

Central Valley Flood Protection Board Package

Agenda Item 7-A

Consider approval of Resolution No. 2016-04 to certify the Final Environmental Impact Statement/Environmental Impact Report that evaluates the environmental effects of the Recommended Plan in the American River Watershed Common Features General Reevaluation Report.

American River Watershed Common Features Project

General Reevaluation Report and Environmental Impact Statement/Environmental Impact Report

Meeting Agenda Date: April 22, 2016

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Michael Zelazo, P.E. &
Erin Brehmer
Flood Projects Office

**Meeting of the Central Valley Flood Protection Board
April 22, 2016**

Staff Report

United States Army Corps of Engineers

**American River Watershed Common Features General Reevaluation Report and
Environmental Impact Statement/Environmental Impact Report**

1.0 ITEM

Consider approval of Resolution No. 2016-04 to:

1. Certify the Final Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) in compliance with Section 21100 of the California Public Resources Code (California Environmental Quality Act or CEQA),
2. Adopt the necessary findings and statements of overriding consideration in compliance with Section 21081 of CEQA,
3. Adopt the Final EIS/EIR Mitigation, Monitoring and Reporting Plan (MMRP) in compliance with Section 21081.6 of CEQA, and finally,
4. Approve the American River Watershed Common Features (ARCF) General Reevaluation Report (GRR), which recommends a change in the scope of the current authorized project to address the residual flood risk for the Greater Sacramento Area.
5. Delegate to the Central Valley Flood Protection Board Executive Officer the authority to execute the Notice of Determination in substantially the form attached hereto in compliance with Section 21108(a) of CEQA.

2.0 SPONSORS

Federal: U.S. Army Corps of Engineers (USACE)
State: The Central Valley Flood Protection Board (CVFPB or Board)
Local: Sacramento Area Flood Control Agency (SAFCA)

3.0 PROJECT LOCATION AND STUDY AREA

The study area has been divided into three subareas that correspond to basins defined by either levees or high ground:

- Natomas Basin (NAT) – The Natomas Basin is located in the northern portion of the study area. The basin is bordered by the Sacramento River to the west, the Natomas Cross Canal to the north, the Natomas East Main Drainage Canal (NEMDC) and Pleasant Grove Creek Canal to the east, and the American River to the south. The NEMDC collects flows from Pleasant Grove Creek, Dry Creek, Robla Creek, Magpie Creek and Arcade Creek (collectively referred to as the east side tributaries).

- American River North Basin (ARN) – This area is located north of the American River and east of the Natomas Basin. The basin is bordered by the NEMDC to the west and the American River to the south.
- American River South Basin (ARS) – This area is located south of the American River. It is bounded on the north by the American River and on the west by the Sacramento River. This basin includes downtown Sacramento and surrounding neighborhoods.

The project is located mainly within the ARN and ARS Basins within the American River Watershed, with the focus being on the vicinity of the confluence of these two rivers where they meet within the City of Sacramento. The area includes approximately 12 miles of the north and south banks of the American River immediately upstream from the confluence with the Sacramento River and approximately 14 miles of levees along the east bank of the Sacramento River downstream from the American River to just below the town of Freeport, at which point those levees tie into the Morrison Creek Beach Lake Levee which protects the south side of Sacramento. The project includes modification to the Sacramento Weir and Bypass, located approximately three miles upstream of the American River. The primary purpose of the Sacramento Weir and Bypass is the divert flows from the American River to the Yolo Bypass.

4.0 PROJECT DESCRIPTION

The purpose of the ARCF GRR is to evaluate the current authorized flood management system for the Greater Sacramento Area. The objective is to recommend a plan that satisfies USACE's National Economic Development (NED) planning process and meets the intentions of the Central Valley Flood Protection Plan (CVFPP) State Systemwide Investment Approach (SSIA).

The ARCF GRR evaluated several alternatives and identified four new features of the flood management system that are necessary to safely pass large flood flows on the American River and the Sacramento River. The ARCF GRR proposes these additional measures as a modification to the current authorized project in order to adequately reduce the risk of flooding in the City of Sacramento and surrounding area in coordination with the interests of the State and local sponsors.

The recommended new features of the project are as follows:

1. Sacramento River: Construction of about nine miles of slurry cutoff walls to address levee seepage and stability problems and about ten miles of rock bank protection to address erosion problems along the Sacramento River east levee, as well as about 2.5 miles of geotextile stabilized slope and two miles of slope flattening to address levee stability and less than one mile of levee raise.
2. American River: Construction of rock bank protection and launchable rock trenches to address erosion problems along four miles of the right (north) bank and seven miles of the left (south) bank of the American River to convey flows from Folsom Reservoir.
3. Eastside Tributaries: Construction of 1.5 miles of slurry cutoff wall along the NEMDC; 2.5 miles of slurry cutoff wall, raise four miles of floodwall and remove ditch on landside toe along Arcade Creek; and raise 2,100 feet of levee, construct 1,000 feet of new levee and purchase floodplain easement along Magpie Creek.
4. Sacramento Bypass: Widen the Sacramento Weir and Bypass by 1,500 feet to reduce the water surface elevation in the Sacramento River and allow more water to flow into the Bypass system. This would include the construction of a new two-mile long setback levee.

5.0 PROJECT BACKGROUND

The ARCF Project was authorized in Section 101(a)(1) of the Water Resources and Development Act of 1996 (WRDA 1996). The ARCF stems from “common elements” in a report which analyzed the flood control system after the 1986 flood. During implementation of WRDA 1996, the Sacramento Valley suffered from flooding in 1997 due to deep underseepage of levees on both the Sacramento River (constructed as part of the Sac Urban Project after the 1986 flood) and the American River. Failure of the recently remediated levees along the Sacramento River was unexpected and illustrated the need for a geotechnical reevaluation to prevent similar failure in the area. This additional effort led to considerable cost increases for construction of levee improvements in progress along the American River and moved funds away from design efforts in the Natomas Basin authorized in WRDA 1996 and WRDA 1999. The additional work necessary in the Natomas Basin led to a decision in 2002 to reevaluate the ARCF project.

Once the 2007 Folsom Dam Post Authorization Change Report (PACR) and the Economic Reevaluation Report identified the need for additional levee improvements on the American River and on the Sacramento River below the American River, it was realized that an additional reevaluation study was needed to include this area. The ARCF GRR encompasses these efforts and analyzes flood risk reduction measures across the American River North and South Basins and Natomas Basin. The 2010 Natomas PACR addressed seepage and stability problems but did not address measures to raise the height of the levees – such measures are addressed in the ARCF GRR.

USACE and the non-federal study sponsors have completed the alternative analysis and screening processes, the Tentatively Selected Plan (TSP) process, the Agency Decision Milestone, and are working on the Chief’s Report milestone to be submitted in April 2016. The USACE and non-federal sponsors presented the ARCF GRR recommended plan to the Civil Works Review Board on December 8, 2015 and received approval to initiate State and Agency review of the Draft Chief’s Report. The non-federal Sponsors and USACE have selected the Locally Preferred Plan (LPP) (Alternative 2) as the TSP.

6.0 AUTHORIZATIONS

Federal: Water Resources Reform and Development Act (WRRDA) 2014, Section 7002; Consolidated Appropriations Act (CAA) 2008, Section 130; Energy and Water Development Appropriations Act (EWDAA) 2004, Section 129; WRDA 1999 Section 336; WRDA 1996 Section 101(a)(1)

State: California Water Code Section 12670.10, 12670.11, 12670.12, 12670.14, and 12670.16

7.0 STAFF ANALYSIS

Reducing flood risk in the Sacramento area is the primary purpose of the ARCF project. The CVFPP lists widening the Sacramento Weir and Bypass and achieving the 200-year level of flood protection as major elements of enhancing the existing flood system capacity. The ARCF GRR recommended plan will meet these objectives and will reduce the flood risk to approximately 500,000 people and 125,000 structures with \$62 billion in damageable property within the study area. The proposed project would reduce Expected Annual Damages (EAD) within Sacramento by 73%, with a residual EAD of approximately \$130 million. Annual Exceedance Probabilities for flooding within Sacramento would be reduced from

approximately 3% (1 in 32 chance of flooding in any given year) to approximately 0.7% (1 in 147 chance of flooding in any given year).

The ARCF GRR analyzed several alternatives ranging from improving the levee system without raises to a maximum protection plan which includes all of the components represented in the alternative plans. The ARCF GRR narrowed the final analysis to two alternatives. Alternatives 1 and 2 would include similar construction of fix-in-place levee remediation measures to address seepage, slope stability, erosion, and overtopping concerns identified for the American River, Sacramento River, NEMDC, Arcade, Dry/Robla, and Magpie Creeks. Alternative 1 would include about seven miles of levee raises along the Sacramento River whereas Alternative 2 would limit the levee raises to less than one mile but would widen the Sacramento Weir and Bypass to roughly twice their current width to accommodate increased bypass flows.

USACE and the non-federal Sponsors support the TSP which is a more comprehensive alternative that addresses federal policy while fulfilling State flood risk management guidance outlined in the CVFPP SSIA. USACE and the non-federal sponsors support several of the elements in Alternative 2 that were added in order to limit direct impacts to the surrounding property owners:

1. System-wide Improvement Framework (SWIF) for addressing landside access and encroachment issues over time; allowing prioritization of critical flood risk improvements.
2. Vegetation Variance will be pursued in the PED phase to limit vegetation removal on the waterside to the upper 2/3 of the levee slope.
3. Impacts to the property owners will be further limited by considering retaining walls for levee raises (if necessary to reduce potential takes where real estate rights are inadequate).

USACE and the non-federal sponsors continue have worked together to achieve a comprehensive plan. USACE made good progress in addressing non-federal concerns regarding project implementation and methodology. CVFPB Staff recommends the Board approve the Final ARCF GRR and continue toward completion of the Final Chief's Report in April 2016.

7.1 COST ANALYSIS

The USACE estimates the cost of the additional features in the ARCF GRR recommended plan to be \$1,565,750,000. These costs are in addition to the estimated cost of \$1,467,980,000 for current work under the ARCF authorized project for a total ARCF project authorized cost of \$3,033,730,000. The cost estimate of \$15,500,000 to prepare the ARCF GRR and to address the Locally Preferred Plan (LPP), approved by the CVFPB in October 2015 through Amendment 1 of the Feasibility Cost Share Agreement, is included in these figures.

The ARCF GRR allocates costs of \$876,478,000 to the Federal Government and \$689,272,000 to non-federal sponsors (increased from \$467,514,000 with the NED Plan). After removing \$8,237,000 from the total for the federal share of cultural resource compliance costs, the cost is allocated into \$868,241,000 for the Federal Government and \$689,272,000 to the non-federal sponsors, representing an allocation of 55.7%/44.3%, respectively. The total cost of \$1,557,513,000 subject to cost-sharing is broken up into \$1,335,755,000 for the NED plan and \$221,758,000 for the extra costs of the LPP. The original cost share of the ARCF project was 75% federal and 25% non-federal. However, the cost of the recommended new features of the ARCF GRR will be shared at a ratio of 65% federal and 35% non-federal in accordance with WRDA 1986 excluding costs associated with the LPP. The non-federal

sponsors are responsible for 100% of the cost of the LPP above the NED selected alternative. Thus, the total financial responsibility of the project for the non-federal sponsors is \$689,272,000.

The cost of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas is estimated at \$245,324,000. The State of California, along with the City of Sacramento and the American River Flood Control District would be responsible for the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project after construction. Operation and maintenance is currently estimated at \$494,000 per year.

Based on a 3.125-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated to be \$74,777,000, including OMRR&R. The total annual benefits are estimated to be \$344,695,000, resulting in a benefit-to-cost ratio of 4.6. As stated in our letter of support for a LPP dated October 25, 2013, the CVFPB along with our partner SAFCA also intends to fully fund the LPP increment beyond the NED project cost. Project costs up to the identified NED cost would be cost shared per WRDA 1986 directive.

7.2 PROJECT BENEFITS

The primary benefits of completing the ARCF GRR which includes an LPP are:

- Risk reduction delivered in a timely manner which considers potential funding and agency coordination constraints
- Systemwide improvements which are in accordance with State policy and engineering guidance outlined in the Central Valley Flood Protection Plan.
- Establishing a partnership with USACE which allows necessary coordination of State flood risk management goals outlined in the Central Valley Flood Protection Plan.

8.0 ENVIRONMENTAL ANALYSIS

The EIS/EIR analyzed the environmental impacts for Alternative 1 and Alternative 2 of the ARCF GRR and found that most impacts would be reduced to less-than-significant levels with implementation of the Mitigation, Monitoring and Reporting Plan. Mitigation would reduce impacts to less-than-significant levels for the following resources: Land Use, Water Quality, Fisheries, Special Status Species, Air Quality, Climate Change, Noise, Public Utilities and Services, Hazardous Wastes, Socioeconomics, Population, and Environmental Justice. However, impacts to the following environmental factors would remain to be potentially significant and unavoidable: Vegetation and Wildlife, Cultural Resources, Transportation, Recreation and Visual Resources.

CVFPB Staff has evaluated this project under CEQA Guidelines and has determined that mitigation measures or BMPs have been incorporated into the project to reduce impacts to less-than-significant levels except in those resources listed above. Staff determines that the social and economic benefits derived from this project outweigh the significant and unavoidable short-term construction impacts to Vegetation and Wildlife, Cultural Resources, Transportation, Recreation, and Visual Resources. The Findings and a Statements of Overriding Consideration are in the Board package reflecting this determination.

The custodian of the CEQA record for the Board is its Executive Officer, Leslie Gallagher, at the Central Valley Flood Protection Board Offices at 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

9.0 STAFF RECOMMENDATION

Consider approval of Resolution No. 2016-04 to:

1. Certify the final Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) in compliance with Section 21100 of the California Public Resources Code (California Environmental Quality Act or CEQA),
2. Adopt the necessary findings and statements of overriding consideration in compliance with Section 21081 of CEQA,
3. Adopt the final EIS/EIR Mitigation, Monitoring and Reporting Plan (MMRP) in compliance with Section 21081.6 of CEQA
4. Approve the American River Common Features (ARCF) General Reevaluation Report (GRR), which recommends an increase in the scope of the current authorized project to address the residual flood risk for the Greater Sacramento Area and finally,
5. Delegate to the Central Valley Flood Protection Board Executive Officer the authority to execute the Notice of Determination in substantially the form attached hereto in compliance with Section 21108(a) of CEQA.

10.0 LIST OF ATTACHMENTS

- A – Board Resolution 2016-04
- B – Notice of Determination
- C – Environmental Impact Statement/Environmental Impact Report
- D – Mitigation, Monitoring and Reporting Plan
- E – General Reevaluation Report

Attachment A

Resolution 2016-04

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD

DRAFT RESOLUTION NO. 2016-04

AMERICAN RIVER WATERSHED COMMON FEATURES PROJECT, CALIFORNIA
FINDINGS AND APPROVAL
FOR THE GENERAL REEVALUATION REPORT AND ENVIRONMENTAL IMPACT
STATEMENT/ENVIRONMENTAL IMPACT REPORT

WHEREAS, the Central Valley Flood Protection Board (Board, formerly known as the Reclamation Board of the State of California) is the non-federal sponsor and the Lead Agency under Section 21100 of the California Public Resources Code (California Environmental Quality Act or CEQA) for the American River Watershed Common Features Project General Reevaluation Report (GRR), the U.S. Army Corps of Engineers (USACE) is the federal sponsor and Lead Agency under the National Environmental Policy Act (NEPA), and the Sacramento Area Flood Control Agency is the local sponsor and responsible agency under CEQA; and

WHEREAS, Congress authorized levee improvements known as the American River Watershed Common Features Project in Section 101(a)(1) of the Water Resources Development Act (WRDA) of 1996, (Public Law 104-303); and

WHEREAS, the State authorized the American River Watershed Common Features Project in 1997 under California Water Code Sections 12670.10, 12670.11, 12670.12, 12670.14 and 12670.16; and

WHEREAS, a Draft Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the GRR was circulated for public review from March 20, 2015 to May 4, 2015; and

WHEREAS, comments on the Draft EIS/EIR have been received, and responses have been prepared and included in a Final EIS/EIR; and

WHEREAS, a Statement of Findings has been prepared for each potentially significant environmental effect that would result from the project has been prepared in conformance with Section 15091 of the CEQA Guidelines; and

WHEREAS, a Mitigation Monitoring and Reporting Plan has been prepared which summarizes the effects, lists adopted mitigation measures, identifies timing of implementation, and establishes responsible party(ies) for implementation to avoid, minimize, or reduce any potentially significant environmental effects identified during the analysis in conformance with Section 15097 of the CEQA Guidelines; and

WHEREAS, the Board has independently reviewed and considered the EIS/EIR and finds, on the basis of the record as a whole, including comments and written responses received on the draft document and mitigation measures, that the EIS/EIR reflects the independent judgement and analysis of the Board in

conformance with Section 15090(a)(3) of the CEQA Guidelines; and

WHEREAS, pursuant to CEQA Guidelines Section 15091, changes and alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects identified in the EIS/EIR; and

WHEREAS, the Board finds that specific overriding economic, legal, social, technological, or other benefits of the GRR Recommended Plan outweigh the potentially significant and unavoidable effects on the environment in compliance with Section 21081(b) of CEQA; and

NOW, THEREFORE, LET IT BE RESOLVED that the Central Valley Flood Protection Board:

Findings of Fact.

- 1 The Board hereby adopts as findings the facts set forth in Attachment 1.
- 2 The Board has independently reviewed and considered all Attachments listed in the Staff Report.

Approval of American River Watershed Common Features General Reevaluation Report Recommended Plan

- 3 The Board adopts the CEQA Statement of Findings attached to this Resolution and Mitigation, Monitoring and Reporting Plan, attached to the Staff Report, and incorporated herein by reference, and
- 4 Based on the foregoing, the Board hereby certifies the Final Environmental Impact Statement/Environmental Impact Report for the American River Watershed Common Features Project General Reevaluation Report prepared in compliance with CEQA.
- 5. The Board approves the Recommended Plan.
- 6. The Board delegates to the Executive Officer the authority to execute the Notice of Determination under CEQA in substantially the form submitted.

Attachment 1: Findings and Statement of Overriding Consideration

PASSED AND ADOPTED by vote of the Board on _____, 2016.

William H. Edgar
President

Jane Dolan

Secretary

Approved as to Legal Form and Sufficiency

Robin Brewer
Assistant Chief Counsel

DRAFT

Attachment 1

Findings and Statement of Overriding Consideration

**STATEMENT OF FINDINGS AND
STATEMENT OF OVERRIDING CONSIDERATIONS FOR THE
AMERICAN RIVER COMMON FEATURES
ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT**

These Findings address significant impacts from the American River Common Features Environmental Impact Statement/Environmental Impact Report (EIS/EIR). The EIS/EIR, released on March 20, 2015, describes and analyzes the environmental impacts of the alternatives discussed in the American River Common Features (ARCF) General Reevaluation Report (GRR). The EIS/EIR has been prepared by the U S Army Corps of Engineers (USACE), lead agency under the National Environmental Policy Act (NEPA), the Central Valley Flood Protection Board (Board), lead agency under the California Environmental Quality Act (CEQA), and the Sacramento Area Flood Control Agency (SAFCA).

The EIS/EIR analyzes the environmental effects of the proposed alternatives using the largest footprint that is expected to be constructed. During the preconstruction engineering and design phase of the project, site-specific analysis, including full biological site surveys, and site-specific engineering will be completed. When applicable, further analysis will be done prior to land changes to comply with NEPA and CEQA.

The Board will consider whether or not to certify the EIS/EIR and approve the ARCF GRR in April 2016. This decision will be based on numerous factors, including the potential environmental impacts and mitigation measures addressed in the EIS/EIR, permitting requirements, Federal and state authorizations, funding and financing mechanisms, and implementation schedule.

Findings

The following section summarizes the environmental impacts of the alternatives identified in the GRR and analyzed in the EIS/EIR, and includes the Board's findings as to those impacts, as required by CEQA and the CEQA Guidelines. The findings provide the written analysis and conclusions of the Board regarding the environmental impacts of the project and mitigation measures proposed in the EIS/EIR. These findings summarize the environmental determinations of the EIS/EIR about project impacts before and after mitigation and do not attempt to describe the full analysis of each environmental impact contained in the EIS/EIR. Instead, these findings provide a summary description of each impact, describe the applicable mitigation measures identified in the EIS/EIR and state the Boards findings on the significance of each impact after imposition of the adopted mitigation measures. A full explanation of these environmental findings and conclusions can be found in the EIS/EIR, and these findings hereby incorporate by reference the discussion and analysis in the EIS/EIR supporting the EIS/EIR's determinations regarding mitigation measures and the project's impacts.

Based on the information in the record as required by CEQA, the Board in its capacity as lead agency under CEQA finds that changes and alterations have been required in, and incorporated into, the GRR,

which avoid or substantially lessen the significant effects as identified in the EIS/EIR in Chapter 3, Effected Environment and Environmental Consequences for the following resources:

Geological Resources

Significance criteria

The thresholds of significance are developed to determine the significance of an action in terms of its context and intensity. Under NEPA and CEQA, consideration is given to determine possible conflicts between the proposed action and the objectives of Federal, State, Regional, and local land use plans, policies, and controls for the study area. Alternatives considered were determined to result in a significant impact to geologic 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.

The proposed alternatives would not expose people or structures to substantial effects involving earthquakes, landslides, and expansive soils. Additionally, the proposed measures would not be located on unstable geographic units. As a result, these criteria are not discussed further in this section.

Alternative 1

The USACE proposes to excavate approximately 1 million cubic yards (cy) of borrow material for this alternative. Excavation of these borrow sites could significantly impact geological resources by causing substantial soil erosion or the permanent loss of topsoil. This alternative would not result in impacts to seismic resources.

Alternative 2

Under Alternative 2, more than 1 million cy of soil would be excavated during construction. However, the potential effects from this action would be consistent with the effects described above for Alternative 1, only of a greater magnitude. Like Alternative 1, these effects would be less than significant with the implementation of the avoidance and minimization measures listed below.

Mitigation Measures

The following measures would be implemented during construction to reduce potential impacts to geological resources to less than significant:

- Prior to construction, the USACE or its contractor would be required to acquire all applicable permits for construction.

- Prior to construction, a Stormwater Pollution Protection Plan (SWPPP) would be prepared, and best management practices (BMPs) would be proposed to reduce potential erosion and runoff during rain events.
- 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 could 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, could be installed as needed to stabilize disturbed areas until vegetation becomes established.

With mitigation measures, impacts are less-than-significant.

Land Use

Significance criteria

Alternatives under consideration were determined to result in a significant impact to land use if they would do any of the following:

- Conflict with any applicable land use plan, policy, or regulation;
- Conflict with approved Habitat Conservation Plans or Natural Community Conservation Plan;
- Physically divide an established community;
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere;
- Convert a significant amount of prime farmland, unique farmland, or farmland of statewide importance to non-agricultural use; or,
- Conflict with existing zoning for agricultural use.

Alternative 1

Impact: In certain locations, the project will use bank protection and launchable rock trench as erosion control methods, both of which require vegetation removal. A 15 foot maintenance road will replace vegetation immediately adjacent to levee in locations where one is not already in existence.

Changes to land use along the Sacramento River would occur primarily on the landside in the Pocket and Little Pocket area of Sacramento where levee raises are required (Plate 3 of EIR/EIS). Many homes in this area back up to the levee with little to no land between the levee toe and the fence or backyard. Flood protection levee easements extending over private parcels have not yet been determined, but it is assumed that some takings of private property would be required. No land surveys have been conducted at this stage in the project. For planning purposes, a general assumption was made that a levee easement exists from toe to toe and extends 10 feet beyond the toe landside and waterside. Acquisition of properties for flood control easements along the Sacramento River and Arcade Creek could cause significant impacts without mitigation.

Mitigation:

Coordination with Sacramento County Department of Parks and Recreation, the National Park Service, the other Federal and State agencies responsible for managing the resources of the Parkway, and non-governmental stakeholders will ensure consistency with existing plans.

All property acquisitions would be conducted in compliance with Federal and State relocation law, and relocation services would be accomplished in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1960. These laws require that appropriate compensation be provided to displaced residential and nonresidential landowners and tenants, and that residents are relocated to comparable replacement housing and receive relocation assistance. With mitigation, impacts would be reduced to less-than-significant.

Alternative 2

Impact: Under this alternative levee raises along the Sacramento River would be reduced from 7 miles to approximately 1 mile compared to Alternative 1 (Plate 4). This would significantly reduce the amount of taking of private property required to construct the project. Acquisition of properties for flood control easements along the Sacramento River and Arcade Creek could cause significant impacts without mitigation.

Bypass expansion could cause the conversion of agricultural lands to floodway. This alternative would add an additional 1,500 feet of weir to the existing Sacramento Weir along the Sacramento River and approximately 315 acres of additional bypass (floodway) space. Primary components of the proposed weir and bypass expansion would include extending the current weir structure, degrading the existing north levee of the Sacramento Bypass, constructing a new levee and seepage berm at the northern terminus of the weir extension, and grading the expanded floodway area. The overall construction “footprint” (e.g. limits of construction) for these expansion features would encompass a total of approximately 427.7 acres.

Construction of the proposed weir extension and bypass expansion would directly impact segments of existing roadways, including Old River Road, CR 124, CR 126, and East Yolo Levee Road, as well as a segment of an existing railroad (Yolo Shortline Railroad). The affected portions of the roadways would

be relocated and the effected railroad segment would be rebuilt as part of the project. Given this, these localized land uses would only be temporarily impacted.

Mitigation:

All property acquisitions would be conducted in compliance with Federal and State relocation law, and relocation services would be accomplished in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1960. These laws require that appropriate compensation be provided to displaced residential and nonresidential landowners and tenants, and that residents are relocated to comparable replacement housing and receive relocation assistance.

