation Measure GHG-1 will reduce construction-related GHG emissions to a less-than-significant level through efficient operation of construction equipment engines, enhanced emissions reductions for equipment used during construction, minimization of equipment idling when not in use, and purchasing carbon offset credits. Therefore, with implementation of Mitigation Measure GHG-1 to reduce GHG emissions and purchase offset credits, the proposed project and refinements will not make a cumulatively considerable incremental contribution to significant cumulative GHG emissions and global climate change.

Conflict with an Applicable GHG Emissions Reduction Plan and Effects of Climate Change

The intent, purpose, and function of the proposed project aligns with the goals of the Assembly Bill (AB) 32 Scoping Plan to protect against the detrimental effects of climate change. It is not anticipated that climate change will have an adverse effect on the proposed project;

rather, the project will improve the Sacramento River east levee and provide improved flood risk reduction to the densely populated City of Sacramento and some unincorporated Sacramento County areas. Therefore, the proposed project is an adaptive measure against the potential effects of climate change.

The climate change assessment contained in the 2018 Safeguarding California Plan, California's Climate Adaptation Strategy (CAS), identified floods (among heat waves, wildfires, and droughts) as likely being one of the earliest climate change effects experienced in California (CNRA 2018). The Updated AB 32 Scoping Plan cites the need to buffer from the increasing effects of climate change, including floods (CARB 2017). Therefore, in addition to reducing GHG emissions, which is the primary goal of the Scoping Plan, it is also critical to implement actions and projects that will prevent, avoid, and minimize the detrimental effects of climate change. These types of projects would also help avoid reconstruction and repair expenditures, losses and disruptions to economic activities, and effects on local residents from a flood event. Although the ARCF 2016 Project, including the Sacramento River Erosion Contract 4 with refinements, will include new temporary, short-term GHG emissions during construction, these emissions will be mitigated to a less-than-significant level with implementation of Mitigation Measure GHG-1, and the project will thus not conflict with plans for reducing GHG emissions. Because the project will be consistent with the goals of the 2018 CAS and the 2017 AB 32 Scoping Plan to protect against the detrimental effects of climate change without impeding current economic growth, the Sacramento River Erosion Contract 4 project, including refinements, will have a less-than-significant effect.

### 3.9.3 Mitigation Measures

The following mitigation measure has been previously adopted (USACE and CVFPB 2021b).
Mitigation Measure GHG-1: Implement GHG Reduction Measures.

Measures that will be implemented to reduce the project's contribution from generation of GHGs are as follows:

- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- Recycle at least 75% of construction waste and demolition debris.
- Purchase at least 20% of the building materials and imported soil from sources within 100 miles of the project site.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3 minutes (5-minute limit is required by the state airborne toxic control measure [Title 13, sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

- Use equipment with new technologies (repowered engines, electric drive trains).
- Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).
- Use an ARB approved low carbon fuel for construction equipment. (NOx emissions from the use of low carbon fuel must be reviewed and increases mitigated.)
- Purchase GHG offset for program-wide GHG emissions (direct emissions plus indirect emissions from on-road haul trucks plus commute vehicles) that meet the criteria of being real, quantifiable, permanent, verifiable, enforceable, and additional, consistent with the standards set forth in Health and Safety Code section 38562, subdivisions (d)(1) and (d)(2). Such credits shall be based on protocols approved by the California Air Resources Board (CARB), consistent with Section 95972 of Title 17 of the California Code of Regulations, and shall not allow the use of offset projects originating outside of California, except to the extent that the quality of the offsets, and their sufficiency under the standards set forth herein, can be verified by USACE or SMAQMD. Such credits must be purchased through one of the following: (i) a CARB-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard; (ii) any registry approved by CARB to act as a registry under the California Cap and Trade program; or (iii) through the California Air Pollution Control Officers Association's (CAPCOA's) GHG Rx and SMAQMD. Purchase of carbon offsets shall be sufficient to reduce the project's GHG emissions to below SMAQMD's significance thresholds applicable through a one-time purchase of credits, based on the emissions estimates in this SEIR or on an ongoing basis based on monthly emissions estimates that would be prepared in accordance with procedures established by Measure AQ-3.

#### *Significance after Mitigation*

The significant impact related to GHG emissions will be reduced to a less-than-significant level with implementation of Mitigation Measure GHG-1, because the Project Partners will take actions to reduce project emissions of GHGs and purchase offsets for any GHG emissions in excess of SMAQMD thresholds.

## 3.10 Noise

### 3.10.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.13 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EA/EIR and therefore is not repeated here. Additional site-specific conditions are described below.

Land uses adjacent to the individual work areas consist of residences, schools, playgrounds, parks, offices, and industrial land uses. Land uses as defined by Federal, State, and local regulations as noise-sensitive vary slightly but typically include schools, hospitals, rest homes, places of worship, long-term care facilities, mental care facilities, residences, convalescent (nursing) homes, hotels, certain parks, and other similar land uses. The closest noise-sensitive land uses are residential properties within 50 feet of the levees, staging areas, and

haul routes. The primary existing noise source in these residential areas consists of vehicular traffic on adjacent roadways. Sensitive receptors include residents along the levee system, and boaters and recreationalists along the Sacramento River.

The City of Sacramento exterior noise standard, as stated in the City's noise ordinance, is 55 A-weighted decibels (dBA) during the hours of 7:00 a.m. to 10:00 p.m. for residential areas. The standard then adjusts to 50 dBA between 10:00 p.m. and 7:00 a.m. for residential areas. The noise ordinance also exempts construction noise during the hours from 7:00 a.m. to 6:00 p.m. Monday through Saturday and from 9:00 a.m. to 6:00 p.m. on Sundays. The ordinance further states that the operation of an internal combustion engine is not exempt if the engine is not equipped with suitable exhaust and intake silencers in good working order (8.68.080 Exemptions, Noise Control Standards, City of Sacramento Municipal Code).

## 3.10.2 Environmental Impacts

### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR found that ground vibration could cause a significant effect if construction occurs within 40 feet of a vibration-sensitive building (defined as a building with either plaster or wallboard for internal walls and ceilings). Mitigation to prepare a vibration control plan would be implemented prior to construction. Although Sacramento County has a construction noise exemption during daylight hours, noise levels above 55 dBA are generally considered to be a significant effect on sensitive receptors. Noise levels could be up to approximately range from 83–95 dBA at 50 feet from the source. Therefore, based on projected construction equipment noise estimates, (including haul trucks), the ARCF GRR Final EIS/EIR found effects to sensitive receptors to be significant during construction of the Sacramento River erosion improvements. A suite of mitigation measures to reduce construction noise and vibration would be implemented where construction would occur within 500 feet of any sensitive receptor to reduce the impact to less than significant.

### *Significance Criteria*

The thresholds for determining the significance of noise impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to noise if it would cause:

- a substantial temporary or permanent increase in ambient noise levels in the study area above the existing levels;
- exposure of sensitive receptors to excessive noise levels (those levels that exceed the City of Sacramento noise ordinance, discussed above); or
- exposure of sensitive receptors or structures to groundborne vibration.

### *Impact Analysis*

Potential Increase in Ambient Noise Levels or Exposure of Sensitive Receptors to Excessive Noise or Vibration

Construction noise will be generated by equipment and material placement. A crane and excavator on barges will place quarry stone, soil bedding/soil fill, soil filled quarry stone, aggregate base, and IWM.

Construction activities associated with the proposed project will result in temporary, short-term, and intermittent increases of noise for sensitive receptors. Because several residences are located within 1,000 feet of the construction zone, there will be very little attenuation to reduce the noise effects from construction for many of the residents. While the City of Sacramento has a noise exemption for construction during daylight hours, as described above, noise levels above 55 dBA are generally considered to have a significant effect on sensitive receptors. Activities such as soil placement/compaction and rip rap installation can result in noise levels of up to 95 dBA at 50 feet and could also result in perceptible vibration. Residences adjacent to the project will be farther than 50 feet from the construction activities, attenuating noise and vibration from activities on the waterside of the levee. The elevated levee crown and trees left in place on the levee could further aid in buffering the noise. Boaters on the Sacramento River will be required to be 50 feet away from the construction activities; however, they will not have the benefit of screening by trees.

Temporary noise and vibration impacts during construction will nevertheless be significant due to the proximity of sensitive residential receptors to the construction activity. Implementation of Mitigation Measure NOI-1 will reduce impacts associated with temporary noise levels and vibration during construction activities to less than significant; this is the same conclusion as in the ARCF GRR Final EIS/EIR.

### 3.10.3 Mitigation Measures

The following mitigation measure has been previously adopted (USACE and CVFPB 2021b).

Mitigation Measure NOI-1: Implement Measures to Reduce Construction Noise and Vibration Effects.

The Project Partners will require construction contractors to implement measures at each work site to avoid and minimize construction noise and vibration effects on sensitive receptors. Prior to the start of construction, the construction contractor will prepare a noise control plan to identify feasible measures to reduce construction noise, when necessary. The measures in the plan would apply to construction activities within 500 feet of a sensitive receptor, including, but not limited to, residences. These measures may include, but are not limited to, the following:

- Provide written notice to residents within 1,000 feet of the construction zone, advising them of the estimated construction schedule. This written notice would be provided within 1 week to 1 month of the start of construction at that location.
- Display notices with information including, but not limited to, contractor contact telephone number(s) and proposed construction dates and times in a conspicuous manner, such as on construction site fences.

- Schedule the loudest and most intrusive construction activities during daytime hours (7:00 a.m. to 7:00 p.m.) Monday through Friday, when feasible.
- Require that construction equipment be equipped with factory-installed muffling devices, and that all equipment be operated and maintained in good working order to minimize noise generation.
- Locate stationary noise-generating equipment as far as practicable from sensitive receptors.
- Limit unnecessary engine idling (i.e., more than 5 minutes) as required by State air quality regulations.
- Employ equipment that is specifically designed for low noise emission levels, when feasible.
- Employ equipment that is powered by electric or natural gas engines, as opposed to those powered by gasoline fuel or diesel, when feasible.
- If the construction zone is within 500 feet of a sensitive receptor, place temporary barriers between stationary noise equipment and noise sensitive receptors to block noise transmission, when feasible, or take advantage of existing barrier features, such as existing terrain or structures, when feasible.
- If the construction zone is within 500 feet of a sensitive receptor, prohibit use of backup alarms and provide an alternate warning system, such as a flagman or radar-based alarm that is compliant with State and Federal worker safety regulations.
- Locate construction staging areas as far as practicable from sensitive receptors.
- Design haul routes to avoid sensitive receptors, to the extent practical.
- To the extent feasible and practicable, the primary construction contractors would employ vibration-reducing construction practices such that vibration from construction complies with applicable noise-level rules and regulations that apply to the work, including the vibration standards established for construction vibration-sources by the applicable agencies (City of Sacramento and Sacramento County), depending on the jurisdictional location of the affected receptor(s), and the California Department of Transportation's (Caltrans) Transportation and Construction Vibration Guidance Manual, which identifies maximum vibration levels of 0.2 to 0.5-inch per second Peak Particle Velocity (PPV) for minimizing damage to structures. Project construction specifications would require the contractor to limit vibrations to less than 0.2-inch per second PPV, and less than 72 VdB within 50 feet at any building. If construction would occur within 50 feet of any occupied building, the contractor would prepare a vibration control plan prior to construction. The plan would include measures to limit vibration, including but not limited to the following:
    - Numerical thresholds above which the contractor would be required to document vibration sources and implement measures to reduce vibration, and above which work would be required to stop for consideration of alternative construction methods.

- Avoid vibratory rollers and packers near sensitive areas to the maximum extent practicable.
- Route heavily loaded trucks away from residential streets, if possible. If no alternatives are available, select streets with the fewest homes.
- A voluntary pre- and post-construction survey would be conducted to assess the existing condition of structures prior to construction and potential architectural/structural damage induced by levee construction vibration at each structure within 100 feet of construction activities, including staging areas. The survey would include visual inspection of the structures that could be affected and documentation of structures by means of photographs and video. This documentation would be reviewed with the individual owners prior to any construction activities. Post-construction surveys of structures would be performed to identify (and repair, if necessary) damage, if any, from construction activities. Any construction-related damage would be documented with photographs and video. This documentation would be reviewed with the individual property owners.
- Place vibration monitoring equipment in lines approximately parallel to the levee alignment at intervals not to exceed 200 feet along the construction limits, including active staging areas. Vibration monitors will be operational at all times during the performance of construction activities. The contractor will monitor and record vibrations continuously.

#### *Significance after Mitigation*

The significant impacts related to noise and vibration will be reduced to a less-than-significant level with implementation of Mitigation Measure NOI-1 because the Project Partners will require a noise control plan, vibration control plan, and actions to reduce the noise-related effects of construction. These actions would include scheduling louder activities for daytime hours, using less noisy equipment where available, and locating and routing activities to minimize effects on sensitive receptors.

## 3.11 Recreation

### 3.11.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.14 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and therefore is not repeated here. Additional site-specific conditions are described below.

#### *Sacramento River Parkway*

The Sacramento River Parkway extends along the entire length of the Sacramento River east levee where improvements are proposed. Developed portions of the parkway accommodate pedestrians and bicyclists and provide access to the Sacramento River. Where trail segments have not been officially designated or constructed, some portions of the levee crown in the project vicinity are used as a pedestrian/bicycle path. Paved segments of the parkway extend from Old Sacramento to Sutterville Road, and along Riverside Boulevard between 35$^{th}$ Avenue

and Ellsworth C. Zacharias Park. The Sacramento River levee is not publicly accessible at the project site, historically due to the presence of fences and gates, and currently due to ongoing construction activities associated with other ARCF contracts.

#### *City of Sacramento Parks and Recreation Facilities*

Bahnfleth Park is located in the vicinity of the project site and is adjacent to the haul route along Seamas Avenue.

#### *Bicycle Facilities*

In addition to the Sacramento River Parkway bike trail mentioned above, designated Class II and Class III (i.e., on-street rights-of-way recommended for bicycle travel that also provide shared-use with motor vehicles or pedestrian traffic) bicycle facilities currently exist along Riverside Boulevard in the Little Pocket area.

#### *Water Related Recreation*

The Sacramento River is used for boating and other water-based recreation. Boat launches are present near the project site at Miller Park and Garcia Bend Park, and marinas near the project site include the Sherwood Harbor Marina on the west bank of the Sacramento River opposite the project site, the Sacramento Yacht Club (west bank, upstream of the project site) and the Sacramento Marina (upstream at Miller Park).

### 3.11.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR stated that construction vehicles would be present in staging areas at various points along the Sacramento River Parkway and construction activities could result in potential disruptions/detours to pedestrian and bicycle trails as well as boat launches and paved parking areas at Miller Park. The access roads in and out of the parkway at various locations would be used as haul routes for trucks transporting borrow material, resulting in increased traffic along the entry routes used by recreationists. Proximity to construction equipment and activities could also degrade recreational experiences due to noise, visual effects, odors, and air quality. Therefore, the project was determined to result in significant effects on recreation activities during construction. Mitigation measures such as trail detours and advanced notice of closures would be implemented to reduce effects on recreation; however, short-term effects to recreation during construction were determined to be significant and unavoidable. Long-term recreational effects were determined to be less than significant because recreation facilities would be returned to pre-construction conditions after construction.

#### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are adapted from the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to recreation if they would:

- Eliminate or substantially restrict or reduce the availability, access, or quality of existing recreational sites or opportunities in the project area;
- Cause substantial long-term disruption in the use of an existing recreation facility or activity; or
- Result in inconsistencies or non-compliance with regional planning documents or the Rivers and Harbors Act.

### *Impact Analysis*

Temporary Changes to Recreational Opportunities during Project Construction Activities

During construction of the proposed project refinements, access to the levee crown will be restricted. Construction access (entrance and exit) will be at the location illustrated on Figure 2-1. The barges will access the site along existing waterways between the Delta and the project site. Material transport to the project site will generally be via barges, and personal construction worker vehicles will be the primary construction traffic.

Constructing the proposed project will not affect active portions of the Sacramento River Bike Trail and will not require closure of recreational facilities at Bahnfleth Park; the levee on the project site is not generally accessible to the public. Construction of the proposed improvements will occur from the water side, and a barge will be temporarily staged in the river adjacent to the work area. This will cause a temporary impact to boating traffic during construction between July 1 and October 31 in 2024. Boaters will still be able to move through the area and appropriate signage will be installed to inform boaters of any obstructions.

Short-term recreation impacts will be significant due to the effect on boating traffic will be reduced to a less-than-significant level with implementation of Mitigation Measure REC-2. The GRR also includes Mitigation Measure REC-1, which would be implemented in the event any bicycle or pedestrian facilities are closed.

## 3.11.3 Mitigation Measures

The following mitigation measures have been previously adopted (USACE and CVFPB 2021a). Two additional locations for posting information on in-water work (Sherwood Harbor Marina and the Sacramento Yacht Club) have been added to the previously adopted Mitigation Measure REC-2.

Mitigation Measure REC-1: Implement Pedestrian Detours, Provide Construction Period Information on Facility Closures.

The Project Partners will implement the following measures to reduce temporary, short-term construction effects on recreational facilities in the Project Area:

- Provide marked detours for pedestrian routes. Detours should be developed in consultation with the City of Sacramento Bicycle and Pedestrian Coordinator at least 10 days before the start of construction activities, as applicable. Post signs that clearly

indicate closure routes at major entry points for trails and will provide a contact number to call for questions or concerns.

- Post signs at major entry points for trails, and boat launch ramps at the Miller Regional Park, Garcia Bend Park and the Sacramento Marina clearly indicating closures of trails and estimated duration of closures. Information signs will notify the public of alternate parks and recreation sites, including boat launch ramps, and will provide a contact number to call for questions or concerns.

- Upon completion of levee improvements, coordinate with the City of Sacramento to restore access and repair any construction-related damage to recreational facilities to pre-project conditions.

Mitigation Measure REC-2: Implement Measures to Notify Boaters

The Project Partners will implement the following measures to reduce temporary, short-term construction effects on recreational facilities in the Project Area:

- Post signs at the Sacramento Marina, Sherwood Harbor Marina, Sacramento Yacht Club, and Garcia Bend Park to clearly indicate the estimated duration of in-water work windows and construction duration.

- Place buoys at the upstream and downstream ends of the construction site to warn boaters of the in-water work.

- Notify the Coast Guard, in accordance with the Rivers and Harbors Act, of in-water work from barges moored in the river. Notification will include in-water work windows and construction duration.

#### *Significance after Mitigation*

Recreation impacts, including impacts to boaters from in-water work, will be reduced to a less-than-significant level with implementation of Mitigation Measures REC-1 and REC-2 because detours, notices, and alternative access will be provided.

## 3.12 Visual Resources

### 3.12.1 Environmental and Regulatory Setting

The environmental and regulatory framework described in Section 3.15 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EA/EIR and therefore is not repeated here. Additional site-specific conditions are described below.

#### *Existing Conditions*

The main group of viewers along the Sacramento River where construction activities will occur are residents living adjacent to the levee and boaters on the Sacramento River. The proposed project is located within a primarily residential area of the Sacramento River with residential properties on the landside and a narrow riparian corridor on the waterside. Much of this stretch of the levee is closed to the general public by gates that prevent public access. The

residents and recreationalists on the river and bike trail have views of large riparian trees and open views of the Sacramento River. Views from the levee crown consist of scenic images of the Sacramento River including tall green shade trees and other riparian vegetation on both sides of the river. Boaters on the Sacramento River have similar views of green riparian vegetation lining both banks of the river as well as views of tops of homes and buildings adjacent to the levee. These views present a high degree of vividness and unity within the proposed project area; therefore, the visual quality is considered high.

### 3.12.2 Environmental Impacts

#### *Summary of ARCF GRR Final EIS/EIR Effects*

Short-term visual effects during construction activities along the Sacramento River were determined to be significant and unavoidable because the presence of construction crews and equipment would degrade the existing visual character and obstruct scenic vistas; no feasible mitigation measures were identified. Long-term visual effects from maintaining the new landside levee maintenance corridor were determined to be significant and unavoidable because the corridor would be adjacent to existing residential backyards and removing landscaping from the maintenance corridor would degrade the current visual character of the individual properties; no feasible mitigation measures were identified.

Short-term visual effects during construction activities along the Sacramento River were determined to be significant and unavoidable, because the presence of construction crews and equipment would degrade the existing visual character and obstruct scenic vistas; no feasible mitigation measures were identified. Long-term impacts would be less than significant after vegetation has been established.

#### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project refinements would result in a potentially significant impact to visual resources if they would:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings;
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

*Impact Analysis*

Changes in Scenic Vistas and Existing Visual Character

Temporary impacts on visual resources during construction will be significant due to the presence of equipment and construction activities, including bank protection placement and vegetation removal, as identified in the ARCF GRR Final EIS/EIR, with no feasible mitigation measures to reduce this effect. Construction activities will require hauling of material and equipment to the site via barges loaded with large construction equipment and materials on the Sacramento River. Impacts will be realized by boaters and pedestrians who will be able to see the construction equipment and activity. Any type of screening of the construction activities from full or partial view temporarily during construction would themselves create substantial visual impacts and would not reduce and would likely increase the severity of visual impacts; therefore, no feasible mitigation is available to minimize visual impacts. In summary, this project will degrade the visual quality of this area of the Sacramento River for residents and recreational users. However, because construction is only anticipated to occur for one construction season, the reduction in visual quality from construction activities will be short-term and temporary.

Because the proposed project will require the removal of trees (in Option 1) and vegetation (in both Options 1 and 2) at the project site, this will have a significant and unavoidable short-term visual impact and could have a long-term effect on the visual quality of the project area. However, after construction is complete, the top surface of the bank protection will be replanted with native shrubs and the management plan will ensure the success of the re-vegetation. Over time, the maturation of the riparian vegetation will return the visual quality of the project area to pre-construction conditions. Therefore, the proposed project will not result in a long-term significant effect to scenic resources or visual character; therefore, impacts are less than significant.

None of the project-related activities will include buildings or other facilities that will require permanent lighting; therefore, no long-term sources of light or glare will be introduced into view-sheds. No night-time construction work is planned as part of the proposed project. During construction of the proposed project, the levee crown and barges may be equipped with lighting for security purposes of construction equipment and stored materials, which will result in new temporary sources of nighttime light pollution and will be visible by neighboring residences and boaters passing near the project site. Lighting may illuminate adjacent residences but the levee and trees on the crown and landside of the levee are expected to aid in screening light disturbances for the residences, along with the implementation of shielding as required by Mitigation Measure VIS-1. This will result in a short-term and temporary significant impact; however, Mitigation Measure VIS-1 will reduce the impact of nighttime light to less-than-significant levels because the contractor will direct lighting away from light-sensitive receptors.

### 3.12.3 Mitigation Measures

The following mitigation measure has been previously adopted (USACE and CVFPB 2021b).

Mitigation Measure VEG-1: Retain, Protect, and Plant Trees On-Site

Refer to Section 3.4.3 for the full text of this mitigation measure.

Mitigation Measure VEG-2: Compensate for Riparian Habitat Removal.

Refer to Section 3.4.3 for the full text of this mitigation measure.

Mitigation Measure SRA-1: Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat

Refer to Section 3.4.3 for the full text of this mitigation measure.

Mitigation Measure VIS-1: Reduce Light Pollution.

The Project Partners will require construction contractors to ensure that all temporary lighting related to security of the staging areas to be shielded or directed to avoid or minimize any direct illumination onto light-sensitive receptors located outside of the Project Area.

#### *Significance after Mitigation*

The long-term effects to visual resources from the proposed project with refinements will be reduced to less than significant with avoidance, minimization, and inclusion of the on-site riparian planting bench as required by Mitigation Measures VEG-1, VEG-2, and SRA-1. Mitigation Measure VIS-1 will reduce the impact of nighttime light to less than significant because the contractor will direct lighting away from light-sensitive receptors.

As described in the ARCF GRR Final EIS/EIR, short-term impacts on visual resources associated with construction along the Sacramento River will be significant and unavoidable. Construction of the proposed project refinements will not result in short-term visual impacts that will be new or substantially more severe than those addressed in the ARCF GRR Final EIS/EIR and, therefore, those construction-related short-term visual impacts are already adequately addressed in the ARCF GRR Final EIS/EIR.

## 3.13 Hazardous Wastes and Materials

### 3.13.1 Environmental and Regulatory Setting

The environmental and regulatory setting in Section 3.17 of the ARCF GRR Final EIS/EIR is applicable to the analysis in this Supplemental EIR and is not repeated.

#### *Existing Conditions*

A Phase I Environmental Site Assessment (Phase I ESA) (HDR 2017) was conducted for the portion of the Sacramento River East Levee, encompassing the project area. The Phase I ESA included a visual inspection of the project site for the proposed project, a review of environmental data bases and regulatory agency records, and a review of historical data sources. The Phase I ESA did not identify recognized environmental conditions in the vicinity of the Sacramento River Erosion Contract 4 project site.

### *Schools*

No schools are located within 0.25 mile of the project site.

### *Airports and Airstrips*

Sacramento Executive Airport is located approximately 1.3 miles east of the work area in the Little Pocket. The project site is not located within or adjacent to any of the airport safety zones. (Sacramento Area Council of Governments [SACOG] 1999:39.)

The Borges-Clarksburg Airport is located approximately 6 miles south of the project site. No work or staging areas are located within or adjacent to any of the airport safety zones.

### *Wildland Fire Hazards*

The project's staging and levee improvement areas are located within a generally developed and urbanized area. However, riparian vegetation is present within the levees along the Sacramento River. According to the California Department of Forestry and Fire Protection (CAL FIRE), staging and levee improvement areas are in a local responsibility area and is not within a very high fire hazard severity zone (CAL FIRE 2007, 2008).

## 3.13.2 Environmental Impacts

### *Summary of ARCF GRR Final EIS/EIR Effects*

The ARCF GRR Final EIS/EIR determined that construction contractors would be required to use, store, and transport hazardous materials in compliance with Federal, State, and local regulations during project construction and operation. Any hazardous substance encountered during construction would be removed and properly disposed of by a licensed contractor in accordance with Federal, State, and local regulations. Work would not occur in locations where known hazardous materials sites are listed with Department of Toxic Substances Control or SWRCB. Therefore, these impacts were determined to be less than significant. Furthermore, the construction contractor would also be required to prepare a SWPPP and implement BMPs to prevent discharge from the construction site into drainage systems, lakes, or rivers, which would further reduce effects from hazardous materials.

### *Significance Criteria*

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. A significant impact related to hazards and hazardous materials would occur if the proposed project refinements would result in any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or involve the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment; or

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency excavation plan.

An additional threshold, not included in the ARCF GRR Final EIS/EIR, is considered in this analysis. The project was determined to result in a significant effect related to wildland fire hazards if it would:

- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or residences are intermixed with wildlands.

### *Impact Analysis*

Handling of Hazardous Materials within 0.25 Mile of a School

No schools are located within 0.25 mile of the project site. This impact will be less than significant.

Possible Exposure of People and the Environment to Hazardous Materials, Including Cortese-listed Sites

Construction contractors will be required to use, store, and transport hazardous materials in compliance with Federal, State, and local regulations during project construction activities. Thus, the use of these materials during construction will not represent a safety hazard for persons working on the project or nearby residents. The Phase I ESA did not identify recognized environmental conditions that could include contaminated soil or groundwater on or near the project site. This impact will be less than significant. USACE nevertheless requires testing for contaminants prior to construction, as described in Mitigation Measure HAZ-1, which could further reduce this less-than-significant impact.

Interfere with Emergency Response or Evacuation

The project site extends along the Sacramento River, and as a result, levee improvements and associated staging will be located at the perimeter of developed areas and will not interfere with emergency response or evacuation. The project will have a less-than-significant effect.

Possible Creation of Wildland Fire Hazards

The proposed project will be implemented in various locations along the Sacramento River and in adjacent and nearby urbanized areas. CAL FIRE (2007, 2008) has determined that the areas where project-related activities will occur are not within a very high fire hazard severity zone or a State Responsibility Area. The project will have a less-than-significant effect.

### 3.13.3 Mitigation Measures

The following mitigation measure has been previously adopted (USACE and CVFPB 2021b).

Mitigation Measure HAZ-1: Conduct Phase II Investigations as Needed

The Project Partners would require that Project Areas be tested for contaminants prior to construction. Any hazardous materials found would be disposed of in accordance with all Federal, State, and local regulations at an approved disposal site. Where construction activities would occur in close proximity to sites identified as Recognized Environmental Conditions in the Phase I ESA (HDR 2017), a Phase II site investigation should also be conducted.

#### *Significance after Mitigation*

The project would not have significant impacts related to hazards and hazardous materials. Implementing Mitigation Measure HAZ-1 would further reduce hazards and hazardous materials impacts.

# CHAPTER 4 CUMULATIVE EFFECTS

CEQA requires the consideration of cumulative effects of the proposed project refinements, together with the effects of other projects causing related impacts (State CEQA Guidelines Section 15130(a)(1). The State CEQA Guidelines define cumulative effects as "two or more individual effects which, when considered together, compound or increase other environmental impacts" (State CEQA Guidelines Section 15355).

The cumulative effects of the overall ARCF 2016 Project were covered in the ARCF GRR Final EIS/EIR (USACE 2016). The thorough cumulative analysis in the ARCF GRR Final EIS/EIR is incorporated by reference. Because the temporal scope of the analysis for the not-yet funded ARCF 2016 Project was not clearly defined in the ARCF GRR Final EIS/EIR, for the purposes of the proposed project, the temporal scope of the cumulative effects analysis in this Supplemental EIR considers past projects that would continue to affect the Sacramento River Erosion Contract 4 project area in 2024 and projects expected to be under parallel construction with Contract 4 construction in 2024.

## 4.1 Past, Present, and Reasonably Foreseeable Future Projects

### 4.1.1 Projects Contributing to Potential Cumulative Effects

This section briefly describes other similar or related projects, focusing on development, flood-risk reduction, and habitat restoration projects that have similar effect mechanisms and affect similar resources as the Sacramento River Erosion Contract 4, with project refinements. Although the ARCF GRR Final EIS/EIR identified several of these projects in the cumulative scenario, the descriptions in this section also include additional projects and updated timing and schedule information.

Past and present projects and activities have contributed on a cumulative basis to the existing environment within the Project Area as a result of mechanisms, such as the following:

- population growth and associated development of socioeconomic resources and infrastructure;
- conversion of natural vegetation to agricultural and developed land uses, and subsequent conversion or restoration of some agricultural lands to developed or natural lands;
- alteration of riverine hydrologic and geomorphic processes by flood management, water supply management, and other activities; and
- introduction of nonnative plant and animal species.

Several major past, present, and probable future projects are considered in this cumulative effects analysis, including regional projects for which USACE has provided approval or is in the process of considering Section 408 permission. For elements of these projects proposed for future implementation, the construction timing and sequencing is highly variable and may depend on uncertain funding sources. However, each of these past, present, and

probable future projects must be considered in the context of environmental effects from the proposed project to properly evaluate the cumulative effects of this action and these other similar projects on the environment.

### *Lower American River Common Features Project*

Based on congressional authorizations in Water Resource Development Act (WRDA) 1996 and WRDA 1999, USACE, CVFPB, and SAFCA have undertaken various improvements to the levees along the north and south banks of the American River and the east bank of the Sacramento River. Under WRDA 1996, this involved constructing 26 miles of slurry walls on the Lower American River. The WRDA 1999 authorization included a variety of additional levee improvements to ensure that the levees could pass an emergency release of 160,000 cubic feet per second (cfs), such as levee raises and levee widening improvements. The WRDA 1996 and 1999 projects were completed in 2014.

### *American River Common Features 2016 Project*

The ARCF 2016 Project is scheduled for construction from 2019 through 2026. The project involves construction of levee improvements along the American and Sacramento River levees as well as proposed improvements to the Natomas East Main Drainage Canal (NEMDC) east levee and Magpie Creek (SAFCA previously completed improvements as an early implementation action in 2018). The levee improvements scheduled for implementation include construction of cutoff walls, erosion protection, seepage and stability berms, relief wells, levee raises, and a small stretch of new levee. In addition, USACE intends to widen the Sacramento Weir. The project will also involve construction of a number of mitigation sites in the area.

In addition to the improvements that are part of the proposed project, the ARCF GRR Final EIS/EIR includes:

- Construction of a seepage and stability berm along Front Street (completed in 2019)
- Seepage and stability improvements to the Sacramento River east levee between downtown Sacramento and Freeport (planned for 2020-2023)
- Erosion protection on the American River (planned for 2022-2026)
- Additional erosion protection improvements on the Sacramento River (planned between 2021 and 2026)
- Improvements to the “East Side Tributaries, including the Magpie Creek Diversion Channel, the east bank of the Natomas East Main Drainage Canal (NEMDC)/Steelhead Creek. Pleasant Grove Creek Canal, and Dry, Robla, and Arcade Creeks (planned for 2025-2026)
- Widening the Sacramento Weir and Bypass, located along the north edge of the City of West Sacramento in Yolo County (planned for 2021 to 2024)

### *American River Watershed Common Features Natomas Basin Project*

In 2007, the Natomas Levee Improvement Project was authorized as an early-implementation project initiated by SAFCA to provide flood protection to the Natomas Basin as quickly as possible. These projects consist of improvements to the perimeter levee system of the Natomas Basin in Sutter and Sacramento Counties, as well as associated landscape and irrigation/drainage infrastructure modifications. SAFCA, DWR, CVFPB, and USACE have initiated this effort with the aim of incorporating the Landside Improvements Project and the Natomas Levee Improvement Project into the Federally authorized American River Common Features Project. Construction of this early implementation project was completed in 2013. In 2014, the Natomas Basin Project was authorized by Section 7002 of Water Resources Reform and Development Act of 2014 (Public Law 113-121). Construction on Reach I and Reach D began in 2018; Reach H began in 2019. Construction on Reach D will include work on the highway 99 window in 2024, and construction on Reaches H and I is expected to continue in 2023 and 2024 with pumping plant improvements and landside improvements. Construction in Reach B began in 2021 and is scheduled to be completed in 2023, with replacement of pumping plants continuing in 2024. Reach A is under construction, scheduled for completion in 2024 with Reaches E, F, and G scheduled for construction in 2023 through 2025.

### *Local Funding Mechanisms for Comprehensive Flood Control Improvements for the Sacramento Area*

SAFCA created a new assessment district ("CCAD2") to replace the existing Consolidated Capital Assessment District and updated the existing development impact fee to provide the local share of the cost of constructing and maintaining flood-risk reduction improvements and related environmental mitigation and floodplain habitat restoration along the American and Sacramento Rivers and their tributaries in the Sacramento metropolitan area. The program includes the projects necessary to provide at least a 100-year level of flood protection for developed areas in Sacramento's major flood plains as quickly as possible; achieve the State's 200-year flood protection standard for these areas within the timeframe mandated by the Legislature; and improve the resiliency, robustness, and structural integrity of the flood control system over time so that the system can safely contain flood events larger than a 200-year flood. The program includes Yolo and Sacramento Bypass system improvements, levee modernization, and Lower Sacramento River erosion control. The Updated Local Funding Mechanisms Final Subsequent Program EIR was certified, and the project was adopted in April 2016 (SAFCA 2016).

### *Sacramento River Bank Protection Project*

The mission of the Sacramento River Bank Protection Project (SRBPP) is to repair bank erosion and minimize the risk of flooding along the Sacramento River by evaluating riverside levees and rehabilitating sections of the levees, if necessary. Section 203 of the Flood Control Act of 1960 was the original authority for SRBPP, giving USACE authorization to implement rehabilitation of 430,000 linear feet of levee. Authority to rehabilitate an additional 405,000 linear feet of levee was added by the 1974 WRDA. In 2007, the WRDA, Pub. L. 110-114, § 3031, 121 Stat. 1113 (2007) (WRDA 2007) added 80,000 linear feet to SRBPP as a supplement to the 1974 legislation.

### *West Sacramento General Reevaluation Report*

The West Sacramento Project General Reevaluation Report (WSPGRR) determined the Federal interest in reducing the flood risk within the West Sacramento project area. The purpose of the WSPGRR is to bring the 50-miles of perimeter levees surrounding West Sacramento into compliance with applicable Federal and State standards for levees protecting urban areas. Proposed levee improvements would address: (1) seepage, (2) stability, (3) overtopping, and (4) erosion concerns along the West Sacramento levee system. Potential measures to address these concerns would include: (1) seepage cutoff walls, (2) stability berms, (3) seepage berms, (4) levee raises, 5) flood walls, (6) relief wells, (7) sheet pile walls, (8) jet grouting, and (9) bank protection. The WSPGRR was authorized in WRDA 2016, and in the Fiscal Year 2019 work plan received initial funding to begin preconstruction design. However, under the West Sacramento Area Flood Control Agency Early Implementation Program, three levee segments have already been completed: a small segment along the Sacramento River adjacent to the I Street Bridge, a stretch along the Sacramento River in the northern portion of the city near the neighborhood of Bryte, and the south levee of the Sacramento Bypass. One levee segment, the Southport setback levee, was constructed as part of the local effort, which includes all of the proposed levee improvements under the study to the Sacramento River on the West Sacramento south basin.

### *I Street Bridge Replacement Project*

The I Street Bridge Replacement Project will include the construction of a new bridge upstream of the existing I Street Bridge. The bridge will provide a new vehicle, bicycle, and pedestrian connection across the Sacramento River between the Sacramento Railyards and the West Sacramento Washington Neighborhood. The existing I Street Bridge's lower deck will continue to serve as a railroad crossing, and the upper deck is planned for use by pedestrians and bicyclists. The approach viaducts to the existing I Street Bridge will be demolished. Construction of the I Street Bridge replacement project is planned between 2024 and 2027.

### *Central Valley Flood Protection Plan of 2022*

The Central Valley Flood Management Planning (CVFMP) Program is one of several programs managed by DWR under FloodSAFE California, a multifaceted initiative launched in 2006 to improve integrated flood management in the Central Valley, including the North Sacramento Streams and Sacramento River east levee (proposed project) Improvement areas. The CVFMP Program addresses State flood management planning activities in the Central Valley. The CVFPP is one of several documents adopted by CVFPB to meet the requirements of flood legislation passed in 2007 and, specifically, the Central Valley Flood Protection Act of 2008. DWR adopted updates to the CVFPB in 2017 and 2022. The 2017 update focused on Sacramento and San Joaquin Watershed Basin-Wide Feasibility Studies (BWFS), Regional Flood Management Planning, and the Central Valley Flood System Conservation Strategy. The 2022 update focused on climate resilience, performance tracking, and alignment with other State efforts, recommending priority actions to address flood risk. The CVFPP contains a broad plan for flood management system improvements, and ongoing planning studies, engineering, feasibility studies, designs, funding, and partnering are required to better define, and incrementally fund and implement, these elements over the next 20 to 25 years. Although most CVFPP projects are not well-defined and would be implemented substantially later than the

proposed project, it is important to consider the long-term aspects of the CVFPP in conjunction with this action.

### *Yolo Bypass Cache Slough Partnership Master Plan*

The Yolo Bypass Cache Slough (YBCS) Partnership (a group of 15 agencies) is proposing to implement a program to coordinate numerous related projects in the Yolo Bypass over the next 25 years to provide essential flood conveyance capacity in the Yolo Bypass while improving its resiliency, reliability, and adaptability to climate change; enhancing aquatic and terrestrial species habitats; and preserving agricultural land and economic values. Projects that are being considered for implementation under the YBCS Partnership Master Plan include: constructing a setback levee in the Lower Elkhorn Basin on the east side of the Upper Yolo Bypass and on the north side of the Sacramento Bypass (discussed separately in further detail below); widening the Freemont Weir and the Sacramento Weir; widening the Upper Yolo Bypass by constructing setback levees along the east side of the Bypass in the Upper Elkhorn Basin; constructing fix-in-place improvements to the existing levees in various locations along the west and east sides of the Upper Yolo Bypass; habitat restoration projects throughout the Yolo Bypass, changes to the Cache Creek Settling Basin; degrading the step levees at the north end of Liberty Island; and raising and strengthening the levees along the entire west side of the Lower Yolo Bypass.

### *Lower Elkhorn Basin Levee Setback Project*

The Lower Elkhorn Basin Levee Setback (LEBLS) project encompasses a portion of the Phase I implementation of Yolo Bypass System Improvements pursuant to DWR's Sacramento BWFS and therefore is focused on levees in the Lower Elkhorn Basin and the Sacramento Bypass. Consistent with the Sacramento BWFS, the LEBLS project is intended to reduce flooding in the Lower Sacramento River Basin by increasing the capacity of the Yolo Bypass. This increased capacity would be accomplished by constructing a setback levee on the north side of the Sacramento Bypass as an early implementation action for the ARCF 2016 project, and constructing a setback levee in the Lower Elkhorn Basin on the east side of the Yolo Bypass.

The LEBLS project includes implementing a project mitigation strategy designed to avoid, minimize, reduce, and mitigate impacts on sensitive habitats and special-status species caused by the project, in a manner that optimally protects the natural environment, especially riparian habitat and stream channels suitable for native plants, wildlife habitat, agricultural lands, and public recreation. Construction of the LEBLS project is planned to be completed in 2024. Construction effects of the LEBLS project have the potential to contribute to cumulative impacts with the proposed project.

### *Folsom Dam Safety and Flood Damage Reduction Project*

The Folsom Dam Safety and Flood Damage Reduction Project, referred to as the Joint Federal Project (JFP), addressed the dam safety hydrologic risk at Folsom Dam and improved flood protection to the Sacramento area. Several activities associated the project included: the Folsom Dam Auxiliary Spillway, static upgrades to Dike 4, Mormon Island Auxiliary Dam (MIAD) modifications, and seismic upgrades (piers and tendons) to the Main Concrete Dam. The project was completed in fall 2017.

### *Folsom Dam Water Control Manual Update*

The Folsom Dam Water Control Manual (WCM) is being updated to reflect authorized changes to the flood management and dam safety operations at Folsom Dam to reduce flood risk in the Sacramento area. The WCM Update would utilize existing and authorized physical features of the dam and reservoir, specifically the recently completed auxiliary spillway. Along with evaluating operational changes to utilize the additional capabilities created by the auxiliary spillway, the WCM Update would assess the use of available technologies to enhance the flood risk management performance of Folsom Dam to include a refinement of the basin wetness parameters and the use of real time forecasting.

Further, the WCM Update would evaluate options for the inclusion of creditable flood control transfer space in Folsom Reservoir in conjunction with Union Valley, Hell Hole, and French Meadows Reservoirs (also referred to as Variable Space Storage). The study would result in an Engineering Report as well as a Water Control Manual implementing the recommendations of the analysis.

### *Folsom Dam Raise*

Construction of the Folsom Dam Raise project followed completion of the JFP and the WCM projects. The Dam Raise project includes raising the Right- and Left-Wing Dams, Mormon Island Auxiliary Dam, and Dikes 1-8 around Folsom Reservoir by 3.5 feet. The Dam Raise project also includes the three emergency spillway gates and three ecosystem restoration projects (automation of the temperature control shutters at Folsom Dam and restoration of the Bushy and Woodlake sites downstream). Similar to the ARCF 2016 Project, the Folsom Dam Raise Project was fully funded by the Bipartisan Budget Act of 2018. Construction to raise Dike 8 by 3.5 feet was completed in 2020. Dikes 1-7, the Main Dam, the Left Wing Dam, the Right Wing Dam and the Mormon Island Auxiliary Dam are currently in design, with environmental documentation completed in 2022. Construction of the 3.5-foot raises on these facilities is planned to begin in 2022 and continue into 2025. Construction and construction traffic effects of the Folsom Dam Raise project have the potential to contribute to cumulative impacts with the proposed project.

## 4.2 Cumulative Effects Analysis

### 4.2.1 Geological Resources

Construction activities associated with most of the related projects would involve extensive grading and earthmoving activities, thereby exposing soil to erosion from wind in summer and from rainfall during storm events. If uncontrolled, suspended sediment from stormwater runoff could enter adjacent water bodies and result in increased turbidity. However, the proposed project refinements along with each related project expected to disturb 1 acre of land or more are required by law to comply with NPDES discharge permits from the Central Valley RWQCB, which require preparation of a SWPPP and implementation of the SWPPP's erosion control BMPs. Therefore, there would be no significant cumulative effect related to construction-related erosion and the proposed project with refinements would not make a cumulatively considerable incremental contribution to a significant cumulative effect related to geological resources.

If not addressed, erosion-related levee failures could contribute significant volumes of sediment and material to the stream channels which could alter flow patterns and potentially destabilize other levees outside the Project Area. However, the proposed project and the related levee projects would implement erosion control measures that would reduce the risk of levee failure. Therefore, the proposed project and the related projects would not cumulatively increase the risk of levee failure but would reduce flood risk and related substantial erosion. Therefore, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to significant cumulative impacts related to erosion.

The proposed project and related projects would be designed based on the results of detailed geotechnical engineering studies and are required to comply with standard engineering practices for levee and/or architectural design. In addition to compliance with CVFPB standards, levee design and construction must be in accordance with EM 1110-2-1913 Design and Construction of Levees (USACE 2000), the primary Federal standards applicable to levee improvements. In addition, ER 1110-2-806, Earthquake Design and Evaluation for Civil Works Projects (USACE 2016), would also apply to project design and construction. Therefore, it is assumed that the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, seepage, and expansive soils. The related development projects must comply with the California Building Standards Code, which incorporates specific requirements for engineering and construction that are designed to reduce damage from seismic ground shaking, liquefaction, subsidence, seepage, and expansive soils to the maximum extent feasible. Therefore, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to seismicity and soils.

Most of the related projects would entail earthmoving activities in the Riverbank and/or Modesto Formations, which are considered to have high paleontologically potential (SVP 2010: 1). However, the proposed project activities will include excavation only in Holocene-aged sediments (i.e., less than 11,700 years old) which, because of their geologically young age, are considered to have low paleontological potential (SVP 2010: 2). While some of the related projects, such as the CVFPP, NLIP, and the Delta Shores projects contain mitigation measures to protect paleontological resources, the other related projects may not. Therefore, some of the related projects may result in significant effects to unique paleontological resources. Future ARCF 16 projects proposed along the Sacramento River East Levee and the American River would also take place in the Riverbank Formation. However, the presence of unique paleontological resources is site-specific, and a low potential exists that any project, including the proposed project with refinements, would encounter unique, scientifically important fossils. Therefore, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to damage to or destruction of unique paleontological resources.

### 4.2.2 Water Quality

This project is the only ARCF project on the Sacramento River that includes bank protection placement below the OHWM. Some projects, such as the West Sacramento GRR and the SRBPP, include levee raises, flood walls, and bank protection. The West Sacramento GRR and Lower Elkhorn Basin Levee Setback Project include construction of new setback levees.

Related projects, including other phases of the ARCF 2016 Project, SRBPP, and the West Sacramento GRR, could be under construction during the same timeframe as the proposed project. If construction occurs during the same timeframe, water quality could be diminished primarily due to increased turbidity from soil released during construction activities. Water quality could be affected in or adjacent to the proposed project area and upstream and downstream of the work area. Construction activities such as clearing and grubbing, grading, and rock placement, have the potential to temporarily degrade water quality through the direct release of soil and construction materials into water bodies or the indirect release of contaminants into water bodies through runoff. Short-term impacts as a result of the proposed project would be mitigated to less than significant with the implementation of mitigation measures described in Section 3.3, "Water Quality." All projects would be required to comply with the NPDES Construction General Permit requirements of the RWQCB, CWA, and overall water quality would be required to meet the Basin Plan objectives. The proposed project would require compliance with the CWA, Sections 401 and 404 before work starts below the OHWM. Therefore, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to significant cumulative effects related to water quality.

### 4.2.3 Vegetation and Wildlife

Project implementation has the potential to contribute to the loss or degradation of sensitive habitats, riparian habitats, waters of the United States, waters of the State, and forestland. Similar anticipated adverse effects on habitats are associated with the flood-risk reduction and development projects, including Sacramento River Bank Protection Project, Lower Elkhorn Basin Levee Setback Project, West Sacramento GRR, I Street Bridge Replacement Project, Folsom Dam Raise, and other phases of the ARCF 16 Project; and the removal of high-hazard vegetation by levee maintaining agencies in the Sacramento area and surrounding region. Such projects would generally continue to contribute to the loss or degradation of sensitive habitats and forestland. Most potential adverse effects of the proposed project and the related projects would be associated with construction disturbances of habitats, but permanent loss of habitat would also result from some of the individual levee improvement projects and the development projects. Implementation of mitigation measures described in Section 3.4, "Vegetation and Wildlife," would reduce or avoid the effects of the proposed project on sensitive habitats in accordance with the requirements of the Federal ESA and California Endangered Species Act (CESA) and other regulatory programs, such as CWA Sections 401 and 404. The other projects would have similar requirements to avoid, minimize, and mitigate for impacts on vegetation and wildlife therefore, reducing impacts. Although the proposed project's temporary construction-related impacts would be significant, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to significant cumulative effects related to the permanent loss or degradation of sensitive habitats or loss of forestland.

### 4.2.4 Fisheries

Project implementation has the potential to contribute to the loss or degradation of fish habitat, including near-shore aquatic SRA habitat. Similar potential for adverse effects on fish and their habitats would be associated with the Sacramento River Bank Protection Project, West Sacramento GRR, I Street Bridge Replacement Project, other phases of the ARCF 16 Project, and the removal of high-hazard vegetation by levee maintaining agencies in the Sacramento area

and surrounding region. Such projects would generally continue to adversely impact fish species. Most potential adverse effects of the proposed project and the related levee projects related to fish would be associated with construction disturbances of fish and their habitats; however, permanent loss of habitat would result from some of the individual levee improvement projects. These adverse effects could contribute to species decline and losses of habitat which, due to historical impacts caused by other projects, have led to the need to protect other species under the ESA and CESA. The completion of the Folsom JFP and the new Water Control Manual Update for the Folsom Dam would likely improve conditions for fish species on the American River and subsequently the Sacramento River because of the ability to release colder water from deeper in the lake and better control outflows. Implementation of mitigation measures described in Section 3.5, "Fisheries," as well as the addition of in-channel IWM, would reduce or avoid the effects of the proposed project in accordance with consultation with USFWS and NMFS. Therefore, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to significant cumulative adverse effects on fisheries.

### 4.2.5 Special-Status Species

Project implementation has the potential to adversely affect special-status species such as Chinook salmon, steelhead, green sturgeon, delta smelt, Swainson's hawk, other nesting birds, and bats. Similar potential for adverse effects on special-status species and their habitats would be associated with the flood-risk reduction projects and the development projects, including Sacramento River Bank Protection Project, Lower Elkhorn Basin Levee Setback Project, West Sacramento GRR, I Street Bridge Replacement Project, Folsom Dam Raise, other phases of the ARCF 16 Project, and the removal of high-hazard vegetation by levee maintaining agencies in the Sacramento area and surrounding region. Such projects would generally continue to adversely impact special- status species. Most potential adverse effects of the proposed project and the other levee projects to special-status species would be associated with construction disturbances of these species and their habitats. However, permanent loss of habitat would result from some of the individual levee improvement projects and the development projects. These adverse effects could contribute to species declines and losses of habitat that have led to the need to protect these species under the ESA and CESA. Implementation of mitigation measures described in Section 3.6, "Special-Status Species," would reduce or avoid the effects of the proposed project in accordance with ESA and CESA requirements. Therefore, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to significant cumulative adverse effects on special-status species.

### 4.2.6 Cultural and Tribal Cultural Resources

Implementation of the proposed project, other flood-risk reduction projects, and development projects considered in this cumulative analysis have the potential to contribute to the loss or degradation of known and unrecorded archaeological resources, known Tribal Cultural Resources, known and unknown human remains, and known and unknown historic-period archaeological resources. Most potential effects of the proposed project and other related projects to cultural resources would be associated with construction disturbances of archaeological sites, Tribal Cultural Resources, and human remains. These effects could contribute to the loss of intact cultural resources and human remains in the Sacramento region. Implementation of the mitigation measures presented in Section 3.7, "Cultural and Tribal

Cultural Resources," would reduce or avoid the effects of the project on known resources and on unknown archaeological resources and human remains that could potentially be discovered during project construction. However, the project could still make a cumulatively considerable incremental contribution to a significant cumulative effect on cultural and Tribal Cultural Resources, which have been destroyed and compromised over time as a result of ground-disturbing activities.

### 4.2.7 Air Quality

Air quality is inherently a cumulative effect because existing air quality is a result of past and present projects. No single project would be sufficient in size, by itself, to result in nonattainment of the regional air quality standards (SMAQMD 2014). Several other construction projects are expected to occur simultaneously in the SVAB during the planned construction period for the proposed project. The related projects have the potential to generate construction-related emissions that individually exceed SMAQMD's threshold of significance. However, all construction projects in the SMAQMD, including the proposed project, are required to offset emissions that have the potential to negatively affect air quality in the SVAB through implementation of SMAQMD emissions reductions practices. In addition, many offset projects create long-term, permanent emissions reductions (which result in a benefit). Furthermore, the proposed project is part of the larger ARCF 16 Project, which has been determined to meet the requirements of general conformity with the provisions of the Clean Air Act (CAA) through payment of fees to offset NOx emissions. Although the ARCF 16 Project as a whole will exceed General Conformity *de minimis* thresholds in 2024, the impact will be reduced to a less-than-significant level after implementing Mitigation Measures AIR-1 through AIR-5. As discussed in Section 3.8, "Air Quality," construction of the proposed project will not result in significant impacts individually to air quality and would not exceed Federal General Conformity *de minimis* thresholds after mitigation in either air basin. Therefore, the proposed project with refinements would not cause a cumulatively considerable incremental contribution to significant cumulative effects related to air quality.

### 4.2.8 Climate Change

Climate change as related to GHG emissions is inherently cumulative. Although significance thresholds can be developed by air districts and State and Federal regulatory agencies, these thresholds and their related goals are ultimately designed to affect change at a global level. Therefore, the analysis presented in Section 3.9, "Climate Change," includes the analysis of both the project and cumulative effects. The proposed project and the related projects would generate GHGs in proportion with the size of each individual project, amount and time of operation of construction equipment, and distances traveled. However, the proposed project and other related projects which generate GHG emissions in excess of threshold levels would be required to implement the mitigation measures set forth in their respective CEQA/NEPA documents to reduce emissions and/or purchase carbon offsets. Most of the other related projects are flood risk management projects. By implementing these projects, the agencies would reduce the potential future emissions associated with flood fighting and future emergency actions. The proposed project would be consistent with statewide climate change adaptation strategies. Therefore, the proposed project with refinements would not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to climate change.

### 4.2.9 Noise

A significant cumulative effect might occur if construction activities associated with any of the related project(s), such as the West Sacramento GRR and other ARCF projects, were to occur within 500 feet of the proposed project's construction activities, or if the construction activities of other projects were to overlap with the construction activities of the proposed project. At its closest point, the portion of the Delta Shores project area that is still under construction would be approximately 5 miles southeast of the project site. Therefore, the Delta Shores project is located too far away to combine with the proposed project's construction noise or vibration effects. Furthermore, although related projects could require construction that exceeds the respective local City or County noise ordinances, the proposed project would limit noise-generating activities to the hours when the City of Sacramento exempts construction noise. Therefore, the proposed project with refinements is not expected to result in a cumulatively considerable incremental contribution to significant cumulative noise impacts caused by construction equipment or increased traffic.

### 4.2.10 Recreation

The proposed project, along with the related projects, may result in temporary closure of recreational facilities and potential damage to recreational facilities. Implementation of mitigation measures described in Section 3.11, "Recreation," would reduce the proposed project's short-term effects to a less-than-significant level. Due to the temporary nature of the construction effects and the likelihood that any degradation to the quality of recreational experiences would last for no longer than 3–6 months, the proposed project's effects on local recreation are not anticipated to overlap with effects of other related projects. Cumulative effects related to recreation resources would be less than significant and the proposed project with refinements would not result in a cumulatively considerable incremental contribution to significant cumulative impacts related to short-term, temporary changes in recreational opportunities during project construction activities.

### 4.2.11 Visual Resources

Construction crews, equipment, and barges would be visible to residents adjacent to local streets and to residences adjacent to the work site. In addition, construction would be visible to recreationists in the Sacramento River and potentially along portions of the Sacramento River Parkway bicycle and pedestrian trail. However, construction would be temporary, occur away from other projects, and as construction would proceed along the levee in a linear fashion, the views of construction crews, equipment, and haul trucks would be of short duration. At the completion of construction activities, the levees, staging areas, barges, and borrow sites for both the proposed project and the related levee projects would be restored to or substantially similar to pre-construction conditions. Nevertheless, construction of multiple projects along the waterways in the Sacramento region would result in a cumulative impact to visual resources due to the removal of vegetation along these waterways and disturbance from construction activities. As stated in the ARCF GRR Final EIS/EIR, cumulative impacts to visual resources were analyzed and determined to be significant and unavoidable while construction is ongoing, and there are no feasible mitigation measures that can be implemented to reduce this cumulative impact to a less-than-significant level.

### 4.2.12 Public Utilities and Service Systems

The proposed project, other phases of the ARCF 2016 Project along the Sacramento River east levee and the American River, and all other related levee projects could temporarily disrupt utility service as a result of inadvertent damage to existing utility equipment, facilities, and infrastructure. However, any utility and service system effects would be geographically isolated, short in duration, and occur on a project-by-project basis. Thus, these disruptions would not combine to form cumulative effects. Therefore, the proposed project with refinements will not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to potential disruption of utility services.

Temporary construction activities associated with the proposed project and related projects in the Sacramento Region would generate organic and non-organic solid waste. Waste material that is not suitable for disposal onsite or at the Railyards would likely be disposed of in the Yolo County Central, Kiefer, or L and D Landfills. These landfills currently provide solid waste disposal services to municipal and commercial customers and provide construction demolition and debris disposal in Sacramento County. These landfills have sufficient permitted capacity to accommodate solid waste disposal needs for Sacramento County, including the disposal needs of the proposed project and the related projects. Therefore, the proposed project with refinements will not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to increases in solid waste generation.

### 4.2.13 Hazards and Hazardous Materials

Implementation of the proposed project and the related projects would include handling small quantities of hazardous materials used in construction equipment (e.g., fuels, oils, lubricants) and during construction activities. The storage, use, disposal, and transport of hazardous materials are extensively regulated by various Federal, State, and local agencies. Permits are required for the use, handling, and storage of these materials, and compliance with appropriate regulatory agency standards agencies is also required to avoid releases of hazardous waste. Construction companies that handle hazardous substances for the proposed project and all related projects are required by law to implement and comply with these existing regulations. Furthermore, any effect that might occur would be localized to the area where the materials are being used and would not be additive to other hazardous materials-related effects associated with the project site. These materials would not be used in quantities that pose a hazard to schools within 0.25 mile of construction sites. Thus, the proposed project with refinements will not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to the potential for accidental spills of materials used during construction activities or handling of hazardous materials within 0.25 mile of a school.

Project implementation could result in exposure to existing hazardous materials sites during construction activities. It is unknown whether any of the related project sites contain existing hazards materials. However, mitigation measures identified in Section 3.14, “Hazardous Wastes and Materials,” will minimize potential exposure to unknown hazards and hazardous materials during implementation of the proposed project. Therefore, the proposed project with refinements will not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to existing hazardous materials.

Wildland fire represents a hazard particularly during the hot, dry summer and fall in the Central Valley. Most of the related projects, including future levee and development projects, would be implemented in urbanized areas, similar to the proposed project, with a relatively low risk of wildland fire. Therefore, there would be no significant cumulative impact related to wildland fire risk, and the proposed project with refinements will not result in a cumulatively considerable incremental contribution to a significant cumulative effect related to wildland fire hazards.

## 4.3 Growth-Inducing Effects

Because the proposed project would not involve construction of housing, the proposed project with refinements would not directly induce growth. Project-related construction activities would generate temporary and short-term employment, but these construction jobs are anticipated to be filled from the existing local employment pool and will not indirectly result in a population increase or induce growth by creating permanent new jobs. Furthermore, the project will not involve constructing businesses or extending roadways or other infrastructure that could indirectly induce population growth. Consequently, the proposed project with refinements will not induce growth leading to changes in land use patterns, population densities, or related impacts on environmental resources.

Levee improvements will benefit areas identified for future growth anticipated in the vicinity of the Sacramento River east levee in the City of Sacramento. Local land use decisions are within the jurisdiction of the City of Sacramento, which has adopted a general plan consistent with State law. The City of Sacramento 2035 General Plan (City of Sacramento 2015) provides an overall framework for growth and development in the City. The City of Sacramento 2013–2021 Housing Element (City of Sacramento 2013) of the City General Plan identifies vacant parcels zoned for multifamily dwelling units in the vicinity of Riverside Boulevard and 43rd Avenue, and vacant parcels zoned for single-family dwelling units are identified within the Little Pocket area.

The levee improvements will increase the levee's resistance to erosion, provide better overall levee stability and reliability, and provide additional flood risk reduction for growth anticipated in the City's General Plan. Growth throughout the project area has already been planned as part of the City of Sacramento 2035 General Plan (City of Sacramento 2015). The proposed project will not allow additional growth to occur other than what has already been planned, nor will it change the locations where this growth is planned to occur. Consequently, implementation of the proposed project will not affect current and/or projected population growth patterns within the City of Sacramento as already evaluated and planned for in the City General Plan and, therefore, will not be growth-inducing. The proposed project with refinements will mitigate flood risks by improving levees to meet engineering standards associated with the National Flood Insurance Program; it will not alter protection for the 100-year event nor does it transfer any such risk to other areas. The proposed project with refinements will not directly or indirectly support development in the base floodplain.

## 4.4 Irreversible and Irretrievable Commitment of Resources

The discussion of irreversible and irretrievable commitments of resources in the ARCF GRR Final EIS/EIR adequately describes the effects of the Sacramento River Erosion Contract 4 with refinements.

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This Supplemental EIR was prepared by CVFPB with assistance from DWR, GEI Consultants, Inc., and USACE, Sacramento District.