Mitigation for the lands converted from parkway land to flood control uses will be mitigated by paying fees to the County under the Habitat Restoration Program Fees (HRP). HRP funds are to be used for natural resource protection or enhancement as well as for land acquisition. Coordination with landowners would occur to determine if land would remain in production or be permanently converted to floodway. When applicable, further analysis will be done prior to land changes to comply with CEQA.

With mitigation, impacts would be reduced to less-than-significant.

Hydrology and Hydraulics

Significance criteria

The alternatives under consideration were determined to result in a significant impact related to hydrology and hydraulics if they would do any of the following:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river in a manner that would result in: (1) substantial erosion or siltation on- or off-site, and (2) substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.
- 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.
- Place housing within a 100-year flood hazard area.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding.

Alternative 1

Impact: Alternative 1 involves fix-in-place only, so the footprint of the levee system would not significantly change. As a result, the proposed measures would not place housing within a 100-year flood hazard area or place structures in a flood hazard area that would impede or redirect flood flows. Alternative 1 would not alter flows from those expected under the future without project condition, there would be no significant change or effect on hydraulics with the project in place. As a result, effects

from Alternative 1 on hydrology and hydraulics would be less-than-significant and no mitigation would be required.

Mitigation: Because the flows would not increase under this alternative, effects to hydrology and hydraulics are less-than-significant, and no mitigation is required.

Alternative 2

Impact: Reduce water surface elevation in the Sacramento River downstream of the confluence of the American River without significantly increasing water surface elevation in the Yolo Bypass downstream of the confluence of the Sacramento Bypass. Although Alternative 2 would result in the creation of a new drainage area within the Sacramento Bypass, the area would be contained within the levee system and would not result in substantial additional erosion, siltation, or runoff. The expanded bypass would not create or contribute flows in excess of the existing capacity of the system. No housing would be permitted within the new flood hazard area, and no structures would be permitted that would impede or redirect flows within this area. As a result, impacts to hydrology and hydraulics from the implementation of Alternative 2 would be less-than-significant, and no mitigation would be required.

Mitigation: Because the flows would not increase under this alternative, effects to hydrology and hydraulics are less-than-significant, and no mitigation is required.

Water Quality

Significance criteria

For this analysis, an effect pertaining to surface water quality and groundwater quality was considered significant under CEQA and NEPA if it would result in any of the following environmental effects, which are based on professional practice, Federal guidelines, and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq.*):

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

Alternative 1

Impact: Potential impacts include increased turbidity during bank protection construction, runoff of exposed soils, and cement, slurry, or fuel spills during construction.

There is the potential for some increases in water temperature, due to the removal of waterside vegetation during construction. However, the vegetation that would be removed would primarily consist of shrubby vegetation and grasses, which do not significantly contribute to shade. The larger trees in the bank protection footprint, which are the primary contributors to shade, would be protected in place. As a result, short term effects to water temperature are expected to be less-than-significant.

Rock revetment placement in open water would result in significant indirect effects as the sediment and turbidity plume drifts further downstream and later effect the water quality in those areas found further downstream of the project area.

Mitigation:

Coordination with the Central Valley RWQCB will occur prior to construction through the Section 401 certification process to ensure that any appropriate measures, to include, but not limited to the BMPs discussed below, are implemented during the construction period.

As part of a turbidity monitoring program, the contractor would 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 result in a rise in turbidity levels above ambient conditions, in accordance with the Central Valley RWQCB Basin Plan turbidity objectives. The monitoring program would be coordinated with the Central Valley RWQCB prior to construction, and would be implemented by the construction contractor. The contractor would be required to implement BMPs, as described below, to prevent runoff from all construction areas.

Environmental commitments included in the project to reduce the potential for impacts to water quality include: preparation of the SWPPP, Spill Prevention Control and Countermeasures Plan (SPCCP), and a bentonite slurry spill contingency plan (BSSCP). Typical elements of the SWPPP are described below. In general, the following measures would be implemented as part of the SWPPP, as required by the SWRCB for any construction activities that disturb more than 1 acre, to limit erosion potential.

- Conduct earthwork during low flow periods (July 1 through November 30).
- To the extent possible, stage construction equipment and materials on the landside of the subject levee reaches 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 could 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, could 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.
- Water samples for determining background levels shall be collected in the adjacent water body for each erosion construction site. Testing to establish background levels shall be performed at least once a day when construction activity is in progress. Water samples for determining down current conditions shall be collected in the adjacent water body at a point 5 feet out from the shoreline and 300 feet down current of each erosion site. During periods when there are no in-water construction activities, random, weekly water monitoring will be performed. During periods of in-water construction, water monitoring will occur hourly.
- During working hours, the construction activity shall not cause the turbidity in the adjacent water body down current from the construction sites to exceed the Basin Plan turbidity objectives. Specifically, where natural turbidity is between 0 and 5 NTUs, increases shall not exceed 1 NTU; where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20%; where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs; and where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent (Central Valley RWQCB 2007). In determining compliance with these limits, appropriate averaging periods could be applied provided that beneficial uses will be fully protected.

An SPCCP is intended to prevent any discharge of oil into navigable water or adjoining shorelines. The contractor would develop and implement an SPCCP to minimize the potential for adverse effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP would be completed before any construction activities begin. Implementation of this measure would comply with state and Federal water quality regulations. The SPCCP would 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 would 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 would also describe how and when employees are trained in proper handling procedure and spill prevention and response procedures.

Release of contaminants into adjacent water bodies could result in significant effects. Adherence to the environmental commitments and the implementation of the measures described in this section if spills were to occur would reduce or minimize this to a less-than-significant effect.

With mitigation, impacts would be reduced to less-than-significant.

Alternative 2

Impact: Impacts to water quality would be the same as Alternative 1 with the additional effects associated with the widening of the Sacramento Weir and Bypass. Construction of the new north levee would occur when water is not flowing through the bypass, and therefore there would be no impacts to water quality during construction of the new north levee of the bypass.

Within the expanded bypass, the existing land use is agriculture; there is approximately 13.5 acres of agricultural ditches and canals within this area. These ditches would likely be removed as a part of construction of the new bypass. During construction, the widened bypass area would be graded to ensure that there is positive drainage during flows and to reduce potential stranding pits for fish as water recedes. Following construction of the expanded bypass, the area would be revegetated with native grasses to stabilize soils in the construction footprint.

Additionally, effects could occur during the construction of the expanded weir along the Sacramento River. There is a potential for water quality impacts to occur if the weir is constructed in a way that debris or other construction materials could enter the Sacramento River. However, it is likely that the weir could be constructed behind the existing levee, which would result in no impacts to water quality.

Following construction, the expanded bypass would be revegetated with native grasses and trees and the area would be monitored, per the requirements established in the Habitat Mitigation and Monitoring Plan, to ensure that the revegetation meets the success criteria defined in the plan (Appendix I). With successful revegetation, it is expected that any effects from erosion and runoff during operation of the widened weir would be less than significant.

Mitigation: Same as Alternative 1 plus revegetation of the expanded bypass. With mitigation, impacts would be reduced to less-than-significant.

Vegetation and Wildlife

Significance criteria

Impacts on vegetation and wildlife would be considered significant if the alternative would result in any of the following:

- 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 Clean Water Act.
- Substantial reduction in the quality or quantity of important habitat, or access to such habitat for wildlife species.
- Substantially conflict with the American River Parkway Plan, Sacramento County Tree Preservation Ordinance, or the City of Sacramento Protection of Trees Ordinance.
- Substantial adverse effects on native wood habitats in the American River Parkway, resulting in the loss of vegetation and wildlife.

The alternatives being analyzed assume a vegetation variance would be obtained for the lower one half of the waterside levee slope on all waterways. This would allow vegetation to remain in place unless required for construction.

Alternative 1

Impact:

For both Alternatives 1 and 2 it is assumed that a vegetation variance would be obtained to reduce the impacts to vegetation and wildlife. In addition, a SWIF agreement with the non-Federal sponsor will allow vegetation and encroachment compliance on the landside of the levee to be deferred and addressed by the LMA at a later time. Vegetation impacts throughout the project area would occur in the proposed construction footprint. Further details on the SWIF and variance are included in the EIS/EIR.

Construction of levee improvements and vegetation removal would result in significant loss of vegetation and wildlife habitat on the landside of the Sacramento River levees, in the American River Parkway, and along Arcade Creek. The construction of the launchable rock trenches would result in the removal of a maximum of 65 acres of riparian habitats within the American River Parkway.

The construction of the bank protection measure would result in impacts to a maximum of 31,000 linear feet of SRA habitat. This estimate is based on areas where either bank protection or launchable rock trench could occur; therefore, based on site-specific designs, this is likely to be refined to a smaller impact prior to construction.

On the Sacramento River under Alternative 1, the existing levee structure would be degraded by one half to create a working platform for slurry wall installation. As the levee is degraded, all vegetation located in the degraded area would be removed. The maximum degraded area (the upper one half of the levee) is approximately 110 acres and contains about 750 trees of various sizes and species. Because a vegetation variance would be obtained approximately 930 large trees would be left in place on the lower one-half waterside slope, and rock will be placed around the base of the trees. The trees that would remain in place are scattered over approximately 50,000 linear feet and 50 acres.

There would be a maximum of 200 trees removed from both the landside and waterside to construct the project at the east side tributaries. These trees compose approximately 2 acres of oak woodland habitat on NEMDC, and approximately 10.5 acres of riparian on Arcade Creek.

Mitigation:

During the design refinement phase, plans will be evaluated to reduce the impact on vegetation and wildlife to the extent practicable. Refinements that could be implemented to reduce the loss of riparian habitat include: reduced footprint, constructing bank protection rather than launchable rock trench whenever feasible, and designing planting berms in areas where significant riparian habitat exists adjacent to the levee toe (when no hydraulic impacts would occur).

To compensate for the removal of 65 acres of riparian habitat along the American River, approximately 130 acres of replacement habitat would be created. Species selected to compensate for the riparian corridor removal would be consistent with the approved list of trees, shrubs, and herbaceous plants native to the Parkway. The 130 acres would create habitat connectivity and wildlife migratory corridors

that provide for the habitat needs of important native wildlife species, without compromising the integrity of the flood control facilities, the flood conveyance capacity of the Parkway, and Parkway management goals in the Parkway Plan. Some of the 130 acres of riparian would be planted on top of the rock trench. A detailed discussion can be found in Appendix I in the EIR/EIS which includes the project's Habitat Mitigation and Monitoring Plan.

Avoidance and minimization measures incorporated as part of the Sacramento River design include: compliance with the USACE vegetation policy through a vegetation variance, installation of a planting berm where erosion protection is required, and narrowing of the levee footprint by construction of a retaining wall, when feasible.

The vegetation variance would allow waterside trees on the lower half of the slope to remain in place. This would allow approximately 930 trees along 10 miles of the Sacramento River to continue to provide habitat for fish and wildlife species. Along with retaining the trees, additional plantings of small vegetation would be done on the newly constructed berm. Species of plants would be coordinated with NMFS, USFWS, and State and local partners.

Off-Site mitigation for the removal of 50 trees in the Arcade Creek area would be done in compliance with the Sacramento City tree ordinance. It is estimated that 2 acres would be required to accommodate the planting of approximately 450 trees.

Impacts with mitigation measures are significant and unavoidable. Further analysis will be done prior to land changes to comply with NEPA and CEQA.

Alternative 2

Impact:

Construction of levee improvements and vegetation removal would result in significant loss of vegetation and wildlife habitat on the landside of the Sacramento River levees, in the American River Parkway, and along Arcade Creek. Construction of the Sacramento Weir extension would require the removal of riparian vegetation. Widening of the Sacramento Weir and Bypass would result in a reduced effect to landside vegetation.

Mitigation:

Same mitigation measures as Alternative 1 plus a maximum of 8 acres of riparian vegetation would be removed to construct the 1,500 foot long weir. Compensation was determined by evaluating other projects with similar impacts in the Central Valley, coordination with resource agencies, and evaluation of compensation plantings' ability to provide similar wildlife habitat. A total of 16 acres would be needed to compensate for the removal of the vegetation along the Sacramento River and within the new weir footprint, due to the temporal loss of habitat while the new habitat is establishing. Plantings could be accomplished within the expanded bypass, other nearby available lands, or through the purchase of credits at an approved mitigation bank.

Impacts with mitigation measures are significant and unavoidable.

Further analysis will be done prior to land changes to comply with NEPA and CEQA.

Fisheries

Significance criteria

In general, effects on fish populations are significant when the project causes or contributes to substantial short- or long-term reductions in abundance and distribution. An effect is found to be significant if it:

- Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites;
- Substantially reduces the habitat of a fish population; and/or
- Causes a fish population to drop below self-sustaining levels.

Alternative 1

Impact:

Rock placement along the American River would most likely disturb the native resident fish by increasing noise, water turbulence, and turbidity, causing them to move away from the area of placement.

Construction during the project may disturb soils and the nearshore environment, leading to increases in sediment in the nearshore aquatic habitat. Direct effects were not considered significant to resident native fish species because it was determined that existing conditions would not be worsened by project construction which includes the creation of planting berms to provide shade and instream woody material elements of SRA habitat. The natural bank element of SRA would be lost with the placement of rock along the levee slope. Over time sediment would settle into the rock voids and provide similar substrate characteristics as a natural bank. The direct effects would also not result in a substantial reduction in population abundance, movement, and distribution.

An increase in sedimentation and turbidity could occur in adjacent water bodies during earth-moving activities and could be considered significant. Indirect effects would be reduced to less than significant with the implementation of BMPs discussed in Water Quality.

A vegetation variance for the Sacramento River would allow vegetation below the lower one-half of the slope to 15 feet waterward of the levee toe. Indirect effects were not considered significant to resident native fish species because it was determined that existing conditions would not be worsened by project construction. The planting berm would create additional cover habitat once it has matured. However, the loss of natural bank would still reduce the overall value of the SRA habitat.

Construction of cutoff walls and flood walls at the East Side Tributaries would take place above the waterline which would not have significant direct effects. The East Side Tributaries would be required to establish compliance with USACE vegetation requirements. Due to SRA habitat located on the lower

portion of NEMDC below Arcade Creek and between Norwood Avenue and the Sacramento Northern Bike Trail, there would be significant direct effects by reducing the available areas for shade and possible food sources available to the existing native and nonnative fish species present in the study area. Indirect effects to loss of SRA habitat would be reduced to less than significant with the implementation of compensation for the loss of vegetation. This compensation is discussed in detail in the Vegetation and Wildlife section of the EIR/EIS.

Mitigation:

All avoidance, minimization, and mitigation measures associated with SRA and riparian habitat removal are addressed in the Vegetation and Wildlife section of the EIR/EIS Section 3.5, pages 127-131 and in Appendix I which includes the project's Habitat Mitigation, Monitoring, and Adaptive Management Plan (HMMAMP). The purpose of this HMMAMP is to present conceptual mitigation proposals, establish performance standards, and outline adaptive management tasks and costs.

BMPs associated with construction related impacts such as dust, runoff, and spills are addressed in the Water Quality section of the EIR/EIS Section 3.5 pages 105- 107.

- In-water construction would be restricted to the August 1 through November 30 work window, during periods of low fish abundance, and outside the principal spawning and migration season. Typical construction season generally corresponds to the dry season, but construction may occur outside the limits of the dry season, only as allowed by applicable permit conditions.
- Due to the deleterious effects of numerous chemicals on native resident fish used in construction, if a hazardous materials spill does occur, a detailed analysis will be performed immediately by a registered environmental assessor or professional engineer to identify the likely cause and extent of contamination. This analysis will conform to American Society for Testing and Materials standards, and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, USACE and its contractors will select and implement measures to control contamination, with a performance standard that surface water quality and groundwater quality must be returned to baseline conditions.

With mitigation, impacts are less-than-significant.

Alternative 2

Impact:

The Alternative 2 direct and indirect effects for the American River, Sacramento River, and East Side Tributaries would be the same as described above in Alternative 1. Proposed construction in the Sacramento Bypass would take place during the dry season when no water would be flowing through the project area from the Sacramento River. There would be no significant direct effects to native fish populations because they would not be present in the construction footprint during the proposed construction.

Mitigation:

All mitigation discussed for Alternative 1, plus: widening the Sacramento Weir and Bypass, the project would create additional floodplain habitat, which could benefit native fish consistent with the results of the Knaggs Ranch Study. The increase of floodplain habitat could increase opportunities for successful rearing and feeding during seasonal flooding. As a result, indirect effects of the Sacramento Bypass and Weir widening for native fish species would be considered a benefit to the species.

With mitigation impacts are less-than-significant.

Special Status Species

Significance criteria

Effects on special status-species were considered significant if an alternative would result in any of the following:

- 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.
- 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.
- 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 California Native Plant Society (CNPS), or species of special concern or regionally important commercial or game species.
- Have an adverse effect on a species' designated critical habitat.

Alternative 1

Impact:

Valley Elderberry Longhorn Beetle

Within the surveyed study area, approximately 250 shrubs were located along the American River Parkway, 50 shrubs were located along the Sacramento River, and 2 shrubs were located within the East Side Tributaries. Prior to project construction, a qualified biologist would conduct focused surveys of elderberry shrubs within 100 feet of the project area for construction in accordance with the USFWS guidelines. All elderberry shrubs with potential to be effected by project activities would be mapped and surveyed to determine the size of the stems on each shrub, location of shrubs to riparian habitat, and presence of exit holes.

Direct effects to valley elderberry longhorn beetle may occur if elderberry shrubs are incidentally damaged by construction personnel or equipment. Since the project would occur over a 13 year period and construction would occur during beetle flight season, there could be direct mortality caused by construction activities. Elderberry shrubs that cannot be avoided would be transplanted between November and mid-February when the plants are dormant. Transplanting procedures will comply with the Conservation Guidelines for the Valley Elderberry Longhorn Beetle, USFWS, 9 July 1999. Potential

impacts due to damage or transplantation include direct mortality of beetles and/or disruption of their lifecycle.

Temporal loss of habitat may occur due to transplantation of elderberry shrubs. Although compensation measures include restoration and creation of habitat, mitigation plantings would likely require one or more years to become large enough to provide supporting habitat. Furthermore, associated riparian habitats may take several decades to reach their full value.

Vernal Pool Fairy Shrimp and Tadpole Shrimp

CNDDDB records include historical occurrences of vernal pools and fairy shrimp in the vicinity of the Magpie Creek area. There is approximately 0.25 acre of land within the construction footprint of the new levee and floodwall that could potentially include vernal pool habitat. This 0.25 acre could be adversely affected from ground disturbing activities, operation of construction vehicles, by construction of the new levee and maintenance road, or due to the alteration of the natural flows of the area due to construction of the new levee.

Giant Garter Snake

Effects to GGS under Alternative 1 are not likely to result from construction activities along the East Side Tributaries. The East Side Tributaries (NEMDC, Magpie Creek, and Arcade Creek) have some potential GGS habitat, however, the creeks in this area lack year round water and connectivity to rice fields, a major component of GGS habitat. The closest rice fields are about 5 miles away up the NEMDC and above a pump plant located on the NEMDC just above Dry/Robla Creek. Additionally, Arcade Creek and NEMDC both have segments that include large cover vegetation that would make them undesirable for GGS.

Western Yellow-Billed Cuckoo

The project area is unlikely to support western yellow-billed cuckoo nesting habitat due to the narrow riparian corridors along the waterways, with the exception of the American River Parkway. However, migrant individuals are likely to pass through the area in transit to breeding sites.

Potential long-term effects to the cuckoo could result from the loss of 65 acres of riparian habitat in the footprint of the rock trench sites within the American River Parkway, however there are no records of the cuckoo nesting in this area. Short term effects to Western yellow-billed cuckoo under Alternative 1 would be significant, due to the temporal loss of nesting habitat along the waterways while the new trees grow at the mitigation sites.

Swainson's Hawk

It is estimated that approximately 175 acres of riparian habitat used by Swainson's hawk for roosting and nesting could be effected by project construction. Any trees removed would be mitigated, however, there would be a significant impact due to the temporal loss of habitat while the new trees grow. Additionally, approximately 2.5 acres of non-native grassland intermixed with barren ground would be removed or disturbed as a result of construction activities at levees. Much of this habitat is within the

Sacramento urban area, where Swainson's hawks nest and forage along the American and Sacramento Rivers. Additional habitat for Swainson's hawks does exist within and adjacent to the Sacramento Bypass. Foraging habitat within the study area could include the levee slopes, and any staging areas, borrow sites, or disposal sites. This area is less urbanized and hawks may be more sensitive to human activities. Prior to construction activities, hawk surveys would be conducted within the study area to determine where potential nest sites. The surveys would be conducted annually in close proximity to construction locations and within one-half mile of any anticipated construction. If any hawks are found, coordination with the resource agencies would occur and appropriate avoidance and minimization measures would be established prior to the start of construction.

Burrowing Owl

Construction activities, including grading and clearing activities within or adjacent to potential burrowing owl habitat, could result in nesting failure, death of nestlings, or loss of eggs. Additionally, approximately 2.5 acres of non-native grassland intermixed with barren ground would be removed or disturbed as a result of construction activities at levees. Additional acreages of burrowing owl nesting habitat could be impacted in the project's staging areas, borrow sites, and disposal sites.

White-Tailed Kite

Construction activities conducted during nesting season, including vegetation removal, could significantly impact the white-tailed kite by removing nesting habitat or causing the species to abandon any active nests. In addition, the short-term loss of approximately 175 acres of riparian habitat on the landside of the levees that could support white-tailed kite nesting and foraging could result in significant effects to this species.

Purple Martin

Construction activities conducted during nesting season, including vegetation removal, could significantly impact the purple martin by removing nesting habitat or causing the species to abandon any active nests. In addition, the short-term loss of approximately 175 acres of riparian habitat on the landside of the levees that could support purple martin nesting and foraging could result in significant effects to this species.

Winter-run Chinook Salmon

Construction would occur on approximately 80,000 linear feet of waterside habitat; however, a vegetation variance is assumed in both of the alternatives and large vegetation would remain in place. Also included, is a planting berm which would be planted with species that provide additional habitat for fish species once established.

Implementation of the bank erosion protection measures may result in adverse effects to juvenile and smolt winter-run chinook salmon, their critical habitat, and EFH. Construction activities that increase noise, turbidity, and suspended sediment may disrupt feeding or temporarily displace fish from preferred habitat. Rearing or outmigrating salmon may not be able to readily move away from nearshore areas that are directly effected by construction activities such as placement of rock

revetment; these effects could result in stress, injury, or mortality. Restricting in-water activities to the August 1 through November 30 work window (beginning on July 1 for sites upstream of RM 60) and implementing the avoidance and minimization measures described below will minimize, but not avoid, potential construction-related effects on juveniles and smolts.

The study area does not support spawning habitat for winter-run Chinook salmon and no long-term effects on spawning habitat will occur. For juvenile winter-run Chinook salmon, the bank protection measures will generally provide long-term increases in bank shading at project sites. The plantings of native grasses and willows are designed to benefit juvenile Chinook salmon by increasing the availability (habitat area) and quality (shallow water and instream cover) of nearshore aquatic habitat and SRA relative to current conditions.

Spring-run Chinook Salmon

Adult spring-run Chinook salmon migrate up the Sacramento River from March through September although most individuals have entered tributary streams by mid-June and will not be effected by construction activities. Therefore, potential for construction-related ARCF GRR project effects will be similar to that described for winter-run Chinook salmon. Similar to winter-run Chinook salmon, spring-run Chinook salmon typically spend up to 1 year rearing in fresh water before migrating to sea. Therefore, potential for construction-related effects will be similar to that described for winter-run Chinook salmon above. Restricting in-water activities to the August 1 through November 30 work window and implementing the avoidance and minimization measures described below will minimize potential construction-related effects on juveniles and smolts to below the significance thresholds. Under Section 7 of the ESA, effects from Alternative 1 may effect and is likely to adversely effect spring-run Chinook salmon.

Central Valley Fall run and Late-Fall run Chinook Salmon

Fall run and late-fall run chinook salmon migrate into the Sacramento River and its tributaries from June through December; therefore, construction activities will coincide with most of the migration period. Construction activities that increase noise, turbidity, and suspended sediment may disrupt adult passage through the study area and may displace these fish as a result of effects on their preferred habitat and spawning habitat. However, because construction activities will be restricted to the channel edge and will include implementing avoidance and minimization measures described below, adverse effects on habitat will be minimized to below the significance thresholds.

Long-term changes on nearshore habitat are expected to have adverse effects on habitat that is important to all life stages of fall run and late-fall–run Chinook salmon. The project could represent a long-term loss of a small amount of potential spawning habitat because repairs will require covering bottom substrates with revetment. However, the potential spawning area that might be effected is very small. In general, it is expected that channel areas immediately adjacent to erosion sites do not support spawning riffles. As a result, effects to fall-/late fall-run Chinook salmon from Alternative 1 would be less-than-significant, with the implementation of the mitigation measures discussed below.

Central Valley Steelhead

Within the ARCF GRR study area, potential spawning habitat is present in the American River, NEMDC, and Dry/Robla Creek. Steelhead spawn in late winter and late spring outside of the August 1-November 30 construction window; therefore, construction-related effects may effect but are not likely to adversely effect steelhead spawning or their spawning habitat.

The potential for construction-related effects on steelhead juveniles and smolts and their habitat will be similar to that described above for winter-run Chinook salmon. Under Section 7 of the ESA, Alternative 1 may effect and is likely to adversely effect Central Valley steelhead. However, with the implementation of the minimization and mitigation measures discussed below, these effects will be reduced to less-than-significant.