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# Part 2

# Draft Supplemental Environmental Assessment

**American River Watershed Common Features**
**Water Resources Development Act of 2016 Project**
**Sacramento River Erosion Contract 2**

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Draft

# American River Common Features Project
# Sacramento, California
# Sacramento River Erosion Contract 4
# Supplemental Environmental Assessment XII

February 2023

**US Army Corps of Engineers**
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# Contents

## Tables

## Figures



## Abbreviations and Acronyms

| | |
|---|---|
| AALWSE | Average Annual Low Water Surface Elevation |
| APE | Area of Potential Effects |
| ARCF | American River Common Features |
| BAAQMD | Bay Area Air Quality Management District |
| BMPs | Best Management Practices |
| BO | Biological Opinion |
| C# | Contract Number |
| CAA | Clean Air Act of 1963 as amended |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| CFR | Code of Federal Regulations |
| CVFPB | Central Valley Flood Protection Board |
| CVRWQCB | Central Valley Regional Water Quality Control Board |
| CWA | Clean Water Act of 1972 |
| DWR | California Department of Water Resources |
| EIR | Environmental Impact Report |

| | |
|---|---|
| EIS | Environmental Impact Statement |
| EO | Executive Order |
| ERO | Erosion |
| ESA | Endangered Species Act |
| FONSI | Finding of No Significant Impact |
| FWCA | Fish and Wildlife Coordination Act of 1958 |
| GRR | General Reevaluation Report |
| HPMP | Historic Properties Management Plan |
| HPTP | Historic Property Treatment Plan |
| IWM | Instream Woody Material |
| LAR | Lower American River |
| NAVD | North American Vertical Datum |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act of 1966 |
| NMFS | National Marine Fisheries Service |
| NOx | Nitrous Oxides |
| NRHP | National Register of Historic Places |
| OHWM | Ordinary High Water Mark |
| PA | Programmatic Agreement |
| PM | Particulate Mater |
| RHA | Rivers and Harbors Act of 1899 as amended |
| SAFCA | Sacramento Area Flood Control Agency |
| SCH | State Clearinghouse |
| SEA | Supplemental Environmental Assessment |
| SEIR | Supplemental Environmental Impact Report |
| SHPO | State Historic Preservation Officer |
| SMAQMD | Sacramento and Yolo-Solano Air Quality Management Districts |
| SR | Sacramento River |
| SREL | Sacramento River East Levee |
| SWPPP | Stormwater Pollution Prevention Plan |
| USACE | US Army Corps of Engineers |
| USC | United States Code |
| USFWS | US Fish and Wildlife Service |

| | |
|---|---|
| VELB | Valley Elderberry Longhorn Beetle |
| WQC | Water Quality Certification |
| WRDA | Water Resources Development Act |
| YBCU | Western Yellow-billed Cuckoo |

# 1 Introduction

## 1.1 Summary

Due to its location at the confluence of the American and Sacramento Rivers, the Sacramento, California metropolitan area is one of the most at-risk areas for flooding in the United States. To address this, Congress first authorized the American River Common Features (ARCF) project in the Water Resources Development Act (WRDA) of 1996 to address levee seepage and instability along the American and Sacramento Rivers in Sacramento and surrounding areas. High water in 1997 stressed the flood risk management system and revealed additional issues to be addressed. The U.S. Army Corps of Engineers (USACE) completed a General Reevaluation Report (GRR) in 2015 and an associated Final Environmental Impact Statement / Environmental Impact Report in 2016 (2016 ARCF FEIS/EIR). The GRR determined that seepage, stability, and overtopping protection measures were needed along the Sacramento River, the east bank of the Natomas East Main Drainage Canal, and Arcade Creek. It also determined that overtopping protection measures were needed along the Magpie Creek Diversion Channel and erosion protection measures were needed along the American and Sacramento Rivers. The 2016 ARCF FEIS/EIR analyzed the alternatives for flood risk reduction and recommended additional improvements to the system. Congress authorized these additional improvements in the WRDA of 2016 (Public Law 114 – 322). The ARCF project consists of North Area Streams Reach D; Magpie Creek; Lower American River erosion protection contracts 1, 2, 3A, 3B, and 4; Sacramento River East Levee (SREL) seepage, stability, and overtopping contracts 1, 2, 3, and 4; Sacramento River erosion protection contracts 1, 2, 3, and 4; and widening of the Sacramento Weir and Bypass. This Supplemental Environmental Assessment (SEA) is focused on Sacramento River Erosion Contract 4. An overview of the contracts within the ARCF project and their associated supplemental NEPA documents is in Appendix A.

Sacramento River (SR) Erosion Contract 4 is one of four contracts within the overall ARCF project intended to address erosion along the Sacramento River east levee between the confluence of the Sacramento and American Rivers to Freeport, California. A Supplemental Environmental Assessment / Supplemental Environmental Impact Report (SEA/SEIR) was completed in June 2021 for SR Erosion Contract 1, which was constructed in Summer 2022. A SEA/SEIR for SR Erosion Contract 2 was completed in October 2022, and construction is anticipated for 2023 and 2024. SR Erosion Contract 3 encompasses the remaining work authorized along the Sacramento River and will be included in a Supplemental Environmental Impact Statement / Subsequent Environmental Impact Report (SEIS/SEIR) along with the remaining ARCF work along the American River, Magpie Creek, and potential mitigation sites along the Sacramento and American Rivers. The Notice of Intent for the upcoming SEIS/SEIR was published in the Federal Register on October 7, 2022. The remainder of the SR Erosion construction is planned for 2025 and 2026.

This SEA is written based on 65% designs and tiers off the 2016 ARCF FEIS/EIR and the SEAs for SR Erosion Contracts 1 and 2. The No Action Alternative in this SEA consists of the Recommended Plan analyzed in the 2016 ARCF FEIS/EIR. The Action in this SEA would consist of one of two proposed alternatives, which include design refinements or elements not analyzed in the original 2016 ARCF FEIS/EIR. Both alternatives include the following elements: a staging area and access route, and a modified bank revetment design. Alternative 1 and 2 differ in the erosion protection method to be used above the average annual low water surface elevation (AALWSE). Above this elevation, Alternative 1 features the placement of quarry stone with choke stone fill, while Alternative 2 features a biotechnical alternative to stone. This is described in detail in Section 2.2.

This document analyzes the effects of the Proposed Action Alternatives on the following resources: Water Quality, Vegetation and Wildlife, Fisheries, Special Status Species, Cultural Resources, Air Quality, and Recreation. A Finding of No Significant Impact (FONSI) may be prepared when an action would not have a significant effect on the human environment and for which an environmental impact statement will not be prepared. The analysis in this document indicates that neither proposed alternative results in greater impacts than those already described in the 2016 ARCF FEIS/EIR, and that a FONSI is merited.

## 1.2 Project Area

Sacramento River Erosion Contract 4 (Figure 1) is adjacent to the Little Pocket neighborhood in the city of Sacramento, CA, along the east bank of the Sacramento River. It is approximately five miles downstream from its confluence with the American River and just upstream from Chicory Bend. It includes 0.3 miles of the 10 miles of the Sacramento River east levee identified for erosion protection in the 2016 ARCF FEIS/EIR. Figure 4 contains a detailed map of the project footprint and surrounding area.

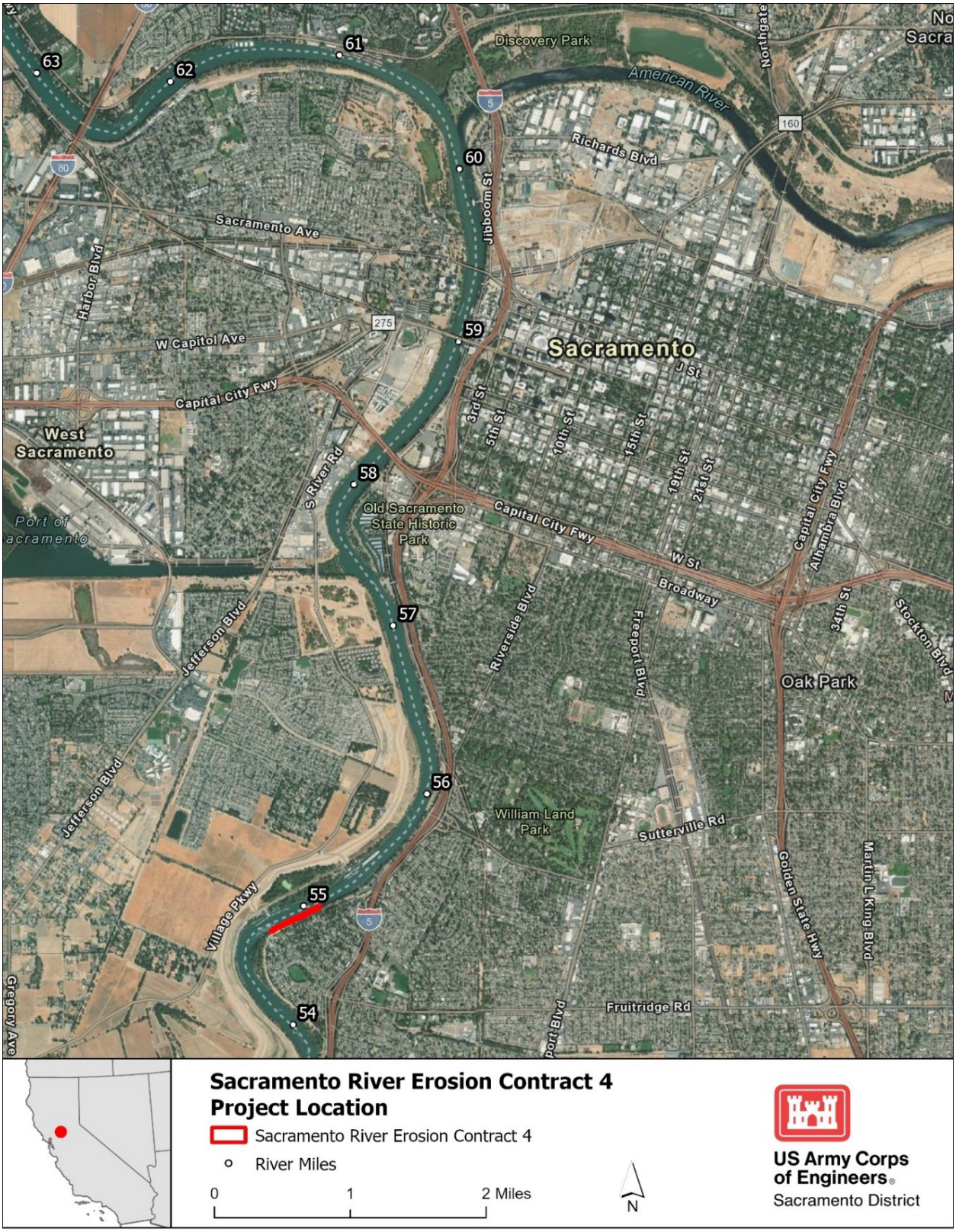


*Figure 1. Location of Sacramento River Erosion Contract 4.*

## 1.3 Background

The 2016 ARCF FEIS/EIR identified the locations of the proposed improvements to the flood risk infrastructure in the Sacramento area and analyzed impacts of those improvements. However, specific project details were not known until the design phases for each individual contract or portion of the authorized work. As projects reached their 65% design milestones, numerous supplemental National Environmental Policy Act (NEPA) documents have been prepared in order to describe and analyze project details not previously described in the original FEIS/EIR. The proposed Alternatives in this SEA describe new and updated design elements being considered for SR Erosion Contract 4 that were not previously known to ensure full project compliance with NEPA.

## 1.4 Authority

The American River Watershed Common Features Project was authorized by WRDA 2016, Pub. L. No. 114-322 § 1322, also known as the Water Infrastructure Improvements for the Nation Act (WIIN Act), and related authorities. In July 2018, Congress granted USACE construction funding to complete urgent flood control projects under the Bipartisan Budget Act of 2018 (Public Law 115-123).

## 1.5 Project Need and Purpose

SR Erosion Contract 4 is located on a straight section of the Sacramento River between meanders. The river bank's toe and mid-bank within the project area were identified as having the greatest erosion potential due to both fluvial processes and boat wake. These processes have led to exposed rootballs and bank erosion in a portion of the river with an extremely narrow floodplain. The purpose of SR Erosion Contract 4 is to decrease flood risk to lives and infrastructure in the Little Pocket neighborhood by increasing resiliency to high river flows and boat wake erosion along a 0.3 mile portion of the Sacramento River's east levee.

## 1.6 Purpose of the Supplemental Environmental Assessment

Two alternatives are described for addressing riverbed scour and for preventing boat wake erosion above the summer water surface. This SEA evaluates the anticipated environmental effects of these two Alternatives as well as the No Action Alternative, and identifies measures to avoid or reduce any adverse effects of the Alternatives to a less-than-significant level, where practicable. This SEA has been prepared in accordance with the requirements of NEPA, and fully discloses the reasonably foreseeable environmental effects of the Alternatives to the public.

## 1.7 Related Documents

The ARCF 2016 project is designed to reduce flood risk within the Sacramento Metropolitan Area. An overview of the elements within ARCF, the individual contracts and their associated supplemental NEPA documents, is included in Appendix A. The following is a list of NEPA studies focused on the Sacramento River projects:

- December 2015 (revised May 2016), American River Watershed Common Features General Reevaluation Report, Final Environmental Impact Statement/Environmental Impact Report (2016 FEIS/EIR)
- July 2016, Final Environmental Impact Report, North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project. Prepared for SAFCA by GEI Consultants
- August 2016, Record of Decision on ARCF GRR 2015 FEIS/EIR signed by Assistant Secretary of the Army (Civil Works), Jo-Ellen Darcy.
- February 2019, Final Supplemental Environmental Assessment/Initial Study, ARCF Seepage Stability Berm, Reach D Contract 1
- June 2019, Final Supplemental Environmental Assessment/Initial Study, ARCF 2016 Project Beach Stone Lakes Mitigation Site.
- November 2019, Supplemental Environmental Assessment/Environmental Impact Report American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento River East Levee Contract 1 (SREL C1). Prepared by GEI Consultants.
- October 2020, Supplemental Environmental Assessment/Environmental Impact Report American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento River East Levee Contract 2 (SREL C2).
- May 2021, Final Supplemental Environmental Impact Statement/ Environmental Impact Report, American River Watershed Common Features, Water Resources Development Act of 2016 Project Sacramento Weir Widening. (State Clearinghouse Number 2020070575)
- June 2021, Final Supplemental Environmental Assessment/ Supplemental Environmental Impact Report, American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento River Erosion Contract 1.
- August 2021, Supplemental Environmental Assessment/Environmental Impact Report American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento River East Levee Contract 3 (SREL C3).
- September 2022, Supplemental Environmental Assessment, American River Common Features, Water resources Development Act of 2016 Project, Sacramento River East Levee Contract 4 (SREL C4).

- October 2022, Supplemental Environmental Assessment, American River Common Features, Water Resources Development Act of 2016 Project, Sacramento River Erosion Contract 2.

## 1.8 Decision Needed

The District Engineer, Commander of the Sacramento District, must decide whether the Proposed Action qualifies for a Finding of No Significant Impact (FONSI) under NEPA guidelines, or whether potentially significant effects that were not considered in the 2016 ARCF FEIS/EIR are anticipated to occur as a consequence of the construction of Alternative 1 or Alternative 2, and therefore a Supplemental EIS must be prepared.

# 2 Alternatives

## 2.1 No Action Alternative

The No Action Alternative includes all of the Sacramento River bank protection measures described in Alternative 2 in the 2016 ARCF FEIS/EIR, along with the Proposed Actions planned for Sacramento River Seepage, Stability, and Overtopping Contracts 1-4, the Sacramento Weir Widening, and Sacramento River Erosion Contracts 1-2, to the extent those Proposed Actions are expected to affect the SR Contract 4 project area.

The design objectives analyzed in the 2016 ARCF FEIS/EIR address bank erosion and scour caused by high river flows, boat wake, and wave wash, using either the launchable rock trench or standard bank protection method (Figure 2). A launchable rock trench involves excavating a trench outside the river channel, filling the trench with rock down to the summer mean water surface elevation, then covering with a minimum of 3 feet of soil to allow for revegetation of the site. The rock is intended to deploy once the surrounding material is eroded away, preventing further erosion.

The standard bank protection method involves placement of rock revetment on the bank to prevent erosion. Rock would be placed from the riverbed up to the required bank elevation by an excavator on a barge, while another barge would hold the stockpile of rock. The revetment would be placed at a slope varying from 2V:1H to 3V:1H. If possible, a small planting berm would be constructed to allow for revegetation of the site. Instream woody material would be anchored into place along the shoreline to replace impacted fish habitat.

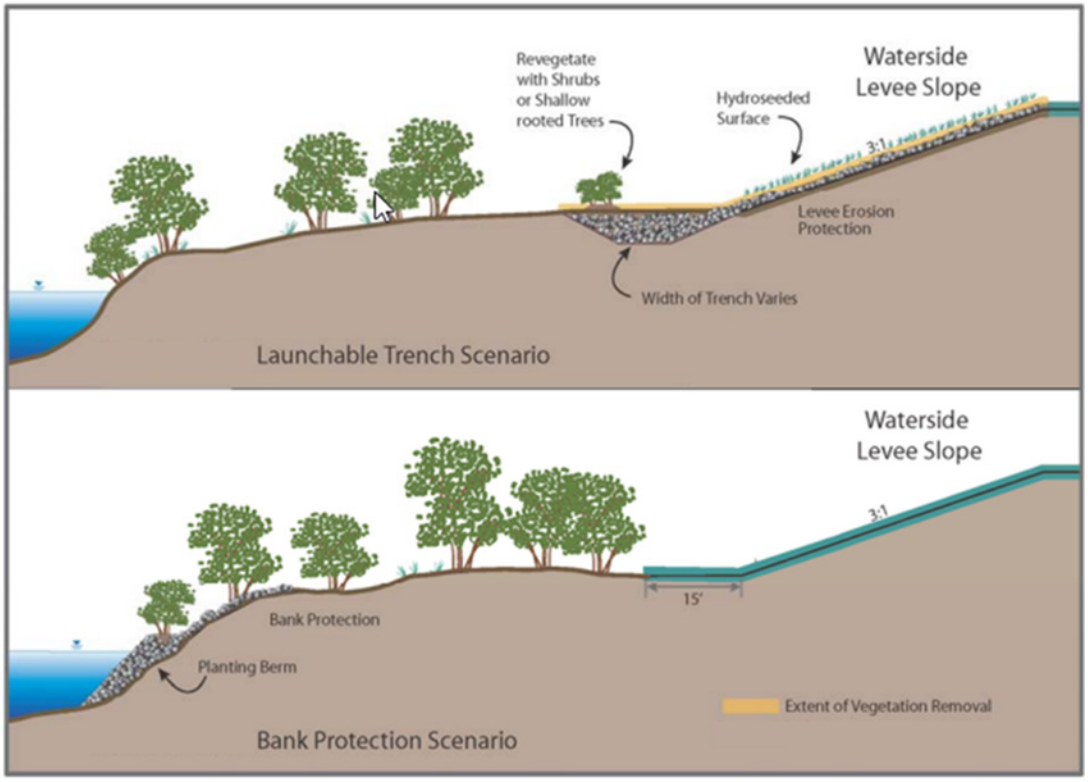


*Figure 2. Typical designs for launchable rock trench and standard bank protection, the two methods analyzed in the 2016 ARCF FEIS/EIR.*

## 2.2 Alternative 1

Alternative 1 consists of a launchable rock toe erosion protection design, which is described below and in the SR Erosion C1 and C2 SEAs and is a different erosion protection design from what was described in the 2016 ARCF FEIS/EIR. Alternative 1 also consists of project details not known at the time of that document's publication: the access route and staging area. The work would be constructed from a barge or from equipment accessing the project footprint from the barge. The locations of the project, access route, and staging area are depicted in Figure 4. Details of Alternative 1 are described below:

Access route and staging area – The exact locations of access routes and staging areas were not identified in the 2016 ARCF FEIS/EIR. The Contract 4 staging area (Figure 4) would be located on the top of the levee immediately upslope from the erosion work location. The staging area would be used for personal vehicle parking, restrooms, and construction offices. The access route to the levee top (Figure 4) would be utilized during the vegetation removal and for employee parking during construction. From I-5, the route utilizes Seamas Avenue west to Piedmont Drive. The access ramp to the levee top staging area is located off Piedmont Drive. Material for constructing the erosion protection would be stockpiled on barges, as all work would be completed from the river. Construction equipment would access the project footprint from the barge by utilizing a ramp. For resource protection, construction equipment would not be permitted

to access the project from the land side and would not utilize the staging area for parking. When not in use, construction equipment will be parked on barges.

Launchable toe erosion protection – The SR Contract 4 erosion protection would consist of 5 foot (ft) thick quarry stone rip-rap placed on the riverbank below the late summer/early fall water surface elevation of 7 ft (NAVD 88) along 0.3 miles of the river's left bank. On the upper riverbank between elevation 7 and 13 ft, the quarry stone would be 2.5 ft thick with an 8-inch layer of choke stone placed on top to fill gaps in the rock and aid recreational access. A launchable rock toe would be placed between the river bottom and elevation -7.9 ft to protect against toe scour. If scour occurs at the launchable toe, the rock would cover the eroded area and prevent further erosion. This is a change from the method described in the 2016 ARCF FEIS/EIR (No Action Alternative), which described standard bank protection without the added launchable toe. This method adds approximately 5 ft (measured in the horizontal direction) of rock / 0.2 acres of impact to the riverbed. Figure 5 shows an example cross section with the approximate depths and thicknesses of the rock placement. To minimize habitat impacts, in-stream woody material (IWM) would be installed into the rock to create cover and shade for fish. The IWM would consist of trees covering at least 40% of the shoreline and would maintain a 50 ft buffer around boat docks.

Tiebacks – These methods for redirecting high flows were not included in the 2016 ARCF FEIS/EIR analysis. Six tiebacks would be installed on the downstream end of the Contract 4 riverbank and oriented slightly upstream from a line perpendicular to the bank. These tiebacks would address erosion caused by historic man-made rock groins in the river channel during high flow events. They would be constructed out of quarry stone and approximate dimensions are 2.5 ft in height, 5 ft wide at the top, and 13 ft wide at the bottom. The tiebacks would be placed on-grade up the bank slope to elevations ranging from 18 – 26 ft. Figure 3 shows an example photograph of a tieback.

*Figure 3. Photo depicting a tieback similar to those designed for SR Erosion Contract 4 (USACE 1997).*

Boat Dock Removal – Eight private boat docks are located in the area where the erosion protection would be constructed, and their removal is required in order for construction to occur. The CVFPB has requested that the owners remove the docks and ramps from the project footprint in accordance with their permit agreements. The docks may be returned once construction is complete. Any docks not removed by the owners would be removed and disposed of by the construction contractor. The dock owners were given the option to either remove the dock pilings or leave them in place for the contractor to work around. Because movement or replacement of dock pilings would require new permits and analysis under NEPA and CEQA, it is anticipated that most pilings will remain in place. However, the clearance between the riverbed and the water surface would change after the project is constructed and may result in owners choosing to relocate pilings to deeper locations.

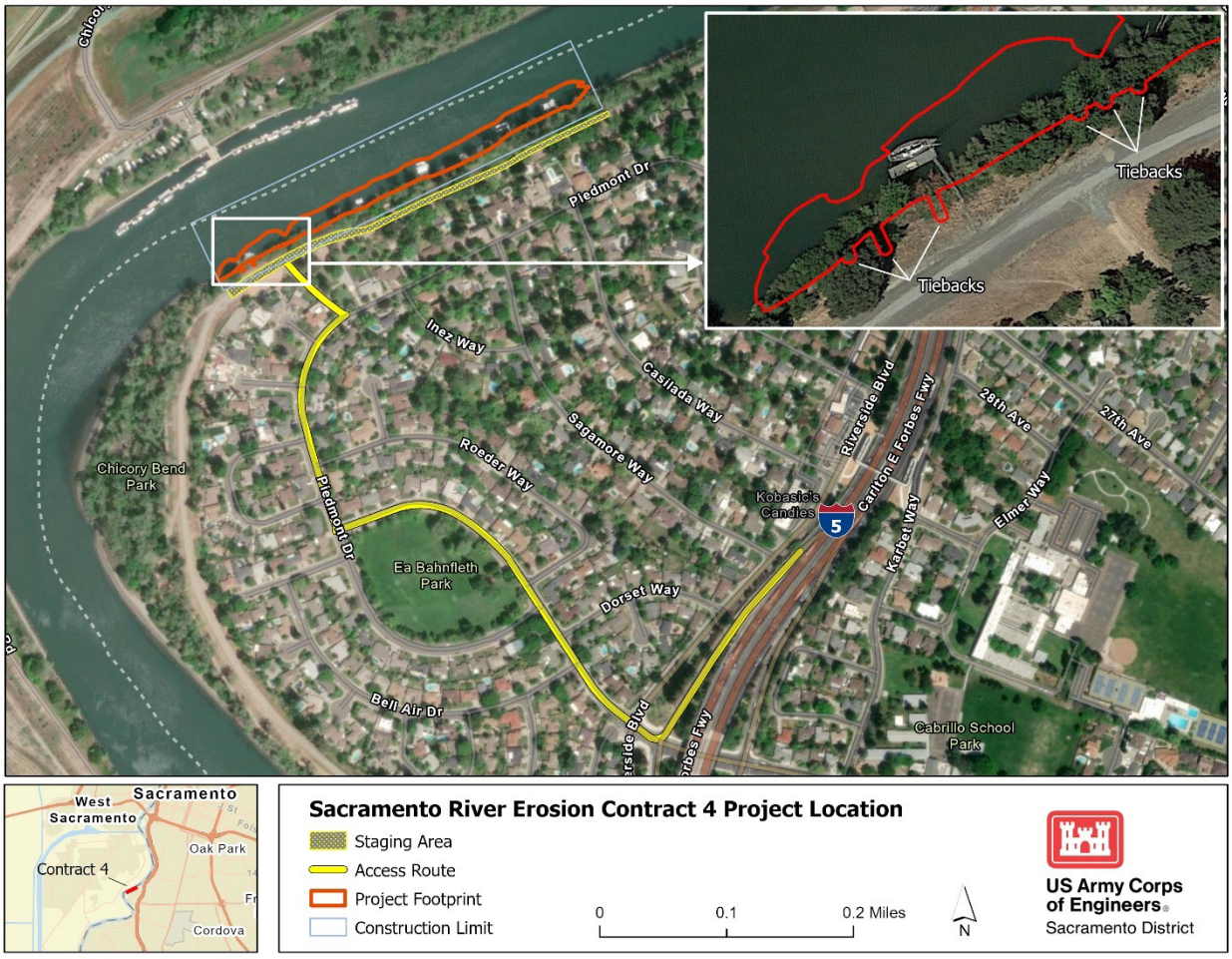


*Figure 4. Sacramento River Erosion Contract 4 project location, showing access route, construction limits, project footprint, and staging area.*

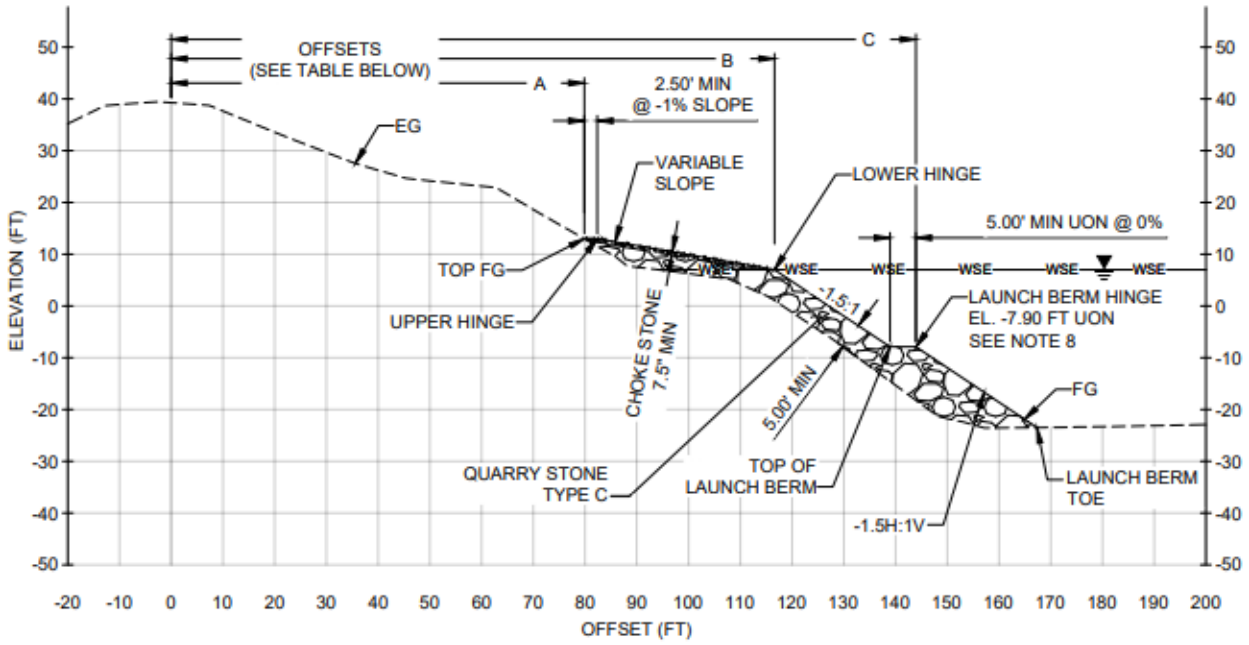


*Figure 5. Example cross section showing approximate depth and thickness of rock revetment and launchable toe below 7 ft elevation (WSE). Above 7 ft, there would be either rock revetment with choke stone fill (Alternative 1), or a biotechnical erosion treatment (Alternative 2).*

## 2.3 Alternative 2 (Preferred Alternative)

Alternative 2 contains most elements of Alternative 1 (the launchable rock toe, staging area, access route, tiebacks, and boat dock removal remain the same), but the method of erosion control above the 7 ft summer water surface elevation would feature a biotechnical alternative to rip-rap. The biotechnical approach would incorporate shrub and tree plantings for bank stabilization between 7 and 13 ft (NAVD 88) in elevation. This method would utilize biodegradable coconut coir blocks secured by wooden stakes and biodegradable fabric (Figure 6) to create lifts. The lifts would be arranged in a step-pattern, starting on top of the rip-rap base and following the grade of the natural riverbank until approximately 13 ft elevation. Beneath the biodegradable fabric would be soil fill. Native riparian trees and shrubs would be planted into the soil and block system. Installation would require small construction equipment operating along the shoreline above 7 ft elevation to move soil and create the lifts. Over time, root growth is expected to be sufficient to control erosion on this portion of the riverbank. Each block would prevent leakage of the soil fill while providing erosion protection. This method avoids permanent vegetation, fish, and wildlife impacts above the 7 ft summer water surface elevation by avoiding the placement of rock.