Green Sturgeon

Spawning migrations of Green Sturgeon typically occur during the months of March through June (Thomas et al. 2013). The Sacramento River downstream of Knights Landing (RM 90) is not believed to have suitable spawning habitat for green sturgeon, primarily due to lack of suitable coarse bottom substrate such as large cobbles (USACE 2012). Therefore, the ARCF project is not likely to affect spawning green sturgeon or their habitat.

Construction activities during July may have adverse impacts on any adult green sturgeon that are still migrating upstream. Because construction activities will largely avoid the peak migration period, the project will be restricted to the channel edge, and will implement the avoidance and minimization measures described in Sections below, adverse effects to adult green sturgeon would be minimized during construction.

Project actions associated with bank protection measures may increase sediment, silt, and pollutants, which could adversely effect rearing habitat or reduce food production, such as aquatic invertebrates, for larval and juvenile green sturgeon.

Due to these adverse effects to juvenile green sturgeon, the USACE is proposing to adaptively manage the project in a number of ways in order to minimize impacts to this species. In particular, preconstruction physical modeling is proposed to assist in determining potential methods of implementing the proposed measures to minimize impacts to salmon. Additionally, new habitat modeling is proposed to better define what those impacts may be. Monitoring would be conducted during and post-construction in order to confirm the impacts estimated to result from the project, and to allow for improvement in minimizing impacts for future construction throughout the estimated 10 year construction period. With the implementation of this process, which is described in more detail in the Habitat Mitigation and Monitoring Plan (Appendix I of the EIR/EIS), the direct and indirect effects to green sturgeon would be reduced to less-than-significant with mitigation.

Delta Smelt

The USACE conducted an analysis of existing shallow water habitat in the ARCF GRR project area, and the effect of the proposed project on that habitat. The results of this analysis are included as Appendix C to the Biological Assessment (Appendix G). The conclusion of the analysis was that approximately 14 acres of shallow water habitat would be permanently lost as a result of implementation of the ARCF GRR with 32 acres of spawning habitat being affected by a long-term change in substrate from sand to rock. The footprint could be minimized as site-specific designs are developed during the PED phase of the project.

The erosion repair is likely to somewhat reduce the sediment supply for riverine reaches directly downstream because the erosion repair is holding the bank or levee in place. However, from a system sediment prospective, the bank material we are protecting in the project reaches is not a major source of sediment compared to the upstream reaches of the Sacramento, Feather, and especially the Yuba River systems. All of the available sediment in the American River watershed is being contained behind Folsom Dam.

Juvenile delta smelt may be subject to disturbance or displacement caused by construction activities that increase noise, turbidity, and suspended sediment. Delta smelt may not be readily able to move away from channel or nearshore areas that are directly affected by construction activities (i.e., placement of rock revetment). Larvae may be disrupted during summer months as they migrate downstream to rear in the Delta. Incidental take of delta smelt may occur from direct mortality or injury during a construction activity, or by the impairment of essential behavior patterns (i.e., feeding, escape from predators). In addition, physiological impairment could be caused by toxic substances (i.e., gasoline, lubricants, oil) entering the water.

Sanford's Arrowhead

Sanford's arrowhead is known to occur in the Arcade Creek and NEMDC channels. Levee work in these reaches is proposed to remain within the levee prism and would not encroach into the channel; therefore, construction activities in this reach would not result in direct impacts to Sanford's arrowhead. Indirect effects to Sanford's arrowhead could occur during construction due to dust disturbance.

Woolly Rose-Mallow

There are no known populations of woolly rose-mallow in the study area, however since they are known to occur on levee banks with riprap, they could potentially be adversely impacted by construction of the proposed project.

Alternative 2

Effects to special status species under Alternative 2 would be consistent with those described for Alternative 1, with the addition of any effects associated with the widening of the Sacramento Weir and Bypass. Additionally, this alternative reduces the raises along the Sacramento River from 9 miles to 1 mile. Listed species that would have reduced effects by the implementation of Alternative 2 include VELB, purple martin, white-tailed kite, and Swainson's hawk. Approximately 33 elderberry shrubs would not need to be transplanted under Alternative 2 with the reduced amount of raise along the Sacramento

River. Fewer sites will require levee raises under Alternative 2 resulting in fewer trees being removed along the Sacramento River. Effects to purple martins, white-tailed kites, and Swainson's hawks would be reduced from 184 acres of riparian habitat lost under Alternative 1 to 150 acres of riparian habitat lost under Alternative 2.

A maximum of 15 acres of aquatic GGS habitat (drainage ditches and farm canals) would be permanently removed and incorporated into the Sacramento Bypass. Existing riparian and wetland habitat within the existing bypass would remain, but could be expanded by about 300 acres once the bypass widening is complete. The additional land would become open space and would likely become similar riparian and wetland habitat supporting listed wildlife and fish (when there is water in it) as the existing vegetation in the bypass.

Widening of the weir and bypass will increase the entrainment and stranding exposure and rates of juvenile green sturgeon. When the weir is overtopping and water is flowing down the bypass, adult fish are attracted to the flow and follow it upstream in an attempt to reach their holding and spawning habitat. Widening the weir and bypass would increase the amount of water going over the weir and increase the attraction rate of sturgeon, salmon and steelhead. Without fish passage in place, the stranding rates of these fish would increase. This is significant, especially for sturgeon.

Mitigation:

Mitigation, avoidance, and minimization measures are similar for both Alternatives 1 and 2 since the footprint does not change for these two alternatives with the exception of the added impacts associated with widening the Sacramento Bypass. Compensation to mitigate for the loss of riparian habitat supporting special status wildlife and fish is based on the largest potential footprint and worst case scenario for the purposes of compliance with NEPA. If design refinements are made at a later time that result in reduced impacts to vegetation, compensation for the permanent loss of habitat will be coordinated with the appropriate resource agencies and adjusted accordingly. Appendix I of the EIR/EIS includes the project's Habitat Mitigation, Monitoring, and Adaptive Management Plan. The purpose of this HMMAMP is to present conceptual mitigation proposals, establish performance standards, and outline adaptive management tasks and costs. With mitigation, impacts are less-than-significant.

Valley Elderberry Longhorn Beetle

In accordance with the USFWS 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* adverse effects to the VELB would be compensated by transplanting the affected elderberries with stems greater than 1 inch in diameter and by planting a mix of native riparian/or upland vegetation at a 2:1 and 6:1 ratios depending on the diameter size of the stems. The amount of compensation for VELB is based on preliminary surveys done in 2011 within the construction footprint. At that time approximately 265 shrubs were located along the levees and within the 15 foot landside and 30 feet on waterside toes. All shrubs that can be transplanted would be transplanted.

The following is a summary of measures based on the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999a). These measures will be implemented to minimize any potential effects

on valley elderberry longhorn beetles or their habitat, including restoration and maintenance activities, long-term, protection, and compensation if shrubs cannot be avoided.

- When a 100-foot (or wider) buffer is established and maintained around elderberry shrubs, complete avoidance (i.e., no adverse effects) will be assumed.
- Where encroachment on the 100-foot buffer has been approved by the USFWS, a setback of 20 feet from the dripline of each elderberry shrub will be maintained whenever possible.
- During construction activities, all areas to be avoided will be fenced and flagged.
- Contractors will be briefed on the need to avoid damaging elderberry shrubs and the possible penalties for not complying with these requirements.
- Signs will be erected every 50 feet along the edge of the avoidance area, identifying the area as an environmentally sensitive area.
- Any damage done to the buffer area will be restored.
- Buffer areas will continue to be protected after construction.
- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant will be used in the buffer areas.
- Trimming of elderberry plants will be subject to mitigation measures.
- Elderberry shrubs that cannot be avoided would be transplanted to an appropriate riparian area at least 100 feet from construction activities.
- If possible, elderberry shrubs would be transplanted during their dormant season (approximately November, after they have lost their leaves, through the first two weeks in February). If transplantation occurs during the growing season, increased mitigation ratios will apply.
- Any areas that receive transplanted elderberry shrubs and elderberry cuttings will be protected in perpetuity.
- USACE will work to develop off-site compensation areas prior to or concurrent with any take of valley elderberry longhorn beetle habitat.
- Management of these lands will include all measures specified in USFWS's conservation guidelines (1999a) related to weed and litter control, fencing, and the placement of signs.
- Monitoring will occur for ten consecutive years or for seven non-consecutive years over a 15-year period. Annual monitoring reports will be submitted to USFWS.

Vernal Pool Fairy Shrimp and Tadpole Shrimp

The following measures from the 2004 Biological Opinion from the Magpie Creek Flood Control Project would be implemented to avoid and minimize impacts to potential vernal pools in the vicinity of the Magpie Creek construction area:

- Preservation component: For every acre of habitat directly or indirectly affected, at least two vernal pool credits will be dedicated within a Service-approved ecosystem preservation bank or, based on Service evaluation of site-specific conservation values, three acres of vernal pool habitat may be preserved on the project site or another nonbank site as approved by the Service.

- Creation component: For every acre of habitat directly affected, at least one vernal pool creation credit will be dedicated within a Service-approved habitat creation bank or, based on Service evaluation of site-specific conservation values, two acres of vernal pool habitat will be created and monitored on the project site or another non-bank site as approved by the Service.
- Listed vernal pool crustacean habitat and associated uplands utilized as on-site compensation will be protected from adverse effects and managed in perpetuity or until the USACE, the applicant, and the Service agree on a process to exchange such areas for credits within a Service-approved conservation banking system. Off-site conservation at a Service-approved non-bank location will be protected and managed in perpetuity through a Service-approved conservation easement, Service-approved management plan, and a sufficient endowment fund to manage the site in perpetuity in accordance with the management plan.
- If habitat is avoided (preserved) on site, then a Service-approved biologist (monitor) will inspect any construction-related activities at the proposed project site to ensure that no unnecessary take of listed species or destruction of their habitat occurs. The biologist will have the authority to stop all activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also will be required to immediately report any unauthorized impacts to the Service and the California Department of Fish and Game.
- Adequate fencing will be placed and maintained around any avoided (preserved) vernal pool habitat to prevent impacts from vehicles.
- All on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to these species and their habitat.
- The applicant will ensure that activities that are inconsistent with the maintenance of the suitability of remaining habitat and associated on-site watershed are prohibited. This includes, but is not limited to: (i) alteration of existing topography or any other alteration or uses for any purposes, including the exploration for or development of mineral extraction; (ii) placement of any new structures on these parcels; (iii) dumping, burning, and/or burying of rubbish, garbage, or any other wastes or fill materials; (iv) building of any new roads or trails; (v) killing, removal, alteration, or replacement of any existing native vegetation; (vi) placement of storm water drains; (vii) fire protection activities not required to protect existing structures at the project site; and (viii) use of pesticides or other toxic chemicals.

The proposed project will result in 0.25 acre of indirect effects to vernal pools/swales of potentially suitable vernal pool shrimp and vernal pool tadpole shrimp habitat. The applicant has identified and agreed to purchase 0.5 vernal pool preservation credits at a Service-approved conservation bank or Service-approved fund. Credits will be purchased prior to the effect on any vernal pool habitat. The agreed upon conservation responsibilities of the applicant are as follows:

- Prior to any earth-moving activities at the proposed project site, the applicant shall purchase at least 0.5 vernal pool preservation credits within a Service-approved ecosystem preservation bank or fund account.

Giant Garter Snake

The following measures will be implemented to minimize effects on giant garter snake habitat that occurs within 200 feet of any construction activity. These measures are based on USFWS guidelines for restoration and standard avoidance measures included as appendices in USFWS (1997).

- Unless approved otherwise by USFWS, construction will be initiated only during the giant garter snakes' active period (May 1 to October 1, when they are able to move away from disturbance).
- Construction personnel will participate in USFWS-approved worker environmental awareness program.
- A giant garter snake survey would be conducted 24 hours prior to construction in potential habitat. Should there be any interruption in work for greater than two weeks, a biologist would survey the project area again no later than 24 hours prior to the restart of work.
- Giant garter snakes encountered during construction activities will be allowed to move away from construction activities on their own.
- Movement of heavy equipment to and from the construction site will be restricted to established roadways. Stockpiling of construction materials will be restricted to designated staging areas, which will be located more than 200 feet away from giant garter snake aquatic habitat.
- Giant garter snake habitat within 200 feet of construction activities will be designated as an environmentally sensitive area and delineated with signs or fencing. This area will be avoided by all construction personnel.
- Habitat temporarily affected for more than three or more seasons will be restored and twice as much habitat will be created.
- The USACE has estimated that approximately 15 acres of aquatic habitat (drainage ditches and irrigation canals) and 30 acres of associated upland habitat would be permanently affected due to the widening of the Sacramento Weir and Bypass. Habitat permanently affected in the Sacramento Bypass will be compensated for through the purchase of 135 acres of credits at a USFWS-approved conservation bank. Due to the spatial and temporal loss of habitat, and the lack of permanent on-site replacement, the ecological value associated with doing all mitigation at an off-site location was reduced to an overall 70% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS in the Biological Opinion included as Appendix J.
- One year of monitoring will be conducted for the 80.5 acres that are temporarily affected.
- The USACE will purchase credits at a conservation bank prior to any permanent disturbance of giant garter snake habitat.

Western Yellow-Billed Cuckoo, Swainson's Hawk, White-Tailed Kite, and Purple Martin

To avoid and minimize effects to migratory birds, the USACE will implement the following BMP measures:

- Before ground disturbance, all construction personnel would participate in a CDFW-approved 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 and foraging habitat.

- A breeding season survey for nesting birds would be conducted for all trees and shrubs that would be removed or disturbed which are located within 500 feet (0.5 mile for Swainson's hawk) of construction activities, including grading. Swainson's hawk surveys would be completed during at least two of the following survey periods: January 1 to March 20, March 20 to April 5, April 5 to April 20, and June 10 to July 30 with no fewer than three surveys completed in at least two survey periods, and with at least one of these surveys occurring immediately prior to project initiation (Swainson's Hawk Technical Advisory Committee 2000). Other migratory bird nest surveys would be conducted concurrent with Swainson's hawk surveys with at least one survey to be conducted no more than 48 hours from the initiation of project activities to confirm the absence of nesting. If the biologist determines that the area surveyed does not contain any active nests, construction activities, including removal or pruning of trees and shrubs, would commence without any further mitigation.
- If active nests are found, the USACE would maintain a 0.25-mile buffer between construction activities and the active nest(s). In addition, a qualified biologist would be present on-site during construction activities to ensure the buffer distance is adequate and the birds are not showing any signs of stress. If signs of stress that could cause nest abandonment are noted, construction activities would cease until a qualified biologist determines that fledglings have left an active nest.
- Tree and shrub removal, and other areas scheduled for vegetation clearing, grading, or other construction activities would not be conducted during the nesting season (generally February 15 through August 31 depending on the species and environmental conditions for any given year). These construction activities could affect them by removing or causing abandonment of active nests of migratory birds protected under the Migratory Bird Treaty Act and California Fish and Game Code. Implementation of mitigation measures described below, would avoid, reduce, or minimize the significant effect.

A vegetation variance will reduce the impact on migratory bird habitat by allowing vegetation on the lower half of the waterside levee slope. Additionally, where bank protection work is performed the sites would be planted with vegetation and trees that over time will provide habitat for the hawks.

To compensate for the removal of 134 acres of riparian habitat supporting Western yellow-billed cuckoos, Swainson's hawks, and other migratory birds approximately 268 acres of replacement habitat will be created, as discussed in the vegetation and wildlife section (Section 3.6.6). Due to the temporal loss of habitat while new on site habitat is growing, the ecological value associated with onsite mitigation was reduced to an overall 80% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS and NMFS in the Biological Opinions.

Some areas that may be considered for riparian mitigation include Cal Expo and Woodlake. For those mitigation lands within the American River Parkway 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 Parkway. Mitigation within the Parkway will prove to be contiguous and create habitat connectivity with wildlife migratory corridors that supports the needs of important native wildlife species, without compromising the integrity of the flood control facilities, the flood conveyance capacity

of the Parkway, and Parkway management goals in the Parkway Plan. To comply with the Parkway Plan, lands within the Parkway will be evaluated for compensation opportunities for any riparian habitat removed from Parkway. The exact location of the compensation lands in the Parkway would be coordinated in the design phase of the project with County Parks and would comply with the Parkway Plan objectives and goals. It is assumed that sufficient lands will be available within the Parkway, however, if there is not sufficient land, other locations within Sacramento County will be identified and public coordination will occur. Additional mitigation may be planted in the expanded Sacramento Bypass or on other lands within the Sacramento area that provide similar value to those removed.

Burrowing Owl

The following avoidance and minimization measures would be implemented to reduce the potential for adverse effects to burrowing owl:

- Prior to the implementation of construction, surveys will be conducted to determine the presence of burrows or signs of burrowing owl presence within the project area. The survey would be conducted in accordance with Appendix D of CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012).
- If burrowing owls are observed, coordination would occur with CDFW to determine the appropriate actions to take or any additional avoidance and minimization measures that may need to occur. These measures may include creating a protective buffer around occupied burrows during the duration of the breeding season and biological monitoring of active burrows to ensure that construction activities do not result in adverse effects on nesting burrowing owls.
- If potential burrows are present, all on-site construction personnel shall be instructed regarding the potential presence of burrowing owls, identification of these owls and their habitat, and will be instructed to follow all measures prescribed by CDFW as set forth above.

Listed Fish Species Mitigation

The USACE proposes to develop a green sturgeon habitat, mitigation, and monitoring plan (HMMP) (Appendix I) in the design phase of the project to address the long-term negative impacts to green sturgeon designated critical habitat with the specific elements that are described below:

- The green sturgeon HMMP shall be developed in coordination with the Interagency Ecological Program (IEP) green sturgeon project work team and consulted on with NMFS prior to the construction of any work within the designated critical habitat of sDPS green sturgeon related to the ARCF GRR.
- The USACE shall either refine the SAM or develop an alternative green sturgeon survival and growth response model based on using and updating the existing Hydrologic Engineering Center Ecosystem Function Model (HEC-EFM) that reflects green sturgeon's preference for benthic habitat.
- The green sturgeon HMMP shall also be developed with measurable objectives for completely offsetting all adverse impacts to all life stages of sDPS green sturgeon (as modeled using refined

approaches described above and considering design refinements that occur in the PED phase of project implementation.

- The HMMP shall also, restore or compensate for the number of acres of soft bottom benthic substrate for sDPS green sturgeon permanently lost to project construction. This mitigation shall be coordinated with the Interagency Working Group (IWG) or a Bank Protection Working Group (BPWG) and must be carried out within the lower Sacramento River/North Delta in order to offset the adverse modification to designated critical habitat.
- Mitigation actions shall be initiated prior to the construction activities affecting sDPS green sturgeon and their critical habitat.
- The sDPS green sturgeon HMMP will include measurable performance standards at agreed upon intervals and will be monitored for a period of at least ten years following construction.

The following additional conservation measures would be implemented to reduce the adverse effects to listed Chinook, steelhead, delta smelt, and green sturgeon:

- In-water construction activities (e.g., placement of rock revetment) will be limited to the work window of August 1 through November 30. If the USACE wants to work outside of this window they will consult with USFWS and NMFS.
- The USACE will purchase delta smelt credits from a USFWS-approved conservation bank to off-set the loss of 14 acres of shallow water habitat, and 13 acres of spawning habitat. This mitigation is assumed to occur through the purchase of credits at a mitigation bank due to the lack of available real estate in the study area for on-site mitigation. Due to the spatial and temporal loss of habitat, the ecological value associated with doing all mitigation at an off site location was reduced to an overall 70% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS and NMFS in the Biological Opinions. The USACE proposes to purchase a total of 72 credits to ensure that impacts to Delta smelt are fully mitigated.
- Erosion control measures (BMPs), including Storm Water Pollution Prevention Program and Water Pollution Control Program, that minimize soil or sediment from entering the river. BMPs shall be installed, monitored for effectiveness, and maintained throughout construction operations to minimize effects to Federally listed fish and their designated critical habitat.
- Screen any water pump intakes, as specified by NMFS and USFWS screening specifications. Water pumps will maintain an approach velocity of 0.2 feet per second or less when working in areas that may support delta smelt.
- No grading or altering of the lands within the existing Sacramento Bypass will occur as part of the project.
- The USACE shall participate in an existing IWG or work with other agencies to participate in a new BPWG to coordinate stakeholder input into future flood risk reduction actions associated with the ARCF GRR.
- The USACE shall coordinate with NMFS during PED as future flood risk reduction actions are designed to ensure conservation measures are incorporated to the extent practicable and feasible and projects are designed to maximize ecological benefits.

- The USACE shall include as part of the Project a Riparian Corridor Improvement Plan with the overall goal of maximizing the ecological function and value of the existing levee system within the Sacramento Metropolitan Area.
- The USACE shall develop an HMMP with an overall goal of ensuring the conservation measures achieve a high level of ecological function and value. The HMMP shall include:
 - Specific goals and objectives and a clear strategy for maintaining all of the project conservation elements for the life of the project.
 - Measures to be monitored by the USACE for 10 years following construction and shall update their O&M manual to ensure the HMMP is adopted by the local sponsor to ensure the goals and objectives of the conservation measures are met for the life of the project.
 - Include specific goals and objectives and a clear strategy for achieving full compensation for all project-related impacts to listed fish species.
- The USACE shall 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 HMMP.
- The USACE shall host an annual meeting and issue annual reports for five years following completion of project construction.
- The USACE shall ensure that, for salmon and steelhead, the maximum SAM WRI deficits for each seasonal water surface elevation as determined appropriate with input from the IWG or the BPWG are fully offset through the purchase of credits at a NMFS approved conservation bank (as described in this BA).
- The USACE shall minimize the removal of existing riparian vegetation and IWM to the maximum extent practicable, and where appropriate, removed IWM will be anchored back into place or if not feasible, new IWM will be anchored in place.
- The USACE shall ensure that the planting of native vegetation will occur as described in the HMMP. All plantings must be provided with the appropriate amount of water to ensure successful establishment.
- The USACE shall provide a copy of the BO, or similar documentation, to the prime contractor, the prime contractor is responsible for implementing all requirements and obligations included in the documents and to educate and inform all other contractors involved in the project as to the requirements of the BO on behalf of USACE.
- A NMFS-approved Worker Environmental Awareness Training Program for construction personnel shall be conducted by the NMFS-approved biologist for all construction workers prior to the commencement of construction activities. Written documentation of the training will be submitted to NMFS within 30 days of the completion of training.
- The USACE shall consider installing IWM along future flood risk reduction projects associated with the ARCF GRR at 40 to 80 percent shoreline coverage at all seasonal water surface elevations in coordination with the IWG or the BPWG. The purpose is to maximize the refugia and rearing habitats for juvenile fish.
- The USACE shall protect in place all riparian vegetation on the lower waterside slope of any levee unless removal is specifically approved by NMFS.

- The USACE shall develop and obtain a Vegetation Variance for all elements of the ARCF GRR that are adjacent to habitat that is occupied by federally listed salmon, steelhead and green sturgeon, including the main channel of the Sacramento River (as proposed) and the Sacramento Bypass.
- The USACE shall ensure the widening of the Sacramento Bypass is designed and constructed to minimize stranding of fish in the depressions wound within the bypass through grading or construction of drainage channels.
- The USACE, in coordination with the local sponsor, shall ensure that the Habitat Mitigation and Monitoring Plan for the Sacramento Bypass includes baseline post-project monitoring of fish stranding. The monitoring plan shall be developed in coordination with NMFS.
- The USACE shall update the O&M manual to incorporate, without detrimental effects to flood operations, 1) operations of the Sacramento Weir include a plan that allows for ramp down flows in a manner that minimize juvenile fish stranding in the Sacramento Bypass, (2) integration of Sacramento Weir operations with the Yolo Bypass.
- During Preconstruction Engineering and Design, the USACE, in coordination with the local sponsor, shall coordinate with NMFS to provide an operation of the Sacramento Weir to allow without detrimental effects to flood management operations, for controlled ramp down rates of water into the Sacramento Bypass following peak flows.
- Additional mitigation issues, not considered in a SAM analysis, will be included in the MMP (See Appendix I) along the Sacramento Bypass reach, including potential adult and juvenile passage issues, loss of shoreline riparian vs. gain in floodplain, and contradicting ESA species habitat requirements. These issues will be considered and appropriate actions will be taken where necessary in coordination with other agencies.

For SRA habitat impacted by construction, the following measures would be implemented to compensate for the habitat loss:

- For identified designated critical habitat, where feasible all efforts will be made to compensate for impacts where they have occurred or in close proximity. Impacts to designated critical habitat, SRA and instream components combined and the compensation value of replacement habitat will be based on the interagency approved Standard Assessment Model (SAM) used throughout the Sacramento River basin and Delta flood control system.
- Compensation sites would be monitored and vegetation would be replaced as necessary based on performance standards in the Mitigation Monitoring Plan (MMP) as detailed in Appendix I of the EIS/EIR.

Special Status Plant Species

The following avoidance and minimization measures would be implemented during construction to reduce potentially significant effects to Sanford's arrowhead and woolly rose-mallow to less than significant. Additionally, the avoidance and minimization measures to address invasive plant species in Section 3.6.6 would also reduce potential impacts to special status plant species.

- Preconstruction surveys would be conducted by a qualified botanist in suitable habitat to determine the presence of any special status plants. Surveys would 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 would be marked or fenced as an avoidance area during construction. A buffer of 25 feet would be established. If a buffer of 25 feet is not possible, the next maximum possible distance would be fenced off as a buffer.
- If special status plant species cannot be avoided during construction, the USACE would coordinate with the resource agencies to determine additional appropriate mitigation measures.

Alternative 2

Impact:

Effects to special status species under Alternative 2 would be consistent with those described for Alternative 1, with the addition of any effects associated with the widening of the Sacramento Weir and Bypass. Additionally, this alternative would have the added footprint of widening the Sacramento Weir and Bypass which reduces the raises along the Sacramento River from 9 miles to 1 mile. Listed species that would have reduced effects by the implementation of Alternative 2 include VELB, purple martin, white-tailed kite, and Swainson's hawk. Approximately 33 elderberry shrubs would not need to be transplanted under Alternative 2 with the reduced amount of raise along the Sacramento River. Additionally, there would be fewer sites that require levee raises under Alternative 2 resulting in fewer trees being removed along the Sacramento River. Effects to purple martins, white-tailed kites, and Swainson's hawks would be reduced from 123 acres of riparian habitat lost under Alternative 1 to 71 acres of riparian habitat lost under Alternative 2. Therefore, effects to special status wildlife (i.e., VELB, Swainson's hawks, burrowing owl) and various runs of special status Chinook salmon, Central Valley steelhead, Delta smelt, and green sturgeon) and their riparian or wetland habitat and/or upland or aquatic habitats are less than significant to all species with the implementation of avoidance, minimization, and compensation measures.

Sacramento Bypass and Weir

A maximum of 15 acres of aquatic GGS habitat (drainage ditches and farm canals) would be permanently removed and incorporated into the Sacramento Bypass. Existing riparian and wetland habitat within the existing bypass would remain, but could be expanded by about 300 acres once the bypass widening is complete. The additional land would become open space and would likely become similar riparian and wetland habitat supporting listed wildlife and fish (when there is water in it) as the existing vegetation in the bypass. If on-site restoration is not possible, then credits would be purchased at a Service-approved mitigation bank.

Assumptions regarding operation of the new weir and bypass for the purposes of this study are discussed in Section 2.3.4, but would likely be refined during the design phase of the project. No grading or altering of the lands within the existing bypass will occur as part of the alternative. The

southern side of the bypass is at a lower elevation so water will naturally flow to the existing area and continue to support existing vegetation and wildlife. Because of the natural flow of water in this area, wetlands in the existing bypass are not expected to be impacted by construction of the project. There is a potential for additional wetlands to actually develop in the added 300 acres of bypass, since the land will no longer be farmed. While the loss of the existing irrigation canals has a short term negative effect on GGS, the conversion of this land back to its natural state would have long term ecological benefits to the GGS and other wildlife and could become an expansion of the Sacramento Bypass Wildlife Area. As a result, impacts to GGS associated with the bypass widening would be less than significant, with the implementation of the mitigation and compensation discussed below.

To the east of the bypass, there are approximately 8 acres of riparian vegetation growing along the Sacramento River that would be removed to construct the new weir structure. The 8-acre area contains both the Old River Road and Union Pacific Railroad (UPRR) tracks. Prior to construction, this area would be surveyed to determine if any avian species have nested in the area. If there are nesting Swainson's Hawks, construction would be delayed until fledglings have left the nest. Fish in the area would likely disperse with the disturbance to the water. The expansion of the Sacramento Weir and Bypass could have a positive beneficial effect on special status wildlife such as the giant garter snake and its riparian vegetation once construction is complete and lands are converted from farming activities to open space where wetlands and shrubby riparian habitat is expected to naturally regenerate with the increased area that is periodically inundated from flooding during the rainy season. The operation of the weir is not expected to adversely affect any species currently listed under the Endangered Species Act, because the intermittent flooding of the bypass would support the natural processes associated with floodplain habitat. Effects to special status species associated with the bypass widening would be less than significant, with the implementation of the mitigation measures discussed below.

Widening of the weir and bypass will increase the entrainment and stranding exposure and rates of juvenile green sturgeon. When the weir is overtopping and water is flowing down the bypass, adult fish are attracted to the flow and follow it upstream in an attempt to reach their holding and spawning habitat. Widening the weir and bypass would increase the amount of water going over the weir and increase the attraction rate of sturgeon, salmon and steelhead. Without fish passage in place, the stranding rates of these fish would increase. This is significant, especially for sturgeon. Population viability modeling, funded in part by the USACE, concluded that without the fish rescue that took place, the loss of the green sturgeon stranded behind the Fremont and Tisdale weirs in 2012 would have significantly reduced the viability the species and increased their extinction risk. The Sacramento Weir poses a similar risk and widening the weir would add to the effect. Given that green sturgeon are long-lived species that have the strongest upstream migration and cohort replacement rates during wet water years and especially after high river flow conditions, the effect of the stranding occurring only two to three times over a 50 year period could be significant. Implementation of the mitigation measures discussed below, including ensuring fish passage and positive drainage in the Sacramento Bypass, would reduce these adverse effects to less than significant. However, the widening of the Sacramento Weir and Bypass may affect, and is likely to adversely affect the green sturgeon. When applicable, further analysis will be done prior to land changes to comply with NEPA and CEQA.

Mitigation:

Mitigation measures are similar for both Alternatives 1 and 2 since the footprint does not change for these two alternatives with the exception of the added impacts associated with widening the Sacramento Bypass. Compensation to mitigate for the loss of riparian habitat supporting special status wildlife and fish is based on the largest potential footprint and worst case scenario for the purposes of compliance with NEPA. If design refinements are made at a later time that result in reduced impacts to vegetation, compensation for the permanent loss of habitat will be coordinated with the appropriate resource agencies and adjusted accordingly.

Appendix I includes the project's Habitat Mitigation and Monitoring Plan. Additionally, the project relied heavily on existing habitat assessments in the Sacramento region in order to create a baseline condition for habitat quality within the study area. Using these existing habitat assessments, the USACE conducted a cost effectiveness/incremental cost analysis (CE/ICA), which is included in Appendix I. The CE/ICA evaluated three options for habitat mitigation to determine the most cost effective and government best buy options for habitat restoration. These options included conducting all mitigation on-site, conducting all mitigation at a mitigation bank, or a combination of on-site and off-site (bank) mitigation.

The estimated acreage for on-site mitigation takes into account the feasibility of being able to do this mitigation on-site. Due to limitations in on-site acreages, real estate availability, and in-water habitat availability, this scenario does not consider all required mitigation. Additionally, due to the temporal loss of habitat while new on-site habitat is growing, the ecological value associated with on-site mitigation was reduced to an overall 80% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS and NMFS in the Biological Opinions.

The mitigation bank estimate took into account maximizing the amount of mitigation purchased at a mitigation bank. This scenario takes into consideration all required mitigation for this project, however, due to the spatial and temporal loss of habitat, the ecological value associated with doing all mitigation at an off-site location was reduced to an overall 70% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS and NMFS in the Biological Opinions.

The combination alternative is likely the most implementable solution. It takes into account all required mitigation for the project, and assesses the implementation based on a reasonable estimate of on site mitigation, without additional real estate required, combined with using a mitigation bank for the remaining habitat. However, due to the temporal loss of habitat while new on site habitat is growing, the ecological value associated with onsite mitigation was reduced to an overall 80% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS and NMFS in the Biological Opinions. Further information on proposed mitigation can be found in Appendix J of the EIR/EIS.

With mitigation measures impacts are less-than-significant.

Cultural Resources

Significance criteria

Any adverse effects on cultural resources that are listed or eligible for listing in the NRHP (i.e., historic properties) are considered to be significant. Effects are considered to be adverse if they:

- 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.
- Cause a substantial adverse change in the significance of a historic property through the physical demolition, destruction, relocation, or alteration of the historic property or its immediate surroundings such that the significance of the resource would be materially impaired.

In California, effects to a historic resource or unique archaeological resource are considered to be adverse if they:

- Materially impair the significance of a historical resource or unique archaeological resource.
- Require the demolition of a historical resource.

Alternative 1

Impact: The effects of the erosion repair on the American River, levee geometry measures, cutoff walls, and bank protection on the Sacramento River and construction of cutoff walls, correction of the levee geometry, installation of floodwalls, installation of a conduit or box culvert, raising of floodwalls and existing levees, construction of maintenance roads, installation of floodgates, and creation of a detention basin on the East Side Tributaries would likely result in an adverse effect to some historic properties located within the area of potential effect (APE) for the project. Adverse effects to historic properties are considered potentially significant.

The records and literature search conducted for the project identified 69 known prehistoric and historic resources in the total project APE. For the purposes of this Draft EIS/EIR, an assumption is made that all of these resources would be impacted by the levee improvement alternatives. Site specific determinations of effect and impact cannot be made at this time because each site within the APE would need to be field checked, the previous recordation (included site boundary, associated features, integrity) verified, and each site would need to be considered for eligibility for listing in the NRHP. The process for field checking cultural resources sites and making determinations of eligibility for listing in the NRHP are outlined in the Programmatic Agreement (PA) which includes a framework to identify historic properties, evaluate NRHP eligibility, and assess effects.

Mitigation:

USACE has determined that the No Action Alternative, Alternative 1, and Alternative 2 may result in an adverse effect to historic properties. Because there would be no Federal undertaking under the No Action Alternative, no further action is required by USACE under the No Action Alternative. Adverse

effects to cultural resources eligible for listing or listed in the NRHP are considered significant. Adverse effects would only potentially result with the USACE's execution of Alternatives 1 or 2. Under NEPA and the NHPA, any significant effect that would result from the implementation of Alternatives 1 or 2 would be reduced to less than significant, as adverse effects would be resolved by implementing stipulations in the PA. Under CEQA, the impacts as a result of Alternatives 1 or 2 would be potentially significant and unavoidable. Mitigation for these impacts would be proposed in accordance with the PA.

For NEPA, implementation of the PA would resolve adverse effects to historic properties through development of a HPMP and, if necessary, development of HPTPs. Mitigation measures for cultural resources that have been determined to be historic properties adversely effected by the project may include data recovery, Historic American Building Survey/Historic American Engineering Record, oral histories, historic markers, exhibits, interpretive brochures or publications, or other means determined in accordance with execution of the PA and the HPMP and HPTP(s). With the execution and implementation of the PA, the ARCF GRR project would be in compliance with Section 106 of the NHPA.

Alternative 2

Impact:

Effects to cultural resources from the construction of levee improvements under Alternative 2 would be consistent with those analyzed for Alternative 1 with the addition of effects resulting from construction of the Sacramento Weir and Bypass widening. The effects of Alternative 2 would likely result in an adverse effect to some historic properties located within the APE for the project. Adverse effects to historic properties are considered potentially significant and unavoidable.

Mitigation:

The mitigation measures implemented for Alternative 2 would be the same as those for Alternative 1.

Transportation and Circulation

Significance criteria

Project alternatives under consideration would result in a significant effect related to transportation and circulation if they would:

- Substantially increase traffic in relation to existing traffic load and capacity of the roadway system.
- Substantially disrupt the flow of traffic.
- Expose people to significant public safety hazards resulting from construction activities on or near the public road system.
- Reduce the supply of parking spaces sufficiently to increase demand above supply.
- Cause substantial deterioration of the physical condition of nearby roadways.
- Result in inadequate emergency access.
- Disrupt railroad services for a significant amount of time.

Alternative 1

Impact:

Implementation of Alternative 1 would result in a substantial increase in traffic on local roadways associated with truck haul trips during construction activities. In addition, traffic controls would cause or contribute to temporary substantial increases in traffic levels on several roadways, as traffic is detoured or slowed. Traffic controls could cause delays during the morning and evening peak commute hours. All construction vehicles would be required to follow local traffic laws and speed limits.

Mitigation:

In order to reduce the impacts from traffic to below the significant level, measures would be implemented which could include, but are not limited to the following:

- The contractor would be required to prepare a Traffic Control and Road Maintenance Plan. A traffic control plan describes 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 plan will reduce the effects of construction on the roadway system in the project area throughout the construction period.
- Construction contractors will follow the standard construction specifications of effected jurisdictions and obtain the appropriate encroachment permits, if required. The conditions of the encroachment permit will be incorporated into the construction contract and will be enforced by the agency that issues the encroachment permit.
- If rock or other materials are transported by barge on the Sacramento River, appropriate water safety measures would be utilized in order to reduce impacts to recreational boaters.
- The construction contractor would 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 will be coordinated with the appropriate jurisdiction and will be minimized to the extent possible during the morning and evening peak traffic periods. Standard construction specifications also typically limit lane closures during commuting hours. Lane closures will be kept as short as possible. If a road must be closed, detour routes and/or temporary roads will be made to accommodate traffic flows. Detour signs will be provided to direct traffic through detours. Advance notice signs of upcoming construction activities will be posted at least 1 week in advance so that motorists are able to avoid traveling through the study area during these times. Within the Parkway, detours would be used to allow for continued use by bicycle commuters.
- Safe pedestrian and bicyclist access will be maintained in or around the construction areas at all times. Construction areas will be secured as required by the applicable jurisdiction to prevent pedestrians and bicyclists from entering the work site, and all stationary equipment will be located as far away as possible from areas where bicyclists and pedestrians are present.
- The construction contractor will notify and consult with emergency service providers to maintain emergency access and facilitate the passage of emergency vehicles on city streets.

- Emergency vehicle access will be made available at all times. Coordination with local emergency responders by the contractor to inform them of the construction activities will be required by the contractor.
- The construction contractor will assess damage to roadways used during construction and will repair all potholes, fractures, or other damages.
- Trains utilizing the Yolo Shortline Railroad would be detoured to a different rail line during construction. If an alternative rail line is not available, railroad services would be continued by transporting goods on public roads using cargo trucks during the extent of closures required by the construction and realignment of the railroad on the new portion of the Sacramento Weir.

As mentioned above, the number of required truck trips has not been determined at this time. However, based on other USACE projects in the area and past experience with similar activities it is assumed that this effect would remain potentially significant and unavoidable during construction due to the volume of trucks on local roadways.

Alternative 2

Impact:

Alternative 2 would require 1 mile of levee raise compared to the 8 miles under Alternative 1. This would result in fewer trucks hauling material along mostly residential streets and along the levee alignment. Additionally, the Sacramento Weir and Bypass expansion would require fill material to construct the new levee. Hauling would occur on existing roads in the rural area of Yolo County. Impacts to traffic under this alternative would be short-term and potentially significant until construction is completed. Once completed traffic would return to the pre-project conditions.

Mitigation:

Alternative 2 would incorporate the same mitigation measures as Alternative 1 as appropriate. Project impacts to traffic will be potentially significant and unavoidable.

Air Quality

Significance criteria

For this analysis, an effect was considered significant if it 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 effecting a substantial number of people.

An air quality effect is considered to be significant if the project's construction emissions would exceed districts' CEQA emission thresholds. District specific CEQA thresholds apply only to the portions of emissions generated under their jurisdiction.

Alternative 1

Impact:

Emission sources associated with the project site include the off-road construction equipment operating at project sites, on-road vehicles traveling to and from the project sites, retaining wall, utility usage, and fugitive dust associated with earthmoving and soil-disturbance activities at project sites. Emission sources associated with the material borrow activities include the off-road construction equipment operating at borrow sites, on-road hauling trucks traveling between borrow sites and the project sites, and fugitive dust associated with earthmoving and soil-disturbance activities at borrow sites. The delivery of rip-rap was calculated using the assumption that the material could be barged to the project site or trucked to the site during the same period of time.

Construction of the proposed project would result in short-term dust emissions from grading and earth moving activities at the project construction sites and the soil borrow sites. The amount of dust generated would be highly variable and is dependent on the size of the disturbed area at any given time, amount of activity, soil conditions, and meteorological conditions. Nearby land uses, especially those residences and schools located downwind of the project sites could be exposed to dust generated during construction activities, indirectly resulting in potential adverse health effects.

Construction of the proposed project would result in short-term diesel particulate emissions from onsite heavy duty equipment and on-road haul trucks. DPM, which is classified as a carcinogenic TAC by CARB, is the primary pollutant of concern with regard to indirect health risks to sensitive receptors. Nearby land uses, especially those residences and schools located downwind of the project sites could be exposed to DPM generated during construction activities, indirectly resulting in potential adverse health effects.

The proposed project would not result in any major sources of odor, and the project would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, wastewater treatment facility). Odors associated with diesel exhaust emissions from the use of onsite construction equipment may be noticeable from time to time by adjacent receptors.

Mitigation:

Some emissions from the project would exceed applicable CEQA and NEPA significance criteria.

Therefore, USACE would implement the following mitigation measures to reduce the potential air quality effects of the project. SMAQMD's Basic Construction Emissions Control Practices:

The SMAQMD requires construction projects to implement basic construction emission control practices to control fugitive dust and diesel exhaust emissions (SMAQMD 2011). USACE would comply with the following control measures for the project:

- Water all exposed surfaces twice daily. Exposed surfaces include but are not limited to: soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would travel along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt from adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Complete all roadways, driveways, sidewalks, or parking lots to be paved as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the site entrances.
- Maintain all construction equipment in proper working condition according to the manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

Fugitive dust mitigation would require the use of adequate measures during each construction activity and would include frequent water applications or application of soil additives, control of vehicle access, and vehicle speed restrictions. USACE would implement the dust mitigation measures listed below.

- Water exposed soil with adequate frequency for continued moist soil.
- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.
- 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.
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site.
- Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips, mulch, or gravel 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 the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance.

USACE will ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one 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 to USACE and SMAQMD monthly. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required 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.

The use of USEPA adopted Tier 3 and Tier 4 standards for newly-built marine engines in 2008 would be encouraged under the barge delivery scenario. The Tier 3 standards reflect the application of technologies to reduce engine PM and NOX emission rates. Tier 4 standards reflect application of high-efficiency catalytic after-treatment technology enabled by the availability of ultra-low sulfur diesel. These Tier 4 standards would be phased in over time for marine engines beginning in 2014 (USEPA 2008).

USACE will use Tier 2 and 3 marine engines standards 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, use of these engines would further lower project emissions.

Off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier-4 off-road emission standards at a minimum under the barge delivery scenario. In addition, if not already supplied with a factory-equipped diesel particulate filter, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emissions control device used by the Contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

On-road heavy-duty diesel trucks or equipment with a GVWR of 19,500 pounds or greater shall comply with EPA 2007 on-road emission standards for PM and NOX (0.01 g/bhp-hr and at least 1.2 g/bhp-hr, respectively) under the barge delivery scenario. Use of these trucks would provide the best available emission controls for NOX and PM emissions.

Construction equipment powered by electricity, rather than diesel fuel, eliminates criteria pollutant emissions from diesel combustion. Electrification would result in a small amount of indirect CO₂ emissions due to the operation of the electric grid. Various types of construction equipment may feasibly be run on electricity.

As of July 1, 2015, the mitigation fee rate is \$18,030 per ton of emissions. The Contractor would provide payment of the appropriate SMAQMD-required NOx mitigation fee to offset the project's NOx emissions when they exceed SMAQMD's threshold of 85 lbs/day. Estimated calculations for these mitigation fees are included under each alternative's effects analysis in Appendix D. The NOX Mitigation Fee applies to all emissions from the project: on-road (on-and off site), off-road, portable, marine and stationary equipment and vehicles.

USACE would consult with the BAAQMD in good faith to enter into a mitigation contract for an emission reduction incentive program (e.g., TFCA or Carl Moyer Program). The current emissions limit is \$17,080/weighted ton of criteria pollutants (NOX + ROG + [20*PM]). An administrative fee of 5 percent would be paid to the BAAQMD to implement the program. The contractor would conduct daily and

annual emissions monitoring to ensure onsite emissions reductions are achieved and no additional mitigation payments are required. The contractor would be required to ensure the requirement is met. This requirement would be incorporated into the construction contracts as part of the project's specifications.

If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, USACE would coordinate with the BAAQMD to meet the performance standards of achieving quantities below applicable BAAQMD CEQA thresholds.

With mitigation measures, impacts would be less-than-significant.

Alternative 2

Impact:

Alternative 2 would include all levee improvements as in Alternative 1, except for a majority of the levee raises along the Sacramento River. Instead of the levee raises, the Sacramento Weir and Bypass would be widened to divert more flows into the Yolo Bypass.

Construction of the Sacramento Weir and Bypass Widening would occur in YSAQMD and include clearing of trees and vegetation, degrading and excavating the levee, construction of the new levee, relocation of utilities, and delivery and installation of rip-rap on the waterside slope. Materials for the construction of the new levee would be reused to the greatest extent possible from the existing levee. The potential borrow sites are located adjacent to the Bypass which would reduce the number of haul truck trips going to and from the site. The construction of Alternative 2 would be spread over 10 years.

Construction of the Sacramento Weir and Bypass would reduce the need for levee raises along the Sacramento River. Materials required for the levee raises was assumed to be trucked from within a 20 miles radius.

Mitigation

The avoidance, minimization, and mitigation measures listed for Alternative 1 are required for Alternative 2. Additionally, Alternative 1 summarizes the maximum daily emissions estimated for ROG, NO_x, PM10, and PM2.5 under the construction emissions that would result in the most combined air emission. Construction emissions would exceed SMAQMD's NO_x thresholds under the truck delivery scenario. After implementation of mitigation measure to reduce NO_x by 20 percent, construction emissions would still exceed SMAQMD thresholds. Therefore construction of Alternative 2 would result in a significant effect. USACE would be required to pay an off-site mitigation fee for NO_x emissions in the SVAB. With the implementation of this mitigation measures, NO_x emissions would be reduced to a less-than-significant level.

Climate Change

Significance criteria

For this analysis, an effect pertaining to climate change was analyzed based on professional judgment, draft NEPA Guidance published by CEQ, and State CEQA Guidelines Appendix G (14 CCR 15000 *et seq.*). An effect was considered significant if it would:

- Conflict with an applicable plan adopted for the purpose of reducing GHG emissions.

The SMAQMD, YSAQMD, and BAAQMD have local jurisdiction over the project area. In January 2008, the SMAQMD made a resolution to adopt guidance published by the California Air Pollution Control Officers Association, entitled “CEQA and Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act” (CAPCOA, 2008). This resolution adopted the following recommended greenhouse gas thresholds of significance:

- Construction phase of projects: 1,100 metric tons of CO_{2e} per year;
- Operational phase of land development projects: 1,100 metric tons of CO_{2e} per year; and,
- Stationary source projects: 10,000 direct metric tons of CO_{2e} per year.

Based on the CEQA guidelines established by each district, the districts recommend that GHG emissions from construction activities be quantified and disclosed, a determination regarding the significance of these GHG emissions be made based on a threshold determined by the lead agency, and BMPs be incorporated to reduce GHG emissions during construction, as feasible and applicable.

Alternative 1

Impact:

The total construction project would exceed the SMAQMD and YSAQMD threshold of 1,100 MT CO_{2e} per year, but project-wide GHG emissions would be well below the BAAQMD’s GHG threshold of 10,000 MT CO_{2e} per year. Implementation of mitigation measures would further reduce GHG emissions during construction to the maximum extent practicable. For any emissions not reduced through proposed mitigation, the USACE would purchase carbon offset credits in coordination with SMAQMD and YSAQMD, as needed. With these offset credits, impacts to climate change from construction would be reduced to less-than-significant.

Alternative 1 would increase the likelihood that the flood management system could accommodate future flood events as a result of climate change. Consequently, the project alternative 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.

Mitigation:

The following measures are applicable for both alternatives and may be considered to lower GHG emissions during the construction:

- 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 toxics 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 a CARB 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) exceeding SMAQMD or CEQ's significance thresholds applicable at the time of construction. Carbon offset credits shall be purchased from programs that have been approved by SMAQMD.

Alternative 2

Impact:

While the truck delivery scenario would generate slightly more GHG emissions relative to the barge delivery scenario, emissions would be well below the BAAQMD's GHG threshold. Implementation of mitigation measures would further reduce GHG emissions. Effects to Climate Change from long-term O&M activities would be the same as discussed in Air Quality Section. These impacts would be less than significant, and no mitigation would be required.

Under Alternative 2, the Sacramento Weir and Bypass would be expanded to accommodate future flood events. The project alternative would allow the State of California future flexibility in the operations of the weir to move more water into the bypass once the river reaches a certain height. While there is no proposed change in operations of the weir at this time, Alternative 2 would improve the resiliency of the levee system by making the system more adaptable to changing climatic conditions, potentially reducing exposure of property or persons to the effects of climate change.

Mitigation:

Mitigation measures implemented for Alternative 1 will be the same as mitigation measures for Alternative 2. With mitigation, impacts are less-than-significant.

Noise

Significance criteria

For the purposes of this study, the Sacramento County noise standards will be used to determine effect levels because most of the work that would affect sensitive receptors will take place in Sacramento County. The Sacramento County noise ordinance states that a standard of 55 dBA is applied during the hours from 7:00 a.m. to 10:00 p.m., and a standard of 50 dBA is applied during the hours from 10:00 p.m. to 7:00 a.m. for residential and agricultural uses. The noise ordinance also states that construction noise is exempt during the hours from 6:00 a.m. to 8:00 p.m. Monday through Friday and from 7:00 a.m. to 8:00 p.m. on Saturdays and Sundays (Chapter 6.68 Noise Control, County of Sacramento Code). The proposed project would have a significant impact from noise if construction would result in any of the following:

- 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 Sacramento County noise ordinance.)
- Exposure of sensitive receptors or structures to groundborne vibration.

Alternative 1

Impact:

Construction of Alternative 1 would generate temporary, short-term, and intermittent noise at or near noise sensitive receptors in and around the study area due to construction activities associated with the proposed levee repairs. Operation of heavy construction equipment, particularly pile driving and other impulsive devices such as pavement breakers, create seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. With regard to the proposed project, ground vibration propagates weakly through loose, alluvial soil such as that found in the project area (FTA 2006). Ground vibration generated by construction equipment would be discernible only at residences within 40 feet of the construction equipment. This alternative would not involve pile driving, which is the type of construction activity that otherwise might cause the most severe vibration impacts.