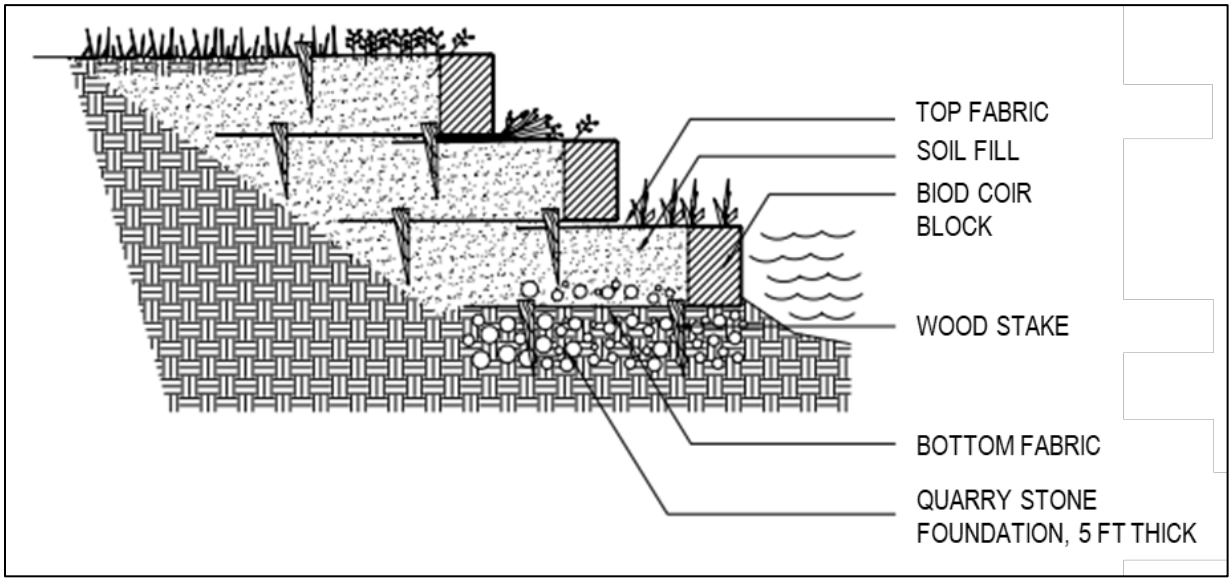


*Figure 6. Diagram of the biotechnical approach of Alternative 2, showing coconut coir blocks, soil fill, wooden stakes, and plantings on top of quarry stone rip-rap base, which extends 5 ft into the river. The dimension of each block is 9" wide x 16" tall x 10' long.*

# 3 Affected Environment and Environmental Effects

## 3.1 Approach to Analysis

The No Action Alternative was presented as Alternative 2 in the 2016 ARCF FEIS/EIR, and as the Action Alternatives in SREL C1, C2, C3, and C4 SEA/SEIRs, Sacramento Weir SEIS/SEIR, and the SR ERO C1 and C2 SEA/SEIRs. The environment effects of the No Action Alternative are fully described in the above documents, as well as the existing conditions, regulatory setting, and avoidance, minimization, and mitigation measures. As a supplemental NEPA document, this SEA focuses its analysis on changes to the No Action Alternative specific to SR Erosion Contract 4 that would arise if Alternative 1 or Alternative 2 were selected. The following resources are likely to be affected by Alternatives 1 and 2 and are discussed in detail below: Water Quality, Vegetation and Wildlife, Fisheries, Special Status Species, Cultural Resources, Air Quality, and Recreation. A summary of resource impacts and mitigation measures are listed on page 33 of this document (Table 6).

## 3.2 Regulatory Setting

The Affected Environment and Environmental Consequences sections of the 2016 ARCF FEIS/EIR and SREL Contract 1, 2, 3, and 4 SEA/EIRs and SR ERO C1 and C2 SEA/SEIRs sufficiently characterize the regulatory setting for the resources impacted by the proposed alternatives.

## 3.3 Resources Not Discussed in Detail

The following resources are omitted from further discussion in this SEA because the effects of the Alternatives on these resources would be negligible or would not cause additional impacts beyond those already analyzed in the 2016 ARCF FEIS/EIR and the supplemental NEPA documents listed in Section 3.1: Geological Resources, Land Use,

Hydrology & Hydraulics, Transportation & Circulation, Climate Change, Noise, Visual Resources, Public Utilities & Service Systems, Hazardous Wastes and Materials.

Socioeconomics, Population, and Environmental Justice was also excluded from detailed discussion. The neighborhood adjacent to SR Erosion Contract 4 is known as the Little Pocket neighborhood and is not located in a disadvantaged community per the Council of Environmental Quality Climate and Economic Justice Screening Tool (Figure 7; https://screeningtool.geoplatform.gov/en/#12.98/38.5325/-121.51874). Additionally, the area adjacent to the levee does not currently contain an unhoused community, and a city ordinance prohibits camping with 25 feet of public safety infrastructure, including levees. The levee in the Little Pocket neighborhood has historically been inaccessible to the public due to the presence of locked gates across the levee, and more recently due to ongoing construction of other phases of the ARCF 2016 project.

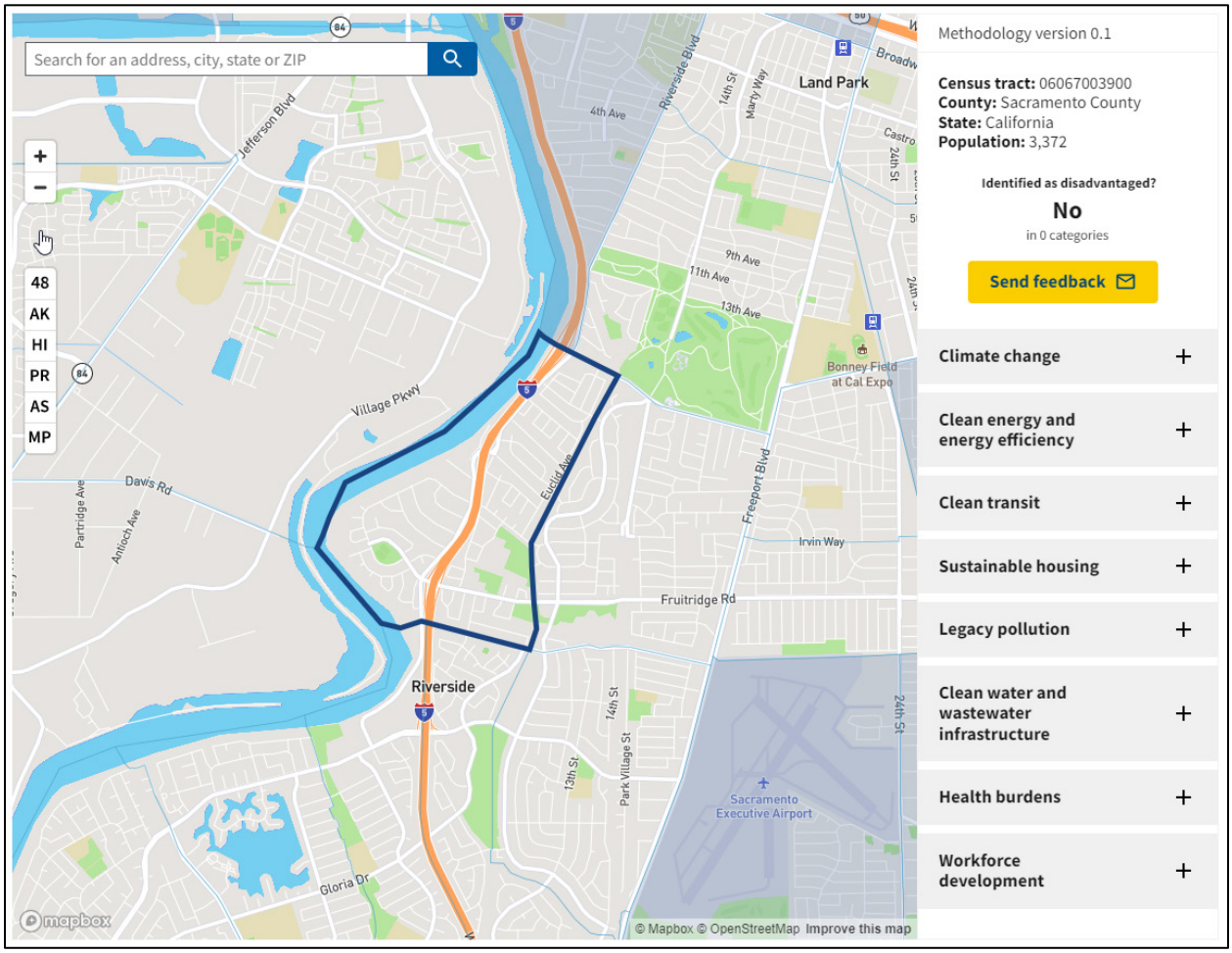


*Figure 7. Map of disadvantaged communities (shaded areas) in the vicinity of Sacramento River Erosion Contract 4 from CEQ Climate and Economic Justice Screening Tool. The census tract surrounding Contract 4 is outlined in dark blue.*

## 3.4 Water Quality and Groundwater Resources

### 3.4.1 Existing Conditions

The environmental and regulatory framework described in Section 3.5, Water Quality and Groundwater Resources, of the 2016 ARCF FEIS/EIR are generally applicable to the analysis in this SEA and therefore are not repeated here.

### 3.4.2 Environmental Effects

**No Action Alternative**

The 2016 ARCF FEIS/EIR evaluated the effects of construction activities to ground water quality and found there was minimal risk to groundwater. Effects to surface water were analyzed in the 2016 ARCF FEIS/EIR and in the proposed actions discussed in SR Erosion Contracts 1 and 2 SEAs. The surface water quality constituents most likely to be affected by construction activities are turbidity and water temperature, due to barge movement and anchoring, placement of rock, runoff, and vegetation removal. It was anticipated that shrubs and grasses, which do not contribute significantly to shade, would be removed. Trees, the primary contributors to shade, were assumed to be protected in place. By implementing the avoidance and minimization measures identified in Section 3.5.6 of the FEIS/EIR and in the related SEAs, effects to water quality would be reduced to less than significant.

**Alternative 1**

Water Quality effects anticipated from Alternative 1 could result from all the actions discussed in the No Action Alternative and the following project details. The staging area would be located on the levee top and would be used for personal vehicle parking, temporary offices, a restroom, and large truck access during tree removal. To avoid disturbance of soil and vegetation, construction vehicles will not be permitted to drive from the staging area to the work site. No materials would be stored at the staging area, which would also be subject to the same temporary stormwater pollution protection measures as the construction site.

The launchable toe and tiebacks would be constructed by equipment operating on the barge or by accessing the project footprint from the barge. Rock placement would be at grade, would not require excavation, and would be undertaken from the waterside to minimize ground disturbance. Impacts to turbidity, as well as avoidance and minimization measures, would be similar to those analyzed in the 2016 ARCF FEIS/EIR.

Removal of boat docks would decrease shading during the construction season and may result in slight increases in water temperature along the shoreline, but the effects would be local and temporary. The rock placement on the riverbank would require the removal of approximately 31 trees, resulting in some decrease in shade near the shoreline, but it is not likely this would result in significant water temperature impacts. As shown in the habitat impact map in Appendix B, the overall proportion of canopy to be removed is small compared to the length of the site. Most of the trees planned for

removal are surrounded by other trees whose canopies would grow to fill the gaps in sunlight. The overhanging canopy is small when compared to the width of the river, which is approximately 450 ft wide. Tree removal would impact approximately 0.4 acres of canopy, which would be compensated for by establishing riparian habitat at an off-site mitigation area or by purchasing mitigation bank credits. For these reasons, direct and indirect impacts to water quality due to Alternative 1 would be short-term (occurring in one construction season) and minor (may cause increased turbidity but unlikely to exceed water quality standards continuously) making the impact overall less than significant.

**Alternative 2**

Alternative 2 would cause the same impacts to water quality below the river's summer water surface elevation. Above this elevation, the installation of the biotechnical rip-rap alternative would require the import and utilization of soil fill beneath and between biodegradable coir blocks and would avoid rock placement in this area. Like Alternative 1, water quality effects from construction are considered short-term (occurring in one construction season) and moderate (causing increased turbidity but unlikely to exceed water quality standards continuously) making the impact overall less than significant.

This erosion control method avoids tree removal, preserving the majority of the tree canopy and avoiding water temperature impacts caused by loss of shade. Native shrubs and trees would be planted into the coir blocks and imported soil; once established, a network of root growth would provide bank stabilization. This would benefit water quality by increasing shade, while also decreasing turbidity because the increased vegetation coverage would slow surface water velocities during high flows and allow suspended sediment to settle out.

### 3.4.3 Avoidance, Minimization, and Mitigation Measures

As stated in Section 3.5.6 of the 2016 ARCF FEIS/EIR, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) and a Spill Prevention Control and Countermeasures Plan (SPCCP) to prevent discharges into the river and adjacent shoreline. A 404(b)(1) evaluation for Contract 4 will be included as an appendix to this document to ensure the chemical, physical, and biological integrity of a Waters of the United States (WOUS) is adequately assessed due to the amount of rock revetment placed below the OHWM. While the Corps Civil Works program does not permit itself, it must abide by CWA Section 404(b)(1) Guidelines (40 CFR 230). A Notice of Intent would be filed under an existing programmatic 401 Water Quality Certification from The Regional Water Quality Control Board prior to construction. In addition to the measures described in Section 3.5.6 in the 2016 ARCF FEIS/EIR, the following measures would be implemented to reduce water quality impacts from Alternatives 1 and 2 to less than significant:

- Water temperature impacts under Alternative 1 would be minimized by selective removal of trees, only removing those necessary to complete the rock placement.

Compensation for any tree removal would be accomplished purchasing mitigation bank credits as they become available or by establishing riparian habitat at an off-site mitigation area on the Sacramento River. The upcoming ARCF SEIS/SEIR includes potential mitigation sites for the Sacramento River.

- Alternative 2 would avoid the water quality impacts that arise from the more conventional soil or stone-filled rip-rap, as the soil or stone can wash away from between gaps in the rock. The fabric and coir blocks would stabilize the soil until the root growth is sufficient to prevent erosion.
- Equipment would access the project site from barges to minimize ground and vegetation disturbance. Equipment would not be permitted to access the project site from the levee top.
- Materials such as rock and soil would be stockpiled on barges with containment measures to prevent material spillage into the river.

## 3.5 Vegetation and Wildlife

### 3.5.1 Existing Conditions

The environmental and regulatory framework discussed in Section 3.6 of the 2016 ARCF FEIS/EIR is applicable to the analysis in this SEA and is not repeated here. Detailed habitat maps are included in Appendix C of the 2016 ARCF FEIS/EIR.

The Fish and Wildlife Coordination Act of 1958 (16 USC 661 *et seq.*), as amended, requires that recommendations from USFWS and NMFS be considered when evaluating effects and mitigation needs for habitat. The USFWS Final Coordination Act Report (CAR; 2015) is included as Appendix A in the 2016 ARCF FEIS/EIR. Updated Biological Opinions from NMFS and USFWS were completed in 2021 to address impacts to listed species habitats.

The ARCF project, including SR Erosion Contract 4, will comply with the recommendations of the CAR and with the NMFS and USFWS Biological Opinions. The vegetation within the project footprint consists largely of non-native trident maple trees (*Acer buergerianum*), with several valley oak trees (*Quercus lobata*). Much of the understory is manicured grass with shrubs growing closer to the river. The downstream riverbank is much steeper, dominated by shrub and herbaceous vegetation, and lacks significant tree cover.

### 3.5.2 Environmental Effects

**No Action Alternative**

The 2016 ARCF FEIS/EIR determined that the project would have significant impacts to vegetation and wildlife because of the temporal lag between tree removal and the time required to re-establish habitat value. The document stated that birds would be the primary type of wildlife affected due to the urban environment along the Sacramento River. For the portion of the Sacramento River containing Contract 4, an estimated 13.2 acres of riparian habitat would be impacted. Section 3.6.4 stated that approximately 930 large trees would be left in place on the lower one-half waterside slope, with rock placed

around the base of the trees. The understory vegetation would be removed to provide a clean surface for rock placement.

**Alternative 1**

The access routes and levee top staging area would utilize developed surfaces without vegetation and would not impact vegetation or wildlife. Removal of boat docks and associated infrastructure would occur from the river and would not affect vegetation or wildlife.

Removal of understory vegetation was discussed in the 2016 ARCF FEIS/EIR. Under the Alternative 1, approximately 31 trees would also be removed within the construction footprint to facilitate the rock placement by barge. This would result in approximately 0.4 acres of riparian canopy removal, which overlaps with western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) habitat, discussed in the Special Status Species section (3.7) of this document. Canopy removal would indirectly affect wildlife by reducing perching and nesting opportunities for birds and reduce cover for mammals living and moving along the river's shoreline. Because tree removal involves selected trees, growth from the surrounding trees would fill in some of the gaps in canopy over time.

The launchable rock toe will be placed on the riverbed from a barge and its construction would not affect vegetation and wildlife; this design refinement would directly impact the benthic habitat in the footprint of the rock toe. Construction of the tiebacks at the downstream end of the project slightly expands the project footprint, but placement of these features can be done to avoid removing large numbers of trees. Vegetation impacts would be limited to shrub removal in the small footprint of the tiebacks. Tieback construction would not lead to increased vegetation and wildlife effects beyond those discussed in the 2016 ARCF FEIS/EIR. With mitigation for the tree removal, the effects of Alternative 1 to vegetation and wildlife would be mid-term (approximately 10 years) and moderate (affecting a small number of trees), making the effect to vegetation less than significant.

**Alternative 2**

The effects to vegetation and wildlife caused by the location of the access route, staging area, and tiebacks remain the same as for Alternative 1 because these details do not differ. The primary difference between the two alternatives is that the erosion protection measures for the elevation between 7 and 13 ft (NAVD) result in permanent vegetation impacts under Alternative 1, while Alternative 2 would cause only temporary impacts to shrub cover and would allow trees to remain. This would avoid adverse impacts to 0.4 acres of riparian canopy.

The biotechnical treatment under Alternative 2 would require removal of the existing understory to provide a clear surface to construct, but trees would be protected in place. Therefore, the short-term effects to vegetation would be similar to those analyzed in the

2016 ARCF FEIS/EIR. This method relies on planted native shrubs and trees to provide the bank stabilization. Once established, denser native vegetation is anticipated, and increased tree coverage would eventually yield a more complex habitat than what is currently present. The effects of Alternative 2 would be beneficial to vegetation and wildlife in the long term, but would require mid-term, moderate adverse effects from vegetation removal similar to the No Action Alternative.

### 3.5.3 Avoidance, Minimization, and Mitigation Measures

The design of SR Erosion Contract 4 had undergone refinements to achieve as small a project footprint as possible to minimize the acreage of impacted habitat. Compensation for vegetation removal required under Alternative 1 would be achieved by the construction of off-site mitigation at potential mitigation sites currently being considered or by purchasing credits at a mitigation bank at the recommended ratios specified in the USFWS and NMFS Biological Opinions and USFWS Coordination Act Report. Alternative 2 utilizes a technique that would avoid tree removal associated with standard rock placement, while also improving vegetation coverage in the long-term. Alternative 2 would not require mitigation for permanent impacts to vegetation.

For both Alternatives 1 and 2, the placement of rock would be accomplished by waterside barge or by equipment accessing the project site directly from the barge, minimizing ground and vegetation disturbance to the project area. Tree removal would require dragging trees to the levee top to be hauled away by truck, utilizing city streets. For Alternative 1, tree removal would occur during the winter months immediately prior to the summer construction season, minimizing the amount of time the construction area is unvegetated. Winter tree removal also avoids effects to bats and nesting birds by avoiding the time of year when they are present. Work windows will be discussed further in Section 3.7.3. For both Alternatives, the remaining vegetation would be removed during site preparation by grubbing the area immediately prior to construction. A biologist will be present to prevent impacts to nesting birds, which may be present at the time of the vegetation removal. Material removed during grubbing would be transported off-site by barge.

## 3.6 Fisheries

### 3.6.1 Existing Conditions

The environmental and regulatory framework as described in Section 3.7 of the 2016 ARCF FEIS/EIR is applicable to the analysis in this SEA and is not repeated here. The Sacramento River, including the construction footprint of Contract 4, is designated as essential fish habitat (EFH) for pacific coast salmon. A Magnuson-Stevens Act consultation with NMFS for EFH conservation was completed on May 12, 2021.

### 3.6.2 Environmental Effects

**No Action Alternative**

The No Action Alternative includes the work and fisheries impacts described in Alternative 2 of the 2016 ARCF FEIS/EIR, the SREL C1-4 SEAs, and the SR ERO C1-2

SEAs. These documents determined that the ARCF project's environmental effects to fisheries would be less than significant with the mitigation measures outlined in Section 3.3.6, the water quality measures in Section 3.5.6, and the vegetation and wildlife measures in Section 3.6.6 of the ARCF FEIS/EIR.

**Alternative 1**

The location of the levee top staging area is on a developed surface above the OHWM, and the access route to this area utilizes existing developed roads. The use of the staging area and the access route would not cause impacts to fisheries.

The addition of the launchable rock toe expands the footprint of rock placed on the riverbed laterally by approximately 5 ft, as compared to the standard bank protection method analyzed in the 2016 ARCF FEIS/EIR which did not describe thicker rock placement along the riverbank's toe. The installation of the rock toe would involve the same equipment and methods as the standard bank protection. This portion of the Sacramento River is highly altered; the banks are steep due to channelization and erosion, and the entire shoreline contains existing, older rip-rap. The benthic habitat contains fine sediment with aquatic plant growth. The launchable rock toe would cover an additional 0.2 acres of this habitat with rock, indirectly affecting fisheries by impacting their food sources and shelter. If riverbed scour were to occur, the launchable rock toe is designed to deploy and cover the eroded area with rock. This could cause direct impacts to fish as a result of rock physically hitting fish; however, this could also occur if the river eroded into the riverbank and caused a collapse of the bank material. The six tiebacks impact the riparian zone, an important component of fish habitat, through the addition of rock on the riverbank above 13 ft elevation (NAVD 88) and outside of the footprint of the standard bank protection. The effects of the launchable rock toe and tiebacks to fisheries would be short term and moderate and will be offset in the same manner as the special-status species mitigation, by purchasing mitigation bank credits or by establishing an off-site mitigation area on the Sacramento River, such as potential mitigation sites under consideration in the upcoming ARCF SEIS/SEIR.

The 2016 ARCF FEIS/EIR had determined that indirect effects to native fish were less than significant because it was assumed that trees would remain in place. Riparian vegetation, particularly trees, provide numerous benefits to fish by providing shade and organic material to the river. It provides leaf litter, which is a food source for prey species, and instream woody material, which provides shelter, shade, and trapping of organic material from upstream. Under Alternative 1, up to 31 trees near the river channel would be removed, and vegetation within the footprint of the tiebacks would also be removed. Additionally, boat docks are minor sources of shade and shelter. Removing shaded fish habitat would have short-term moderate adverse effects on fish habitat due to decreased shading of the channel and decreased input of organic material. Installing IWM along the shoreline and the mitigation measures discussed below in Section 3.6.3 would reduce the fisheries impacts to less than significant.

**Alternative 2**

There would be no fisheries impacts from the staging area or access route. The underwater rock placement, including the launchable toe, would have the same fisheries impacts as Alternative 1 as the footprint of disturbance below 7 ft elevation are the same. The footprint of disturbance for the tiebacks are also the same. Both Alternatives incorporate IWM into the rip-rap along the shoreline.

Under Alternative 2, there would be no placement of rock between 7 and 13 ft elevation and the 31 trees planned for removal in Alternative 1 would not be removed. The shrub understory would require removal to install the biotechnical erosion treatment; however, this effect is temporary (5 to 10 years) until the new shrub growth can reestablish. In areas which currently lack trees, the biotechnical treatment would incorporate new tree plantings to overall increase shaded riverine aquatic (SRA) habitat in the long-term. Alternative 2 would have short-term to mid-term, minor effects to fish habitat, and long-term would improve fisheries habitat by establishing long-term sources of shade, wood, and leaf litter into the river.

### 3.6.3 Avoidance, Minimization, and Mitigation Measures

To avoid, minimize and mitigate impacts to fisheries, USACE will implement the measures listed in the Water Quality and Vegetation and Wildlife Sections (3.5.6 and 3.6.6, respectively) of the 2016 ARCF FEIS/EIR.

Boat docks are anticipated to be replaced after construction is completed. For both alternatives, any fisheries impacts due to their removal would be temporary.

Alternative 2 is an avoidance measure in itself, as the new shrub and tree plantings would provide erosion protection while avoiding indirect fisheries impacts above the summer water elevation. For both Alternatives, the fisheries impacts due to rock placement and any removal of SRA would be compensated for under the required special-status species mitigation, along with on-site installation of IWM. With mitigation, the impacts of both alternatives would be less than significant.

## 3.7 Special Status Species

### 3.7.1 Existing Conditions

The environmental and regulatory framework described in Section 3.8 of the 2016 ARCF FEIS/EIR is applicable to the analysis in this document and is not repeated here. Federal special-status species that occur in the project area and could be impacted by construction of SR Erosion Contract 4 are the Sacramento River winter-run and Central Valley (CV) spring- and fall-runs of Chinook salmon (*Oncorhynchus tshawytscha*), CV distinct population segment steelhead (*Oncorhynchus mykiss*), southern distinct population segment green sturgeon (*Acipenser medirostris*), delta smelt (*Hypomesus transpacificus*), and Western yellow-billed cuckoo (YBCU; *Coccyzus americanus occidentalis*).

### 3.7.2 Environmental Effects

**No Action Alternative**

Under the No Action Alternative, the projects and impacts described in Alternative 2 of the 2016 ARCF FEIS/EIR, as well as the SREL C1-4 and SR ERO C1-2 SEAs are considered completed. These documents determined that the projects' effects to federal special status species would be less than significant with the avoidance, minimization, and mitigation measures outlined in those documents and in the USFWS and NMFS BOs. Table 1 summarizes the special-status species impacts under Alternatives 1 and 2.

**Alternative 1**

The location of the levee top staging area is on a developed surface above the OHWM, and the access route to this area utilizes existing developed roads. The staging area and access route would not impact federal special-status species.

Under Alternative 1, rock would be placed on the left riverbank from the riverbed to 13 ft in elevation (NAVD 88), incorporating a launchable rock toe. Six tiebacks would be added above 13 foot elevation to deflect river flows from the riverbank and would slightly expand the rock footprint over what was analyzed in the 2016 ARCF FEIS/EIR, which had previously analyzed effects of standard bank protection, but not the launchable rock toe or tiebacks. The launchable rock toe method adds approximately 5 ft of rock thickness near the river bottom in a lateral direction (Figure 5), increasing the footprint of riverbed disturbance compared to the standard erosion protection analyzed in the 2016 ARCF FEIS/EIR, using the same equipment and placement method.

The estimated area of salmonid and green sturgeon impacts due to rock placement below the OHWM is approximately 3.2 acres. The area of delta smelt impacts due to rock placement between mean low-low water and mean high water is approximately 0.8 acres. To facilitate the rock placement, up to 31 trees within the project footprint may need to be removed, impacting both shaded riverine aquatic (SRA) and YBCU habitat. Effects to special status listed fish are considered to be short-term and moderate if impacts are compensated through the purchase of mitigation bank credits. If impacts are offset through the creation of an offsite aquatic habitat mitigation area, the effect is considered to be mid-term and moderate due to temporal losses caused by the delay of constructing the mitigation area. Effects to YBCU riparian habitat are considered to be short-term and moderate and the effect will be offset through the purchase of mitigation bank credits.

**Alternative 2**

There would be no impacts to federal special-status species from the staging area or access route. The underwater rock placement, including the launchable toe, would have the same impacts as Alternative 1.

Under Alternative 2, soil fill, biodegradable coconut coir blocks, biodegradable fabric, and native shrub and tree plantings would be used instead of rock between 7 and 13 ft elevation. The existing shrub understory would require removal, but trees would be allowed to remain in place. Effects to listed species at this elevation would be temporary, as the newly planted shrubs would quickly grow to replace those removed. The shrub stems and saplings would slow high water flows and encourage aggradation of sediment and the return to a natural riverbank. Native trees would be established in areas currently dominated by shrubs, increasing shade, IWM inputs, and other habitat values for special-status species.

The estimated surface area of salmonid and sturgeon habitat impacts due to rock placement below the OHWM is reduced to 2.1 acres, as compared with Alternative 1. Delta smelt habitat impacts would be reduced slightly to 0.7 acres. Listed fish habitat impacts would be smaller under Alternative 2 than Alternative 1, but still result in short-term to mid-term moderate effects depending on the mitigation strategy adopted. Up to 31 trees would be avoided, likely eliminating permanent impacts to YBCU habitat or at most result in only negligible adverse effects to riparian habitat.

*Table 1. Summary of Estimated Special-Status Species Impacts under Alternatives 1 and 2*

| Special-Status Species | Cause of Impact | Alternative 1 Impacts | Alternative 2 Impacts |
|---|---|---|---|
| Salmonids / Sturgeon | Rock placement below OHWM, SRA removal | 3.2 acres | 2.1 acres |
| Delta Smelt | Shallow water rock placement | 0.8 acres | 0.7 acres |
| YBCU | Canopy removal (up to 31 trees) | 0.4 acres | As low as 0 |

### 3.7.3 Avoidance, Minimization, and Mitigation Measures

In addition to the avoidance and minimization measures discussed in the 2016 ARCF FEIS/EIR, the Contract 4 project would utilize the work windows in Table 2 to comply with the USFWS and NMFS Biological Opinions. Construction of the erosion protection features would occur during the July 1 – October 31 construction window for work below the OHWM to avoid the time of year when listed fish species could be in the area. However, to avoid impacts to bats and nesting birds, tree removal would occur between November 1 – February 15. While this work would occur outside the wetted channel, it is still below the OHWM and conflicts with the work window for special-status fish. A Memorandum for Record (MFR) was written (USACE 2021) and circulated to USFWS and NMFS for comment that listed specific BMPs covered in the 2016 ARCF FEIS/EIR, the 2020 Biological Assessment, the 2021 Biological Opinions, and several additional measures that will be taken to avoid impacts to listed fish which may be in the area during the tree removal work.

*Table 2. Wildlife Work Windows*

| | Jan | Feb | Mar | April | May | June | July | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bird** | | 15th | | | | | | | 1st | | | |
| **Fish** | | | | | | | 1st | | | 31st | | |

Shaded cells indicate months when work can occur; blank cells indicate months where work should be avoided

Mitigation for impacts to special-status species habitat is required by the USFWS and NMFS BOs. These impacts must be compensated for at different ratios, depending upon the species, habitat, and timing. USACE will compensate for the impacted acreages listed in Table 1 at the required ratios by creating off-site mitigation at a potential Sacramento River site, or by purchasing credits at an approved mitigation bank as they become available.

Both Alternatives incorporate installation of instream woody material (IWM) to minimize project effects to fish. The IWM is intended to provide structural diversity to the shoreline, provide refugia, SRA, and rearing habitat for juvenile fish. The IWM will consist of cut trees anchored into the rip-rap in bunches of 3-4 trees, at 5 to 10 foot spacing along the entire length, with a 50 ft buffer around boat docks.

## 3.8 Cultural Resources

### 3.8.1 Existing Conditions

The cultural resources setting and regulatory framework described in Section 3.9 of the 2016 ARCF FEIS/EIR is applicable to the analysis in this SEA and is not repeated here.

### 3.8.2 Environmental Effects

**No Action Alternative**

Under the No Action/No Project Alternative, the Authorized action from the 2016 ARCF FEIS/FEIR (Alternative 2) would be implemented. That document concluded that mitigation measures would reduce potential impacts of the project to cultural resources under NEPA to a less-than-significant level as any adverse effects would be resolved through compliance with Section 106 of the National Historic Preservation Act, specifically through the implementation of requirements contained in the ARCF Section 106 Programmatic Agreement (PA).

**Alternatives 1 and 2**

Erosion protection measures would involve minimal ground disturbance and include rock placement with some staging areas. Any earthmoving activities could damage or destroy unknown subsurface historic-period sites, prehistoric-period archaeological sites, and properties with significance to Native American tribes (Tribes). If offsite stockpiling is needed, all proposed stockpile areas will be inventoried for cultural resources and assessed for effects to historic properties under the PA and ARCF GRR Historic Properties Management Plan (HPMP).

Two potential historic properties were located within the area of potential effects (APE) for these alternatives that were not discussed in the 2016 ARCF FEIS/FEIR: P-34-005225, the Sacramento River Traditional Cultural Landscape, and P-34-002143, Levee Unit 115. In accordance with the ARCF PA, confirmation of National Register of Historic Places (NRHP) eligibility for these cultural resources, findings of effect for the alternatives, and appropriate mitigation (if required) would be made through consultation between USACE, the California State Historic Preservation Officer (SHPO), and ARCF PA Parties, as appropriate, prior to initiating construction of the selected alternative. USACE has initiated consultation with the SHPO and Tribes regarding the APE for the two alternatives, determinations of eligibility for these two potential historic properties, and a finding of no adverse effect for either alternative. Consultation with the SHPO and Tribes regarding these efforts will be ongoing in the coming months and will be completed prior to project construction in accordance with the ARCF PA requirements.

### 3.8.3 Avoidance, Minimization, and Mitigation Measures

The following mitigation measures augment the cultural resources mitigation identified in the 2016 ARCF FEIS/FEIR, including actions to address adverse effects to historic properties and discovery of archaeological resources. If these alternatives are implemented, USACE and the CVFPB would implement the measures as described.

- Resolve Adverse Effects through a Programmatic Agreement and Historic Properties Treatment Plan: A Programmatic Agreement has been executed for the ARCF Project. A Historic Properties Treatment Plan (HPTP) would be developed if the selected alternative is found to result in adverse effects to historic properties.
- Prepare an Archaeological Discovery Plan and an Archaeological Monitoring Plan: In accordance with the procedures described in Section 9.2 of the ARCF HPMP, an archaeological discovery plan would be developed for the selected alternative. The discovery plan would specify what actions must be taken by the contractor in the event of an archaeological discovery and describe what actions USACE may take in the event of a discovery.
- In accordance with the procedures described in Section 9.3.9 of the ARCF HPMP, an archaeological monitoring plan would be developed for the selected alternative. This plan would identify the locations of known Historic Properties as well as sensitive areas designated for archaeological monitoring and would include methods and procedures for monitoring and the procedures to be followed in the event of a discovery of archaeological materials.
- Conduct Cultural Resources Awareness Training: In accordance with the procedures described in Section 9.1 of the ARCF HPMP, USACE would require the contractor to provide a cultural resource sensitivity and awareness training program for all personnel involved in project construction, including field consultants and construction workers. The training would be developed in

coordination with an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, as well as culturally affiliated Tribes. USACE may invite Native American representatives from interested culturally affiliated Tribes to participate in this training.

- Implement Procedures for Discovery of Cultural Materials: If the discovery of cultural materials (e.g., unusual amounts of shell, animal bone, any human remains, bottle glass, ceramics, building remains), sacred sites, or landscapes is made at any time during project-related construction activities, USACE in consultation with the CVFPB and other interested parties would develop appropriate protection and avoidance measures where feasible. These procedures would be developed in accordance with the ARCF PA and ARCF HPMP, which specifies procedures for post-review discoveries. Additional measures, such as development of HPTPs prepared in accordance with the PA and HPMP, may be necessary if avoidance or protection is not possible.

## 3.9 Air Quality

### 3.9.1 Existing Conditions

The environmental and regulatory framework described in Section 3.11 of the 2016 ARCF FEIS/EIR and the existing conditions in Section 3.2.3 of the SR Erosion Contract 1 SEA/SEIR is applicable to the analysis in this SEA and in incorporated by reference, with some updated information provided below.

SR Erosion Contract 4 is located in the Sacramento Valley Air Basin and is under the jurisdiction of the Sacramento Metropolitan Air Quality Management District. The air quality emissions that were estimated in 2015 and included in the 2016 ARCF FEIS/EIR in Appendix D have been determined to be inadequate, because the construction window in that document (assumed to be 14 years) has been condensed to 8 years, and multiple ARCF contracts are being constructed simultaneously. An updated emissions analysis is documented in *The Final General Conformity Determination, American River Watershed Common Features 2016 Project* (USACE 2021). The analyzed emission sources considered a wide range of construction activities and equipment, including those associated with Alternatives 1 and 2.

### 3.9.2 Environmental Effects

**No Action Alternative**

Under the No Action Alternative, the project work described in Alternative 2 in the 2016 ARCF FEIS/EIR, as well as the SREL C1-4 and SR ERO C1-2 SEAs are considered complete. This includes the equipment used to transport materials by road and by barge, degrade the levee, install jet grouting, rebuild the levee, and construct the bank erosion protection measures. As discussed in Section 3.11.5 in the 2016 ARCF FEIS/EIR and the air quality sections in the supplemental documents listed above, the effect to air quality from the No Action Alternative is less than significant with mitigation.

**Alternatives 1 and 2**

Air quality emissions would be generated by equipment used to construct the project, hauling of material, and by construction worker trips to the project area and would impact two air districts: the Bay Area Air Quality Management District (BAAQMD) and the Sacramento Metropolitan Air Quality Management District (SMAQMD). Barges and tugboats would be used to transport equipment, rock, trees, and other materials to and from the project area. The barges are expected to originate from the Bay Area and transport materials to and from Rio Vista. Tug and push boats would be utilized to transport the barges and maneuver them into place. Underwater rock placement would be accomplished by a crane and excavator stationed on a barge, while excavators would transport rock and place it on the shoreline. Equipment would access the shoreline from the barge by a ramp. Air emissions from the barges and tugboats were modeled using the SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator. Emissions from other equipment were modeled using the California Emissions Estimator Model (CalEEMod) version 2020.4.0.

The material amounts for Alternatives 1 and 2 are listed in Table 3. The estimated air emissions are in Table 4 for the Sacramento Valley Air Basin and Table 5 for the San Francisco Bay Area Air Basin. Because both alternatives require approximately the same amount of material, only one set of emissions estimates are presented below. All phases of construction, from vegetation removal to material placement, were assumed to occur in 2024. As shown in Tables 4 and 5, $NO_x$ emissions are anticipated to exceed the daily local air district thresholds.

*Table 3. Comparison of material amounts for each Alternative.*

| Material | Alternative 1 – Conventional Rip-rap | Alternative 2 - Biotechnical |
|---|---|---|
| Quarry stone Type C | 22,950 CY | 20,113 CY |
| Choke Stone | 1,051 CY | none |
| Soil | none | 2,835 CY |
| IWM | 113 trees | 113 trees |
| Biotechnical materials | none | 1 barge |

*Table 4. Emissions Estimates for the Alternatives in the SMAQMD*

| Pollutant | Unmitigated/Mitigated (lbs/day) | Unmitigated/Mitigated (tons/year) | Significance Threshold |
|---|---|---|---|
| ROG | 26.1 / 25.2 | 0.27 / 0.23 | N/A |
| $NO_x$ | **335 / 328** | 3.16 / 2.88 | 85 lbs/day |
| $PM_{10}$ | 18.4 / 18.1 | 0.18 / 0.18 | 80 lbs/day and 14.6 tons/year |
| $PM_{2.5}$ | 15.8 / 15.6 | 0.14 / 0.13 | 82 lbs/day and 15 tons/year |

**Notes:** ROG = reactive organic gases; $NO_x$ = nitrogen oxides; $PM_{10}$ or $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 10 or 2.5 microns. Bold numbers indicate concentrations above the local air district thresholds.

*Table 5. Emissions Estimates for the Alternatives in the BAAQMD*

| Pollutant | Barge Emissions (lbs/day) | Barge Emissions (tons/year) | Significance Threshold (lbs/day) |
|---|---|---|---|
| ROG | 23.8 | 0.01 | 54 |
| $NO_x$ | **408** | 0.20 | 54 |
| $PM_{10}$ | 18.4 | 0.01 | 82 |
| $PM_{2.5}$ | 16.4 | 0.01 | 84 |

**Notes:** ROG = reactive organic gases; $NO_x$ = nitrogen oxides; $PM_{10}$ or $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 10 or 2.5 microns. Bold numbers indicate concentrations above the local air district thresholds.

Individually the Alternatives' air quality effects are short-term and moderate. However, the Alternatives' emissions are considered additive to those of the ARCF Project construction and the ARCF Project as a whole would exceed general conformity thresholds in 2024.

### 3.9.3 Avoidance, Minimization, and Mitigation Measures

USACE would minimize emissions through the BMPs listed in Section 3.11.6 of the 2016 ARCF FEIS/EIR to reduce pollutant emissions, diesel particulate emissions, and fugitive dust associated with construction of the project. Funding of emission offset credits from SMAQMD and BAAQMD as mitigation would address the exceedances from the ARCF Project construction in 2024 to meet the Corps' commitments in the General Conformity Report and would reduce effects to air quality to less than significant.

## 3.10 Recreation

### 3.10.1 Existing Conditions

Recreational impacts were discussed in Section 3.14 of the 2016 ARCF FEIS/EIR. The levee adjacent to SR Erosion C4 is gated and not open for access to the public. The area is used recreationally by the local residents who own the land on both the landside and waterside of the levee. Eight private boat docks are located in the project footprint; seven docks are under permits authorized by the CVFPB and one dock is unpermitted.

### 3.10.2 Environmental Effects

**No Action Alternative**

Under the No Action Alternative, the project as described in the 2016 ARCF FEIS/EIR is considered completed. The document primarily addressed bike trail and park access rather than impacts related to private land, and found that recreation impacts along the Sacramento River would be short-term and significant. The area would be returned to pre-existing conditions once construction is completed.

**Alternative 1**

The staging area would utilize the levee top, requiring the area to be fenced and access restricted during the July – October construction season. The fencing would also restrict homeowners' access to the river while the project is under construction.

In order to construct the project, the dock owners would be required to remove the docks and staircases from the construction footprint per the terms of their permits with the CVFPB. The owners have the option to remove the dock pilings or leave them in place for the contractor to work around. Any docks not removed by the owners would be removed and disposed of by the construction contractor. After construction is completed, the docks, ramps, and staircases may be returned to their original locations. However, due to the thickness of rock being placed along the riverbank, the clearance between the water surface and river bed will decrease. Pilings may need to be moved into deeper areas before the docks can be moved back. Relocation of pilings would require new permits and environmental analysis under CEQA and/or NEPA. For this reason, it is possible that some docks may not be able to be replaced immediately after construction.

**Alternative 2**

Recreation impacts under Alternative 2 would be the same as Alternative 1, with the exception that the bioengineered shoreline would be fenced off to access to allow for plant establishment. This portion of the riverbank is approximately 1.1 acres and lies between 7 ft and 13 ft elevation. It is surrounded by very steep, well-vegetated terrain, is covered with broken concrete and riprap, and is difficult to access. Due the likely infrequent use of this area, recreation impacts under Alternative 2 would be temporary (occurring in one construction season, or until docks and ramps can be replaced), moderate (affecting adjacent homeowners, but not the general public), making the overall recreation impact less than significant.

### 3.10.3 Avoidance, Minimization, and Mitigation Measures

Recreation impacts due to access would be temporary and limited to a single July – October construction season. Public parks, trails, and boat ramps are nearby and may be utilized during project construction. Impacts due to boat dock removal are a result of conditions contained within the permits, which state that permittees may be required to remove their docks and associated structures, at their own expense, upon request from the CVFPB. The CVFPB has mailed letters to dock owners giving advance notice of this request.

*Table 6. Summary of Effects and Mitigation*

| Resource[1] | No Action (2016 ARCF FEIS/EIR) | Alternative 1 | Alternative 2 | Approximate Numerical Impact (if any) | Mitigation (2016 ARCF FEIS/EIR) | Mitigation – Alternative 1 | Mitigation – Alternative 2 |
|---|---|---|---|---|---|---|---|
| Land Use | Less than significant with mitigation | No new significant effect | No new significant effect | N/A | Landowner compensation under Uniform Relocation Assistance and Real Property Acquisition Act of 1960 | N/A | N/A |
| Hydrology and Hydraulics | Less than significant | No new significant effect | No new significant effect | N/A | None required | N/A | N/A |
| Water Quality and Groundwater Resources | Less than significant with mitigation | Significant cumulative effects, less than significant with mitigation | Significant cumulative effect, less than significant with mitigation | Alt 1: up to 3.2 acres<br>Alt 2: up to 2.1 acres | Preparation of a Stormwater Pollution Protection Plan, Spill Prevention Control and Countermeasures Plan, and implementation of BMPs listed in Section 3.5.6. | Establishing off-site mitigation or purchasing mitigation bank credits | Establishing off-site mitigation or purchasing mitigation bank credits |
| Vegetation and Wildlife | Significant short-term, less than significant long term with mitigation | Same as FEIS/EIR short-term; less than significant with mitigation long-term | Same as FEIS/EIR short-term; beneficial long-term | Alt 1: 0.4 acres of tree canopy removed, all shrubs within footprint<br>Alt 2: little to no tree canopy removal, shrub impacts temporary | When possible, compensation would be planted on planting berms or on launchable rock trenches. A hydraulic evaluation will be conducted to determine whether mitigation could occur in the Sacramento Bypass. Additional mitigation sites are identified in Section 3.6.6. | Establishing off-site mitigation or purchasing mitigation bank credits per the CAR ratios | Likely none required |

| Resource[1] | No Action (2016 ARCF FEIS/EIR) | Alternative 1 | Alternative 2 | Approximate Numerical Impact (if any) | Mitigation (2016 ARCF FEIS/EIR) | Mitigation – Alternative 1 | Mitigation – Alternative 2 |
|---|---|---|---|---|---|---|---|
| Fisheries | Less than significant with mitigation | New indirect effects due to riparian vegetation loss and slightly increased rock footprint; less than significant with mitigation | No new significant effect; launchable rock toe balanced out by lack of rock above AALWSE | Alt 1: 0.4 acres of SRA removed. 3.2 acre rock footprint.<br>Alt 2: little to no permanent SRA removal. 2.1 acre rock footprint. | Vegetation variance would allow waterside vegetation to remain on the Sacramento River. Bank protection sites and launchable rock trenches would be revegetated following construction. BMPs would be implemented to address turbidity, discussed in Section 3.5.6. | Establishing off-site mitigation or purchasing mitigation credits per the CAR ratios; installing IWM | Establishing off-site mitigation or purchasing mitigation credits per the CAR ratios; installing IWM |

| Resource[1] | No Action (2016 ARCF FEIS/EIR) | Alternative 1 | Alternative 2 | Approximate Numerical Impact (if any) | Mitigation (2016 ARCF FEIS/EIR) | Mitigation – Alternative 1 | Mitigation – Alternative 2 |
|---|---|---|---|---|---|---|---|
| Special Status Species | Less than significant with mitigation | New indirect effects due to riparian vegetation loss and slightly increased rock footprint; less than significant with mitigation | No new significant effect; launchable rock toe balanced out by lack of rock above AALWSE | Alt 1: YBCU: 0.4 acres<br>Delta Smelt: 0.8 acres<br>Salmonids/Green Sturgeon: 3.2 acres<br>Alt 2:<br>SRA/YBCU: little to none.<br>Delta Smelt: 0.7 acres<br>Salmonids/Green Sturgeon: 2.1 acres. | Mitigation per the terms of the USFWS and NMFS BOs. Replace habitat either on-site or in close proximity to lost habitat. Implement BMPs discussed in Section 3.5.6 and conservation measures in the BOs during construction to prevent mortality. Implement green sturgeon modeling and monitoring to improve effects assessment, minimize construction impacts, and mitigate for lost benthic habitat per the terms of the BOs. Implement fish passage at the Sacramento Bypass, and grade the widened bypass to reduce stranding potential. | Establishing off-site mitigation or purchasing mitigation credits per the ratios in the BOs; installing IWM | Establishing off-site mitigation or purchasing mitigation credits per the ratios in the BOs; installing IWM |
| Cultural Resources | Less than significant with mitigation | No new significant effect | No new significant effect | | Implementation of a Programmatic Agreement, Historic Properties Management Plan, and Historic Properties Treatment Plan | | |

| Resource[1] | No Action (2016 ARCF FEIS/EIR) | Alternative 1 | Alternative 2 | Approximate Numerical Impact (if any) | Mitigation (2016 ARCF FEIS/EIR) | Mitigation – Alternative 1 | Mitigation – Alternative 2 |
|---|---|---|---|---|---|---|---|
| Transportation and Circulation | Significant | No new significant effect | No new significant effect | | Preparation of a Traffic Control and Road Management Plan and other BMPs listed in Section 3.10.6 | | |
| Air Quality | Less than Significant with mitigation | No new significant effect | No new significant effect | NOx: 335 lbs/day (unmitigated) in SMAQMD; 408 lbs/day in BAAQMD | Implementation of SMAQMD's Basic Construction Emission Control Practices and other BMPs, as listed in Section 3.11.6 | Fund emissions offsets through SMAQMD | Fund emissions offsets through SMAQMD |
| Climate Change | Less than Significant with Mitigation | No new significant effect | No new significant effect | | Implementation of SMAQMD's Basic Construction Emission Control Practices and other BMPs, as listed in Section 3.12.6 | N/A | N/A |
| Noise | Less than significant with mitigation | No new significant effect | No new significant effect | | Coordination with local residents, compliance with noise ordinances, and other BMPs listed in Section 3.13.6 | | |

| Resource[1] | No Action (2016 ARCF FEIS/EIR) | Alternative 1 | Alternative 2 | Approximate Numerical Impact (if any) | Mitigation (2016 ARCF FEIS/EIR) | Mitigation – Alternative 1 | Mitigation – Alternative 2 |
|---|---|---|---|---|---|---|---|
| Recreation | Significant | No new significant effect | No new significant effect | Removal of 8 private boat docks | Notification and coordination with recreation users and bike groups. Flaggers, signage, and fencing to notify and control recreation access and traffic around construction sites | N/A; dock removal is per the terms of the permits with the CVFPB. Recreational access impacts are temporary and nearby public locations are available. | N/A; dock removal is per the terms of the permits with the CVFPB. Recreational access impacts are temporary and nearby public locations are available. |
| Public Utilities and Service Systems | Less than significant | No new significant effect | No new significant effect | None | Notification of potential interruptions would be provided to the appropriate agencies and to landowners | N/A | N/A |
| Hazardous Wastes and Materials | Less than significant with mitigation | No new significant effect | No new significant effect | None | Borrow material would be tested prior to use to ensure that no contaminated soils are used for this project | N/A | N/A |
| Socioeconomic, Population, and Environmental Justice | Less than significant with mitigation | No new significant effect | No new significant effect | None | Federal Relocation Act Compliance | N/A | N/A |

[1] The following resources were not analyzed in detail by this EA and previously prepared documentation was relied upon to make effects determination summarized in the table: Geological Resources, Land Use, Hydrology & Hydraulics, Transportation & Circulation, Climate Change, Noise, Visual Resources, Public Utilities & Service Systems, and Hazardous Wastes and Materials.

# 4 Cumulative Impacts

## 4.1 Cumulative Effects

### 4.1.1 Methodology and Geographic Scope of Analysis

The Council for Environmental Quality (CEQ) defines environmental effects to include cumulative effects, which are those resulting from the proposed alternatives added to those from other past, present, and reasonably foreseeable actions (40 C.F.R. § 1508.1), regardless of which entity undertakes the action. Section 4.1.2 of the 2016 ARCF FEIS/EIR described other projects in the Sacramento area and the cumulative impacts of these projects were described in Section 4.2. The cumulative impacts analyses contained below considers effects due to the updates to the SR Erosion Contract 4 design combined with other projects in the area. The projects included within this section will affect similar habitats or resources as SR Erosion Contract 4 both temporally and geographically. If the projects are not expected to contribute to a cumulative effect on a resource, then that resource is not included in the sections below. Table 7 lists resources considered in this cumulative effects analysis and the geographic scope of analysis.

*Table 7. Resources and Geographic Areas Considered in the Sacramento River Contract 4 Cumulative Effects Analyses*

| Resource | Geographic Area |
|---|---|
| Water Quality and Groundwater | Sacramento River |
| Vegetation and Wildlife | Sacramento River |
| Fisheries | Sacramento River |
| Special Status Species | Sacramento River and regional species implications |
| Cultural Resources | Individual sites and regional implications |
| Air Quality | Sacramento Metropolitan Air Quality Management District (SMAQMD); Bay Area Air Quality Management District (BAAQMD) |

### 4.1.2 Past, Present, and Reasonably Foreseeable Future Projects

#### *American River Common Features 2016*

The ARCF project has been under construction since 2019 and is scheduled through 2026. SR Erosion Contract 4 will be constructed in 2024. The project elements include improvements of levees along the American and Sacramento Rivers, the east bank of the Natomas East Main Drainage Canal (NEMDC), Arcade Creek, the Magpie Creek Diversion Channel, and the Sacramento Weir and Bypass. The levee improvements include construction of cutoff walls, erosion protection, seepage and stability berms, levee raises, relief wells, and new levee. The Sacramento Weir and Bypass would be widened in order to increase conveyance of flood waters and reduce flood stages downstream from the confluence of the Sacramento and American Rivers. The ARCF project also includes construction of mitigation sites in the Sacramento area. Specifically, the 2016 ARCF FEIS/EIR included the following construction projects:

- Construction of a seepage and stability berm along Front Street (completed in 2019)

- Seepage and stability improvements to the Sacramento River east levee between the American River confluence and Freeport (construction 2020 – 2023)
- Erosion protection on the American River (construction 2022 – 2025)
- Erosion protection on the Sacramento River (construction 2021 – 2026)
    - Contract 2 will be constructed in 2023 and 2024
    - Contract 4 will be constructed in 2024
    - Contract 3 will be constructed in 2025 and 2026
- Improvements to the Magpie Creek Diversion Channel, east bank of the NEDMC, Pleasant Grove Creek Canal, and Dry, Robla, and Arcade Creeks (planned for 2024 - 2025)
- Widening of the Sacramento Weir and Bypass (planned for 2021 – 2024)

#### *Dredging at Miller Park*

The City of Sacramento performs annual maintenance dredging between July and October at the Sacramento Marina and Miller Park Boat Ramp, located 2.5 miles upstream from Contract 4.

#### *Sacramento River Bank Protection Project*

The Sacramento River Bank Protection Project (SRBPP) was authorized to protect existing levees and flood control facilities of the Sacramento River Flood Control Project. The SRBPP directs USACE to provide bank protection along the Sacramento River and its tributaries bordered by Federal flood control project levees. WRDA 2007 authorized an additional 80,000 linear feet of bank protection, to be implemented under the SRBPP Post Authorization Change Report, which received approval in June 2020. The specific locations and dates of the work are unknown at this time.

#### *West Sacramento Project*

The purpose of the West Sacramento GRR is to bring the 50 miles of levees surrounding West Sacramento into compliance with Federal and State standards. The proposed levee improvements would be similar to those being implemented for the ARCF 2016 project and would address seepage, stability, height, and erosion concerns in the same geographic area and will include work along the Sacramento River's west levee. Construction of the West Sacramento Project will begin in 2024 with construction of the Yolo Bypass east levee.

## 4.2 Cumulative Impact Analysis

Of the projects mentioned above, the construction of Sacramento River Erosion Contract 2 and the annual Miller Park dredging would occur during the same year as Sacramento River Erosion Contract 4 construction.

### 4.2.1 Water Quality and Groundwater Resources

Simultaneous temporary construction activities may result in adverse cumulative impacts to water quality. The primary water quality constituent that may be affected is turbidity, due to the projects' placement of rock or dredging activities. All projects involving work below the OHWM would require coordination with the Central Valley Regional Water Quality Control Board and be in compliance with their 401 water quality permits. No significant cumulative water quality effects are anticipated due to the implementation of these multiple projects.

The original 404(b)(1) evaluation in the 2016 ARCF FEIS/EIR stated that up to 15 acres of rock would be placed below the OHWM in the Sacramento River over a length of 10 miles. While the Alternatives under the SR Erosion Contract 4 proposed action entail up to 3.15 acres of rock placement, the combined revetment designs of SR Erosion Contracts 1 – 4 total approximately 60 acres of rock over 6 miles. A 404(b)(1) evaluation for Contract 4 will be included as an appendix to this document to ensure the chemical, physical, and biological integrity of a Waters of the United States (WOUS) is adequately assessed due to the additional amount of rock revetment being placed below the OHWM.

The rock placement required by these projects will not affect the chemical or physical integrity of a WOUS. For all SR Erosion projects, effects to the biological integrity of this WOUS will be accomplished by the mitigation for ESA-listed fish species required under the USFWS and NMFS Biological Opinions, which typically require creation of habitat at acreages higher than those affected by the project. The SR Erosion contracts cover a portion of the river with an already degraded biotic environment due to the existing concrete and rip-rap armoring, the lack of floodplain, and channelization. With mitigation, the impacts to this WOUS would be reduced to less than significant.

### 4.2.2 Vegetation and Wildlife

The 2016 ARCF FEIS/EIR determined there would be significant vegetation impacts in its cumulative effects analysis. SR Erosion Contract 1, the Seepage Stability and Overtopping Contracts 1 – 3 and the West Sacramento projects all required vegetation removal. SR Erosion Contracts 2 and 3 will also require vegetation removal, as will Seepage Stability and Overtopping Contract 4, which is scheduled for 2023 and partially overlaps SR Erosion Contract 4. Construction of the West Sacramento Project would significantly affect vegetation along the west levee, and a variety of options will be considered to reduce effects to less than significant, such as planting berms, plantings within levee setbacks, or mitigation bank credits. The SRBPP project will not commence in the ARCF footprint in the foreseeable future, and the Miller Park dredging will not require vegetation removal. While the ARCF project would follow the recommendations of the Coordination Act Report, the determination of significant impacts was based on the amount of habitat being removed to construct the projects and the time lapse before the mitigation plantings could mature to replace the habitat value of those removed. Once the plantings have matured, the new habitat would be similar to what was

removed and the effects to vegetation and wildlife would be less than significant. Because the surrounding projects incorporate on-site plantings, there would be no significant cumulative impacts to vegetation and wildlife.

### 4.2.3 Fisheries

The 2016 ARCF FEIS/EIR evaluated cumulative effects of projects occurring upstream and downstream of the project area on the Sacramento River and found short term significant cumulative effects from the construction of the SRBPP, West Sacramento Project, and ARCF projects. The onsite mitigation created at these project areas is small compared to the loss of fisheries habitat. The Sacramento River Erosion projects are all incorporating a launchable rock toe into their bank protection designs, which slightly expands the rock footprint analyzed in the 2016 ARCF FEIS/EIR and was discussed in their supplemental NEPA documents. With mitigation, the cumulative impacts will not be greater than what was analyzed in the 2016 ARCF FEIS/EIR.

### 4.2.4 Special Status Species

#### *Yellow-billed Cuckoo*

The 2016 ARCF FEIS/EIR found short-term significant cumulative impacts to yellow-billed cuckoo due to the removal of riparian habitat, however designated critical habitat would not be affected. The surrounding Sacramento River Erosion projects are compensating for loss of riparian trees by reestablishing native habitat onsite through planting benches installed along the shoreline. The Alternative 1 would require tree removal; however, removal is selective and would leave most of the existing canopy intact and able to fill in the canopy gaps over time. The Alternative 2 would not contribute to cumulative impacts to this species. Because of the on-site mitigation requirement of the surrounding projects, the cumulative long-term effects to yellow-billed cuckoo habitat remain less than significant.

#### *Federally Listed Fish Species*

The 2016 ARCF FEIS/EIR had sufficiently analyzed the effects of erosion protection measures along approximately 10 miles of the Sacramento River's east bank and areas downstream, in combination with the SRBPP, the West Sacramento Project, and the Miller Park dredging projects. The projects would contribute to adverse habitat effects due to the rock placement on benthic habitat, and that lands available for riparian habitat compensation could be difficult to locate along the Sacramento River. The surrounding erosion projects incorporate planting benches into their designs in order to create on-site mitigation for impacts to federally listed fish habitat. Off-site mitigation is being pursued along the Sacramento and American Rivers to create habitat to compensate for the remaining unavoidable impacts.

### 4.2.5 Cultural Resources

Cumulative impacts to cultural resources could result from multiple construction projects in the vicinity of the Sacramento River East Levee and the surrounding area if they cause adverse effects on important cultural resources. The Sacramento River East Levee area continues to experience growth, with new residential, commercial, and

recreation-related construction, and there have been other recent Federal projects associated with the Sacramento River East Levee. Future Sacramento River construction projects could result in significant adverse impacts to cultural resources; however, the proposed action, which will result in No Adverse Effects to cultural resources, would not make a considerable contribution to this significant cumulative impact.

### 4.2.6 Air Quality

In 2021 USACE published an updated General Conformity Determination for the ARCF project to assess the possible emissions for the entire project considering the updated and consolidated construction schedule. The 2024 construction of SR Erosion Contract 4 is expected to coincide with construction of SR Erosion Contract 2 and the Sacramento Weir, resulting simultaneous sources of emissions within the SMAQMD and BAAQMD air districts.

The combined estimated emissions for ARCF 2016 project components expected to be constructed in 2024 are in Tables 8 and 9, along with the General Conformity *de minimis* standards. The ARCF project is anticipated to exceed the *de minimis* thresholds for $NO_x$ and credits will be purchased to offset these emissions.

*Table 8. Estimated emissions (tons) for the ARCF 2016 project for construction year 2024 in the SMAQMD air basin.*

| Project Component | ROG Unmitigated | NOx Unmitigated | $PM_{10}$ Unmitigated | $PM_{2.5}$ Unmitigated | ROG Mitigated | NOx Mitigated |
|---|---|---|---|---|---|---|
| Sacramento River Erosion Contract 2 | 1.16 | 13.0 | 1.72 | 0.82 | 0.91 | 9.17 |
| Sacramento River Erosion Contract 4 | 0.27 | 3.16 | 0.18 | 0.14 | 0.23 | 2.88 |
| Sacramento Weir | 1.51 | 14.2 | 44.7 | 9.78 | 1.10 | 6.28 |
| Total ARCF 16 Project Emissions | 2.94 | **30.3** | 46.6 | 10.7 | 2.24 | 18.3 |
| **General Conformity *de minimis* Thresholds** | 25 | 25 | 100 | 100 | 25 | 25 |

**Notes**: Bold numbers indicate concentrations above thresholds.
CO = carbon monoxide; NOx = oxides of nitrogen; $PM_{10}$ = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases.
Unmitigated and Mitigated data is presented in tons per year.

*Table 9. Estimated emissions (tons) for the ARCF 2016 project for construction year 2024 in the BAAQMD air basin.*

| Project Component | ROG Unmitigated | NOx Unmitigated | $PM_{10}$ Unmitigated | $PM_{2.5}$ Unmitigated | ROG Mitigated | NOx Mitigated |
|---|---|---|---|---|---|---|
| Sacramento River Erosion Contract 2 | 0.53 | 9.02 | 0.41 | 0.36 | 0.53 | 9.02 |
| Sacramento River Erosion Contract 4 | 0.17 | 2.85 | 0.13 | 0.11 | 0.17 | 2.85 |
| Sacramento Weir | 0.21 | 3.64 | 0.16 | 0.15 | 0.21 | 3.64 |
| Total ARCF 16 Project Emissions | 0.91 | 15.5 | 0.70 | 0.62 | 0.91 | 15.5 |
| **General Conformity *de minimis* Thresholds** | 100 | 100 | 100 | 100 | 100 | 100 |

### 4.2.7 Recreation

Other projects in the area may impact public recreational access through closures, detours, or diverted recreational use. SR Erosion Contract 4 would affect recreation on private land utilized by a limited number of landowners which is not accessible to the public. It is not anticipated to contribute to cumulative recreational impacts.