Mitigation:

During construction, noise-reducing measures would be employed in order to ensure that construction noise complies with local ordinances. Prior to the start of construction, a noise control plan would be prepared that would identify feasible measures to reduce construction noise, when necessary. The following measures 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 one week to one 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.), 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 the haul routes to avoid sensitive receptors, to the extent practical.
- If there are any occupied buildings with plaster or wallboard construction within 40 feet of construction equipment, a vibration control plan would be prepared prior to construction.

With mitigation, impacts would be less-than-significant.

Alternative 2

Impact:

Noise effects from construction of the levee repairs under Alternative 2 would be consistent with the analysis in Alternative 1, except that the noise impacts under Alternative 2 would be for a shorter duration, as there would be less than 1 mile of levee raises constructed downstream on the Sacramento River compared to 8 miles of levee raise for Alternative 1.

Noise effects associated with the widening of the Sacramento Weir and Bypass would also be similar to the effects described under Alternative 1. Noise would be generated from construction equipment and activities, however in this case the study area is primarily rural. The closest sensitive receptors are approximately 900 and 1,500 feet away from the construction area, respectively.

Mitigation: Mitigation measures implemented for Alternative 1 will be the same as mitigation measures for Alternative 2. With mitigation impacts would be less-than-significant.

Recreation

Significance criteria

Adverse effects on recreation would be considered significant if implementation of an alternative plan would result in any of the following:

- 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;
- Result in inconsistencies or non-compliance with regional planning documents;
- Result in inconsistencies or non-compliance with the American River Parkway Plan; or
- Result in inconsistencies with the Rivers and Harbors Act or the Wild and Scenic Rivers Act.

Alternative 1

Impact:

Construction of erosion protection measures along the American River is expected to take up to 10 years, with construction occurring in multiple locations within the Parkway at the same time. While this would not be a permanent long-term effect, 10 years of linear construction would be considered a significant effect to recreation activities because it would reduce the quality of existing recreation activities.

Portions of the road on top of the levee would be closed to pedestrian access during the construction period. Additionally, construction of the launchable rock trench would disturb several miles of bike trails as well as access to public parks and boat launches within or adjacent to the Parkway. Such closures and disturbances would result in non-compliance with the American River Parkway Plan which states that flood control berms, levees and other facilities should be, to the extent consistent with proper operation and maintenance of these facilities, open to the public for approved uses, such as hiking, biking and other recreational activities.

These closures and disturbances would also result in non-compliance with the Wild and Scenic Rivers Act which states that “certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations” Recreational resources that could potentially be effected by construction of the erosion protection measures include Paradise Beach, the Campus Commons Golf Course, the Guy West Bridge, and the boat launches at Howe Avenue, Watt Avenue, and Gristmill Park.

Many people who use the recreation facilities in the Parkway are daily users who enjoy the tranquility of the Parkway in an urban environment. While construction activities are underway, the tranquility of the Parkway will be lost in those areas where construction will take place. Because the construction would be occurring for several years and would take away the overall pleasure of recreation activities, there would be a significant effect that cannot be mitigated. While bike trails, running paths, boat ramps, and

equestrian trails can all be rerouted or accessible a short distance away, there would still be an overall reduction in the recreation quality with continuous construction over a 10 year period and, therefore, would result in a significant effect. Construction will also occur during the summer months when the Parkway recreation activities are at the peak. The timing of construction cannot be mitigated as it is unsafe to perform construction activities in the floodway during the flood season.

Construction vehicles would be present in staging areas at various points along the Parkway and construction activities could result in potential disruptions/detours not only of bike trails, but of hiking trails and equestrian trails as well. 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 may also degrade recreational experiences, due to noise, visual effects, smells, and air quality. This would be a significant effect on recreation activities during construction. Mitigation measures would be implemented in order to reduce impacts on recreation; however, even with the mitigation measure effects to recreation during construction would be significant. Once construction is complete the recreation facilities would be returned to the pre-construction conditions and long term effects would be less than significant. The mitigation measures are discussed below.

Construction of levee improvements along the Sacramento River would have potential short-term effects to recreation along the Sacramento River. Activities would occur in the vicinity of Miller Park and Garcia Bend Park during summer months when the park is at the peak use time. Paved parking areas at both parks would be used for staging of equipment and other construction activities. Access to the parks would remain open during construction but could be impacted by construction equipment using the same access or levee construction. The boat ramps at both of these parks would also remain open during construction. Walking trails and the existing bike path may be temporarily rerouted during construction. Detours would be temporary and would return to pre-construction conditions following the completion of construction. There would be short-term term significant effects along the Sacramento River reach of the project, however, there would be no long-term effects because the area would be returned to the pre-construction conditions once completed.

Construction of levee improvements on the East Side Tributaries would have minimal effect on recreation uses, except for the levee trail, which is sometimes used as a walking path or for cycling. People who commonly use this area would be able to continue the walking and cycling on other public roads and trails. There are no formal recreational facilities in this area of the project that would be impacted during construction. These areas are highly urbanized and consist mainly of industrial buildings and single family dwellings along the landside of the levee. Since there are very few recreation uses in these areas, any effects to recreation would be temporary and less than significant. Construction activities are not expected to have an impact on the Sacramento Northern Bike Trail. However, tree planting mitigation could occur along this trail which would provide for a more pleasurable environment for cyclists.

Mitigation:

The following measures would be taken to keep the public informed of construction activities to mitigate for effects to bike trail/recreation trail access. Coordination with recreation user groups would occur prior to and during construction for input into mitigation measures that would reduce effects to the maximum extent practicable. Advance notice would be given to recreation users informing them of anticipated activities and detours to reduce the effects.

To ensure public safety, flaggers, warning signs, and signs restricting access would be posted before and during construction, as necessary. In the event that bike trails would be disrupted, detours would be provided. Detour routes would be clearly marked, and fences would be erected in order to prevent access to the project area. In areas where recreational traffic intersects with construction vehicles, traffic control will be utilized in order to maintain public safety. The public will have continued access to the Parkway and recreation facilities during construction, but bike and running trail users would likely be required to detour onto public roads or alternative trails. If any access point needs to be closed during construction, notices will be posted providing alternative access routes.

These mitigation measures will reduce the effects on recreation; however, impacts would still be significant because of the duration of construction and the inability to provide similar quality recreation during construction. Any recreation facilities effected by the project would be replaced in-kind within the existing area and no long-term impacts are anticipated.

Alternative 2

Impact:

Construction of levee improvements associated with the Sacramento Weir and Bypass widening would have possible short-term effects on recreational use. During construction, certain areas would be closed to the public while other areas might be used as haul routes or borrow/disposal sites. Activities such as bird watching, walking, running, and jogging along the Sacramento Bypass levee crown and nearby roads would be restricted. Construction activities could potentially overlap with hunting season in the Sacramento Bypass Wildlife Area, which occurs from September 1 through January 31, restricting hunting activities for a limited period of time. It is likely that hunting activities would be prohibited in the areas undergoing active construction for the safety of the construction workers, however there would likely be a conflict only during degrading of the existing levee and construction of the new Sacramento Bypass north levee. It is anticipated that construction of the new Sacramento Weir would not conflict with any existing hunting activities in the Bypass because the existing levee would remain in place during construction of the new weir, creating a barrier between hunting activities and the construction area. There also could be a reduction in the overall experience of the wildlife area due to disturbed soil and the presence of construction equipment during the levee work. In addition, there may be temporary effects to the Yolo Shortline Railroad. Construction activities would have a significant effect on the Yolo Shortline Railroad as portions of the railway may have to be shut down or relocated during construction activities. There would be short-term term significant effects at the Sacramento Bypass, as described above; however, there would be no long-term effects because the area would be returned to the pre-construction conditions once construction is complete. Additionally, the expanded bypass would create additional recreation area, which would be a long-term benefit to recreation.

Mitigation:

The mitigation measures implemented for Alternative 2 would be the same as those for Alternative 1. With mitigation measures, impacts will still be significant and unavoidable to recreation.

Visual Resources

Significance criteria

A proposed alternative would result in a potentially significant impact to visual resources if it 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.
- Create a new source of substantial light or glare that would adversely effect day or nighttime views in the area.

Alternative 1

Impact:

Activities at borrow sites would consist of large excavation equipment removing soil to extract suitable material and transporting the material to the levee construction sites. The estimated amount of borrow material needed is 1 million cubic yards, which could require more than 400 acres of land to extract suitable material. Multiple sites have been considered for borrow material. The sites being considered are in rural areas and are not currently being used for crop production or other urban uses. Actual selection of borrow sites would be determined based on the least damage to the natural and human environment. During construction the existing visual character will be diminished as large equipment moves soil and the sites become exposed dirt. However, this is a short term impact and once the site is completed and restored the effects will be less-than-significant

Construction would occur on approximately 11 of the 26 miles of the American River Parkway, a construction area of nearly 200 acres. Within the 200 acres are approximately 65 acres of riparian habitat that would be removed to construct the launchable rock trenches. The remaining 135 acres are existing levee slopes, which will be degraded to install the rock trench, and staging areas. During construction equipment would be moving throughout the Parkway as equipment and materials are delivered and removed from the sites. This would create a reduction in the visual quality of the Parkway. Construction in the Parkway would be primarily during the summer months and would last for approximately 10 years. Construction at any location is not likely to take longer than a year or two. While this is considered a short-term impact, with the number of construction vehicles required and the construction timeframe extending for 10 years, this is considered a significant effect to the visual tranquility of the Parkway.

The loss of riparian vegetation from the construction of the launchable rock trenches would have a long term impact on the visual resources in the Parkway. The launchable rock trenches would be designed to include a planting berm, which would be planted with trees outside of the 15 foot vegetation free zone to compensate for some of the 65 acres of lost riparian habitat. However, the trees would take many years to grow to the similar visual value as those removed. This is considered a significant effect to visual resources and cannot be mitigated. During construction of the bank protection sites, activities in the Parkway would be similar to those for the rock trench. Construction vehicles would be moving throughout the Parkway transporting materials to the sites. The footprint for the bank protection sites would be adjacent to the river channel, varying distances from the public access areas. Visual impacts of completed bank protection sites would likely only be seen from the river and to those within the Parkway. Trees would remain in place and anchored with rock to protect them from future erosion. These sites would also be planted with vegetation; once the vegetation is established the rock would likely not be visible from either the river or the Parkway. It would likely take 3 to 5 years to establish the vegetation at these sites. Figures 8 through 10 are pictures of a site similar to the proposed bank protection sites and what the site looked like post-construction, 4 years after construction, and 9 years after construction. The visual value of these sites would take time to reach the full natural environment preferred by users. Visual effects at bank protection sites are considered to be less than significant because the sites would quickly revegetate and provide a natural looking environment similar or enhanced from existing conditions.

Construction activities along the Sacramento River would require the hauling of equipment and materials to the sites. There would be large construction equipment on barges and on top of the levee during construction of the levee improvements. Boaters and pedestrians would be able to see the construction equipment and activities. Residents, whose homes up to the levee would also see the construction activities from their backyard and windows. The presence of construction equipment would degrade the visual quality of the scenic vistas of the Sacramento River for the residents and recreational users. Construction along the Sacramento River would be intermittent for approximately 8 years. Construction would occur laterally so most residents will experience the effects of construction activities behind their homes for one to two construction seasons. Like the American River, the visual effects would be short-term and, similar to the American River effects discussed above, vegetation planted along the bank would cover the rock and provide natural habitat within 3 to 5 years. Large trees would also remain in place, which would reduce the effects to visual resources. Effects to visual resources are short-term and are considered less than significant.

Levee improvements, and specifically levee raises, along Arcade Creek would require the acquisition of residential private property. Most of the properties in this area have minimal or no backyard landscaping and there is no vegetation on the levee slopes. Therefore, overall the visual effects in this area would be less than significant. However, there are a few residents that have landscaping which would need to be removed. This would result in an effect to that individual resident. However, because overall there are limited residents that have landscaping this effect would be considered less-than-significant.

Mitigation:

Significant effects to visual resources along the American River during construction cannot be avoided and cannot be mitigated. Construction equipment would need to move within the Parkway during construction activities to access sites and transport materials. Once construction is complete, vehicle movement in the Parkway would return to the pre-project conditions. Additional trees could be planted at other areas within the Parkway in compliance with the Parkway Plan to mitigate for the removal of the trees which provide a natural environmental in an urban area. The short term effects would be significant. However, the planting of trees will reduce the effects to visual resources to less-than-significant once the trees are established and provide similar views as those removed.

Significant effects to visual resources during construction cannot be avoided and cannot be mitigated. Construction equipment would need to move along the levee and within the river during construction activities to access sites and transport materials. Once construction is complete, vehicle and barge movement would return to the pre-project conditions. To minimize visual impacts along the Sacramento River, trees would be left in place on the waterside lower third of the levee. The understory vegetation will be removed in order to place rock. To mitigate the removal of understory vegetation, planting berms will be installed and planted with vegetation to provide a similar visual appearance as before construction. By constructing the planting berms and installing vegetation the long term effects to visual resources will be reduced to less than significant. On the landside of the levee visual resources cannot be mitigated because the new levee maintenance corridor would be constructed where backyards currently exist. The removal of landscaping would take away the current visual character of the individual properties and would be a significant effect.

The homes along the East Side Tributaries are directly adjacent to the levee and there is insufficient space for mitigation of visual resources impacts. No other avoidance, minimization, or mitigation measures for visual resources are available, however, due to short duration of construction this effect would remain less-than-significant.

Alternative 2

Impact:

Visual resource effects are the same as Alternative 1 for the American River, Sacramento River, and East Side Tributaries. Expansion of the Sacramento Weir and Bypass would include the removal of the existing north levee and contouring of land within the expanded bypass. This requires the use of large construction equipment to remove and rebuild the levee. Large equipment moving throughout this area would be a change from the natural environment that currently exists. This would be a short-term impact and once construction is complete the area would become a natural floodway. Since this is not a populated area, this impact is considered less-than-significant.

Construction of the weir would have some visual effects as the concrete weir is formed and poured. This would also require the relocation of the River Road and rail road on top of the weir. These construction activities would be seen by people using the river for recreational purposes and driving along Old River Road. Construction would take approximately 3 years, and once complete the bypass area will provide

the same visual value as it did prior to construction. The natural environment that currently exists along the river would be replaced by the new concrete weir. However, this is a small amount of change compared to all the natural vegetation that exists along the Sacramento River. This impact is considered less-than-significant because it is short-term and a small footprint which will not have a substantial effect on the overall scenic value of the river.

Mitigation:

Visual resource effects are the same as Alternative 1 for the American River, Sacramento River, and East Side Tributaries. Significant effects to visual resources along the American River during construction cannot be avoided and cannot be mitigated. Since the Sacramento Weir and Bypass is not a populated area, this impact is considered less-than-significant.

Public Utilities

Significance criteria

Adverse effects on public utilities and services would be considered significant if implementation of an alternative plan would result in any of the following:

- Require the construction or expansion of any utility systems due to project implementation;
- Disruption or significantly diminished quality of the public utilities and services for an extended period of time;
- create an increased need for new fire protection, police protection, or ambulance services or significantly effect existing emergency response times or facilities;
- Create damage to public utility and service facilities, pipelines, conduits, or power lines; or
- Create inconsistencies or non-compliance with regional planning documents.

Alternative 1

Impact:

Construction of Alternative 1 could have potential effects to utility systems in the project area. There is the potential for construction-related damage to infrastructure and disruption of service during construction activities. In addition, infrastructure that currently runs through the levee prism would require either relocations or other alterations in order to comply with USACE policy for encroachments through the levee structure. There is the potential for temporary disruptions in utility service during relocation or alteration of infrastructure.

Mitigation:

In order to mitigate for any disruption to public utilities and service systems, consultation with all known service providers would take place prior to construction to identify specific infrastructure locations and appropriate protection measures. Consultation would continue during construction to ensure avoidance/protection of facilities to minimize service disruptions. Where feasible, replacement utility

structures would be completed before demolition of existing facilities. Mitigation measures would include the following:

- Notification of any potential interruptions in service shall be provided to the appropriate agencies and effected landowners.
- Before the start of construction, utility locations shall be verified through field surveys and the use of the Underground Service Alert services. Any buried utility lines shall be clearly marked in the area of construction on the construction specifications in advance of any earthmoving activities.
- Before the start of construction, a response plan shall be prepared to address potential accidental damage to a utility line. The plan shall identify chain of command rules for notification of authorities and appropriate actions and responsibilities to ensure the safety of the public and workers. Worker education training in response to such situations shall be conducted by the contractor. The response plan shall be implemented by the project proponent(s) and its contractors during construction activities.
- Utility relocations shall be staged to minimize interruptions in service.
- Construction activities will be coordinated with first responders within the study area so plans can be implemented to avoid response delays due to construction detours.

With mitigation impacts will be less-than-significant.

Alternative 2

Impact:

Effects to public utilities and service systems from the construction of levee improvements under Alternative 2 would be consistent with those analyzed for Alternative 1. Under Alternative 2, levee raises on the Sacramento River would be greatly reduced, however it is assumed that this would not change the level of effort or impacts associated with bringing utility encroachments into compliance with USACE policy. Under Alternative 2, the Sacramento Weir and Bypass would be widened instead of most of the levee raises. There are no major West Sacramento or Yolo County utility infrastructure systems located in the footprint of the Sacramento Weir and Bypass, therefore this action would not impact those systems. Localized effects in this area could occur if power lines or other pipe lines occur in the area, but their impacts would be consistent with those discussed for the levee improvements above.

Mitigation:

Same mitigation measures as Alternative 1. With mitigation impacts will be less-than-significant.

Hazardous Wastes and Materials

Significance criteria

The alternatives under consideration were determined to result in a significant impact related to hazards and hazardous materials if they would do 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.

Alternative 1:

Impacts:

Construction activities would involve the use of potentially hazardous material, such as fuels, oils and lubricants, and cleaners, which are commonly used in construction projects. 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. Compliance with applicable regulations would reduce the potential for accidental release of hazardous materials during transport and construction activities. The risk of significant hazards associated with the transport, use, and disposal of these materials is low.

Mitigation:

Compliance with applicable regulations would reduce the potential for accidental release of hazardous materials during construction. The contractor would also be required to prepare a SWPPP, which details the contractor's plan to prevent discharge from the construction site into drainage systems, lakes, or rivers. This plan would include BMPs which would be implemented at each construction site.

Project areas would be tested for contaminants prior to construction, and any materials found would be disposed of in accordance with all Federal, State, and local regulations at an approved disposal site. Implementation of these mitigation measures would reduce the impacts from hazardous materials at project sites to less than significant. If significant time has elapsed between approval of this document and construction, additional investigations should be done to reduce the risk of encountering a site during construction. If construction activities would occur in close proximity to sites listed in the existing conditions section, a Phase II ESA should also be conducted. This would further reduce the risk of exposure to workers and the public during construction and assist in the remediation planning.

Alternative 2:

Impacts to the Sacramento River, American River, and East Side Tributaries levees would be the same as Alternative 1, with the additional effects associated with the expansion of the Sacramento Weir and

Bypass. The Old Bryte Landfill, located adjacent to the north levee of the Sacramento Bypass, would be remediated in accordance with Federal, State, and local laws by the non-federal partner prior to construction. Capping of the site is not allowed, as this area would become part of the floodway and capping is not allowed under the Comprehensive Environmental Response, Compensation, and Liability Act. No construction activities would occur in proximity to this site until the site has been completely remediated and meets all Federal, State, and local regulatory requirements. Therefore, this alternative would have no impacts.

Mitigation:

Same mitigation measures as Alternative 1. With mitigation impacts will be less than significant.

Socioeconomic, Population, and Environmental Justice

Significance criteria

Alternatives under consideration were determined to result in a significant impact related to population and housing if they would do any of the following:

- Induce substantial population growth in an area, either directly (for example; by proposing new homes and businesses) or indirectly (for example; through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Alternative 1:

Temporary disruption to the community would occur during construction. Disruptions to the community are primarily related to traffic congestion, noise, recreation, and leisure activities. Haul routes would consist of existing roads, causing additional traffic congestion on residential streets. Hauling would occur during normal construction hours which could coincide with commute traffic. Hauling would also occur on the existing levee adjacent to residential properties. This would be a nuisance to residents due to truck engine noise and dust. The close proximity to the residential properties would occur during the summer months and would disrupt the tranquility that currently exists for the residents. This would be a short term impact, and while significant to the residents, it is not considered significant to the overall project as it is a limited number of residents affected.

Because the project is set in an urban area, no change in population is expected under all alternatives. The areas within the project are already at build out and any additional population increases would be insignificant. The alternatives would reduce the risk of flooding to the existing populations and lands behind the existing levee system. Local land use plans do not indicate significant development in areas where urban development does not already exist. The project is not anticipated to displace a significant

number of residents or divide an established community. Any disruption of communities would be short term during construction when traffic, noise, and other construction related activities could effect resident's daily life styles. Construction of this alternative would result in less than significant effects because the impacts would be short term and no long term impacts are expected to occur.

Mitigation:

Because the project would not have a significant socioeconomic impact on the community no mitigation measures are required. However, by reducing the risk of flooding the project could result in positive impacts to the socioeconomics by reduced likelihood of flooding, loss of lives, and pain and suffering. The project would also reduce the cost of flood insurance to structures removed from the 100-year FEMA floodplain. Mitigation for relocation of people and their homes would be compensated under the Federal Relocation Act.

Alternative 2:

Impacts are consistent with the discussion above for Alternative 1. There would be no additional effects to socioeconomics, population, or environmental justice under Alternative 2. Construction of this alternative would result in less than significant effects.

Mitigation:

Mitigation measures implemented for Alternative 1 will be the same as mitigation measures for Alternative 2.

Cumulative Impacts

This section discusses the potential cumulative effects of the ARCF GRR when added to other past, present, and reasonably foreseeable future actions. If the project is not expected to contribute to a cumulative effect on a resource, then that resource is not included in the section below. The resources not included below include hazardous and toxic waste, hydrology and hydraulics, land use, socioeconomics, utilities and services, and geology, as these resources would not have cumulative effects when considered with other past, present, or reasonably foreseeable future actions. Significance of cumulative effects is determined by meeting the Federal and State mandates and specified criteria identified under each environmental resource section above to evaluate impacts from the combination of the proposed alternatives and the other related projects. A full discussion can be found in the EIS/EIR.

Water Quality

Water quality could be effected within the actual construction area and upstream and downstream of the work area. All projects would be required to coordinate with the RWQCB and overall water quality will be required to meet the Basin Plan objectives. There are no anticipated long-term water quality effects with the implementation of multiple projects.

Vegetation and Wildlife

Implementation of the ARCF project has the potential to remove large amounts of vegetation within the project area. Additionally, compliance with USACE vegetation policy could also result in the removal of vegetation along waterways. The avoidance, minimization, and mitigation measures would be implemented in accordance with the recommendations of the Coordination Act Report, however, potential adverse effects on biological resources would remain significant due to the amount of habitat being removed to construct the project and the time lapse before the new plantings would mature to the level of those removed.

Fisheries

Potential cumulative effects on fish would include effects associated with other projects proposed to occur on the Sacramento and American Rivers. Cumulative effects were evaluated within the construction area and upstream and downstream of the project within the effected river. The ARCF Project along with many other projects being considered for the region could result in limited opportunities for mitigation of SRA habitat for fish species. The impact is significant and unavoidable.

Special Status Species

Valley Elderberry Longhorn Beetle

Concurrent construction of multiple projects over the next 10 to 15 years within the Sacramento Metropolitan area would likely cause mortality to beetles due to construction operations. Construction activities for the multiple projects would occur each year during the flight season of beetles. Since construction activities would be adjacent to known VELB locations it is likely that some mortality may occur. Shrubs within the each project footprint would be transplanted to areas in close proximity to the current locations. The transplanting of shrubs and compensation within the same area as the potential impacts would result in adverse effects to the beetle but not result in jeopardy to the valley elderberry longhorn beetle

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

The ARCF GRR estimates that approximately 0.25 acre of vernal pool habitat could be impacted by project construction. However, the USACE proposes to offset this impact through the purchase of credits at a mitigation bank. None of the other related projects discussed above involve activities in known vernal pool habitats. As a result, the ARCF GRR would not contribute to a cumulative effect on vernal pool fairy shrimp or vernal pool tadpole shrimp, and no additional mitigation beyond the measures discussed above would be required.

Giant Garter Snake

Cumulative effects on GGS and their habitat were evaluated within the construction area, haul routes, borrow sites, and immediately adjacent to construction activities. Because avoidance, minimization, and compensation measures would be implemented in accordance with the requirements of the Federal and State ESA, and other relevant regulatory requirements, and the project would protect habitat in place and create habitat, potential adverse effects on special-status species and on sensitive habitats would be reduced to a less-than-significant level. Additionally, other projects that could occur in the area would also be implemented in accordance with the requirements of the Federal and State ESA.

Special Status Migratory Bird Species

Concurrent construction of multiple projects over the next 10 to 15 years within the Sacramento Metropolitan area would result in adverse effects to special status migratory bird species such as Swainson's hawk, Western yellow-billed cuckoo, and white-tailed kite through the removal of trees within the riparian corridors. Construction activities for the multiple projects would occur each year during nesting season, which could disrupt nesting birds. No designated critical habitat would be affected with the construction of any of the projects.

Prior to construction, each project would be required to conduct surveys to determine the presence of nesting birds. If nesting birds are present, additional measures would be proposed by each of the projects, which may include biological monitoring and buffers around nesting trees. Additionally, any tree removal would likely occur outside of the nesting season. Each project would be required to compensate for the loss of nesting trees. While the short term impact would be significant, over time these compensation measures within the same area as the potential impacts would result in less-than-significant effects to migratory birds.