## 5 Compliance with Federal Laws and Regulations

This section discusses the project's compliance with applicable federal laws and regulations. Each of the federal laws and regulations were also discussed in the 2016 ARCF FEIS/EIR and other supplemental documents. Certain Federal laws and regulations require issuance of permits before project implementation; others require agency consultation but may not require issuance of any authorization or entitlements before project implementation.

### 5.1 Endangered Species Act of 1973, as amended, 16 USC 1531, et seq

Under Section 7(a)(2) of the Endangered Species Act, federal agencies must consult with USFWS and NMFS to ensure that agency actions do not jeopardize the continued existence of any threatened or endangered species or their habitats. Biological Opinions were received for the ARCF 2016 project from USFWS on March 31, 2021 (08ESMF00-2014-F-0518-R003) and from NMFS on May 12, 2021 (WCRO-2020-03082). The NMFS BO concluded that the ARCF 2016 project would not jeopardize the continued existence of Sacramento River winter-run Chinook Salmon, Central Valley spring-run Chinook Salmon, the North American green sturgeon DPS, and California Central Valley steelhead DPS, and is not likely to destroy or adversely modify their designated critical habitats. The USFWS BO concluded that the ARCF 2016 project would not jeopardize the continued existence of the valley elderberry longhorn beetle, delta smelt, giant garter snake, and yellow-billed cuckoo. The project is also not likely to destroy or adversely modify delta smelt critical habitat. These findings were based on conservation measures detailed in both biological opinions, which will be followed throughout all phases of the Sacramento River Erosion Contract 4 project.

## 5.2 Fish and Wildlife Coordination Act of 1958, as amended, 16 USC 661, *et seq*

The Fish and Wildlife Coordination Act directs the USFWS to provide recommendations to minimize impacts to fish and wildlife resources because of a proposed federal action's effects on a body of water. The USFWS Coordination Act Report (CAR; 08ESMF00-2013-CPA-0020) was prepared in 2015 and included as Appendix 1 of the 2016 ARCF FEIS/EIR. SR Erosion Contract 4 contains riparian forest, riparian scrub-shrub, and shallow open water habitats. These are designated in the CAR as Resource Category 2, with a mitigation goal of "no net loss of in-kind habitat value or acreage". The CAR recommends that USACE compensate for impacts to these habitats at a ratio of 2:1. Depending upon the chosen Alternative, up to 0.4 acres of riparian forest canopy will be impacted as a result of tree trimming or removal and clearing of scrub-shrub required for installation of the erosion protection. The riparian forest and riparian scrub-shrub habitat impacts will be addressed as part of compensation for impacts to yellow-billed cuckoo habitat, as discussed in the Federal Special-Status Species section of this SEA. Similarly, impacts of up to 1 acre of shallow-water habitat are discussed in Federal Special-Status Species section, as this habitat type overlaps with delta smelt critical habitat.

## 5.3 Magnuson-Stevens Fishery Conservation and Management Act

The Sacramento River is designated as essential fish habitat (EFH) for Pacific Coast salmon. Section 305(b) of the Magnuson-Stevens Act requires federal agencies to consult with NMFS whenever a federal action occurs in an area that may adversely affect EFH. These consultations require NMFS to make recommendations to conserve EFH, such as avoiding, minimizing, or mitigating adverse impacts. NMFS's review of potential effects of the ARCF 2016 project to EFH was received on May 12, 2021. It was determined that the project would adversely affect the EFH of Pacific Coast salmon through the placement of rock armoring, removal of riparian vegetation, and maintain the continued disconnection of the river from its floodplain. The conservation recommendations include several actions being considered in this SEA, such as placement of IWM, minimizing tree loss, and utilizing vegetative plantings as an alternative to riprap.

## 5.4 Migratory Bird Treaty Act of 1936, as amended, 16 USC 703 *et seq*

The Migratory Bird Treaty Act (MTBA) implements a series of international treaties that provide for migratory bird protection within the United States. Under the MBTA, it is unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…" (USC Title 16, Section 703), including both direct and indirect actions. Both proposed Alternatives will incorporate the measures listed in the 2016 ARCF FEIS/EIR to minimize the potential for the take of migratory birds through all project phases.

## 5.5 Executive Order 13112, Invasive Species

Executive Order (EO) 13112 directs Federal agencies to take actions to prevent the introduction of invasive species, provide for control of invasive species, and minimize

the economic, ecological, and human health impacts that these species cause. This EO also calls for the use of native plants for site stabilization and restoration. Any disturbed areas under Alternative 1 would be hydroseeded with a native seed mix. Alternative 2 would also use a native hydroseed mix to establish initial cover and woody vegetation would also be planted as the central part of the bioengineered design for erosion control. Under Alternative 2, native riparian species would be planted to create a vegetated riverbank.

### 5.6 Clean Water Act of 1972, as amended, 33 USC 1251 *et seq*

Both Alternatives would place fill material below the OHWM within a Water of the United States and requires compliance with Sections 401 and 404 of the Federal Clean Water Act. For Section 401 compliance, USACE obtained a programmatic Water Quality Certification from the Central Valley Regional Water Quality Control Board on July 13, 2021. Authorization will be requested from the CVRWQCB under the Programmatic General Permit, Report Type 3 Commencement of Construction, for the selected alternative prior to construction. To demonstrate compliance with Section 404, a 404(b)(1) evaluation was completed for the entire ARCF project and included as Appendix E in the 2016 ARCF FEIS/EIR. A consistency review of the 404(b)(1) evaluation will be completed and included as an Appendix in the final version of this SEA. Additionally, the contractor will be required to obtain a Construction General Permit and the preparation of a Stormwater Pollution Prevention Plan (SWPPP) for potential effects related to stormwater discharge.

### 5.7 Executive Order 11988, Floodplain Management

The Alternatives do not involve floodplain modifications, floodplain development, or alterations to the environmental values provided by floodplains. These alternatives reinforce an existing levee protecting life and property on an already developed floodplain. Full compliance with Executive Order 11988 is ensured because the Alternatives do not alter the floodplain.

### 5.8 Executive Order 1990, Protection of Wetlands

The project area does not contain wetlands.

### 5.9 Clean Air Act of 1963, as amended, 42 USC 7401, *et seq*

The daily and cumulative $NO_x$ emissions of the ARCF 2016 project in 2024 will likely exceed the General Conformity *de minimis* Thresholds in the SMAQMD. The contractor will be responsible for monitoring and reporting monthly emissions to SMAQMD, and the ARCF 2016 project will purchase credits to compensate for the exceedances.

### 5.10 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

EO 12898 directs federal agencies to address disproportionate environmental and human health effects of federal actions on minority and low-income populations. Both Alternatives will reduce flood risk to the Sacramento Area by preventing erosion of the Sacramento River east levee. The neighborhoods adjacent to the project area are not

considered to be minority or low-income communities. The material haul route utilizes the river and does not involve trucks traveling through neighborhoods. Compliance with EO 12898 is ensured because there are no disproportionate adverse effects, and the flood risk reduction benefits apply to the entire Sacramento area.

## 5.11 National Historic Preservation Act of 1966, as amended, 54 USC 300101 et seq.

Pursuant to Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, USACE has consulted with the California State Historic Preservation Officer (SHPO) and other parties and, as a result, has executed the *Programmatic Agreement among USACE and the California SHPO regarding the American River Common Features Project, Sacramento and Yolo Counties, California* (PA). The PA establishes the process USACE shall follow for compliance with Section 106 of the NHPA, taking into consideration the views of the signatory and concurring parties and interested Native American Tribes. All terms and conditions resulting from the agreement shall be implemented in order to minimize adverse impacts to historic properties.

In accordance with the PA and the HPMP for the ARCF 2016 Project, USACE initiated ongoing consultation with Native American Tribes who attach religious or cultural significance to potential historic properties that may be affected by the proposed undertaking on November 8, 2021. A response was received from United Auburn Indian community (UAIC) regarding the culturally sensitive nature of the area. No further responses from Native American tribes were received regarding potential resources within the APE.

In accordance with the PA, USACE consulted with the California SHPO, requesting comments on the delineation of the APE on November 8, 2021. In a letter dated December 6, 2021, USACE received a response stating SHPO had no comment on the project's APE.

On June 23, 2022, USACE provided the California SHPO and Native American tribes with a draft Identification, Evaluation, and Finding of Effect Cultural Report requesting comments on these efforts. Consultation is ongoing regarding identification and evaluation of historic properties, and a finding of effect for this Project phase would be completed prior to award of SRE Contract 4. Accordingly, pursuant to the PA, the Proposed Action is in full compliance with Section 106 of the NHPA.

## 5.12 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 USC 4601, *et seq*

The project footprint falls within easements and real estate acquisition is not anticipated to construct the project. Sacramento Area Flood Control Agency (SAFCA) is USACE's partner and is responsible for the Lands, Easements, Rights-of-Way, Relocations, and Disposal (LERRD) processes including any property acquisitions in order to comply with the Act.

# 6. Coordination of the Supplemental EA

This draft SEA will be published along with a CEQA Draft Supplemental Environmental Impact Report. Both will undergo a 45-day public comment period from March 1 through April 14. Copies of both documents will be posted on the USACE and CVFPB websites (www.sacleveeupgrades.com and https://cvfpb.ca.gov/public-notices) and will be made available by mail upon request. This project will be coordinated with all appropriate Federal, State, and local governmental agencies prior to the finalization of this document.

# 7 Findings

The anticipated environmental effects for seven resource areas under two different Alternatives were evaluated within this SR Erosion Contract 4 SEA. The analysis indicates that, with mitigation, these alternatives would not cause any new significant impacts beyond what was already described in the 2016 ARCF FEIS/EIR, or in the subsequent supplemental documents SREL C1, C2, C3, and C4 SEA/SEIRs, Sacramento Weir SEIS/SEIR, and SR ERO C1 and C2 SEA/SIER. A FONSI of the preferred Alternative has been prepared and has been circulated with this SEA.

# 8 Report Preparers and Contributors

This Supplemental Environmental Assessment was prepared by the U.S. Army Corps of Engineers Planning Division, Sacramento District.

*Table 10. List of Preparers and Contributors*

| **Preparers and Contributors** | **Title, Agency, or Consultant** |
|---|---|
| Melissa Dyer | Environmental Manager |
| Andrea Meier | Chief, Environmental Analysis Section |
| Mariah Brumbaugh | NEPA Regional Technical Specialist |
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| Sydney Kerkhove-Peltier | Archaeologist |
| Chi Bui | Lead Engineer |
| Susanna Real | DWR Environmental Scientist |
| Drew Sutton | GEI Consultants |
| Greg Treible | Project Manager |

# 9 References

National Marine Fisheries Service. 2021. Endangered Species Act Section 7(a)(2) Biological Opinion, Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the American River Watershed Common Features General Reevaluation Report Reinitiation 2020. Accessed 8/8/22 at www.sacleveeupgrades.com

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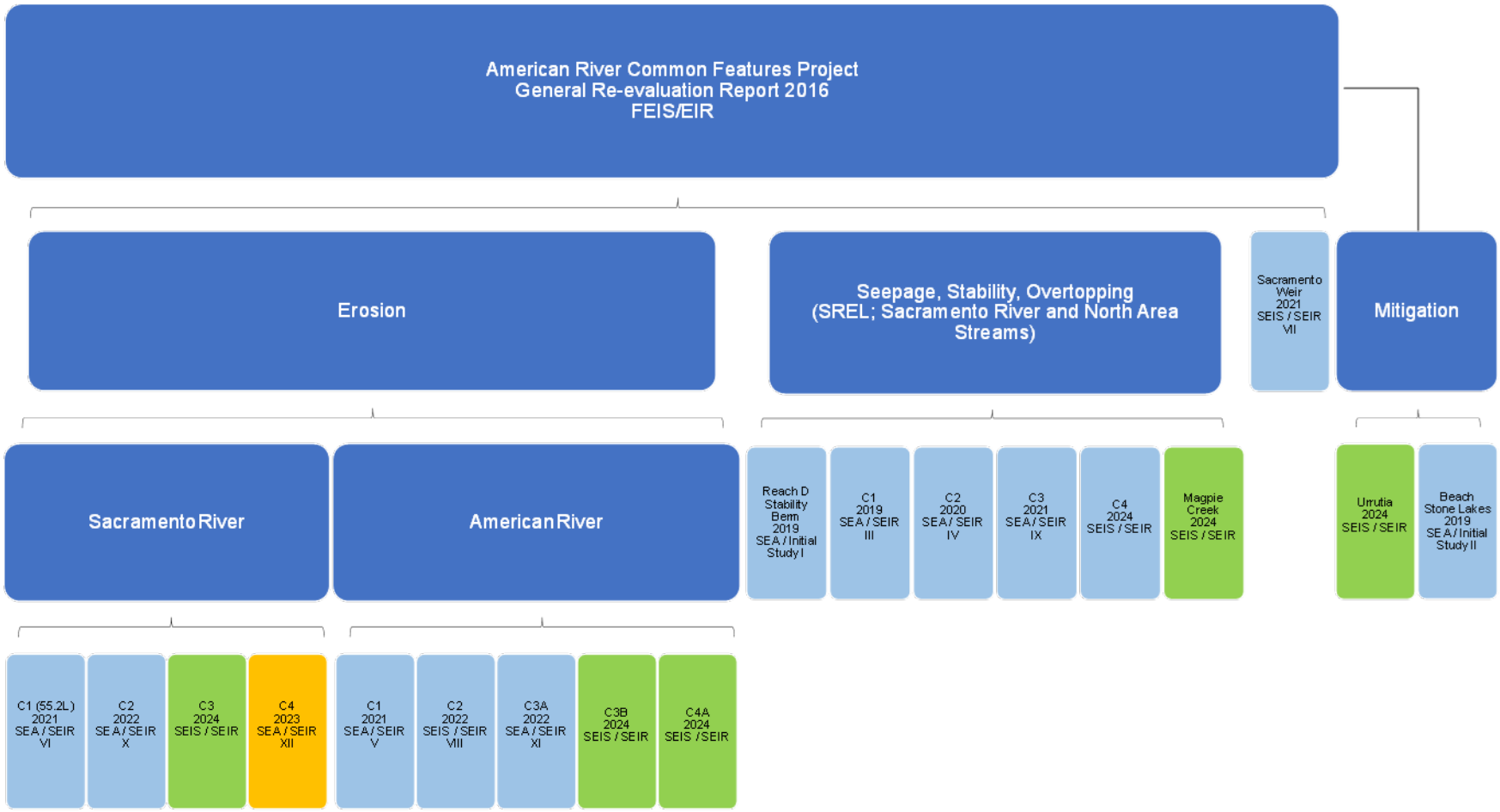
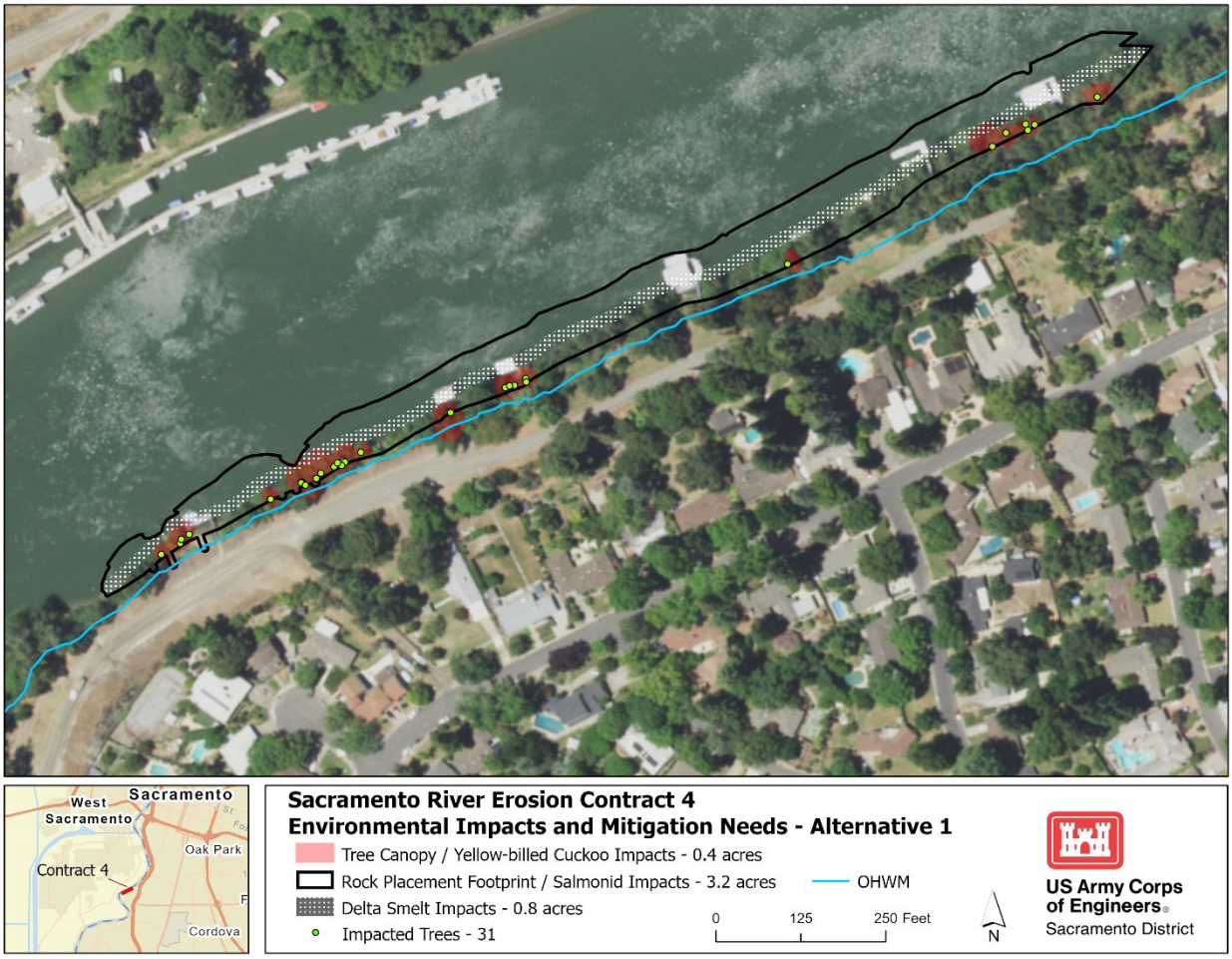
# Appendix A - Overview of all ARCF Elements, Contracts, Associated NEPA/CEQA Documents




Also included is document number (in order of publication) and year FONSI/ROD was or will be signed. This supplemental EA is orange, remaining ARCF contracts to be included in a 2024 comprehensive SEIS/SEIR are in green.

# Appendix B – Protected Species Habitat Impact Maps

## Alternative 1 – Conventional Rip-rap above the Summer Water Elevation



## Alternative 2 – Biotechnical Alternative above the Summer Water Elevation

# Appendix C – Public Comments

# Appendix D – 404(b)(1) Evaluation

# APPENDIX A: AIR QUALITY MODELING RESULTS

# ARCF Sacramento River Erosion Contract 4 Detailed Report

## Table of Contents

# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field | Value |
|---|---|
| Project Name | ARCF Sacramento River Erosion Contract 4 |
| Lead Agency | — |
| Land Use Scale | Project/site |
| Analysis Level for Defaults | County |
| Windspeed (m/s) | 3.00 |
| Precipitation (days) | 6.00 |
| Location | 38.53202138407491, -121.52563552517893 |
| County | Sacramento |
| City | Sacramento |
| Air District | Sacramento Metropolitan AQMD |
| Air Basin | Sacramento Valley |
| TAZ | 519 |
| EDFZ | 13 |
| Electric Utility | Sacramento Municipal Utility District |
| Gas Utility | Pacific Gas & Electric |

## 1.2. Land Use Types

| Land Use Subtype | Size | Unit | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|---|---|---|---|---|---|---|---|---|
| User Defined Linear | 0.30 | Mile | 3.15 | 0.00 | — | — | — | flood control levee |

## 1.3. User-Selected Emission Reduction Measures by Emissions Sector

| Sector | # | Measure Title |
|---|---|---|
| Construction | C-5 | Use Advanced Engine Tiers |

# 2. Emissions Summary

## 2.1. Construction Emissions Compared Against Thresholds

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

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 2.97 | 2.23 | 23.0 | 20.4 | 0.12 | 0.66 | 0.90 | 1.56 | 0.62 | 0.24 | 0.85 | — | 11,618 | 11,618 | 0.66 | 0.63 | 11,828 |
| Mit. | 1.79 | 1.34 | 15.9 | 39.9 | 0.12 | 0.43 | 0.90 | 1.33 | 0.41 | 0.24 | 0.65 | — | 11,618 | 11,618 | 0.66 | 0.63 | 11,828 |
| % Reduced | 40% | 40% | 31% | -96% | — | 35% | — | 15% | 33% | — | 24% | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 2.97 | 2.23 | 23.5 | 20.4 | 0.12 | 0.66 | 0.90 | 1.56 | 0.62 | 0.24 | 0.85 | — | 11,617 | 11,617 | 0.66 | 0.63 | 11,820 |
| Mit. | 1.79 | 1.34 | 16.4 | 39.9 | 0.12 | 0.43 | 0.90 | 1.33 | 0.41 | 0.24 | 0.65 | — | 11,617 | 11,617 | 0.66 | 0.63 | 11,820 |
| % Reduced | 40% | 40% | 30% | -96% | — | 35% | — | 15% | 33% | — | 24% | — | — | — | — | — | — |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.71 | 0.55 | 5.34 | 4.96 | 0.03 | 0.17 | 0.19 | 0.35 | 0.15 | 0.05 | 0.20 | — | 2,523 | 2,523 | 0.14 | 0.12 | 2,563 |
| Mit. | 0.45 | 0.35 | 3.78 | 9.24 | 0.03 | 0.11 | 0.19 | 0.30 | 0.11 | 0.05 | 0.16 | — | 2,523 | 2,523 | 0.14 | 0.12 | 2,563 |
| % Reduced | 37% | 36% | 29% | -86% | — | 31% | — | 14% | 29% | — | 22% | — | — | — | — | — | — |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unmit. | 0.13 | 0.10 | 0.97 | 0.90 | < 0.005 | 0.03 | 0.03 | 0.06 | 0.03 | 0.01 | 0.04 | — | 418 | 418 | 0.02 | 0.02 | 424 |
| Mit. | 0.08 | 0.06 | 0.69 | 1.69 | < 0.005 | 0.02 | 0.03 | 0.06 | 0.02 | 0.01 | 0.03 | — | 418 | 418 | 0.02 | 0.02 | 424 |
| % Reduced | 37% | 36% | 29% | -86% | — | 31% | — | 14% | 29% | — | 22% | — | — | — | — | — | — |

## 2.2. Construction Emissions by Year, Unmitigated

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

| Year | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 2.97 | 2.23 | 23.0 | 20.4 | 0.12 | 0.66 | 0.90 | 1.56 | 0.62 | 0.24 | 0.85 | — | 11,618 | 11,618 | 0.66 | 0.63 | 11,828 |
| Daily - Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 2.97 | 2.23 | 23.5 | 20.4 | 0.12 | 0.66 | 0.90 | 1.56 | 0.62 | 0.24 | 0.85 | — | 11,617 | 11,617 | 0.66 | 0.63 | 11,820 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 0.71 | 0.55 | 5.34 | 4.96 | 0.03 | 0.17 | 0.19 | 0.35 | 0.15 | 0.05 | 0.20 | — | 2,523 | 2,523 | 0.14 | 0.12 | 2,563 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 0.13 | 0.10 | 0.97 | 0.90 | < 0.005 | 0.03 | 0.03 | 0.06 | 0.03 | 0.01 | 0.04 | — | 418 | 418 | 0.02 | 0.02 | 424 |

## 2.3. Construction Emissions by Year, Mitigated

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

| Year | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 1.79 | 1.34 | 15.9 | 39.9 | 0.12 | 0.43 | 0.90 | 1.33 | 0.41 | 0.24 | 0.65 | — | 11,618 | 11,618 | 0.66 | 0.63 | 11,828 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 1.79 | 1.34 | 16.4 | 39.9 | 0.12 | 0.43 | 0.90 | 1.33 | 0.41 | 0.24 | 0.65 | — | 11,617 | 11,617 | 0.66 | 0.63 | 11,820 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 0.45 | 0.35 | 3.78 | 9.24 | 0.03 | 0.11 | 0.19 | 0.30 | 0.11 | 0.05 | 0.16 | — | 2,523 | 2,523 | 0.14 | 0.12 | 2,563 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 0.08 | 0.06 | 0.69 | 1.69 | < 0.005 | 0.02 | 0.03 | 0.06 | 0.02 | 0.01 | 0.03 | — | 418 | 418 | 0.02 | 0.02 | 424 |

# 3. Construction Emissions Details

## 3.1. Linear, Grubbing & Land Clearing (2024) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.48 | 0.41 | 3.99 | 4.25 | 0.01 | 0.15 | — | 0.15 | 0.13 | — | 0.13 | — | 1,205 | 1,205 | 0.05 | 0.01 | 1,209 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 0.02 | 0.01 | 0.13 | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 39.6 | 39.6 | < 0.005 | < 0.005 | 39.8 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | < 0.005 | 0.02 | 0.03 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.56 | 6.56 | < 0.005 | < 0.005 | 6.58 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.2. Linear, Grubbing & Land Clearing (2024) - Mitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.48 | 0.41 | 3.99 | 4.25 | 0.01 | 0.15 | — | 0.15 | 0.13 | — | 0.13 | — | 1,205 | 1,205 | 0.05 | 0.01 | 1,209 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.02 | 0.01 | 0.13 | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 39.6 | 39.6 | < 0.005 | < 0.005 | 39.8 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | < 0.005 | < 0.005 | 0.02 | 0.03 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.56 | 6.56 | < 0.005 | < 0.005 | 6.58 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.3. Linear, Grading & Excavation (2024) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 2.50 | 2.10 | 16.8 | 16.6 | 0.07 | 0.62 | — | 0.62 | 0.57 | — | 0.57 | — | 7,623 | 7,623 | 0.31 | 0.06 | 7,649 |
| Dust From Material Movement | — | — | — | — | — | — | 0.66 | 0.66 | — | 0.07 | 0.07 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.08 | 0.07 | 0.55 | 0.55 | < 0.005 | 0.02 | — | 0.02 | 0.02 | — | 0.02 | — | 251 | 251 | 0.01 | < 0.005 | 251 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.02 | 0.01 | 0.10 | 0.10 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 41.5 | 41.5 | < 0.005 | < 0.005 | 41.6 |
| Dust From Material Movement | — | — | — | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.4. Linear, Grading & Excavation (2024) - Mitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.32 | 1.21 | 9.70 | 36.1 | 0.07 | 0.39 | — | 0.39 | 0.37 | — | 0.37 | — | 7,623 | 7,623 | 0.31 | 0.06 | 7,649 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dust From Material Movement | — | — | — | — | — | — | 0.66 | 0.66 | — | 0.07 | 0.07 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.04 | 0.04 | 0.32 | 1.19 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 251 | 251 | 0.01 | < 0.005 | 251 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.06 | 0.22 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 41.5 | 41.5 | < 0.005 | < 0.005 | 41.6 |
| Dust From Material Movement | — | — | — | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.5. Linear, Grading & Excavation (2024) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 2.53 | 2.13 | 16.5 | 18.0 | 0.08 | 0.60 | — | 0.60 | 0.55 | — | 0.55 | — | 8,140 | 8,140 | 0.33 | 0.07 | 8,168 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 2.53 | 2.13 | 16.5 | 18.0 | 0.08 | 0.60 | — | 0.60 | 0.55 | — | 0.55 | — | 8,140 | 8,140 | 0.33 | 0.07 | 8,168 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.47 | 0.40 | 3.07 | 3.35 | 0.01 | 0.11 | — | 0.11 | 0.10 | — | 0.10 | — | 1,517 | 1,517 | 0.06 | 0.01 | 1,522 |
| Dust From Material Movement | — | — | — | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.09 | 0.07 | 0.56 | 0.61 | < 0.005 | 0.02 | — | 0.02 | 0.02 | — | 0.02 | — | 251 | 251 | 0.01 | < 0.005 | 252 |
| Dust From Material Movement | — | — | — | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.44 | 0.11 | 6.50 | 2.42 | 0.04 | 0.06 | 0.26 | 0.33 | 0.06 | 0.08 | 0.14 | — | 3,478 | 3,478 | 0.33 | 0.56 | 3,660 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.44 | 0.11 | 6.99 | 2.44 | 0.04 | 0.06 | 0.26 | 0.33 | 0.06 | 0.08 | 0.14 | — | 3,477 | 3,477 | 0.33 | 0.56 | 3,652 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.08 | 0.02 | 1.28 | 0.45 | 0.01 | 0.01 | 0.05 | 0.06 | 0.01 | 0.02 | 0.03 | — | 648 | 648 | 0.06 | 0.10 | 681 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.01 | < 0.005 | 0.23 | 0.08 | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 107 | 107 | 0.01 | 0.02 | 113 |

## 3.6. Linear, Grading & Excavation (2024) - Mitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.35 | 1.23 | 9.40 | 37.5 | 0.08 | 0.37 | — | 0.37 | 0.35 | — | 0.35 | — | 8,140 | 8,140 | 0.33 | 0.07 | 8,168 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.35 | 1.23 | 9.40 | 37.5 | 0.08 | 0.37 | — | 0.37 | 0.35 | — | 0.35 | — | 8,140 | 8,140 | 0.33 | 0.07 | 8,168 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.25 | 0.23 | 1.75 | 6.99 | 0.01 | 0.07 | — | 0.07 | 0.07 | — | 0.07 | — | 1,517 | 1,517 | 0.06 | 0.01 | 1,522 |
| Dust From Material Movement | — | — | — | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.05 | 0.04 | 0.32 | 1.28 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 251 | 251 | 0.01 | < 0.005 | 252 |
| Dust From Material Movement | — | — | — | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.44 | 0.11 | 6.50 | 2.42 | 0.04 | 0.06 | 0.26 | 0.33 | 0.06 | 0.08 | 0.14 | — | 3,478 | 3,478 | 0.33 | 0.56 | 3,660 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.44 | 0.11 | 6.99 | 2.44 | 0.04 | 0.06 | 0.26 | 0.33 | 0.06 | 0.08 | 0.14 | — | 3,477 | 3,477 | 0.33 | 0.56 | 3,652 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.08 | 0.02 | 1.28 | 0.45 | 0.01 | 0.01 | 0.05 | 0.06 | 0.01 | 0.02 | 0.03 | — | 648 | 648 | 0.06 | 0.10 | 681 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.01 | < 0.005 | 0.23 | 0.08 | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 107 | 107 | 0.01 | 0.02 | 113 |