Burrowing Owl

Concurrent construction of multiple projects over the next 10 to 15 years within the Sacramento Metropolitan area could result in adverse effects to burrowing owls through the disturbance of potential burrow habitat within the riparian corridors. Construction activities for the multiple projects would occur each year during nesting season, which could disrupt nesting owls. Prior to construction, each project would be required to conduct surveys to determine the presence of burrowing owls. If nesting owls are present, additional measures would be proposed by each of the projects, which may include biological monitoring and buffers around burrow sites. With the implementation of appropriate mitigation and minimization measures, it is unlikely that the proposed actions would combine to contribute to a significant cumulative effect to burrowing owls.

Special Status Salmonid Species

Special status salmonid species use the American and Sacramento Rivers for migration, therefore, cumulative effects for fisheries were evaluated based on changes to habitat that could occur at the construction sites and change in conditions downstream of the project areas as a result of construction. Implementation of the project has the potential to contribute to the loss or degradation of sensitive habitats and to adversely affect salmonids. These effects could contribute to the species declines and losses of habitat that have led to the need to protect these species under the Federal and State ESA. A vegetation variance would allow trees to remain in place along the lower one-third of the levee and provide essential habitat for many special-status fish species. Beyond the existing trees being left in place, plants would be installed within the planting berm and potentially provide habitat where none currently exist due to long term erosion. With various projects being considered in the Sacramento and Delta region, lands available for mitigation and compensation could become difficult to locate. This would be especially true for waterside riparian habitat along the Sacramento River.

Green Sturgeon

Green sturgeon use the Sacramento River for migration, therefore, cumulative effects for fisheries were evaluated based on changes to habitat that could occur at the construction sites and change in conditions downstream of the project areas as a result of construction. Implementation of the project has the potential to contribute to the loss or degradation of sensitive habitats and to adversely affect green sturgeon. These effects could contribute to species decline and losses of habitat that have led to the need to protect this species under the Federal and State ESA.

In particular, the combination of the ARCF GRR, SRBPP, and West Sacramento projects could combine to contribute to adverse effects to green sturgeon in the study area. These projects involve the placement of bank protection to address erosion in the study area, and in doing so could adversely impact the food source of the green sturgeon by covering benthic substrate with rock. However, the extent of impact to this species is not easily defined due to the lack of scientific knowledge in this area of the Sacramento River system. These projects are working to adaptively manage their implementation to minimize impacts on the species through modeling efforts during the design phase, and monitoring during the construction phase of the projects. More information on the USACE mitigation efforts for green sturgeon is included in the Habitat Mitigation and Monitoring Plan (Appendix I). With the implementation of the USACE proposed mitigation and compensation efforts for both the West Sacramento and ARCF GRR projects, significant cumulative effects on green sturgeon would be minimized as discussed above and replacement habitat compensation would be created for the remaining unavoidable impacts.

Delta Smelt

With the implementation of site specific designs, the local projects would provide long term net benefits to delta smelt. However, there are four specific significant threats to the delta smelt that have been identified by the USFWS: direct entrainments by State and Federal water export facilities, summer and fall increases in salinity, summer and fall increases in water clarity, or effects from introduced species.

Implementation of the various projects would not affect direct entrainments by State and Federal water export facilities. The only potential effect could result from the release of more water down the Sacramento Bypass into the Yolo Bypass during high water events, as a result of construction of the ARCF GRR project. The excess water that would normally be moving downriver through the Sacramento area would enter the system farther down in the Delta area. Since adult delta smelt are moving up the system to spawn at this time this would not affect entrainment in the water export facilities. Summer and fall increases in salinity is driven more by low flow drought years and water releases in the Sacramento tributaries than site specific designs for erosion protection in the project areas. Summer and fall increases in water clarity are associated with, among other factors, invasive nonnative clam species and non-native plant species, which are generally located down in the Delta below the project areas, that are filtering out vital chlorophyll and plankton that would normally increase turbidity which helps the delta smelt avoid predators. As mentioned above the erosion repair activities of these combined projects would likely reduce the sediment supply for riverine reaches directly downstream because the erosion repair is holding the bank or levee in place. However, as explained above, from a

system sediment perspective, the bank material the ARCF GRR project is protecting in the project reaches is not a major source of sediment compared to the upstream reaches of the Sacramento, Feather, and especially the Yuba River systems. As a result, it is unlikely that the combination of the ARCF GRR, West Sacramento, and SRBPP projects would contribute to cause significant impacts to Delta smelt, with the implementation of proposed mitigation measures to reduce construction-related impacts.

Special Status Plant Species

Concurrent construction of multiple projects over the next 10 to 15 years within the Sacramento Metropolitan area could result in adverse effects to special status plant species, including Sanford's arrowhead and wooly rose-mallow through the disturbance of their habitat. Construction activities could result in disturbance through dust, or even mortality if their presence is not properly established before the commencement of construction activities. Prior to construction, each project would be required to conduct surveys to determine the presence of special status plant species. These surveys would need to occur during the blooming period of each species. If special status plants are present, additional measures would be proposed by each of the projects, which may include biological monitoring and buffers around habitat areas. There is the potential that these projects could result in significant impacts to these species if their presence is unknown. However, with the implementation of appropriate mitigation and minimization measures, it is unlikely that the proposed actions would combine to contribute to a significant cumulative effect to special status plant species.

Cultural Resources

Cumulative impacts to cultural resources would be primarily related to individual ground disturbance sites, with potential regional implications for sites if they are considered as part of a historic district, landscape, or multiple sites that may be ethnographically significant and to other construction projects that could occur during the same timeframe as those considered for this study and within the same vicinity as this study. At the time of this analysis there are several ground disturbing construction projects anticipated to modify the Sacramento River levees that would result in similar impacts as those included above. As a result, the cumulative overall impact to non-renewable cultural resources is likely, as well as significant and unavoidable. However, individual projects would implement separate mitigation measures that would address the effects caused by these projects. This project is addressing effects through the execution of a PA. The PA includes stipulations to reduce the significant, adverse effects to less-than-significant. Therefore, the project would not result in significant cumulative impacts.

Air Quality

Cumulative effects to air resources were evaluated within each air basin. Construction of the proposed alternatives would result in emissions of criteria pollutants; however, with the implementation of mitigation measures these emissions are expected to be below the thresholds of the Federal and State CAA. Coordination with SMAQMD would result in the identification of mitigation measures, such as low emission vehicles, mitigation credits, and dust control measures, to reduce the overall cumulative effects on air quality to less-than-significant.

Climate Change

It is unlikely that any single project by itself could have a significant impact on the environment with respect to GHGs. However, the cumulative effect of human activities has been linked to quantifiable changes in the composition of the atmosphere, which, in turn, have been shown to be the main cause of global climate change (IPCC 2007). Therefore, the analysis of the environmental effects of GHG emissions is inherently a cumulative impact issue. While the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative effect with respect to global climate change.

At this time, it is unknown at what point in time the ARCF project would be under construction, as construction is dependent on Congressional authorization and appropriation. However, it is likely that the ARCF project would be constructed at the same time as the West Sacramento GRR. It is expected that the primary impacts from these concurrent projects would be due to construction activities. On an individual basis, each of these projects would mitigate emissions below the general reporting threshold. If these projects are implemented concurrently, it is possible that the combined cumulative effects could be above the Federal reporting requirement for major facilities for GHG emissions of 25,000 tons of CO₂e per year. It would be necessary to ensure that the ARCF and the West Sacramento GRR projects are not constructing at sites in close proximity to one another, such as on opposite sides of the river, at the same time. However, on a regional level, these projects would still contribute to a significant cumulative effect, and coordination with the SMAQMD would need to occur prior to construction to reduce these effects.

As a result, the overall cumulative GHG emissions from these projects are considered to be less-than-significant.

Noise

This project and the other local projects listed above would result in temporarily increased levels of ambient noise in the study area. Cumulative effects to noise would be limited to the projects that are in a close enough proximity to the ARCF construction sites to contribute to the project's noise and create a cumulative effect to the sensitive receptors impacted by the project. The only project that could contribute to the ARCF construction noise due to proximity is the West Sacramento GRR. USACE would ensure that both projects are not constructing at the same time on opposite sides of the river in order to avoid these cumulative effects to the extent practicable. With this coordination, there would be no cumulative effects due to noise in the study area.

Recreation

Cumulative impacts to recreation are primarily related to other construction projects that could occur during the same timeframe as those considered for this study and within a close enough proximity to one another that recreationists would be impacted by potential impacts to multiple facilities. At the time of this analysis no heavy construction projects are anticipated to occur in the American River Parkway or the East Side Tributaries that would create a cumulative effect on recreation opportunities in those areas. However, the combined impact of West Sacramento and ARCF construction sites on opposing

sides of the Sacramento River could create a nuisance to boaters and other recreationists on the river. It would be necessary to ensure that the ARCF and the West Sacramento GRR projects are not constructing at sites in close proximity to one another, such as on opposite sides of the river, at the same time. With this coordination, there would be no cumulative effects to recreation.

Visual Resources

Cumulative impacts to visual resources are primarily related to other construction projects that could occur within the same visual view-scape as this study and result in loss of visual quality both during construction and after construction. If authorized and constructed Alternative 2 would result in a significant amount of large trees and other vegetation removed along the Sacramento River and the American River. Other projects in the vicinity, such as the West Sacramento Project and the SRBPP could also result in the removal of large trees and other vegetation. Implementation of the ARCF Project, when combined with other future projects in the vicinity, would result in a significant cumulative impact on visual resources, primarily from removal of vegetation. Additionally, the long time period for replanted vegetation to reach a size similar to the vegetation removed as a result of construction would be considered a cumulatively significant effect on visual resources along the Sacramento and American Rivers. No other projects are anticipated in the area of the East Side Tributaries and therefore no cumulative effects would occur.

Growth Inducing Impacts

Within the project area, population growth and urban development are driven by local, regional, and national economic conditions. Local land use decisions are within the jurisdiction of the City of Sacramento and Sacramento County. Each of these agencies has adopted a general plan. These general plans provide an overall framework for growth and development within the jurisdiction of each agency, including the project area.

Growth inducing impacts would be the same for both Alternatives 1 and 2 as development in the area protected with implementation of the project is covered by existing general plans and is largely completed. Levees within the project area provide flood control for both the City of Sacramento and Sacramento County and help convey water flowing from the surrounding mountain ranges to the Delta. Construction of these alternatives would reduce the risk of flooding in the study area and help to maintain the integrity of the existing levee system.

There is currently sufficient workforce in the Sacramento metropolitan area to support construction of the project if approved. Implementation of either action alternative would have no significant effect on growth and, therefore, no mitigation is required.

FINDINGS

Based on the information in the EIS/EIR for the American River Common Features GRR and the entire record, the Central Valley Flood Protection Board finds that

- Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant environmental effects on the environment.
- Those changes or alterations are wholly or partially within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other public agency.
- Specific economic, social, technological, or other considerations make infeasible the mitigation measures or alternatives identified in the EIS/EIR that would otherwise avoid or substantially lessen the identified significant environmental effects of the project.

Based on the foregoing findings and information contained in the record, it is hereby determined that:

- Significant effects on the environment due to approval of the project have been eliminated or substantially lessened where feasible.
- Any remaining significant effects on the environment found unavoidable are acceptable due to the factors described in the statement of overriding considerations.

FINDINGS REGARDING ALTERNATIVES TO THE PROJECT

Section 15126.6 of the CEQA *Guidelines* states:

a) Alternatives to the Proposed Project: An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.

Subsections 15091(a)(3) and (b) provide that if an agency finds that specific economic, legal, social, technological, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR, the findings shall be supported by substantial evidence in the record. The findings below regarding environmental effects identify some impacts that are potentially significant and unavoidable even after the implementation of all feasible mitigation measures. This section provides additional detail and findings supporting those determinations.

Objectives of the Project:

- Reduce the chance of flooding and damages, once flooding occurs, and improve public safety, preparedness, and emergency response.
- Reduce maintenance and repair requirements by modifying the flood management systems in ways that are compatible with natural processes.
- Integrate the recovery and restoration of key physical processes, self-sustaining ecological functions, native habitats, and species.
- Ensure that technically feasible and cost-effective solutions are implemented to maximize the flood risk reduction benefits given the practical limitations of applicable funding sources.

The EIR for the Project includes two project alternatives which attain these basic objectives.

The alternatives covered in the EIR have similar levels of impact and result in the similar significant and unavoidable impacts.

Findings: Based on the final EIR and the entire record, the CVFPB makes the following findings with regard to alternatives to the proposed project:

1. To eliminate or lessen the significance of the project's unavoidable impacts, the project would have to be implemented in another location, which is infeasible.
2. The social and economic benefits of the project outweigh the impacts of the significant unavoidable impacts.
3. None of the alternatives examined in the EIR would be a feasible means to avoid or eliminate the remaining significant effects.
4. Alternative 2 while, still having significant and unavoidable impacts, has a greater benefit to the environment.

No Action Alternative:

The No Action Alternative assumes that no work would be completed by USACE and the study area would continue to be at a very high risk of levee failure and subsequent flooding of the Sacramento Metropolitan area. This area includes the California State Capitol and other significant infrastructure.

The No Action Alternative is inconsistent with the objectives of the project and leaves the study area at an unacceptable level of risk due to flooding.

The CVFPB finds that the No Action Alternative is not a feasible means to avoid risk to avoid the residual significant effects of the Project.

Alternative 1

Alternative 1 includes fix-in-place levee remediation measures to address seepage, slope stability, erosion, and overtopping concerns identified for the American and Sacramento River, NEMDC, Arcade, Dry/Robla, and Magpie Creek levees. This alternative would have potentially significant and unavoidable impacts to Vegetation and wildlife even with a vegetation variance.

The terms of the Biological Opinion require implementation of green sturgeon modeling and monitoring to improve effects assessment, minimize construction impacts.

This alternative has greater environmental impacts due to the levee raises and fewer environmental benefits.

Alternatives 1 and 2 have significant and unavoidable impacts to: recreation, transportation, visual resources, and cultural resources.

The CVFPB finds that Alternative 1 is not a feasible means to avoid risk to avoid the residual significant effects.

Alternative 2

Alternative 2 includes all of the levee improvements discussed in Alternative 1, except levee raises along the Sacramento River would be included to a lesser extent. Instead of the full extent of levee raises, the Sacramento Weir and Bypass would be widened to divert more flows into the Yolo Bypass.

While the impacts to landside vegetation would be reduced by the widening of the Sacramento weir and bypass the alternative would still have significant and unavoidable impacts to vegetation and wildlife. The bypass would also create floodplain which could provide benefits to fish species.

The terms of the Biological Opinion require implementation of green sturgeon modeling and monitoring to improve effects assessment, minimize construction impacts. Alternative 2 will also implement fish passage at the Sacramento bypass, and grade the widened Bypass for improved fish movement.

Both alternatives 1 and 2 have significant and unavoidable impacts to: recreation, transportation, visual resources, and cultural resources.

The CVFPB finds that Alternative 2 is not a feasible means to avoid the overall significant impacts to the project.

Statement of Overriding Considerations

State CEQA Guidelines CCR Section 21100(b)(2)(A) provides that an EIR shall include a detailed statement setting forth “any significant effect on the environment that cannot be avoided if the project is implemented.” Chapter 3 of the EIS/EIR provides a detailed analysis of all potentially significant environmental impacts of the ARCF project, feasible mitigation measures that could reduce or avoid the project’s impacts, and whether these mitigation measures would reduce these impacts to less-than-significant levels. Cumulative impacts are discussed above. If a specific impact cannot be reduced to less-than-significant level, it is considered a significant and unavoidable impact.

The ARCF GRR project would have the following significant and unavoidable environmental effects (direct, indirect, and/or cumulative):

- Temporary increase in traffic on public roadways;
- Loss of vegetation and wildlife habitat on the Sacramento River levees, in the American River Parkway, and along Arcade Creek due to construction of levee improvements;
- Cumulative loss of vegetation and wildlife habitat within the Sacramento Metropolitan area;
- Cumulative short term loss of fisheries habitat due to project construction along the lower American and Sacramento Rivers;
- Temporary closure of recreation facilities including bike trail, walking trails, and boat launches in the American River Parkway during construction;

- Loss of aesthetic and visual resources due to construction related disruption of existing visual conditions in the American River Parkway and along the Sacramento and American River; and,
- Cumulative loss of aesthetic and visual resources primarily from removal of vegetation along the lower American and Sacramento Rivers.

Under CEQA, the following impacts would be significant and unavoidable. Mitigation for these impacts would be proposed in accordance with the PA. With the implementation of this mitigation the ARCF GRR project would be in compliance with Section 106 of the NHPA.

- Potential damage or disturbance to known archaeological or architectural resources from ground-disturbance or other construction related activities,
- Potential damage to or destruction of previously unidentified; or undiscovered cultural resources from ground disturbance or other construction-related activities; and
- Potential discovery of human remains during construction.

The Board finds that the social and economic benefits derived from reducing the risk of damage from flooding to lives and property outweighs the unavoidable significant short-term construction related impacts to vegetation and wildlife, cultural resources, transportation and circulation, recreation and, aesthetics and visual resources.

The custodian of the CEQA record for the Board is its Executive Officer, Leslie M. Gallagher, at the Central Valley Flood Protection Board Offices at 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

By: _____ Date: _____
 William Edgar
 President

By: _____ Date: _____
 Jane Dolan
 Secretary

Attachment B

Notice of Determination

(To be inserted by Environmental
Support Staff)

Attachment C

Environmental Impact Statement/Environmental Impact Report

*(available for download from the Board's
website under a link to this agenda item)*

Attachment D

Mitigation Monitoring and Reporting Plan

MITIGATION, MONITORING, AND REPORTING PLAN
AMERICAN RIVER WATERSHED COMMON FEATURES
GENERAL REEVALUATION REPORT
SACRAMENTO COUNTY, CALIFORNIA

This mitigation monitoring or reporting plan (MMRP) is designed to fulfill Section 21081.6 (a) of the California Environmental Quality Act (CEQA). Which requires public agencies to adopt a reporting or monitoring program whenever a project or program is approved that includes mitigation measures identified in an environmental document for which the agency makes a finding pursuant to CEQA Section 21081 (a) (1). The mitigation measures and strategies described below and in the attached table are to be used to avoid, minimize, or reduce any potentially significant environmental impacts.

The MMRP table includes the following:

- Section and Impacts – identifies the issue area section of the EIR/EIS and corresponding impact.
- Mitigation Measures – lists the adopted mitigation measures from the EIR/EIS.
- Implementation Timing – identifies the timing of implementation of the action described in the mitigation measures.
- Responsible for Implementation – identifies the agency/party responsible for implementing the actions described in the mitigation measures.
- Responsible for Monitoring/Reporting Action – identifies the agency/party responsible for monitoring implementation of the actions described in the mitigation measures. Verification will be carried-out during the project and an MMRP completion report will be submitted to the CVFPB staff upon completion of the project.

Section and Impacts	Mitigation Measures	Implementation Timing	Responsible for Mitigation	Responsible for Monitoring/ Reporting Action
<p>3.2 Geologic Resources</p> <p>Alternative 1 Excavation for borrow material or during construction could increase soil erosion or permanent loss of topsoil.</p> <p>Alternative 2 Similar impact as alternative 1, but a greater magnitude.</p>	<p>Both Alternatives Prior to construction, USACE or its contractor would be required to acquire all applicable permits for construction.</p> <p>Prior to construction, a Stormwater Pollution Protection Plan (SWPPP) would be prepared, and best management practices (BMPs) would be proposed to reduce potential erosion and runoff during rain events.</p> <p>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.</p> <p>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.</p>	D,P,C	USACE	<p>CVFPB Monitor measures applicable to site:</p> <p>Verify that all required permits have been acquired.</p> <p>Verify that SWPPP and BMP's have been prepared.</p> <p>Review plans to see that stockpiles will be on landside.</p> <p>Monitor construction periodically to assure ground and vegetation</p>

Notes:

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	<p>Install sediment barriers on graded or otherwise disturbed slopes as needed to prevent sediment from leaving the project site and entering nearby surface waters.</p> <p>Install plant materials to stabilize cut and fill slopes and other disturbed areas once construction is complete. Temporary structural BMPs, such as sediment barriers, erosion control blankets, mulch, and mulch tackifier, could be installed as needed to stabilize disturbed areas until vegetation becomes established.</p>			<p>disturbance is minimal.</p> <p>Verify use of sediment barriers and instillation of stabilizing plant materials.</p> <p>Verify establishment of vegetation.</p>
<p>3.3 Land Use</p> <p>Alternative 1 Acquisition of properties for levee easements along the Sacramento River and Arcade Creek.</p> <p>Alternative 2 Acquisition of properties for levee easements along the Sacramento River and Arcade Creek (fewer properties impacted than Alternative 1). Conversion of agricultural lands to floodway.</p>	<p>Coordination with Sacramento County Department of Parks and Recreation, the National Park Service, the other Federal and State agencies responsible for managing the resources of the Parkway, and non-governmental stakeholders will ensure consistency with existing plans.</p> <p>All property acquisitions would be conducted in compliance with Federal and State relocation law, and relocation services would be accomplished in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1960.</p> <p>Mitigation for the lands converted from parkway land to flood control uses will be mitigated by paying fees to the County under the Habitat Restoration Program Fees (HRP).</p>	D	USACE	<p>CVFPB</p> <p>Coordinate with stakeholders to ensure consistency.</p> <p>Verify that acquisitions are conducted in accordance with Uniform Relocation Act.</p> <p>Verify payment of fees.</p>
3.4 Hydrology and Hydraulics				

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<p>Alternative 1 No impact</p> <p>Alternative 2 Reduce water surface elevation in the Sacramento River downstream of the confluence of the American River without significantly increasing water surface elevation in the Yolo Bypass downstream of the confluence of the Sacramento Bypass.</p>	<p>None required.</p>	<p>D</p>	<p>USACE</p>	<p>CVFPB</p>
<p>3.5 Water Quality and Groundwater Resources</p> <p>Alternative 1 Increased turbidity during bank protection construction, runoff of exposed soils, and cement, slurry, or fuel spills during construction. Rock revetment placement in open water would result in significant indirect effects as the sediment and turbidity plume drifts further downstream and later effect the water qualify in those areas found further downstream of the project area.</p> <p>Alternative 2 Same impacts as alternative 1 plus, a potential for water quality impacts to occur if the weir is constructed in a way that debris or other construction materials could enter the Sacramento River.</p>	<p>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 result in a rise in turbidity levels above ambient conditions, in accordance with the Central Valley RWQCB Basin Plan turbidity objectives</p> <p>Prepare a SWPPP, Spill Prevention Control and Countermeasures Plan (SPCCP), and a bentonite slurry spill contingency plan (BSSCP)</p> <ul style="list-style-type: none"> • Conduct earthwork during low flow periods (July 1 through November 30). • To the extent possible, stage construction equipment and materials on the landside of the subject levee reaches in areas that have already been disturbed. 	<p>P, C</p>	<p>USACE</p>	<p>CVFPB</p> <p>Verify coordination with RWQCB.</p> <p>Review SWPPP, SPCCP, and BSSCP. Verify measures are in place during construction.</p>

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	<ul style="list-style-type: none"> • 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 • 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 could 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, could 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. 			
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	<ul style="list-style-type: none"> Water samples for determining background levels shall be collected in the adjacent water body for each erosion construction site. During working hours, the construction activity shall not cause the turbidity in the adjacent water body down current from the construction sites to exceed the Basin Plan turbidity objectives. 			
<p>3.6 Vegetation and Wildlife</p> <p>Alternative 1 The launchable rock trenches would result in the removal of a maximum of 65 acres of riparian habitats within the American River Parkway.</p> <p>Bank protection measure would result in impacts to a maximum of 31,000 linear feet of SRA habitat.</p> <p>The existing levee structure would be degraded by one half to create a working platform for slurry wall installation. As the levee is degraded, all vegetation located in the degraded area would be removed. The maximum degraded area (the upper one half of the levee) is approximately 110 acres and contains about 750 trees of various sizes and species. On the landside of the levee, where levee raises are required, all trees would</p>	<p>During the design refinement phase, plans will be evaluated to reduce the impact on vegetation and wildlife to the extent practicable. Refinements that could be implemented to reduce the loss of riparian habitat include: reduced footprint, constructing bank protection rather than launchable rock trench whenever feasible, and designing planting berms in areas where significant riparian habitat exists adjacent to the levee toe.</p> <p>To compensate for the removal of a maximum of 65 acres of riparian habitat, approximately 130 acres of replacement habitat would be created to account for the temporal loss of habitat while newly created habitat is growing.</p> <p>Surveys would be conducted prior to construction to determine if any birds are nesting within 0.5 miles of the construction activities. If nests are located within the vicinity of construction for any given year, coordination with the appropriate resource agencies would occur to determine what</p>	D, P, C	USACE	<p>CVFPB</p> <p>Verify impact refinement for smaller footprint.</p> <p>Verify replacement habitat creation.</p> <p>Verify and participate in nesting bird surveys.</p> <p>Verify that tree removal occurs outside of nesting season.</p> <p>Verify vegetation</p>