## 3.7. Linear, Drainage, Utilities, & Sub-Grade (2024) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.81 | 0.68 | 4.24 | 6.59 | 0.01 | 0.23 | — | 0.23 | 0.21 | — | 0.21 | — | 965 | 965 | 0.04 | 0.01 | 969 |

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| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.06 | 0.05 | 0.30 | 0.47 | < 0.005 | 0.02 | — | 0.02 | 0.01 | — | 0.01 | — | 68.8 | 68.8 | < 0.005 | < 0.005 | 69.0 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.06 | 0.09 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 11.4 | 11.4 | < 0.005 | < 0.005 | 11.4 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.8. Linear, Drainage, Utilities, & Sub-Grade (2024) - Mitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.81 | 0.68 | 4.24 | 6.59 | 0.01 | 0.23 | — | 0.23 | 0.21 | — | 0.21 | — | 965 | 965 | 0.04 | 0.01 | 969 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.06 | 0.05 | 0.30 | 0.47 | < 0.005 | 0.02 | — | 0.02 | 0.01 | — | 0.01 | — | 68.8 | 68.8 | < 0.005 | < 0.005 | 69.0 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.06 | 0.09 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 11.4 | 11.4 | < 0.005 | < 0.005 | 11.4 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 4. Operations Emissions Details

## 4.10. Soil Carbon Accumulation By Vegetation Type

### 4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

### 4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

### 4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

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

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

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

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

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

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

# 5. Activity Data

## 5.1. Construction Schedule

| Phase Name | Phase Type | Start Date | End Date | Days Per Week | Work Days per Phase | Phase Description |
|---|---|---|---|---|---|---|
| Veg Clearing | Linear, Grubbing & Land Clearing | 1/1/2024 | 1/14/2024 | 6.00 | 12.0 | Remove woody vegetation |
| Site Grubbing | Linear, Grading & Excavation | 7/1/2024 | 7/14/2024 | 6.00 | 12.0 | Prepare bank surface for material |
| Material Placement | Linear, Grading & Excavation | 7/15/2024 | 10/1/2024 | 6.00 | 68.0 | Place rock or geotechnical stabilization measures |
| Site Stabilization | Linear, Drainage, Utilities, & Sub-Grade | 10/2/2024 | 10/31/2024 | 6.00 | 26.0 | Hydroseed and plant |

## 5.2. Off-Road Equipment

### 5.2.1. Unmitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|---|
| Veg Clearing | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 250 | 0.37 |
| Veg Clearing | Other Material Handling Equipment | Diesel | Average | 1.00 | 8.00 | 93.0 | 0.40 |
| Site Grubbing | Excavators | Diesel | Average | 3.00 | 10.0 | 500 | 0.38 |
| Site Grubbing | Crawler Tractors | Diesel | Average | 1.00 | 10.0 | 200 | 0.43 |
| Material Placement | Cranes | Diesel | Average | 1.00 | 10.0 | 450 | 0.29 |
| Material Placement | Excavators | Diesel | Average | 3.00 | 10.0 | 500 | 0.38 |
| Site Stabilization | Sweepers/Scrubbers | Diesel | Average | 2.00 | 10.0 | 36.0 | 0.46 |
| Site Stabilization | Skid Steer Loaders | Diesel | Average | 1.00 | 10.0 | 125 | 0.37 |

### 5.2.2. Mitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|---|
| Veg Clearing | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 250 | 0.37 |
| Veg Clearing | Other Material Handling Equipment | Diesel | Average | 1.00 | 8.00 | 93.0 | 0.40 |
| Site Grubbing | Excavators | Diesel | Tier 4 Final | 3.00 | 10.0 | 500 | 0.38 |
| Site Grubbing | Crawler Tractors | Diesel | Average | 1.00 | 10.0 | 200 | 0.43 |
| Material Placement | Cranes | Diesel | Average | 1.00 | 10.0 | 450 | 0.29 |
| Material Placement | Excavators | Diesel | Tier 4 Final | 3.00 | 10.0 | 500 | 0.38 |
| Site Stabilization | Sweepers/Scrubbers | Diesel | Average | 2.00 | 10.0 | 36.0 | 0.46 |
| Site Stabilization | Skid Steer Loaders | Diesel | Average | 1.00 | 10.0 | 125 | 0.37 |

## 5.3. Construction Vehicles

### 5.3.1. Unmitigated

| Phase Name | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix |
|---|---|---|---|---|
| Veg Clearing | — | — | — | — |
| Veg Clearing | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Veg Clearing | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Veg Clearing | Hauling | 0.00 | 20.0 | HHDT |
| Veg Clearing | Onsite truck | — | — | HHDT |
| Site Grubbing | — | — | — | — |
| Site Grubbing | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Site Grubbing | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Site Grubbing | Hauling | 0.00 | 20.0 | HHDT |
| Site Grubbing | Onsite truck | — | — | HHDT |
| Material Placement | — | — | — | — |
| Material Placement | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Material Placement | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Material Placement | Hauling | 46.0 | 20.0 | HHDT |
| Material Placement | Onsite truck | — | — | HHDT |
| Site Stabilization | — | — | — | — |
| Site Stabilization | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Site Stabilization | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Site Stabilization | Hauling | 0.00 | 20.0 | HHDT |
| Site Stabilization | Onsite truck | — | — | HHDT |

### 5.3.2. Mitigated

| Phase Name | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Veg Clearing | — | — | — | — |
| Veg Clearing | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Veg Clearing | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Veg Clearing | Hauling | 0.00 | 20.0 | HHDT |
| Veg Clearing | Onsite truck | — | — | HHDT |
| Site Grubbing | — | — | — | — |
| Site Grubbing | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Site Grubbing | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Site Grubbing | Hauling | 0.00 | 20.0 | HHDT |
| Site Grubbing | Onsite truck | — | — | HHDT |
| Material Placement | — | — | — | — |
| Material Placement | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Material Placement | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Material Placement | Hauling | 46.0 | 20.0 | HHDT |
| Material Placement | Onsite truck | — | — | HHDT |
| Site Stabilization | — | — | — | — |
| Site Stabilization | Worker | 0.00 | 14.3 | LDA,LDT1,LDT2 |
| Site Stabilization | Vendor | 0.00 | 8.80 | HHDT,MHDT |
| Site Stabilization | Hauling | 0.00 | 20.0 | HHDT |
| Site Stabilization | Onsite truck | — | — | HHDT |

## 5.4. Vehicles

### 5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

## 5.5. Architectural Coatings

| Phase Name | Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|---|

## 5.6. Dust Mitigation

### 5.6.1. Construction Earthmoving Activities

| Phase Name | Material Imported (cy) | Material Exported (cy) | Acres Graded (acres) | Material Demolished (sq. ft.) | Acres Paved (acres) |
|---|---|---|---|---|---|
| Veg Clearing | — | — | 3.15 | 0.00 | — |
| Site Grubbing | — | — | 3.15 | 0.00 | — |
| Material Placement | 25,000 | 0.00 | 3.15 | 0.00 | — |
| Site Stabilization | — | — | 3.15 | 0.00 | — |

### 5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

## 5.7. Construction Paving

| Land Use | Area Paved (acres) | % Asphalt |
|---|---|---|
| User Defined Linear | 3.15 | 100% |

## 5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

| Year | kWh per Year | CO2 | CH4 | N2O |
|---|---|---|---|---|
| 2024 | 0.00 | 375 | 0.01 | < 0.005 |

## 5.18. Vegetation

### 5.18.1. Land Use Change

#### 5.18.1.1. Unmitigated

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

#### 5.18.1.2. Mitigated

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

### 5.18.1. Biomass Cover Type

#### 5.18.1.1. Unmitigated

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

#### 5.18.1.2. Mitigated

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

### 5.18.2. Sequestration

#### 5.18.2.1. Unmitigated

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

#### 5.18.2.2. Mitigated

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

# 6. Climate Risk Detailed Report

## 6.1. Climate Risk Summary

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

| Climate Hazard | Result for Project Location | Unit |
|---|---|---|
| Temperature and Extreme Heat | 19.3 | annual days of extreme heat |
| Extreme Precipitation | 5.85 | annual days with precipitation above 20 mm |
| Sea Level Rise | 0.00 | meters of inundation depth |
| Wildfire | 6.78 | annual hectares burned |

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

## 6.2. Initial Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | 1 | 0 | 0 | N/A |
| Extreme Precipitation | 2 | 0 | 0 | N/A |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | 1 | 0 | 0 | N/A |
| Flooding | 0 | 0 | 0 | N/A |
| Drought | 0 | 0 | 0 | N/A |
| Snowpack | N/A | N/A | N/A | N/A |
| Air Quality | 0 | 0 | 0 | N/A |

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

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

## 6.3. Adjusted Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | 1 | 1 | 1 | 2 |
| Extreme Precipitation | 2 | 1 | 1 | 3 |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | 1 | 1 | 1 | 2 |
| Flooding | 1 | 1 | 1 | 2 |
| Drought | 1 | 1 | 1 | 2 |
| Snowpack | N/A | N/A | N/A | N/A |
| Air Quality | 1 | 1 | 1 | 2 |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

## 6.4. Climate Risk Reduction Measures

# 7. Health and Equity Details

## 7.1. CalEnviroScreen 4.0 Scores

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

| Indicator | Result for Project Census Tract |
|---|---|
| Exposure Indicators | — |
| AQ-Ozone | 37.6 |
| AQ-PM | 34.4 |
| AQ-DPM | 68.1 |

| | |
|---|---|
| Drinking Water | 16.8 |
| Lead Risk Housing | 64.1 |
| Pesticides | 0.00 |
| Toxic Releases | 27.1 |
| Traffic | 76.8 |
| Effect Indicators | — |
| CleanUp Sites | 0.00 |
| Groundwater | 0.00 |
| Haz Waste Facilities/Generators | 0.00 |
| Impaired Water Bodies | 83.0 |
| Solid Waste | 0.00 |
| Sensitive Population | — |
| Asthma | 89.0 |
| Cardio-vascular | 66.8 |
| Low Birth Weights | 69.5 |
| Socioeconomic Factor Indicators | — |
| Education | 49.2 |
| Housing | 1.74 |
| Linguistic | 44.4 |
| Poverty | 34.7 |
| Unemployment | 58.4 |

## 7.2. Healthy Places Index Scores

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

| Indicator | Result for Project Census Tract |
|---|---|
| Economic | — |
| Above Poverty | 77.15898884 |

| | |
|---|---|
| Employed | 92.6344155 |
| Median HI | 53.95868087 |
| Education | — |
| Bachelor's or higher | 73.37354036 |
| High school enrollment | 100 |
| Preschool enrollment | 25.06095214 |
| Transportation | — |
| Auto Access | 58.83485179 |
| Active commuting | 51.55909149 |
| Social | — |
| 2-parent households | 33.927884 |
| Voting | 93.32734505 |
| Neighborhood | — |
| Alcohol availability | 83.48517901 |
| Park access | 81.35506224 |
| Retail density | 23.86757346 |
| Supermarket access | 43.37225715 |
| Tree canopy | 92.00564609 |
| Housing | — |
| Homeownership | 65.48184268 |
| Housing habitability | 96.43269601 |
| Low-inc homeowner severe housing cost burden | 86.56486591 |
| Low-inc renter severe housing cost burden | 97.43359425 |
| Uncrowded housing | 75.52932119 |
| Health Outcomes | — |
| Insured adults | 82.30463236 |
| Arthritis | 8.6 |

| | |
|---|---|
| Asthma ER Admissions | 7.2 |
| High Blood Pressure | 4.3 |
| Cancer (excluding skin) | 7.2 |
| Asthma | 76.7 |
| Coronary Heart Disease | 12.2 |
| Chronic Obstructive Pulmonary Disease | 53.7 |
| Diagnosed Diabetes | 36.9 |
| Life Expectancy at Birth | 61.2 |
| Cognitively Disabled | 21.0 |
| Physically  Disabled | 49.3 |
| Heart Attack ER Admissions | 25.5 |
| Mental Health Not Good | 85.8 |
| Chronic Kidney Disease | 14.8 |
| Obesity | 72.3 |
| Pedestrian Injuries | 82.1 |
| Physical Health Not Good | 67.2 |
| Stroke | 22.5 |
| Health Risk Behaviors | — |
| Binge Drinking | 82.5 |
| Current Smoker | 82.0 |
| No Leisure Time for Physical Activity | 67.1 |
| Climate Change Exposures | — |
| Wildfire Risk | 0.0 |
| SLR Inundation Area | 0.0 |
| Children | 47.4 |
| Elderly | 11.5 |
| English Speaking | 55.1 |

| | |
|---|---|
| Foreign-born | 7.3 |
| Outdoor Workers | 54.0 |
| Climate Change Adaptive Capacity | — |
| Impervious Surface Cover | 72.4 |
| Traffic Density | 71.9 |
| Traffic Access | 23.0 |
| Other Indices | — |
| Hardship | 23.7 |
| Other Decision Support | — |
| 2016 Voting | 81.9 |

## 7.3. Overall Health & Equity Scores

| Metric | Result for Project Census Tract |
|---|---|
| CalEnviroScreen 4.0 Score for Project Location (a) | 45.0 |
| Healthy Places Index Score for Project Location (b) | 78.0 |
| Project Located in a Designated Disadvantaged Community (Senate Bill 535) | No |
| Project Located in a Low-Income Community (Assembly Bill 1550) | No |
| Project Located in a Community Air Protection Program Community (Assembly Bill 617) | No |

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

## 7.4. Health & Equity Measures

No Health & Equity Measures selected.

## 7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

## 7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

# 8. User Changes to Default Data

| Screen | Justification |
|---|---|
| Construction: Construction Phases | estimated workdays |
| Construction: Off-Road Equipment | most equipment info from Contract 1 AQ contractor's report |
| Construction: Dust From Material Movement | we are placing material |

**Barge Emissions Calculations**
**ARCF 2016**
**Sacramento River Erosion Protection - Contracts 2, 3, 4**

SFNA = Sac Metro, Yolo-Solano, Feather river, Placer County, El Dorado County districts
BAAQMD = Bay Area

Assumptions:
300 tons/hour, 1500 tons/barge (see below). 2 barges emptied per 10 hour day
41,250 / 3000/day = 14 days

| Basic Assumptions | | | |
|---|---|---|---|
| CY per Barge[1] | 909 | | |
| CY Imported | 25,000 | per year | gave 1,000 CY buffer. 41,250 tons |
| Miles/ hr per barge | 5 | | |
| Extra Empty Trips | 2 | | |
| Total Hrs per Day | 10 | | |
| lbs/ tons | 2000 | | |
| lbs/MT | 2204.62 | | |

| | San Rafael to Rio Vista (in SFNA) | San Rafael to Rio Vista (in BAAQMD) | Rio Vista to Sacramento Erosion |
|---|---|---|---|
| No. of Barge in Tow | 4 | 4 | 1 |
| Miles (one-way) | 10.4 | 45 | 40 |
| **Total Tow-Hours** | **18** | **80** | **236** |

This is the total number of barge hours per air district, one-way

| | PM10 | PM2.5 | NOx | ROG | CO | SO2 | CO2 | CH4 | N2O | CO2e (MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| Two-Engine Push Boat Emissions (lb/hr) (from the Barge Calculator) | 1.61 | 1.44 | 35.71 | 2.09 | 8.97 | 0.01 | 1417.70 | 0.06 | 0.01 | 1422.56 |
| Tug Boat Emissions (lb/hr) (from the barge calculator) | 0.37 | 0.33 | 6.47 | 0.54 | 1.90 | 0.00 | 456.06 | 0.02 | 0.00 | 457.63 |
| **One-way (tons):** | | | | | | | | | | |
| **Total Emissions for Push Boat - In SFNA (Tons)** | **0.01** | **0.01** | **0.33** | **0.02** | **0.08** | **0.00** | **13.09** | **0.00** | **0.00** | **11.91** |
| **Total Emission for Push Boat- In BAAQMD (Tons)[2]** | **0.06** | **0.06** | **1.43** | **0.08** | **0.36** | **0.00** | **56.62** | **0.00** | **0.00** | **51.54** |
| **Total Emissions for Tug Boat - In SFNA (Tons)** | **0.04** | **0.04** | **0.76** | **0.06** | **0.22** | **0.00** | **53.82** | **0.00** | **0.00** | **48.99** |
| **Sum of Emissions in SFNA (Tons)** | **0.06** | **0.05** | **1.09** | **0.08** | **0.31** | **0.00** | **66.90** | **0.00** | **0.00** | **60.9** |
| **Round-trip emissions:** | | | | | | | | | | |
| **Total yearly emissions (tons, round-trip)** | | | | | | | | | | |
| **Total Emissions for Push Boat - In SFNA (Tons)** | **0.03** | **0.03** | **0.66** | **0.04** | **0.17** | **0.00** | **26.17** | **0.00** | **0.00** | **23.82** |
| **Total Emission for Push Boat- In BAAQMD (Tons)[2]** | **0.13** | **0.11** | **2.85** | **0.17** | **0.72** | **0.00** | **113.24** | **0.00** | **0.00** | **103.08** |
| **Total Emissions for Tug Boat - In SFNA (Tons)** | **0.09** | **0.08** | **1.53** | **0.13** | **0.45** | **0.00** | **107.63** | **0.00** | **0.00** | **97.98** |
| **Sum of Emissions in SFNA (Tons)** | **0.12** | **0.10** | **2.19** | **0.17** | **0.61** | **0.00** | **133.80** | **0.01** | **0.00** | **121.8** |

**Daily emissions**

**ASSUMED 14 TRANSPORATION DAYS. 28 barges required for 25,000 CY.**
**300 tons/hour, 1500 tons/barge = 2 barges per 10-hour day**
**Divided the amounts above by 14 to get daily emissions**

| | PM10 | PM2.5 | NOx | ROG | CO | SO2 | CO2 | CH4 | N2O | CO2e (MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Emissions for Push Boat - In SFNA (Tons)** | **0.00** | **0.00** | **0.05** | **0.00** | **0.01** | **0.00** | **1.87** | **0.00** | **0.00** | **1.70** |
| **Daily Emission for Push Boat- In BAAQMD (Tons)[2]** | **0.01** | **0.01** | **0.20** | **0.01** | **0.05** | **0.00** | **8.09** | **0.00** | **0.00** | **7.36** |
| **Daily Emissions for Tug Boat - In SFNA (Tons)** | **0.01** | **0.01** | **0.11** | **0.01** | **0.03** | **0.00** | **7.69** | **0.00** | **0.00** | **7.00** |
| **Sum of daily Emissions in SFNA (Tons)** | **0.01** | **0.01** | **0.16** | **0.01** | **0.04** | **0.00** | **9.56** | **0.00** | **0.00** | **8.70** |

**Converted to lbs…**

| | PM10 | PM2.5 | NOx | ROG | CO | SO2 | CO2 | CH4 | N2O | CO2e (MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Emissions for Push Boat - In SFNA (lbs)** | **4.26** | **3.79** | **94.18** | **5.51** | **23.67** | **0.03** | **3738.67** | **0.15** | **0.03** | **3403.31** |
| **Daily Emission for Push Boat- In BAAQMD (lbs)[2]** | **18.41** | **16.39** | **407.52** | **23.84** | **102.40** | **0.15** | **16176.95** | **0.66** | **0.13** | **14725.86** |
| **Daily Emissions for Tug Boat - In SFNA (lbs)** | **12.55** | **11.17** | **218.14** | **18.34** | **64.09** | **0.14** | **15375.77** | **0.62** | **0.12** | **13996.55** |
| **Sum of daily Emissions in SFNA (lbs)** | **16.80** | **14.96** | **312.32** | **23.85** | **87.76** | **0.18** | **19114.44** | **0.78** | **0.16** | **17399.86** |

Notes: [1] https://ihsmarkit.com/country-industry-forecasting.html?ID=106593483 , one barge has the capacity of 1500 tons and assuming 1.65 tons/cy of quarry rock
[2] BAAQMD NOx Threshold is 54 lb/day (Not relevent to General Conformity)

# APPENDIX B: BIOLOGICAL RESOURCES DATA

# Selected Elements by Scientific Name

## California Department of Fish and Wildlife

## California Natural Diversity Database

**Query Criteria:** Quad IS (Sacramento East (3812154) OR Sacramento West (3812155) OR Taylor Monument (3812165) OR Rio Linda (3812164) OR Florin (3812144) OR Clarksburg (3812145) OR Saxon (3812146) OR Davis (3812156) OR Grays Bend (3812166))

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Accipiter cooperii*** Cooper's hawk | ABNKC12040 | None | None | G5 | S4 | WL |
| ***Acipenser medirostris pop. 1*** green sturgeon - southern DPS | AFCAA01031 | Threatened | None | G2T1 | S1 | |
| ***Agelaius tricolor*** tricolored blackbird | ABPBXB0020 | None | Threatened | G1G2 | S1S2 | SSC |
| ***Ammodramus savannarum*** grasshopper sparrow | ABPBXA0020 | None | None | G5 | S3 | SSC |
| ***Antrozous pallidus*** pallid bat | AMACC10010 | None | None | G4 | S3 | SSC |
| ***Archoplites interruptus*** Sacramento perch | AFCQB07010 | None | None | G1 | S1 | SSC |
| ***Ardea alba*** great egret | ABNGA04040 | None | None | G5 | S4 | |
| ***Ardea herodias*** great blue heron | ABNGA04010 | None | None | G5 | S4 | |
| ***Astragalus tener var. ferrisiae*** Ferris' milk-vetch | PDFAB0F8R3 | None | None | G2T1 | S1 | 1B.1 |
| ***Astragalus tener var. tener*** alkali milk-vetch | PDFAB0F8R1 | None | None | G2T1 | S1 | 1B.2 |
| ***Athene cunicularia*** burrowing owl | ABNSB10010 | None | None | G4 | S3 | SSC |
| ***Atriplex cordulata var. cordulata*** heartscale | PDCHE040B0 | None | None | G3T2 | S2 | 1B.2 |
| ***Atriplex depressa*** brittlescale | PDCHE042L0 | None | None | G2 | S2 | 1B.2 |
| ***Bombus crotchii*** Crotch bumble bee | IIHYM24480 | None | Candidate Endangered | G2 | S2 | |
| ***Bombus occidentalis*** western bumble bee | IIHYM24252 | None | Candidate Endangered | G3 | S1 | |
| ***Branchinecta conservatio*** Conservancy fairy shrimp | ICBRA03010 | Endangered | None | G2 | S2 | |
| ***Branchinecta lynchi*** vernal pool fairy shrimp | ICBRA03030 | Threatened | None | G3 | S3 | |
| ***Branchinecta mesovallensis*** midvalley fairy shrimp | ICBRA03150 | None | None | G2 | S2S3 | |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Buteo regalis*** ferruginous hawk | ABNKC19120 | None | None | G4 | S3S4 | WL |
| ***Buteo swainsoni*** Swainson's hawk | ABNKC19070 | None | Threatened | G5 | S3 | |
| ***Carex comosa*** bristly sedge | PMCYP032Y0 | None | None | G5 | S2 | 2B.1 |
| ***Centromadia parryi ssp. parryi*** pappose tarplant | PDAST4R0P2 | None | None | G3T2 | S2 | 1B.2 |
| ***Charadrius montanus*** mountain plover | ABNNB03100 | None | None | G3 | S2S3 | SSC |
| ***Charadrius nivosus nivosus*** western snowy plover | ABNNB03031 | Threatened | None | G3T3 | S3 | SSC |
| ***Chloropyron palmatum*** palmate-bracted bird's-beak | PDSCR0J0J0 | Endangered | Endangered | G1 | S1 | 1B.1 |
| ***Cicindela hirticollis abrupta*** Sacramento Valley tiger beetle | IICOL02106 | None | None | G5TH | SH | |
| ***Coccyzus americanus occidentalis*** western yellow-billed cuckoo | ABNRB02022 | Threatened | Endangered | G5T2T3 | S1 | |
| ***Cuscuta obtusiflora var. glandulosa*** Peruvian dodder | PDCUS01111 | None | None | G5T4? | SH | 2B.2 |
| ***Desmocerus californicus dimorphus*** valley elderberry longhorn beetle | IICOL48011 | Threatened | None | G3T2T3 | S3 | |
| ***Downingia pusilla*** dwarf downingia | PDCAM060C0 | None | None | GU | S2 | 2B.2 |
| ***Egretta thula*** snowy egret | ABNGA06030 | None | None | G5 | S4 | |
| ***Elanus leucurus*** white-tailed kite | ABNKC06010 | None | None | G5 | S3S4 | FP |
| ***Elderberry Savanna*** Elderberry Savanna | CTT63440CA | None | None | G2 | S2.1 | |
| ***Emys marmorata*** western pond turtle | ARAAD02030 | None | None | G3G4 | S3 | SSC |
| ***Eryngium jepsonii*** Jepson's coyote-thistle | PDAPI0Z130 | None | None | G2 | S2 | 1B.2 |
| ***Extriplex joaquinana*** San Joaquin spearscale | PDCHE041F3 | None | None | G2 | S2 | 1B.2 |
| ***Falco columbarius*** merlin | ABNKD06030 | None | None | G5 | S3S4 | WL |
| ***Fritillaria agrestis*** stinkbells | PMLIL0V010 | None | None | G3 | S3 | 4.2 |
| ***Gonidea angulata*** western ridged mussel | IMBIV19010 | None | None | G3 | S1S2 | |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Gratiola heterosepala*** Boggs Lake hedge-hyssop | PDSCR0R060 | None | Endangered | G2 | S2 | 1B.2 |
| ***Great Valley Cottonwood Riparian Forest*** Great Valley Cottonwood Riparian Forest | CTT61410CA | None | None | G2 | S2.1 | |
| ***Hibiscus lasiocarpos var. occidentalis*** woolly rose-mallow | PDMAL0H0R3 | None | None | G5T3 | S3 | 1B.2 |
| ***Hypomesus transpacificus*** Delta smelt | AFCHB01040 | Threatened | Endangered | G1 | S1 | |
| ***Lasionycteris noctivagans*** silver-haired bat | AMACC02010 | None | None | G3G4 | S3S4 | |
| ***Lasiurus cinereus*** hoary bat | AMACC05032 | None | None | G3G4 | S4 | |
| ***Lasthenia chrysantha*** alkali-sink goldfields | PDAST5L030 | None | None | G2 | S2 | 1B.1 |
| ***Laterallus jamaicensis coturniculus*** California black rail | ABNME03041 | None | Threatened | G3T1 | S1 | FP |
| ***Legenere limosa*** legenere | PDCAM0C010 | None | None | G2 | S2 | 1B.1 |
| ***Lepidium latipes var. heckardii*** Heckard's pepper-grass | PDBRA1M0K1 | None | None | G4T1 | S1 | 1B.2 |
| ***Lepidurus packardi*** vernal pool tadpole shrimp | ICBRA10010 | Endangered | None | G4 | S3 | |
| ***Lilaeopsis masonii*** Mason's lilaeopsis | PDAPI19030 | None | Rare | G2 | S2 | 1B.1 |
| ***Linderiella occidentalis*** California linderiella | ICBRA06010 | None | None | G2G3 | S2S3 | |
| ***Melospiza melodia pop. 1*** song sparrow ("Modesto" population) | ABPBXA3013 | None | None | G5T3?Q | S3? | SSC |
| ***Myrmosula pacifica*** Antioch multilid wasp | IIHYM15010 | None | None | GH | SH | |
| ***Nannopterum auritum*** double-crested cormorant | ABNFD01020 | None | None | G5 | S4 | WL |
| ***Navarretia leucocephala ssp. bakeri*** Baker's navarretia | PDPLM0C0E1 | None | None | G4T2 | S2 | 1B.1 |
| ***Neostapfia colusana*** Colusa grass | PMPOA4C010 | Threatened | Endangered | G1 | S1 | 1B.1 |
| ***Northern Claypan Vernal Pool*** Northern Claypan Vernal Pool | CTT44120CA | None | None | G1 | S1.1 | |
| ***Northern Hardpan Vernal Pool*** Northern Hardpan Vernal Pool | CTT44110CA | None | None | G3 | S3.1 | |
| ***Nycticorax nycticorax*** black-crowned night heron | ABNGA11010 | None | None | G5 | S4 | |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Oncorhynchus mykiss irideus pop. 11*** steelhead - Central Valley DPS | AFCHA0209K | Threatened | None | G5T2Q | S2 | |
| ***Oncorhynchus tshawytscha pop. 11*** chinook salmon - Central Valley spring-run ESU | AFCHA0205L | Threatened | Threatened | G5T2Q | S2 | |
| ***Oncorhynchus tshawytscha pop. 7*** chinook salmon - Sacramento River winter-run ESU | AFCHA0205B | Endangered | Endangered | G5T1Q | S2 | |
| ***Plagiobothrys hystriculus*** bearded popcornflower | PDBOR0V0H0 | None | None | G2 | S2 | 1B.1 |
| ***Plegadis chihi*** white-faced ibis | ABNGE02020 | None | None | G5 | S3S4 | WL |
| ***Pogonichthys macrolepidotus*** Sacramento splittail | AFCJB34020 | None | None | G3 | S3 | SSC |
| ***Progne subis*** purple martin | ABPAU01010 | None | None | G5 | S3 | SSC |
| ***Puccinellia simplex*** California alkali grass | PMPOA53110 | None | None | G2 | S2 | 1B.2 |
| ***Riparia riparia*** bank swallow | ABPAU08010 | None | Threatened | G5 | S2 | |
| ***Sagittaria sanfordii*** Sanford's arrowhead | PMALI040Q0 | None | None | G3 | S3 | 1B.2 |
| ***Sidalcea keckii*** Keck's checkerbloom | PDMAL110D0 | Endangered | None | G2 | S2 | 1B.1 |
| ***Spirinchus thaleichthys*** longfin smelt | AFCHB03010 | Candidate | Threatened | G5 | S1 | |
| ***Symphyotrichum lentum*** Suisun Marsh aster | PDASTE8470 | None | None | G2 | S2 | 1B.2 |
| ***Taxidea taxus*** American badger | AMAJF04010 | None | None | G5 | S3 | SSC |
| ***Thamnophis gigas*** giant gartersnake | ARADB36150 | Threatened | Threatened | G2 | S2 | |
| ***Trifolium hydrophilum*** saline clover | PDFAB400R5 | None | None | G2 | S2 | 1B.2 |
| ***Tuctoria mucronata*** Crampton's tuctoria or Solano grass | PMPOA6N020 | Endangered | Endangered | G1 | S1 | 1B.1 |
| ***Vireo bellii pusillus*** least Bell's vireo | ABPBW01114 | Endangered | Endangered | G5T2 | S2 | |
| ***Xanthocephalus xanthocephalus*** yellow-headed blackbird | ABPBXB3010 | None | None | G5 | S3 | SSC |

**Record Count: 79**

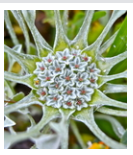
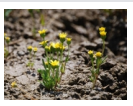
California Native Plant Society

## Search Results

**33** matches found. Click on scientific name for details

Search Criteria: 9-Quad include [**3812155:3812165:3812164:3812144:3812154:3812145:3812166:3812156:3812146**]

| ▲ SCIENTIFIC NAME | COMMON NAME | FAMILY | LIFEFORM | BLOOMING PERIOD | FED LIST | STATE LIST | GLOBAL RANK | STATE RANK | CA RARE PLANT RANK | CA ENDEMIC | DATE ADDED | PHOTO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Astragalus pauperculus* | depauperate milk-vetch | Fabaceae | annual herb | Mar-Jun | None | None | G4 | S4 | 4.3 | Yes | 1974-01-01 |  ©2012 Tim Kellison |
| *Astragalus tener* var. *ferrisiae* | Ferris' milk-vetch | Fabaceae | annual herb | Apr-May | None | None | G2T1 | S1 | 1B.1 | Yes | 1994-01-01 | No Photo Available |
| *Astragalus tener* var. *tener* | alkali milk-vetch | Fabaceae | annual herb | Mar-Jun | None | None | G2T1 | S1 | 1B.2 | Yes | 1994-01-01 | No Photo Available |
| *Atriplex cordulata* var. *cordulata* | heartscale | Chenopodiaceae | annual herb | Apr-Oct | None | None | G3T2 | S2 | 1B.2 | Yes | 1988-01-01 |  © 1994 Robert E. Preston, Ph.D. |
| *Atriplex depressa* | brittlescale | Chenopodiaceae | annual herb | Apr-Oct | None | None | G2 | S2 | 1B.2 | Yes | 1994-01-01 |  © 2009 Zoya Akulova |
| *Brodiaea rosea* ssp. *vallicola* | valley brodiaea | Themidaceae | perennial bulbiferous herb | Apr-May(Jun) | None | None | G5T3 | S3 | 4.2 | Yes | 2019-01-07 |  © 2011 Steven Perry |
| *Carex comosa* | bristly sedge | Cyperaceae | perennial rhizomatous herb | May-Sep | None | None | G5 | S2 | 2B.1 | | 1994-01-01 |  Dean Wm. Taylor 1997 |
| *Centromadia parryi* ssp. *parryi* | pappose tarplant | Asteraceae | annual herb | May-Nov | None | None | G3T2 | S2 | 1B.2 | Yes | 2004-01-01 | No Photo Available |
| *Centromadia parryi* ssp. *rudis* | Parry's rough tarplant | Asteraceae | annual herb | May-Oct | None | None | G3T3 | S3 | 4.2 | Yes | 2007-05-22 | No Photo Available |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Chloropyron palmatum* | palmate-bracted bird's-beak | Orobanchaceae | annual herb (hemiparasitic) | May-Oct | FE | CE | G1 | S1 | 1B.1 | Yes | 1974-01-01 | No Photo Available |
| *Cuscuta obtusiflora* var. *glandulosa* | Peruvian dodder | Convolvulaceae | annual vine (parasitic) | Jul-Oct | None | None | G5T4? | SH | 2B.2 | | 2011-08-24 | No Photo Available |
| *Downingia pusilla* | dwarf downingia | Campanulaceae | annual herb | Mar-May | None | None | GU | S2 | 2B.2 | | 1980-01-01 | No Photo Available |
| *Eryngium jepsonii* | Jepson's coyote-thistle | Apiaceae | perennial herb | Apr-Aug | None | None | G2 | S2 | 1B.2 | Yes | 2016-09-13 | No Photo Available |
| *Extriplex joaquinana* | San Joaquin spearscale | Chenopodiaceae | annual herb | Apr-Oct | None | None | G2 | S2 | 1B.2 | Yes | 1988-01-01 | No Photo Available |
| *Fritillaria agrestis* | stinkbells | Liliaceae | perennial bulbiferous herb | Mar-Jun | None | None | G3 | S3 | 4.2 | Yes | 1980-01-01 |  © 2016 Aaron Schusteff |
| *Gratiola heterosepala* | Boggs Lake hedge-hyssop | Plantaginaceae | annual herb | Apr-Aug | None | CE | G2 | S2 | 1B.2 | | 1974-01-01 |  ©2004 Carol W. Witham |
| *Hesperevax caulescens* | hogwallow starfish | Asteraceae | annual herb | Mar-Jun | None | None | G3 | S3 | 4.2 | Yes | 2001-01-01 |  © 2017 John Doyen |
| *Hibiscus lasiocarpos* var. *occidentalis* | woolly rose-mallow | Malvaceae | perennial rhizomatous herb (emergent) | Jun-Sep | None | None | G5T3 | S3 | 1B.2 | Yes | 1974-01-01 |  © 2020 Steven Perry |
| *Lasthenia chrysantha* | alkali-sink goldfields | Asteraceae | annual herb | Feb-Apr | None | None | G2 | S2 | 1B.1 | Yes | 2019-09-30 |  © 2009 California State University, Stanislaus |
| *Legenere limosa* | legenere | Campanulaceae | annual herb | Apr-Jun | None | None | G2 | S2 | 1B.1 | Yes | 1974-01-01 |  ©2000 John Game |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Lepidium latipes* var. *heckardii* | Heckard's pepper-grass | Brassicaceae | annual herb | Mar-May | None | None | G4T1 | S1 | 1B.2 | Yes | 1994-01-01 |  2018 Jennifer Buck |
| *Lilaeopsis masonii* | Mason's lilaeopsis | Apiaceae | perennial rhizomatous herb | Apr-Nov | None | CR | G2 | S2 | 1B.1 | Yes | 1974-01-01 | No Photo Available |
| *Myosurus minimus* ssp. *apus* | little mousetail | Ranunculaceae | annual herb | Mar-Jun | None | None | G5T2Q | S2 | 3.1 | | 1980-01-01 | No Photo Available |
| *Navarretia cotulifolia* | cotula navarretia | Polemoniaceae | annual herb | May-Jun | None | None | G4 | S4 | 4.2 | Yes | 2001-01-01 |  © 2020 Zoya Akulova |
| *Navarretia leucocephala* ssp. *bakeri* | Baker's navarretia | Polemoniaceae | annual herb | Apr-Jul | None | None | G4T2 | S2 | 1B.1 | Yes | 1994-01-01 |  © 2018 Barry Rice |
| *Neostapfia colusana* | Colusa grass | Poaceae | annual herb | May-Aug | FT | CE | G1 | S1 | 1B.1 | Yes | 1974-01-01 | No Photo Available |
| *Plagiobothrys hystriculus* | bearded popcornflower | Boraginaceae | annual herb | Apr-May | None | None | G2 | S2 | 1B.1 | Yes | 1974-01-01 | No Photo Available |
| *Puccinellia simplex* | California alkali grass | Poaceae | annual herb | Mar-May | None | None | G2 | S2 | 1B.2 | | 2015-10-15 | No Photo Available |
| *Sagittaria sanfordii* | Sanford's arrowhead | Alismataceae | perennial rhizomatous herb (emergent) | May-Oct(Nov) | None | None | G3 | S3 | 1B.2 | Yes | 1984-01-01 |  ©2013 Debra L. Cook |
| *Sidalcea keckii* | Keck's checkerbloom | Malvaceae | annual herb | Apr-May(Jun) | FE | None | G2 | S2 | 1B.1 | Yes | 1974-01-01 | No Photo Available |
| *Symphyotrichum lentum* | Suisun Marsh aster | Asteraceae | perennial rhizomatous herb | (Apr)May-Nov | None | None | G2 | S2 | 1B.2 | Yes | 1974-01-01 | No Photo Available |
| *Trifolium hydrophilum* | saline clover | Fabaceae | annual herb | Apr-Jun | None | None | G2 | S2 | 1B.2 | Yes | 2001-01-01 | No Photo Available |
| *Tuctoria mucronata* | Crampton's tuctoria or Solano grass | Poaceae | annual herb | Apr-Aug | FE | CE | G1 | S1 | 1B.1 | Yes | 1974-01-01 | No Photo Available |

Showing 1 to 33 of 33 entries

**Suggested Citation:**

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# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.



## Location

Sacramento and Yolo counties, California


## Local offices

San Francisco Bay-Delta Fish And Wildlife

(916) 930-5603
(916) 930-5654

650 Capitol Mall

Suite 8-300
Sacramento, CA 95814

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

# Birds

| NAME | STATUS |
|---|---|
| Least Bell's Vireo Vireo bellii pusillus<br>Wherever found<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>https://ecos.fws.gov/ecp/species/5945 | Endangered |

# Reptiles

| NAME | STATUS |
|---|---|
| Giant Garter Snake Thamnophis gigas<br>Wherever found<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/4482 | Threatened |

# Amphibians

| NAME | STATUS |
|---|---|
| California Tiger Salamander Ambystoma californiense<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>https://ecos.fws.gov/ecp/species/2076 | Threatened |

# Fishes

| NAME | STATUS |
|---|---|
| Delta Smelt Hypomesus transpacificus<br>Wherever found<br>There is **final** critical habitat for this species. Your location overlaps the critical habitat.<br>https://ecos.fws.gov/ecp/species/321 | Threatened |
| Longfin Smelt Spirinchus thaleichthys<br>No critical habitat has been designated for this species. | Proposed Endangered |

# Insects

| NAME | STATUS |
|---|---|
| **Monarch Butterfly** *Danaus plexippus*<br>Wherever found<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/9743 | Candidate |
| **Valley Elderberry Longhorn Beetle** *Desmocerus californicus dimorphus*<br>Wherever found<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>https://ecos.fws.gov/ecp/species/7850 | Threatened |

# Crustaceans

| NAME | STATUS |
|---|---|
| **Vernal Pool Fairy Shrimp** *Branchinecta lynchi*<br>Wherever found<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>https://ecos.fws.gov/ecp/species/498 | Threatened |
| **Vernal Pool Tadpole Shrimp** *Lepidurus packardi*<br>Wherever found<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>https://ecos.fws.gov/ecp/species/2246 | Endangered |



# Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

| NAME | TYPE |
|---|---|
| **Delta Smelt** *Hypomesus transpacificus*<br>https://ecos.fws.gov/ecp/species/321#crithab | Final |

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

**The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON |
|---|---|

| | |
|---|---|
| **Bald Eagle** *Haliaeetus leucocephalus*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Jan 1 to Aug 31 |
| **Belding's Savannah Sparrow** *Passerculus sandwichensis beldingi*<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA<br>https://ecos.fws.gov/ecp/species/8 | Breeds Apr 1 to Aug 15 |
| **Black Skimmer** *Rynchops niger*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/5234 | Breeds May 20 to Sep 15 |
| **Black Swift** *Cypseloides niger*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/8878 | Breeds Jun 15 to Sep 10 |
| **Black Tern** *Chlidonias niger*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/3093 | Breeds May 15 to Aug 20 |
| **Black-chinned Sparrow** *Spizella atrogularis*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9447 | Breeds Apr 15 to Jul 31 |
| **Bullock's Oriole** *Icterus bullockii*<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds Mar 21 to Jul 25 |
| **California Gull** *Larus californicus*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Mar 1 to Jul 31 |

California Thrasher *Toxostoma redivivum* — Breeds Jan 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe *Aechmophorus clarkii* — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat *Geothlypis trichas sinuosa* — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle *Aquila chrysaetos* — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch *Carduelis lawrencei* — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Marbled Godwit *Limosa fedoa* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker *Picoides nuttallii* — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse *Baeolophus inornatus* — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

| | |
|---|---|
| Olive-sided Flycatcher Contopus cooperi<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/3914 | Breeds May 20 to Aug 31 |
| Short-billed Dowitcher Limnodromus griseus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9480 | Breeds elsewhere |
| Tricolored Blackbird Agelaius tricolor<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/3910 | Breeds Mar 15 to Aug 10 |
| Western Grebe aechmophorus occidentalis<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/6743 | Breeds Jun 1 to Aug 31 |
| Willet Tringa semipalmata<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Wrentit Chamaea fasciata<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Mar 15 to Aug 10 |
| Yellow-billed Magpie Pica nuttalli<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9726 | Breeds Apr 1 to Jul 31 |



# Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence** (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

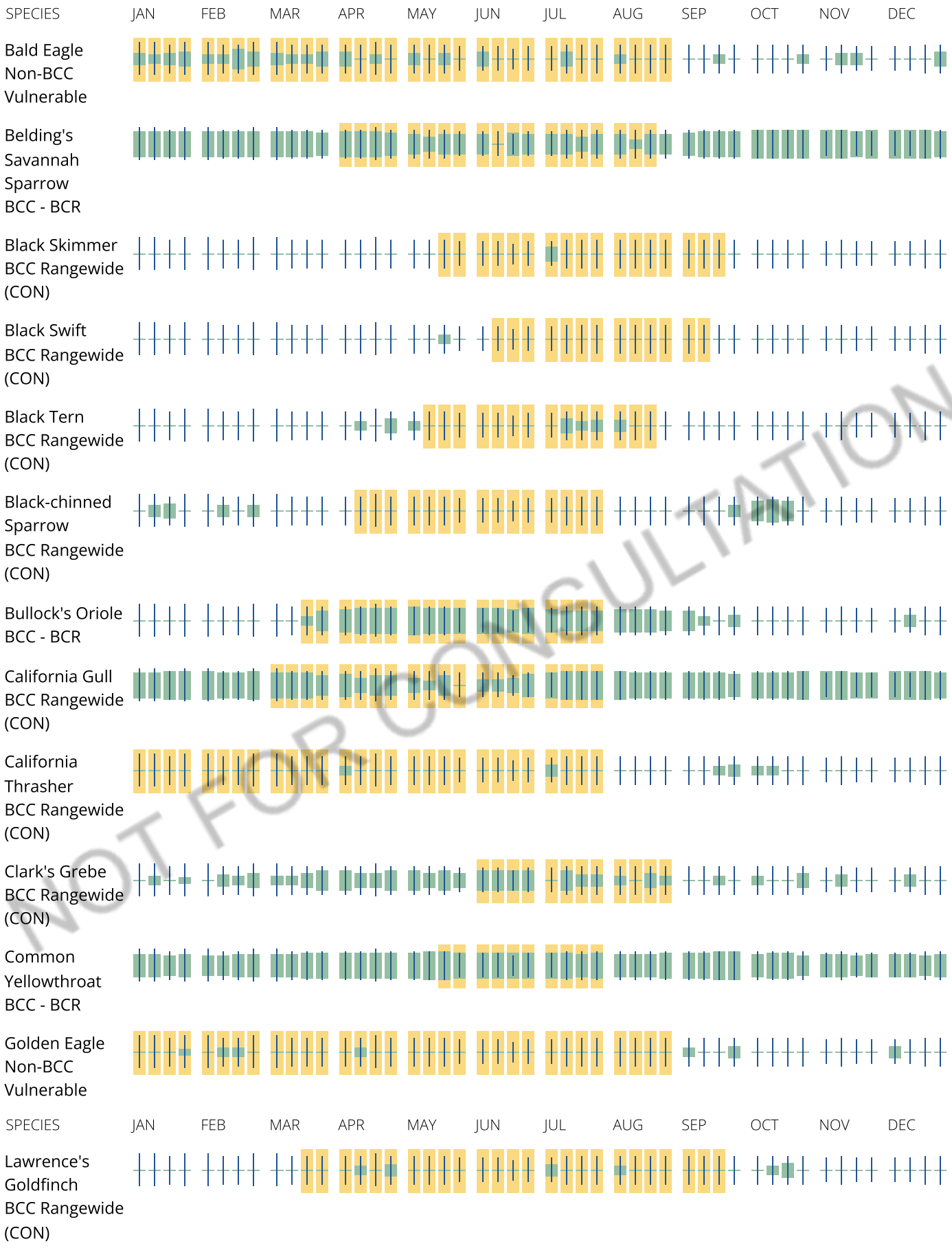
**Breeding Season** (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

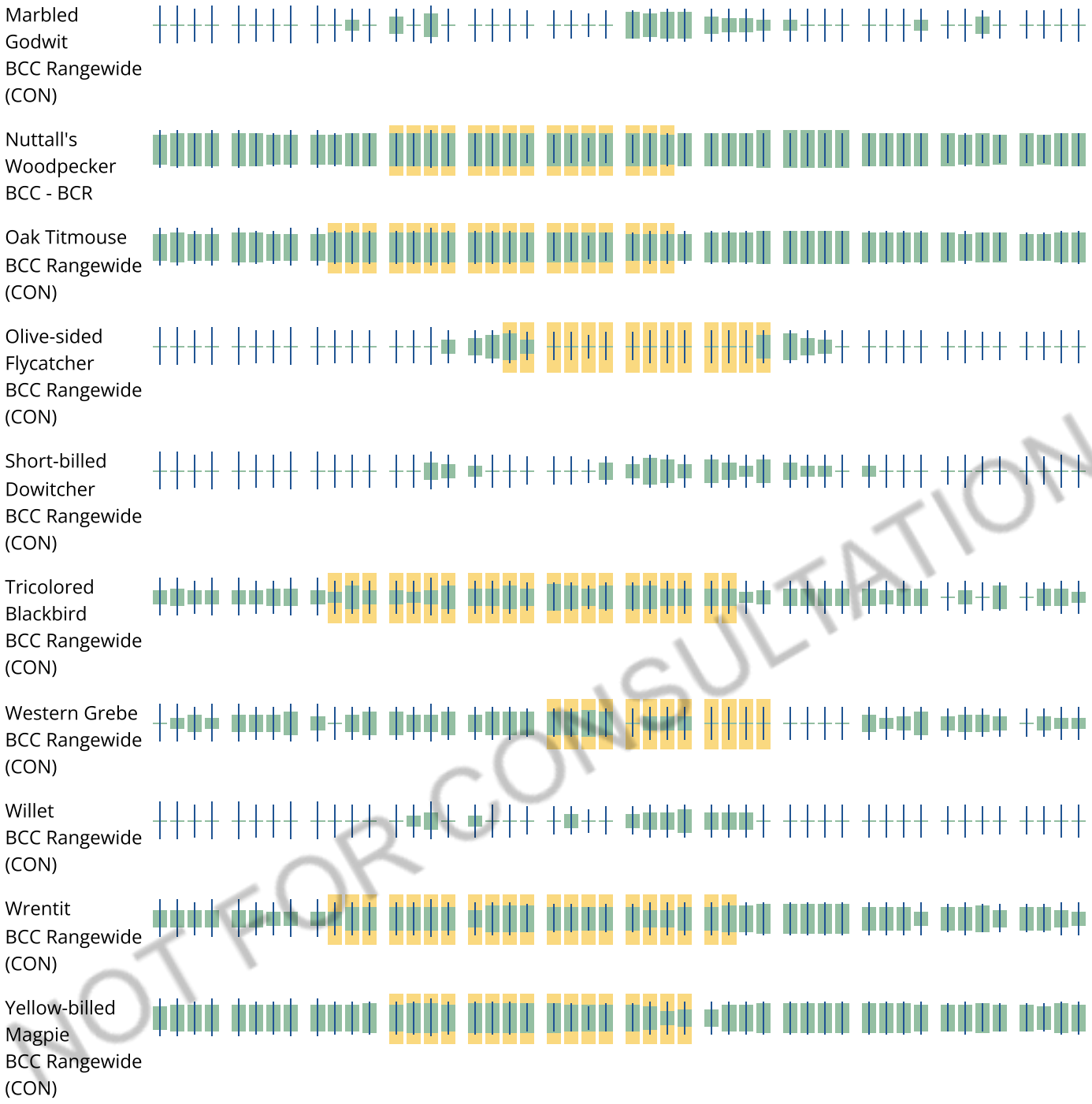
**Survey Effort** (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

**No Data** (–)
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.








**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

## Fish hatcheries

There are no fish hatcheries at this location.

# Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

- PFOR
- PSSR

RIVERINE

- R1UBV
- R5UBFx

A full description for each wetland code can be found at the National Wetlands Inventory website

**NOTE:** This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

# NMFS Database Query (5/11/2021)

Quad Name **Sacramento West**
Quad Number **38121-E5**

## ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) - **X**
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

## ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat - **X**
SRWR Chinook Salmon Critical Habitat - **X**
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat - **X**

## ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

## ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

## ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

## ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

## ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

## Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - X
Groundfish EFH - X
Coastal Pelagics EFH -
Highly Migratory Species EFH -

## MMPA Species (See list at left)

**ESA and MMPA Cetaceans/Pinnipeds**

**See list at left and consult the NMFS Long Beach office 562-980-4000**

MMPA Cetaceans -

MMPA Pinnipeds -

Quad Name **Clarksburg**
Quad Number **38121-D5**

## ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) - **X**
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

## ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat - **X**
SRWR Chinook Salmon Critical Habitat - **X**
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat - **X**

## ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

## ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

## ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

## ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

## ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

## Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - X
Groundfish EFH - X
Coastal Pelagics EFH -
Highly Migratory Species EFH -

## MMPA Species (See list at left)

## ESA and MMPA Cetaceans/Pinnipeds

**See list at left and consult the NMFS Long Beach office 562-980-4000**

MMPA Cetaceans -
MMPA Pinnipeds -

**DEPARTMENT OF THE ARMY**
**U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT**
**1325 J STREET**
**SACRAMENTO CA 95814-2922**

# FINDING OF NO SIGNIFICANT IMPACT - DRAFT

American River Common Features (ARCF) Project,
Sacramento, California
Sacramento River Erosion Contract 4
Supplemental Environmental Assessment (SEA) XII

The U.S. Army Corps of Engineers, Sacramento District has conducted an environmental analysis of the proposed project in accordance with the National Environmental Policy Act of 1969, as amended. Sacramento River (SR) Erosion Contract 4 is part of a portfolio of measures comprising the ARCF Project designed to help alleviate flood risk in the Sacramento Region. The ARCF Project was authorized in the Water Resources Development Act of 2016 (Pub. Law 114-322) and other related authorities.

SR Erosion Contract 4 would address erosion and levee failure risk to the Sacramento River east levee through the placement of rock revetment adjacent to the Little Pocket neighborhood of Sacramento. The final Supplemental Environmental Assessment (SEA) analyzes the environmental effects of elements of Contract 4 that were not considered in the 2016 ARCF General Reevaluation Report Final Environmental Impact Statement/Final Environmental Impact Report (2016 ARCF FEIS/FEIR) because the detailed design of the contract was not completed until 2023.

The SEA evaluated a No Action Alternative and two Action alternatives. The No Action Alternative assumes that levee improvements have been constructed as described under Alternative 2 in the 2016 ARCF FEIS/FEIR and as described in the Proposed Action analyses of the following associated supplemental environmental documents: SREL C1, C2, C3, and C4 SEA/SEIR, Sacramento Weir SEIS/SEIR, and SR Erosion C1 and C2 SEA/SEIR.

The Action Alternatives included Alternative 1, which consists of the following project elements: an access route, staging area, and modifications to the standard rock revetment described in the 2016 ARCF FEIS/FEIR. These modifications consist of rock tiebacks and a launchable rock toe. Alternative 2 includes the same elements as Alternative 1 except that it features a biotechnical alternative to rock placement along the shoreline between elevations 7 and 13 feet (NAVD 88[1]). A summary assessment of potential effects of the [preferred alternative] are listed in Table X:

[1]North American Vertical Datum of 1988

**Table 1: Summary of Potential Effects of the Preferred Alternative [Alternative 1 / conventional rip-rap]**

| | **Sacramento River Erosion Contract 4** Less than significant effects[2] | **Sacramento River Erosion Contract 4** Less than significant effects as a result of mitigation[3] | **Sacramento River Erosion Contract 4** Resource unaffected by action | **Program Level** Program elements beyond the scope of this contract disclosed in the 2016 FEIS/FEIR as likely to cause significant adverse effects |
|---|---|---|---|---|
| Geological Resources | ☐ | ☐ | ☒ | ☐ |
| Land Use | ☐ | ☐ | ☒ | ☐ |
| Hydrology and Hydraulics | ☐ | ☐ | ☒ | ☐ |
| Water Quality and Groundwater Resources | ☐ | ☒ | ☐ | ☐ |
| Vegetation and Wildlife | ☐ | ☒ | ☐ | ☒ |
| Fisheries | ☐ | ☒ | ☐ | ☐ |
| Special-Status Species | ☐ | ☒ | ☐ | ☐ |
| Cultural Resources | ☐ | ☒ | ☐ | ☐ |
| Transportation and Circulation | ☐ | ☐ | ☒ | ☒ |
| Air Quality | ☐ | ☒ | ☐ | ☐ |
| Climate Change | ☐ | ☒ | ☐ | ☐ |
| Noise | ☒ | ☐ | ☐ | ☐ |
| Recreation | ☒ | ☐ | ☐ | ☒ |
| Visual Resources | ☐ | ☐ | ☐ | ☒ |
| Public Utilities and Service Systems | ☐ | ☐ | ☒ | ☐ |
| Hazardous Wastes and Materials | ☒ | ☐ | ☐ | ☐ |
| Socioeconomics and Population | ☐ | ☐ | ☒ | ☐ |
| Environmental Justice | ☐ | ☐ | ☒ | ☐ |

[2] Less than significant effects are further described with NEPA descriptors in the SEA. Generally less than significant effects are considered those that are minor or moderate adverse effects to a particular resource.

[3] 40 CFR 1505.2(C) all practicable means to avoid and minimize environmental harm are adopted.

**[Alternate] Table 2: Summary of Potential Effects of the Preferred Alternative [Alternative 2 / biotechnical]**

| | **Sacramento River Erosion Contract 4** Less than significant effects | **Sacramento River Erosion Contract 4** Less than significant effects as a result of mitigation | **Sacramento River Erosion Contract 4** Resource unaffected by action | **Program Level** Program elements beyond the scope of this contract disclosed in the 2016 FEIS/FEIR as likely to cause significant adverse effects |
|---|---|---|---|---|
| Geological Resources | ☐ | ☐ | ☒ | ☐ |
| Land Use | ☐ | ☐ | ☒ | ☐ |
| Hydrology and Hydraulics | ☐ | ☐ | ☒ | ☐ |
| Water Quality and Groundwater Resources | ☐ | ☒ | ☐ | ☐ |
| Vegetation and Wildlife | ☒ | ☐ | ☐ | ☒ |
| Fisheries | ☐ | ☒ | ☐ | ☐ |
| Special-Status Species | ☐ | ☒ | ☐ | ☐ |
| Cultural Resources | ☐ | ☒ | ☐ | ☐ |
| Transportation and Circulation | ☐ | ☐ | ☒ | ☒ |
| Air Quality | ☐ | ☒ | ☐ | ☐ |
| Climate Change | ☐ | ☒ | ☐ | ☐ |
| Noise | ☒ | ☐ | ☐ | ☐ |
| Recreation | ☒ | ☐ | ☐ | ☒ |
| Visual Resources | ☒ | ☐ | ☐ | ☒ |
| Public Utilities and Service Systems | ☐ | ☐ | ☒ | ☐ |
| Hazardous Wastes and Materials | ☒ | ☐ | ☐ | ☐ |
| Socioeconomics and Population | ☐ | ☒ | ☒ | ☐ |
| Environmental Justice | ☐ | ☐ | ☒ | ☐ |

All practicable and appropriate means to avoid or minimize adverse environmental effects were considered and incorporated into the Preferred Alternative. Best management practices (BMPs) as detailed in the SEA will be implemented, as appropriate, to minimize or offset anticipated impacts.

The Preferred Alternative would result in unavoidable adverse impacts to [If Alternative 1 is selected]: approximately 0.4 acres of yellow-billed cuckoo, 0.8 acres of delta smelt, and 3.2 acres of salmonid/sturgeon habitat due to vegetation removal and rock placement. [If Alternative 2 is selected, The Preferred Alternative would impact approximately 0.7 acres of delta smelt and 2.1 acres of salmonid/sturgeon habitats due to vegetation removal and rock placement.] Impacts to these species would be offset by establishing habitat at an offsite mitigation area within 50 miles of the project impacts or by purchasing the appropriate credits at a mitigation bank. The ARCF project, including the Preferred Alternative, is anticipated exceed air quality thresholds for $NO_x$. The Corps would purchase air emissions offsets on an annual basis.

Public review of the draft SEA concluded on April 14, 2023. [[Will be updated when Public Comments are received.]] All comments submitted during the public review period were responded to in the Final SEA and FONSI. [To be added after public comment period: Comments from the public review period did not result in any changes to the SEA / or as a result of public comments, XXXX was added to the SEA.].

Pursuant to Section 7 of the Endangered Species Act of 1973, the U.S. Fish and Wildlife Service and National Marine Fisheries Service issued Biological Opinions which cover the following species anticipated to be impacted by the Preferred Alternative: western yellow-billed cuckoo, delta smelt, green sturgeon, and listed salmonid species. All terms and conditions, conservation measures, and reasonable and prudent alternatives and measures resulting from these consultations shall be implemented in order to minimize take of endangered species and avoid jeopardizing the species. Effects of the Preferred Alternative to special-status species would be less than significant as a result of mitigation.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, USACE has consulted with the State Historic Preservation Officer (SHPO) and other parties and has executed a Programmatic Agreement (PA) with the SHPO. The PA establishes the process USACE must follow for compliance with Section 106, taking into consideration the views of the signatory and concurring parties and interested Native American Tribes. All terms and conditions resulting from the agreement shall be implemented in order to minimize adverse impacts to historic properties.

Pursuant to the Clean Water Act of 1972, as amended, a programmatic Clean Water Act (CWA) Section 401 Water Quality Certification was issued for the ARCF Project and a notice of intent will be filed separately for SR Erosion Contract 4. A consistency review under Section 404(b)(1) of the CWA was conducted and included in Appendix D of the SEA, as the Preferred Alternative will result in approximately [3.2 acres for Alt 1 or 2.1 acres for Alt 2] of discharge into a Waters of the United States. The contractor will be required to obtain a Construction General Permit from the State Water Resources

Control Board to comply with storm water regulatory requirements under CWA Section 402 (NPDES) and to have in place a Spill Prevention Control and Countermeasures Plan (SPCCP). With these certifications and permits in place, and implementation of the avoidance, minimization and mitigation measures summarized in the SR Erosion Contract 4 SEA, the significant cumulative effects of the Preferred Alternative to water quality would be reduced to less than significant. No effect to groundwater resources is anticipated.

Pursuant to the Clean Air Act of 1972, an air quality general conformity analysis was completed for the entire ARCF program that addresses the annualized emission effects from implementation of the entire program on the 5-year schedule. SR Erosion Contract 4 would cause more severe air quality impacts than what was addressed in the 2016 ARCF FEIS/EIR due to the compressed 5-year construction schedule versus the 10-year period analyzed in the FEIS/EIR. The air quality impacts from SR Erosion Contract 4 would be less than significant with mitigation.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed. [If Alternative 1 is selected: Effects of the Preferred Alternative to vegetation, wildlife, and fisheries would be less than significant after mitigation. Trees will be trimmed or removed over the winter to avoid encounters with nesting migratory birds protected under the Migratory Bird Treaty Act prior to construction commencing. Compensatory mitigation for adverse impacts to these resources will be achieved under the Special-Status species mitigation.] *[If Alternative 2 is selected: Effects of the Preferred Alternative to vegetation and wildlife would be similar to those analyzed in the 2016 ARCF FEIS/EIR in the short-term, and beneficial in the long-term. After construction is complete, on-site plantings of native trees and shrubs will replace those removed.]*

All applicable laws, executive orders, regulations, and local government plans were considered in the evaluation of the alternatives. Based on the evaluation of the effects from the Preferred Alternative as described in the final Supplemental EA, the reviews by other Federal, State, and local agencies, Tribes, input of the public, and the review by my staff, I find that the Preferred Alternative will cause no new significant environmental impacts not already disclosed in the 2016 FEIS/FEIR. Accordingly, preparation of an Environmental Impact Statement is not required.

_____
Date

_____
Chad W. Caldwell
Colonel, U.S. Army
Commander and District Engineer