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<p>be removed from the levee slope and within 15 feet of the levee toe to construct the levee raise. A landside maintenance easement would be required along the levee toe within the 8 miles of levee raise. This easement will be left in place after construction as access. There are approximately 1,300 trees of various species and size within this landside easement that once removed would not be replaced on-site.</p> <p>There would be a maximum of 200 trees removed from both the landside and waterside to construct the project. These trees compose approximately 2 acres of oak woodland habitat on NEMDC, and approximately 10.5 acres of riparian on Arcade Creek.</p> <p>Alternative 2 Because the amount of levee raising is significantly reduced under Alternative 2 due to the widening of the Sacramento Weir and Bypass, effects to the landside vegetation on the levees would be less than under implementation of Alternative 1. This would result in the removal of approximately 750 trees of various species</p>	<p>action should be taken to reduce impacts. Trees would not be removed if an active nest is found; however, once the young have fledged, the tree can be removed for construction. If survey results determine that no nests are in the vicinity of construction scheduled for that year, construction may commence without further coordination on this issue.</p> <p>Avoidance and minimization measures incorporated as part of the Sacramento River design include: compliance with the USACE vegetation policy through a vegetation variance, installation of a planting berm where erosion protection is required, and narrowing of the levee footprint by construction of a retaining wall, when feasible.</p> <p>The vegetation variance would allow waterside trees on the lower half of the slope to remain in place. This would allow approximately 930 trees along 10 miles of the Sacramento River to continue to provide habitat for fish and wildlife species. Along with retaining the trees, additional plantings of small vegetation would be done on the newly constructed berm. Species of plants would be coordinated with NMFS, USFWS, and State and local partners.</p> <p>Off-Site mitigation for the removal of 50 trees in the Arcade Creek area would be done in compliance with the Sacramento City tree ordinance. It is estimated that 2 acres would be required to accommodate the planting of</p>			<p>variance is in place to minimize tree removal.</p> <p>Verify mitigation area for trees planted off-site.</p>
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	<p>approximately 450 trees.</p> <p>Alternative 2 Compensation was determined by evaluating other projects with similar impacts in the Central Valley, coordination with resource agencies, and evaluation of compensation plantings' ability to provide similar wildlife habitat.</p> <p>A total of 16 acres would be needed to compensate for the removal of the vegetation along the Sacramento River and within the new weir footprint, due to the temporal loss of habitat while the new habitat is establishing. Plantings could be accomplished within the expanded bypass, other nearby available lands, or through the purchase of credits at an approved mitigation bank.</p>			
<p>3.7 Fisheries</p> <p>Alternative 1 Rock placement would most likely disturb the native resident fish by increasing noise, water turbulence, and turbidity, causing them to move away from the area of placement. In some pelagic native juvenile species utilizing the near shore habitat for cover, moving away from that cover could put them at a slight risk of predation.</p> <p>Construction during the project may disturb soils and the nearshore</p>	<p>Mitigation measures for vegetation and wildlife, and water quality will also apply for fisheries. Additionally;</p> <ul style="list-style-type: none"> In-water construction would be restricted to the general estimated work window of August 1 through November 30. For the purpose of this study however, during PED, the work window will be adjusted on a site specific basis taking into account periods of low fish abundance, and in-water construction outside the principal spawning and migration season. Typical construction season generally corresponds to the dry 	<p>D, P, C</p>	<p>USACE</p>	<p>CVFPB</p> <p>Verify implementation of vegetation and wildlife mitigation measures.</p> <p>Verify implementation of water quality mitigation measures.</p>

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<p>environment, leading to increases in sediment in the nearshore aquatic habitat. This in turn may increase sedimentation (i.e., deposition of sediment on the substrate), suspended sediments, and turbidity.</p> <p>Alternative 2 By widening the Sacramento Weir and Bypass, the project would create additional floodplain habitat within the Sacramento Bypass, which could benefit native fish.</p>	<p>season, but construction may occur outside the limits of the dry season, only as allowed by applicable permit conditions.</p> <ul style="list-style-type: none"> • Due to the deleterious effects of numerous chemicals on native resident fish used in construction, if a hazardous materials spill does occur, a detailed analysis will be performed immediately by a registered environmental assessor or professional engineer to identify the likely cause and extent of contamination. This analysis will conform to American Society for Testing and Materials standards, and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the USACE and its contractors will select and implement measures to control contamination, with a performance standard that surface water quality and groundwater quality must be returned to baseline conditions. • If mitigation or compensation sites are planned within the Sacramento Bypass for the overall ARCF project, information gained from the 2013 Knaggs Ranch Pilot Study would be reviewed for potential beneficial habitat for native fish species to be 			
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	incorporated into the sites.			
<p>3.8 Special Status Species</p> <p>Alternative 1</p> <p><u>Valley Elderberry Longhorn Beetle</u></p> <p>Within the surveyed study area, approximately 250 shrubs were located along the American River Parkway and 50 shrubs were located along the Sacramento River. Prior to project construction, a qualified biologist would conduct focused surveys of elderberry shrubs within 100 feet of the project area for construction in accordance with the USFWS guidelines.</p>	<p>Mitigation measures are similar for both Alternatives 1 and 2</p> <p><u>Valley Elderberry Longhorn Beetle</u></p> <p>The following is a summary of measures that would be implemented during construction based on the <i>Conservation Guidelines for the Valley Elderberry Longhorn Beetle</i> (USFWS 1999a). These measures will be implemented to minimize any potential effects on valley elderberry longhorn beetles or their habitat, including restoration and maintenance activities, long-term, protection, and compensation if shrubs cannot be avoided:</p> <ul style="list-style-type: none"> • When a 100-foot (or wider) buffer is established and maintained around elderberry shrubs, complete avoidance (i.e., no adverse effects) will be assumed. • Where encroachment on the 100-foot buffer has been approved by the USFWS, a setback of 20 feet from the dripline of each elderberry shrub will be maintained whenever possible. • During construction activities, all areas to be avoided will be fenced and flagged. • Contractors will be briefed on the need to avoid damaging elderberry shrubs and the possible penalties for not complying with 	D, P, C, M	USACE	<p>CVFPB</p> <p>Verify that all BMP's and mitigation measures are followed during construction.</p> <p>Verify setback distances</p> <p>Verify that environmental awareness training has been implemented</p>

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<p><u>VELB continued</u></p>	<p>these requirements.</p> <ul style="list-style-type: none"> • Signs will be erected every 50 feet along the edge of the avoidance area, identifying the area as an environmentally sensitive area. • Any damage done to the buffer area will be restored. • Buffer areas will continue to be protected after construction. • No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant will be used in the buffer areas. • Trimming of elderberry plants will be subject to mitigation measures. • Elderberry compensation would be planted in the American River Parkway. The USACE has six existing sites which are offsetting previous USACE flood control projects along the lower American River and near Folsom Dam. The USACE will find areas within the lower American River parkway which will either expand existing compensation areas or provide for connectivity between conserved valley elderberry longhorn beetle habitat. Sites within the Parkway will be coordinated with County Parks and the Service during the design phase of the project. Sites will be designed and developed prior to any effects to valley elderberry longhorn beetle habitat. The USACE will create 69.91 acres of riparian habitat which supports valley elderberry longhorn beetle within the lower American 			<p>Verify sign placement.</p>
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<p>vehicles, by construction of the new levee and maintenance road, or due to the alteration of the natural flows of the area due to construction of the new levee.</p> <p>Prior to initiation of any construction activities, field surveys and a wetland delineation would occur to verify the occurrence of vernal pools in the construction footprint and to determine if any nearby vernal pools could be indirectly affected by construction.</p>	<p>habitat directly or indirectly affected, at least two vernal pool credits will be dedicated within a Service-approved ecosystem preservation bank or, based on Service evaluation of site-specific conservation values, three acres of vernal pool habitat may be preserved on the project site or another nonbank site as approved by the Service.</p> <ul style="list-style-type: none"> • Creation component: For every acre of habitat directly affected, at least one vernal pool creation credit will be dedicated within a Service-approved habitat creation bank or, based on Service evaluation of site-specific conservation values, two acres of vernal pool habitat will be created and monitored on the project site or another non-bank site as approved by the Service. • Listed vernal pool crustacean habitat and associated uplands utilized as on-site compensation will be protected from adverse effects and managed in perpetuity or until the USACE, the applicant, and the Service agree on a process to exchange such areas for credits within a Service-approved conservation banking system. Off-site conservation at a Service-approved non-bank location will be protected and managed in perpetuity through a Service-approved conservation easement, Service-approved management plan, and a sufficient endowment fund to manage the site in perpetuity in accordance with the management plan. • If habitat is avoided (preserved) on site, then a Service-approved biologist (monitor) will 			<p>Verify that preconstruction bird surveys have occurred.</p>
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<p><u>Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp continued</u></p>	<p>inspect any construction-related activities at the proposed project site to ensure that no unnecessary take of listed species or destruction of their habitat occurs. The biologist will have the authority to stop all activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also will be required to immediately report any unauthorized impacts to the Service and the California Department of Fish and Game.</p> <ul style="list-style-type: none"> • Adequate fencing will be placed and maintained around any avoided (preserved) vernal pool habitat to prevent impacts from vehicles. • All on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to these species and their habitat. • The applicant will ensure that activities that are inconsistent with the maintenance of the suitability of remaining habitat and associated on-site watershed are prohibited. This includes, but is not limited to: (i) alteration of existing topography or any other alteration or uses for any purposes, including the exploration for or development of mineral extraction; (ii) placement of any new structures on these parcels; (iii) dumping, burning, and/or burying of rubbish, garbage, or any other wastes or fill materials; (iv) building of any new roads or trails; (v) killing, removal, alteration, or replacement of any existing native vegetation; (vi) placement of storm 			
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<p><u>Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp continued</u></p>	<p>water drains; (vii) fire protection activities not required to protect existing structures at the project site; and (viii) use of pesticides or other toxic chemicals.</p> <p>The proposed project will result in 0.25 acre of indirect effects to vernal pools/swales of potentially suitable vernal pool shrimp and vernal pool tadpole shrimp habitat. The applicant has identified and agreed to purchase 0.5 vernal pool preservation credits at a Service-approved conservation bank or Service-approved fund. Credits will be purchased prior to the effect on any vernal pool habitat. The agreed upon conservation responsibilities of the applicant are as follows:</p> <ul style="list-style-type: none"> • Prior to any earth-moving activities at the proposed project site, the applicant shall purchase at least 0.5 vernal pool preservation credits within a Service-approved ecosystem preservation bank or fund account. 			
<p><u>Giant Garter Snake (GGS)</u></p> <p>The East Side Tributaries (NEMDC, Magpie Creek, and Arcade Creek) have some potential GGS habitat, however, the creeks in this area lack year round water and connectivity to rice fields, a major component of GGS habitat. The closest rice fields are about 5 miles away up the NEMDC and above a pump plant</p>	<p><u>Giant Garter Snake</u></p> <p>The following measures will be implemented to minimize effects on giant garter snake habitat that occurs within 200 feet of any construction activity. These measures are based on USFWS guidelines for restoration and standard avoidance measures included as appendices in USFWS (1997).</p>			

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<p>located on the NEMDC just above Dry/Robla Creek. Additionally, Arcade Creek and NEMDC both have segments that include large cover vegetation that would make them undesirable for GGS.</p>	<ul style="list-style-type: none"> • Unless approved otherwise by USFWS, construction will be initiated only during the giant garter snakes' active period (May 1 to October 1, when they are able to move away from disturbance). • Construction personnel will participate in USFWS-approved worker environmental awareness program. • A giant garter snake survey would be conducted 24 hours prior to construction in potential habitat. Should there be any interruption in work for greater than two weeks, a biologist would survey the project area again no later than 24 hours prior to the restart of work. • Giant garter snakes encountered during construction activities will be allowed to move away from construction activities on their own. • Movement of heavy equipment to and from the construction site will be restricted to established roadways. Stockpiling of construction materials will be restricted to designated staging areas, which will be located more than 200 feet away from giant garter snake aquatic habitat. 			
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<p><u>GGG continued</u></p>	<ul style="list-style-type: none"> • Giant garter snake habitat within 200 feet of construction activities will be designated as an environmentally sensitive area and delineated with signs or fencing. This area will be avoided by all construction personnel. • Habitat temporarily affected for more than three or more seasons will be restored and twice as much habitat will be created. • The USACE has estimated that approximately 15 acres of aquatic habitat (drainage ditches and irrigation canals) and 30 acres of associated upland habitat would be permanently affected due to the widening of the Sacramento Weir and Bypass. Habitat permanently affected in the Sacramento Bypass will be compensated for through the purchase of 135 acres of credits at a USFWS-approved conservation bank. Due to the spatial and temporal loss of habitat, and the lack of permanent on-site replacement, the ecological value associated with doing all mitigation at an off-site location was reduced to an overall 70% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS in the Biological Opinion included as Appendix J. 			
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<p><u>GGs continued</u></p> <p><u>Western Yellow-Billed Cuckoo</u></p> <p>The project area is unlikely to support western yellow-billed cuckoo nesting habitat due to the narrow riparian corridors along the waterways, with the exception of the American River Parkway. However, migrant individuals are likely to pass through the area in transit to breeding sites along the Sacramento River north of Colusa. Potential long-term effects to the cuckoo could result from the loss of 65 acres of riparian habitat in the footprint of the rock trench sites within the American River Parkway. For the American River, impacts to trees would be the width of the launchable rock trenches (currently proposed at approximately 40-feet wide) for a total of approximately 65 acres. Additionally, approximately 110 acres of riparian habitat would be impacted along the Sacramento River.</p> <p><u>Swainson’s Hawks</u></p>	<ul style="list-style-type: none"> • One year of monitoring will be conducted for the 80.5 acres that are temporarily affected. • The USACE will purchase credits at a conservation bank prior to any permanent disturbance of giant garter snake habitat. <p><u>Western Yellow-Billed Cuckoo, Swainson’s Hawk, White-Tailed Kite, and Purple Martin</u></p> <p>The following BMPs will be implemented:</p> <ul style="list-style-type: none"> • Before ground disturbance, all construction personnel would participate in a CDFW-approved 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 and foraging habitat. • A breeding season survey for nesting birds would be conducted for all trees and shrubs that would be removed or disturbed which are located within 500 feet (0.5 mile for Swainson’s hawk) of construction activities, including grading. Swainson’s hawk surveys would be completed during at least two of the following survey periods: January 1 to March 20, March 20 to April 5, April 5 to April 20, and June 10 to July 30 with no fewer than three surveys completed in at least two survey periods, and with at least one of these surveys occurring immediately prior to project initiation (Swainson’s Hawk Technical Advisory Committee 2000). Other 			
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<p>Approximately 175 acres of riparian habitat used by Swainson’s hawk for roosting and nesting could be affected by project construction.</p> <p>Additionally, approximately 2.5 acres of non-native grassland intermixed with barren ground would be removed or disturbed as a result of construction activities at levees. Much of this habitat is within the Sacramento urban area, where Swainson’s hawks nest and forage along the American and Sacramento Rivers.</p> <p><u>White-Tailed Kite</u></p> <p>Construction activities conducted during nesting season, including vegetation removal, could significantly impact the white-tailed kite by removing nesting habitat or causing the species to abandon any active nests. In addition, the short-term loss of approximately 175 acres of riparian habitat on the landside of the levees that could support white-tailed kite nesting and foraging could result in significant effects to this species.</p> <p><u>Purple Martin</u></p> <p>Construction activities conducted during</p>	<p>migratory bird nest surveys could be conducted concurrent with Swainson’s hawk surveys with at least one survey to be conducted no more than 48 hours from the initiation of project activities to confirm the absence of nesting. If the biologist determines that the area surveyed does not contain any active nests, construction activities, including removal or pruning of trees and shrubs, could commence without any further mitigation.</p> <ul style="list-style-type: none"> • If active nests are found, the USACE would maintain a 0.25-mile buffer between construction activities and the active nest(s). In addition, a qualified biologist would be present on-site during construction activities to ensure the buffer distance is adequate and the birds are not showing any signs of stress. If signs of stress that could cause nest abandonment are noted, construction activities would cease until a qualified biologist determines that fledglings have left an active nest. • Tree and shrub removal, and other areas scheduled for vegetation clearing, grading, or other construction activities would not be conducted during the nesting season (generally February 15 through August 31 depending on the species and environmental conditions for any given year) . These construction activities could affect them by removing or causing abandonment of active nests of migratory birds protected under the Migratory Bird Treaty Act and California Fish 			
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<p>nesting season, including vegetation removal, could significantly impact the purple martin by removing nesting habitat or causing the species to abandon any active nests. In addition, the short-term loss of approximately 175 acres of riparian habitat on the landside of the levees that could support purple martin nesting and foraging could result in significant effects to this species.</p> <p><u>Burrowing Owl</u></p> <p>Construction activities, including grading and clearing activities within or adjacent to potential burrowing owl habitat, could result in nesting failure, death of nestlings, or loss of eggs. In addition, the short-term loss of approximately 175 acres of riparian habitat on the landside of the levees that could support burrowing owl nesting and foraging could result in significant effects to this species.</p>	<p>and Game Code</p> <p>To reduce the impact on migratory birds habitat the USACE will seek a vegetation variance on lower half of the waterside levee slope. Additionally, where bank protection work is performed the sites would be planted with vegetation and trees that over time will provide habitat for the hawks.</p> <p>To compensate for the removal of 134 acres of riparian habitat supporting Western yellow-billed cuckoos, Swainson’s hawks, and other migratory birds approximately 268 acres of replacement habitat will be created, as discussed in the vegetation and wildlife section.</p> <p><u>Burrowing Owl</u></p> <ul style="list-style-type: none"> • Prior to the implementation of construction, surveys will be conducted to determine the presence of burrows or signs of burrowing owl presence within the project area. The survey would be conducted in accordance with Appendix D of CDFW’s Staff Report on Burrowing Owl Mitigation (CDFG 2012). • If burrowing owls are observed, coordination would occur with CDFW to determine the appropriate actions to take or any additional avoidance and minimization measures that may need to occur. These measures may include creating a protective buffer around occupied burrows during the duration of the breeding season and biological monitoring of 			
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<p><u>Listed Fish Species:</u> <u>Winter-Run Chinook Salmon</u></p> <p>Implementation of the bank erosion protection measures may result in adverse effects to juvenile and smolt winter-run Chinook salmon, their critical habitat, and EFH. Construction activities that increase noise, turbidity, and suspended sediment may disrupt feeding or temporarily displace fish from preferred habitat. Physical damage or harassment to listed fish species would be low during the months of construction.</p> <p>Winter-run Chinook salmon are expected to show a long term positive response to project actions in the Sacramento River and American River SAM analysis reaches over the lifetime of the project when both IWM and planted benches are incorporated into the with-project conditions. Chinook</p>	<p>active burrows to ensure that construction activities do not result in adverse effects on nesting burrowing owls.</p> <ul style="list-style-type: none"> • If potential burrows are present, all on-site construction personnel shall be instructed regarding the potential presence of burrowing owls, identification of these owls and their habitat, and the importance of minimizing impacts on burrowing owls and their habitat. <p><u>Listed Fish Species</u></p> <p>USACE proposes to develop a green sturgeon habitat, mitigation, and monitoring plan (HMMP) (Appendix I) to address the long-term negative impacts to green sturgeon designated critical habitat with the specific elements that are described below:</p> <ul style="list-style-type: none"> • The green sturgeon HMMP shall be developed in coordination with the Interagency Ecological Program (IEP) green sturgeon project work team and consulted on with NMFS prior to the construction of any work within the designated critical habitat of sDPS green sturgeon related to the ARCF GRR. • The USACE shall either refine the SAM or develop an alternative green sturgeon survival and growth response model based on using and updating the existing Hydrologic Engineering Center Ecosystem Function Model (HEC-EFM) that reflects 			
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<p>salmon should exhibit a positive response by year 5 in the winter-spring when most juvenile Chinook salmon are expected in the ARCF GRR project area.</p> <p><u>Spring-run Chinook Salmon</u></p> <p>Adult spring-run Chinook salmon migrate up the Sacramento River from March through September although most individuals have entered tributary streams by mid-June and will not be affected by construction activities. Therefore, potential for construction-related ARCF GRR project effects will be similar to that described for winter-run Chinook salmon.</p> <p><u>Central Valley Fall-/Late Fall-Run Chinook Salmon</u></p> <p>Fall-/Late Fall-Run Chinook salmon are expected to show a long term positive response to project actions in the Sacramento River and American River SAM analysis reaches over the lifetime of the project when both IWM and planted benches are incorporated into the with-project conditions. Chinook salmon should exhibit a positive response by year 5 in the winter-spring</p>	<p>green sturgeon’s preference for benthic habitat.</p> <ul style="list-style-type: none"> • The green sturgeon HMMP shall also be developed with measurable objectives for completely offsetting all adverse impacts to all life stages of sDPS green sturgeon (as modeled using refined approaches described above and considering design refinements that occur in the PED phase of project implementation. • The HMMP shall also, restore or compensate for the number of acres of soft bottom benthic substrate for sDPS green sturgeon permanently lost to project construction. This mitigation shall be coordinated with the Interagency Working Group (IWG) or a Bank Protection Working Group (BPWG) and must be carried out within the lower Sacramento River/North Delta in order to offset the adverse modification to designated critical habitat. • Mitigation actions shall be initiated prior to the construction activities affecting sDPS green sturgeon and their critical habitat. • The sDPS green sturgeon HMMP will include measurable performance standards at agreed upon intervals and will be monitored for a period of at least ten years following construction. <p>The following additional conservation measures would be implemented to reduce the adverse effects to listed Chinook, steelhead, delta smelt, and green sturgeon:</p>			
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<p>when most juvenile Chinook salmon are expected in the ARCF GRR project area.</p> <p><u>Central Valley Steelhead</u></p> <p>Steelhead are expected to show a long term positive response to project actions in the Sacramento River and American River SAM analysis reaches over the lifetime of the project. Steelhead should exhibit a positive response by year 4 in the winter-spring when most juvenile steelhead will be migrating and rearing through the project area.</p> <p><u>Green Sturgeon</u></p> <p>If larvae or juveniles are present during construction, in-water activities could result in localized displacement and possible injury or mortality to individuals that do not readily move away from the channel or nearshore areas. Project actions associated with bank protection measures may increase sediment, silt, and pollutants, which could adversely affect rearing habitat or reduce food production, such as aquatic invertebrates, for larval and juvenile green sturgeon.</p>	<ul style="list-style-type: none"> • In-water construction activities (e.g., placement of rock revetment) will be limited to the work window of August 1 through November 30. If the USACE wants to work outside of this window they will consult with USFWS and NMFS. • The USACE will purchase delta smelt credits from a USFWS-approved conservation bank to off-set the loss of 14 acres of shallow water habitat, and 13 acres of spawning habitat. This mitigation is assumed to occur through the purchase of credits at a mitigation bank due to the lack of available real estate in the study area for on-site mitigation. Due to the spatial and temporal loss of habitat, the ecological value associated with doing all mitigation at an off site location was reduced to an overall 70% habitat value. This reduction is offset by the increase of mitigation credits at ratios specified by USFWS and NMFS in the Biological Opinions. The USACE proposes to purchase a total of 72 credits to ensure that impacts to Delta smelt are fully mitigated. • Erosion control measures will be implemented (BMPs), including Storm Water Pollution Prevention Program and Water Pollution Control Program, that minimize soil or sediment from entering the river. BMPs shall be followed, monitored for effectiveness, and maintained throughout construction operations to minimize effects to Federally listed fish and their designated 			
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<p>Due to these adverse effects to juvenile green sturgeon, USACE is proposing to adaptively manage the project in a number of ways in order to minimize impacts to this species. In particular, preconstruction physical modeling is proposed to assist in determining potential methods of implementing the proposed measures to minimize impacts to salmon. Additionally, new habitat modeling is proposed to better define what those impacts may be. Monitoring would be conducted during and post-construction in order to confirm the impacts estimated to result from the project, and to allow for improvement in minimizing impacts for future construction throughout the estimated 10 year construction period.</p> <p><u>Delta Smelt</u></p> <p>Potential spawning habitat includes shallow channel edge waters in the Delta and Sacramento River. Construction-related effects include disruption of spawning activities, disturbance or mortality of eggs and newly hatched larvae, and alteration of spawning and incubation habitat. As a result, potential construction-related effects to delta smelt physical habitat would include disruption of spawning activities, disturbance or mortality of</p>	<p>critical habitat.</p> <ul style="list-style-type: none"> • Screen any water pump intakes, as specified by NMFS and USFWS screening specifications. Water pumps will maintain an approach velocity of 0.2 feet per second or less when working in areas that may support delta smelt. • No grading or altering of the lands within the existing Sacramento Bypass will occur as part of the project. • The USACE shall participate in an existing IWG or work with other agencies to participate in a new BPWG to coordinate stakeholder input into future flood risk reduction actions associated with the ARCF GRR. • The USACE shall coordinate with NMFS during PED as future flood risk reduction actions are designed to ensure conservation measures are incorporated to the extent practicable and feasible and projects are designed to maximize ecological benefits. • The USACE shall include as part of the Project, a Riparian Corridor Improvement Plan with the overall goal of maximizing the ecological function and value of the existing levee system within the Sacramento Metropolitan Area. • The USACE shall develop a HMMP with an overall goal of ensuring the conservation measures achieve a high level of ecological function and value. The HMMP shall include: 			
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<p>eggs and newly hatched larvae, alteration of spawning and incubation habitat, and loss of shallow water habitat for spawning. Juvenile delta smelt may be subject to disturbance or displacement caused by construction activities that increase noise, turbidity, and suspended sediment. Delta smelt may not be readily able to move away from channel or nearshore areas that are directly affected by construction activities (i.e., placement of rock revetment). Larvae may be disrupted during summer months as they migrate downstream to rear in the Delta. Incidental take of delta smelt may occur from direct mortality or injury during a construction activity, or by the impairment of essential behavior patterns (i.e., feeding, escape from predators). In addition, physiological impairment could be caused by toxic substances (i.e., gasoline, lubricants, oil) entering the water. Construction related effects on delta smelt rearing and migration will be minimized by restricting in-water construction activities on the Sacramento River to a general estimated work window between August 1 and November 30. For the purpose of this study however, during PED, the work window will be adjusted on a site specific basis taking into account presence of juvenile and</p>	<ul style="list-style-type: none"> ▪ Specific goals and objectives and a clear strategy for maintaining all of the project conservation elements for the life of the project. ▪ Measures to be monitored by the USACE for 10 years following construction and shall update their O&M manual to ensure the HMMP is adopted by the local sponsor to ensure the goals and objectives of the conservation measures are met for the life of the project. ▪ Include specific goals and objectives and a clear strategy for achieving full compensation for all project-related impacts to listed fish species. ▪ The USACE shall 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 HMMP. ▪ The USACE shall host an annual meeting and issue annual reports for five years following completion of project construction. <ul style="list-style-type: none"> • The USACE shall ensure that, for salmon and 			
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<p>adult delta smelt as well as any other condition that could impact delta smelt rearing and migration.</p> <p><u>Listed Fish Species continued</u></p>	<p>steelhead, the maximum SAM WRI deficits for each seasonal water surface elevation as determined appropriate with input from the IWG or the BPWG are fully offset through the purchase of credits at a NMFS approved conservation bank (as described in this BA).</p> <ul style="list-style-type: none"> • The USACE shall minimize the removal of existing riparian vegetation and IWM to the maximum extent practicable, and where appropriate, removed IWM will be anchored back into place or if not feasible, new IWM will be anchored in place. • The USACE shall ensure that the planting of native vegetation will occur as described in the HMMP. All plantings must be provided with the appropriate amount of water to ensure successful establishment. • The USACE shall provide a copy of the BO, or similar documentation, to the prime contractor, the prime contractor is responsible for implementing all requirements and obligations on behalf of USACE included in the documents and to educate and inform all other contractors involved in the project as to the requirements of the BO. • A NMFS-approved Worker Environmental Awareness Training Program for construction personnel shall be conducted by the NMFS-approved biologist for all construction workers prior to the commencement of construction activities. Written documentation of the training will be submitted to NMFS within 30 days of the 			
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<p><u>Listed Fish Species continued</u></p>	<p>completion of training.</p> <ul style="list-style-type: none"> • The USACE shall consider installing IWM along future flood risk reduction projects associated with the ARCF GRR at 40 to 80 percent shoreline coverage at all seasonal water surface elevations in coordination with the IWG or the BPWG. The purpose is to maximize the refugia and rearing habitats for juvenile fish. • The USACE shall protect in place all riparian vegetation on the lower waterside slope of any levee unless removal is specifically approved by NMFS. • The USACE shall develop a Vegetation Variance for all elements of the ARCF GRR that are adjacent to habitat that is occupied by federally listed salmon, steelhead and green sturgeon, including the main channel of the Sacramento River (as proposed) and the Sacramento Bypass. • The USACE shall ensure the widening of the Sacramento Bypass is designed and constructed to minimize stranding of fish in the depressions wound within the bypass though grading or construction of drainage channels. • The USACE, in coordination with the local sponsor, shall ensure that the Habitat Mitigation and Monitoring Plan for the Sacramento Bypass includes baseline post-project monitoring of fish stranding. The monitoring plan shall be developed in coordination with NMFS. 			
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<p><u>Listed Fish Species continued</u></p>	<ul style="list-style-type: none"> • The USACE shall update the O&M manual to incorporate without detrimental effects to flood operations 1) operations of the Sacramento Weir include a plan that allows for ramp down flows in a manner that minimize juvenile fish stranding in the Sacramento Bypass, (2) integration of Sacramento Weir operations with the Yolo Bypass. • During Preconstruction Engineering and Design, the USACE, in coordination with the local sponsor, shall coordinate with NMFS to provide an operation of the Sacramento Weir to allow without detrimental effects to flood management operations, for controlled ramp down rates of water into the Sacramento Bypass following peak flows. • Additional concerns about mitigation, not considered in a SAM analysis, will be included in the MMP (See Appendix I) along the Sacramento Bypass reach, including potential adult and juvenile passage issues, loss of shoreline riparian vs. gain in floodplain, and contradicting ESA species habitat requirements. These issues will be considered and appropriate actions will be taken where possible in coordination with other agencies. <p>For SRA habitat impacted by construction, the following measures would be implemented to compensate for the habitat loss:</p>			
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<p><u>Listed Fish Species continued</u></p>	<ul style="list-style-type: none"> • Compensation timing refers to the time between the initiation of construction at a particular site and the attainment of the habitat benefits to protected species from designated compensation sites. In general, compensation time is the time required for on-site plantings to provide significant amounts of shade or structural complexity from instream woody material recruitment. Significant long-term benefits have often been considered as appropriate to offset small short-term losses in habitat for listed species in the past, as long as the overall action contributes to recovery of the listed species. The authority to compensate prior to or concurrent with project construction is given under WRDA 1986 (33 United States Code [USC] §§ 2201–2330). • For identified designated critical habitat, where feasible all efforts will be made to compensate for impacts where they have occurred or in close proximity. Impacts to designated critical habitat, SRA and instream components combined and the compensation value of replacement habitat will be based on the interagency approved Standard Assessment Model (SAM) used throughout the Sacramento River basin and Delta flood control system. • Compensation sites would be monitored and vegetation would be replaced as necessary based on performance standards in the Mitigation Monitoring Plan (MMP) as detailed in Appendix I of the EIS/EIR. 			
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<p><u>Special Status Plant Species:</u> <u>Sanford's Arrowhead</u></p> <p>Sanford's arrowhead is known to occur in the Arcade Creek and NEMDC channels. Levee work in these reaches is proposed to remain within the levee prism and would not encroach into the channel; therefore, construction activities in this reach would not result in direct impacts to Sanford's arrowhead. Indirect effects to Sanford's arrowhead could occur during construction due to dust disturbance. However, the mitigation measures proposed in the air quality section.</p>	<p>Depending on the species of interest (e.g., delta smelt), the severity of the short-term habitat losses due to bank erosion repair actions may not be compensated by long-term gains, whereas longer lived species (e.g., steelhead, Chinook) have longer periods for compensation to be provided. The following compensation time periods (based loosely on life expectancy) should be considered as guidelines for compensation:</p> <ul style="list-style-type: none"> • Green sturgeon, 15 years; • Chinook salmon, 5 years; • Central Valley steelhead, 4 years; and • Delta smelt, 1 year. <p><u>Special Status Plant Species</u></p> <p>The following avoidance and minimization measures would be implemented during construction to reduce potentially significant effects to Sanford's arrowhead and woolly rose-mallow to less than significant. Additionally, the avoidance and minimization measures to address invasive plant species in Section 3.6.6 would also reduce potential impacts to special status plant species.</p> <ul style="list-style-type: none"> • Preconstruction surveys would be conducted by a qualified botanist in suitable habitat to determine the presence of any special status plants. Surveys would be conducted at an 			
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<p><u>Woolly Rose-Mallow</u></p> <p>There are no known populations of woolly rose-mallow in the study area, however since they are known to occur on levee banks with riprap, they could potentially be adversely impacted by construction of the proposed project. Clearing and grubbing of the levee slopes, and some long-term O&M activities, such as mowing of the levees, could also remove populations of this plant, if present.</p> <p>Alternative 2 A maximum of 15 acres of aquatic GGS habitat (drainage ditches and farm canals) would be permanently removed and incorporated into the Sacramento Bypass.</p> <p>To the east of the bypass, there are approximately 8 acres of riparian vegetation growing along the Sacramento River that would be removed to construct the new weir structure. The 8-acre area contains both the Old River Road and Union Pacific Railroad (UPRR) tracks. Prior to construction this area would be surveyed to determine if any avian species have nested in the area. If there is nesting Swainson’s Hawks</p>	<p>appropriate time of year during which the species are likely to be detected, which would likely be during the blooming period.</p> <ul style="list-style-type: none"> • If special status plant species are found during preconstruction surveys, the habitat would be marked or fenced as an avoidance area during construction. A buffer of 25 feet would be established. If a buffer of 25 feet is not possible, the next maximum possible distance would be fenced off as a buffer. • If special status plant species cannot be avoided during construction, the USACE would coordinate with the resource agencies to determine additional appropriate mitigation measures. <p>Alternative 2 Same mitigation ratios and BMPs as alternative 1</p>			
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<p>construction would be delayed until fledglings have left the nest. Fish in the area would likely disperse with the disturbance to the water. The expansion of the Sacramento Weir and Bypass could have a positive beneficial effect on special status wildlife such as the giant garter snake and its riparian vegetation once construction is complete and lands are converted from farming activities to open space where wetlands and shrubby riparian habitat is expected to naturally regenerate with the increased area that is periodically inundated from flooding during the rainy season.</p> <p>Widening of the weir and bypass will increase the entrainment and stranding exposure and rates of juvenile green sturgeon. When the weir is overtopping and water is flowing down the bypass, adult fish are attracted to the flow and follow it upstream in an attempt to reach their holding and spawning habitat. Widening the weir and bypass would increase the amount of water going over the weir and increase the attraction rate of sturgeon, salmon and steelhead.</p>				
<p>3.9 Cultural Resources</p> <p>The effects of the erosion repair on the</p>	<p>Avoidance of adverse effects to historic properties is the preferred treatment approach.</p>	<p>D, P, C</p>	<p>USACE</p>	<p>CVFPB</p>

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<p>American River, levee geometry measures, cutoff walls, and bank protection on the Sacramento River and construction of cutoff walls, correction of the levee geometry, installation of floodwalls, installation of a conduit or box culvert, raising of floodwalls and existing levees, construction of maintenance roads, installation of floodgates, and creation of a detention basin on the East Side Tributaries would likely result in an adverse effect to some historic properties located within the APE for the project.</p> <p>The records and literature search conducted for the project identified 69 known prehistoric and historic resources in the total project APE. For the purposes of this EIS/EIR, the USACE assumes that all of these resources would be impacted by the levee improvement alternatives. Site specific determinations of effect and impact cannot be made at this time because each site within the APE would need to be field checked, the previous recordation (included site boundary, associated features, integrity) verified, and each site would need to be considered for eligibility for listing in the NRHP. The process for field checking cultural resources sites and making determinations of eligibility for listing in</p>	<p>The USACE will consider design refinements of project elements in order to avoid historic properties and project effects that may be adverse. Avoidance of adverse effects to historic properties is a significant part of the USACE planning and cultural resources management for this project as described in the PA.</p> <p>The PA includes a framework to identify historic properties, evaluate NRHP eligibility, and assess effects. Although specific effects to historic properties cannot be determined at this time, effects could include, but is not limited to, the following: temporary visual and auditory effects caused by construction activities, temporary lack of access and/or privacy to areas traditionally used by Native American tribes for ceremonies, temporary and/or permanent effects to the viewshed of TCPs caused by construction activities and associated noise levels, vibration or compression effects caused by construction activities to historic properties located in proximity to construction activities, alteration or destruction of built environment resources, removal of trees and vegetation that may represent plants significant to Native American tribes and used in ceremonies or for other traditional uses.</p>			<p>Verify that the PA is in place</p>
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<p>the NRHP are outlined in the Programmatic Agreement (PA).</p> <p>Specific individual determinations of effect for historic properties that may be affected by Alternative 1 would be completed under the stipulations of the PA, which includes a framework to identify historic properties, evaluate NRHP eligibility, and assess effects. Although specific effects to historic properties cannot be determined at this time, effects could include, but is not limited to, the following: temporary visual and auditory effects caused by construction activities, temporary lack of access and/or privacy to areas traditionally used by Native American tribes for ceremonies, temporary and/or permanent effects to the viewshed of TCPs caused by construction activities and associated noise levels, vibration or compression effects caused by construction activities to historic properties located in proximity to construction activities, alteration or destruction of built environment resources, removal of trees and vegetation that may represent plants significant to Native American tribes and used in ceremonies or for other traditional uses.</p> <p>Alternative 2</p>				
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<p>Effects to cultural resources from the construction of levee improvements under Alternative 2 would be consistent with those analyzed for Alternative 1 with the addition of effects resulting from construction of the Sacramento Weir and Bypass widening.</p> <p>Effects to historic properties may also result from disturbance of cultural resources sites due to remediation of a hazardous, toxic, and radiological waste (HTRW) site near the existing north levee, which may consist of historic era debris.</p>				
<p>3.10 Transportation and Circulation</p> <p>Increased traffic on public roadways.</p>	<p>Preparation of a traffic control and Road Management Plan</p> <p>BMP's below will be implemented to reduce the impacts from traffic:</p> <ul style="list-style-type: none"> The contractor would be required to prepare a Traffic Control and Road Maintenance Plan. A traffic control plan describes 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 plan would reduce the effects of construction on the roadway system in the project area throughout the construction period. 	<p>P, C</p>	<p>USACE</p>	<p>CVFPB</p> <p>Verify traffic plan</p>

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	<ul style="list-style-type: none"> • Construction contractors would follow the standard construction specifications of affected jurisdictions and obtain the appropriate encroachment permits, if required. The conditions of the encroachment permit would be incorporated into the construction contract and would be enforced by the agency that issues the encroachment permit. • If rock or other materials are transported by barge on the Sacramento River, appropriate water safety measures would be utilized in order to reduce impacts to recreational boaters. • The construction contractor would 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 would be minimized to the extent possible during the morning and evening peak traffic periods. Standard construction specifications also typically limit lane closures during commuting hours. Lane closures will be kept as short as possible. If a road must be closed, detour routes and/or 			<p>Verify barge usage when appropriate.</p>
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	<p>temporary roads would be made to accommodate traffic flows. Detour signs would be provided to direct traffic through detours. Advance notice signs of upcoming construction activities would be posted at least 1 week in advance so that motorists are able to avoid traveling through the study area during these times. Within the Parkway, detours would be used to allow for continued use by bicycle commuters.</p> <ul style="list-style-type: none"> • Safe pedestrian and bicyclist access would be maintained in or 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 would be located as far away as possible from areas where bicyclists and pedestrians are present. • The construction contractor would notify and consult with emergency service providers to maintain emergency access and facilitate the passage of emergency vehicles on city streets. • Emergency vehicle access would be made available at all times. Coordination with local emergency responders by the contractor to inform them of the construction activities would be required by the contractor. • The construction contractor would assess damage to roadways used during construction and will repair all potholes, fractures, or other damages. 			<p>Verify pedestrian and cyclist detour routes.</p>
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	<ul style="list-style-type: none"> Trains utilizing the Yolo Shortline Railroad would be detoured to a different rail line during construction. If an alternative rail line is not available, railroad services would be continued by transporting goods on public roads using cargo trucks during the extent of closures required by the construction and realignment of the railroad on the new portion of the Sacramento Weir. 			
<p><u>3.11 Air Quality</u></p> <p>Emissions of criteria pollutants from construction equipment, haul trucks, and barges.</p> <p>Construction of the proposed project would result in short-term dust emissions from grading and earth moving activities at the project construction sites and the soil borrow sites.</p> <p>Construction of the proposed project would result in short-term diesel particulate emissions from onsite heavy duty equipment and on-road haul trucks. DPM, which is classified as a carcinogenic TAC by CARB, is the primary pollutant of concern with regard to indirect health risks to sensitive receptors. Nearby land uses, especially those residences and schools located downwind of the project sites could be exposed to DPM generated during construction activities, indirectly</p>	<p>SMAQMD’s Basic Construction Emissions Control Practices</p> <p>The SMAQMD requires construction projects to implement basic construction emission control practices to control fugitive dust and diesel exhaust emissions (SMAQMD 2015). The USACE would comply with the following control measures for the project:</p> <ul style="list-style-type: none"> Water all exposed surfaces twice daily. Exposed surfaces include but are not limited to: soil piles, graded areas, unpaved parking areas, staging areas, and access roads. Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would travel along freeways or major roadways should be covered. Use wet power vacuum street sweepers to remove any visible trackout mud or dirt from adjacent public roads at least once a day. 	<p>D, P, C</p>	<p>USACE</p>	<p>CVFPB</p> <p>Verify that emissions control guidance is followed.</p> <p>Verify that dust control measures are in place.</p>

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<p>resulting in potential adverse health effects. The proposed project would not result in any major sources of odor, and the project would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, wastewater treatment facility). Odors associated with diesel exhaust emissions from the use of onsite construction equipment may be noticeable from time to time by adjacent receptors.</p> <p>Alternative 2 Construction of the Sacramento Weir and Bypass Widening would occur in YSAQMD and include clearing of trees and vegetation, construction of the new levee, construction of the new portion of the weir, construction of new sections of road and railroad on the top of the new portion of the weir and the new levee, relocation of utilities, degrading and excavating the existing levee, and delivery and installation of rip-rap on the waterside slope of the new levee. Materials for the construction of the new levee would be reused from the existing levee to the greatest extent possible.</p>	<p>Use of dry power sweeping is prohibited.</p> <ul style="list-style-type: none"> • Complete all roadways, driveways, sidewalks, or parking lots to be paved as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the site entrances. • Maintain all construction equipment in proper working condition according to the manufacturer’s specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. <p><u>Fugitive Dust Emission Mitigation Measures</u></p> <p>Fugitive dust mitigation would require the use of adequate measures during each construction activity and would include frequent water applications or application of soil additives, control of vehicle access, and vehicle speed restrictions. The USACE would implement the dust mitigation measures listed below.</p> <ul style="list-style-type: none"> • Water exposed soil with adequate frequency for continued moist soil. • Suspend excavation, grading, and/or 			
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	<p>demolition activity when wind speeds exceed 20 mph.</p> <ul style="list-style-type: none"> • 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. • Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site. • Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips, mulch, or gravel 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 the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance. <p>The project will ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour.</p> <p>The use of USEPA adopted Tier 3 and Tier 4 standards for newly-built marine engines in 2008 would be encouraged under the barge delivery scenario. The Tier 3 standards reflect the</p>			
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	<p>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. These Tier 4 standards would be phased in over time for marine engines beginning in 2014 (USEPA 2008).</p> <p>The USACE will require that all off-road construction equipment comply with SMAQMD's enhanced exhaust controls (20% NO_x and 45% PM reductions). The USACE will encourage their construction contractors to use off-road diesel-powered construction equipment greater than 50 horsepower that meets Tier-4 off-road emission standards under the barge delivery scenario.</p> <p>As of July 1, 2015, the mitigation fee rate is \$18,030 per ton of emissions. The Contractor would provide payment of the appropriate SMAQMD-required NO_x mitigation fee to offset the project's NO_x emissions when they exceed SMAQMD's threshold of 85 lbs/day.</p> <p>The USACE would consult with the BAAQMD in good faith to enter into a mitigation contract for an emission reduction incentive program (e.g., TFCA or Carl Moyer Program). The current emissions limit is \$17,080/weighted ton of criteria pollutants (NO_x + ROG + [20*PM]). An administrative fee of 5 percent would be paid to the BAAQMD to implement the program. The contractor would conduct daily and annual emissions monitoring to ensure onsite emissions</p>			
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	reductions are achieved and no additional mitigation payments are required. The contractor would be required to ensure the requirement is met. This requirement would be incorporated into the construction contracts as part of the project's specifications.			
3.12 Climate Change Increased GHG emissions from construction equipment, haul trucks, and barges.	<p>The following measures may be considered to lower GHG emissions during the construction:</p> <ul style="list-style-type: none"> • 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 toxics 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 	P, C	USACE	CVFPB Verify mitigation measures are being implemented.

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	<p>mechanic and determined to be running in proper condition before it is operated.</p> <ul style="list-style-type: none"> • 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 a CARB approved low carbon fuel for construction equipment. (NO_x 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) exceeding SMAQMD or CEQ’s significance thresholds applicable at the time of construction. Carbon offset credits shall be purchased from programs that have been approved by SMAQMD. 			
<p>3.13 Noise Construction activities in the American River Parkway, Sacramento River, East Side Tributaries and Sacramento Bypass could result in temporary significant impacts on residents, recreationists, and other noise sensitive groups.</p>	<p>During construction, noise-reduction measures would be employed in order to ensure that construction noise complies with local ordinances. Prior to the start of construction, a noise control plan would be prepared that would identify feasible measures to reduce construction noise, when necessary. The following measures 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:</p>	<p>P, C</p>	<p>USACE</p>	<p>CVFPB</p> <p>Verify noise control plan.</p> <p>Verify that residents have been notified in writing.</p> <p>Verify signage.</p>

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	<ul style="list-style-type: none"> • 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 one week to one 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.), 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. 			
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	<ul style="list-style-type: none"> • 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. • If there are any occupied buildings with plaster or wallboard construction within 40 feet of construction equipment, a vibration control plan would be prepared prior to construction. 			
<p>3.14 Recreation</p> <p>Site-specific designs have not been conducted to determine which erosion protection measure is appropriate along each reach of the Parkway, certain assumptions can be made:</p> <ul style="list-style-type: none"> • Access to the American River for 	<p>The following measures would be implemented to keep the public informed of construction activities to mitigate for effects to bike trail/recreation trail access:</p> <ul style="list-style-type: none"> • Coordination with recreation user groups would occur prior to and during construction for input into mitigation measures that would reduce affects to the maximum extent practicable. 	<p>P,C</p>	<p>USACE</p>	<p>CVFPB</p> <p>Verify that notice is given about recreational impacts prior to closure.</p>

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<p>the purposes of erosion control construction would require some temporary closures of portions of the recreation trail during construction activities.</p> <ul style="list-style-type: none"> • Haul trucks would use portions of the recreational trail to bring materials to the construction sites, reducing accessibility to recreationists. • Some areas within the Parkway itself would be construction staging areas. • The presence of construction equipment and haul trucks would reduce the quality of recreational experiences. <p>Alternative 2 Possible closure of the Sacramento Bypass during portions of the hunting season.</p>	<ul style="list-style-type: none"> • Advance notice would be given to recreation users informing them of anticipated activities and detours to reduce the effects. <p>To ensure public safety:</p> <ul style="list-style-type: none"> • Flaggers, • Signs restricting access would be posted before and during construction • Detour routes would be clearly marked, • Fences would be erected in order to prevent access to the project area. • In areas where recreational traffic intersects with construction vehicles, traffic control will be utilized in order to maintain public safety. • The public will have continued access to the Parkway and recreation facilities during construction, but bike and running trail users would likely be required to detour onto public roads or alternative trails. • If any access point needs to be closed during construction, notices will be posted providing alternative access routes. 			<p>Verify use of flaggers.</p> <p>Verify use of detour signs.</p>
<p>3.15 Visual Resources</p> <p>Vegetation loss and construction activities would disrupt the existing visual conditions in the Parkway and along the Sacramento River.</p>	<p>American River Trees will be planted along the outer portion of the rock trench where there is sufficient space.</p> <p>Sacramento River Trees will remain on the waterside lower third of the levee. The understory vegetation will be removed in order to place rock.</p>	<p>P, C, M</p>	<p>USACE</p>	<p>CVFPB</p> <p>Verify replanting of trees.</p> <p>Verify that lower one third of trees are not removed.</p>

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	<p>Sacramento Weir and Bypass</p> <p>Native trees and shrubs within the existing bypass would be avoided during construction as much as practicable to help minimize visual impacts. The loss of ground cover in the existing and expanded bypass would be mitigated by planting native grasses and forbs in areas disturbed by construction, except within the footprint of the extended weir. The loss of existing native trees and shrubs within the existing bypass, along the bank of the Sacramento River, and within small portions of the agricultural lands directly impacted by the project would be mitigated by planting native trees and shrubs within certain portions of the expanded bypass.</p>			Verify tree mitigation.
<p>3.16 Public Utilities and Services</p> <p>Temporary disruptions to utility services are possible particularly during relocation of utilities that penetrate the levee.</p>	<p>Consultation with all known service providers would take place prior to construction to identify specific infrastructure locations and appropriate protection measures. Consultation would continue during construction to ensure avoidance/protection of facilities to minimize service disruptions. Where feasible, replacement utility structures would be completed before demolition of existing facilities. Mitigation measures would include the following:</p> <ul style="list-style-type: none"> • Notification of any potential interruptions in service shall be provided to the appropriate agencies and affected landowners. • Before the start of construction, utility locations shall be verified through field surveys and the use of the Underground Service Alert services. Any buried utility lines 	D, P, C	USACE	<p>CVFPB</p> <p>Verify coordination with appropriate service providers.</p>

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M: To be implemented as ongoing maintenance after construction is complete

O: To be implemented as an operational practice after construction is complete

	<p>shall be clearly marked in the area of construction on the construction specifications in advance of any earthmoving activities.</p> <ul style="list-style-type: none"> • Before the start of construction, a response plan shall be prepared to address potential accidental damage to a utility line. The plan shall identify chain of command rules for notification of authorities and appropriate actions and responsibilities to ensure the safety of the public and workers. Worker education training in response to such situations shall be conducted by the contractor. The response plan shall be implemented by the project proponent(s) and its contractors during construction activities. • Utility relocations shall be staged to minimize interruptions in service. • Construction activities will be coordinated with first responders within the study area so plans can be implemented to avoid response delays due to construction detours. 			
<p>3.17 Hazardous, Toxic, and Radiological Wastes No effect from construction activities. HTRW sites encountered would be removed and properly disposed of prior to construction.</p>	<p>Borrow material would be tested prior to use to ensure that no contaminated soils are used in project.</p>	P, C	USACE	<p>CVFPB Verify that import soils are tested prior to use in project.</p>
<p>3.18 Socioeconomics, Population, and Environmental Justice Disruption to residents alongside</p>	<p>Mitigation for relocation of people and their homes would be compensated under the Federal Relocation Act.</p>	D,P	USACE	<p>CVFPB Verify that Federal</p>

Notes:

D: To be implemented or included as part of project design. Includes pre-project permitting and agency coordination

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construction sites from traffic, noise, and dust. Acquisition of properties for levee easements.				relocation process is followed.
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Notes:

- D: To be implemented or included as part of project design. Includes pre-project permitting and agency coordination
- P: To be implemented prior to construction being initiated prior (pre-construction), but not part of project design or permitting
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Attachment E

American River Watershed Common Features

General Reevaluation Report

*(available for download from the
Board's website under a link to this
agenda item)*