Mitigation Monitoring and Reporting Program

American River Watershed Common Features, Water Resources Development Act of 2016 Project, American River Contract 1

SCH# 2005072046

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Abbreviations and Acronyms

APE	Area of Potential Effects
CARB	California Air Resources Board
ARCF	American River Watershed Common Features
BMP	Best Management Practice
BO	Biological Opinion
CCR	Code of California Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CRHR	California Register of Historic Resources
CVFPB	Central Valley Flood Protection Board
EA	Environmental Assessment
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
GHG	Greenhouse gas
GPS	Global Positioning System
GRR	General Reevaluation Report
HMMAMP	Habitat Mitigation Monitoring and Reporting Plan
HPMP	Historic Properties Management Plan
HPTP	Historic Properties Treatment Plan
IWM	Instream Woody Material
MLD	Most Likely Descendent
MMRP	Mitigation, Monitoring, and Reporting Program
NAHC	Native American Heritage Center
NO_x	Oxides of Nitrogen
NTU	Nephelometric Turbidity Unit
NPDES	National Pollutant Discharge Elimination System
PA	Programmatic Agreement
PM	Particulate matter
PM_{10}	Particulate matter 10 microns or less in diameter
PPV	Peak particle velocity
PRC	Public Resources Code
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Office
SMAQMD	Sacramento Metropolitan Air Quality Management District
SPCCP	Spill Prevention Control and Countermeasures Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
TCR	Tribal Cultural Resource
VELB	Valley Elderberry Longhorn Beetle
VdB	Velocity decibels

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Mitigation Monitoring and Reporting Program

Section 21081.6(a)(1) of the California Public Resources Code (PRC) and Section 15097 of the State CEQA Guidelines require a public agency to adopt a reporting and monitoring program on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental impacts on the physical environment.

This Mitigation Monitoring and Reporting Program (MMRP) will be used by the Central Valley Flood Protection Board (CVFPB) to ensure the successful implementation of the mitigation measures identified in the Final Supplemental Environmental Assessment/Environmental Impact Report (EA/EIR) for the American River Watershed Common Features (ARCF) Water Resources Development Act of 2016 Project, American River Contract 1 (American River Contract 1 Project). All appropriate mitigation measures, including measures from the ARCF General Reevaluation Report (GRR) Final Environmental Impact Statement (EIS)/EIR, have been incorporated into the Final Supplemental EA/EIR.

The MMRP is in tabular format. The table columns contain the following information:

Mitigation Number: Lists the mitigation measures by number, as designated in the Final Supplemental EA/EIR.

Mitigation Measure: Provides the text of the mitigation measures, each of which has been adopted and incorporated into the American River Contract 1 Project.

Implementation Timing: Lists the time frame in which the mitigation measure is expected to take place. The following abbreviations are used in the table:

D: To be implemented or included as part of American River Contract 1 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

C: To be implemented during American River Contract 1 Project construction

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

Implementation Responsibility: Identifies the entity responsible for implementing the mitigation measure.

Responsible for Monitoring/Reporting Action: Identifies the entity responsible for monitoring implementation of the actions described in the mitigation measures. Verification will be carried out during the American River Contract 1 Project and an MMRP completion report will be submitted to CVFPB staff upon implementation of all mitigation measures.

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
VIS-1	**Shield Temporary Nighttime Lighting:** The U.S. Army Corps of Engineers (USACE) will require its construction contractors to ensure that all temporary lighting related to security of the staging areas to be shielded or directed to avoid or minimize any direct illumination onto light-sensitive receptors located outside of the Project Area.	C	USACE	CVFPB
WQ-1	**Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices:** As part of a turbidity monitoring program, the USACE contractor(s) will 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 Regional Water Quality Control Board (RWQCB) Basin Plan turbidity objectives. The monitoring program will be coordinated with the Central Valley RWQCB prior to construction and will be implemented by the construction contractor. The contractor will be required to use Best Management Practices (BMPs), as described below, to prevent runoff from all construction areas. Environmental commitments included in the project to reduce the potential for impacts on water quality include preparation of the Storm Water Pollution Prevention Plan (SWPPP), and Spill Prevention Control and Countermeasures Plan (SPCCP). Typical elements of the SWPPP are described below. In general, the following measures will be implemented as part of the SWPPP, as required by the State Water Resources Control Board (SWRCB) for any construction activities that disturb more than 1 acre, to limit erosion potential. • Conduct earthwork during low-flow periods (e.g., approximately May 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. • Install sediment barriers (e.g., silt fences, fiber rolls, and straw bales) around the base of soil 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. Stockpiling soil on the landside of the levee is not practical at Site 2-1. • 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	D, P, C	USACE	CVFPB

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	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. • During working hours, the construction activity will 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 nephelometric turbidity units (NTUs), increases will not exceed 1 NTU; where natural turbidity is between 5 and 50 NTUs, increases will not exceed 20 percent; where natural turbidity is between 50 and 100 NTUs, increases will not exceed 10 NTUs; and where natural turbidity is greater than 100 NTUs, increases will not exceed 10 percent. 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 will 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 will be completed before any construction activities begin. • Implementation of this measure will comply with State and Federal water quality regulations. The SPCCP will describe spill sources and spill pathways in addition to the actions that will be taken in the event of a spill (e.g., an oil spill from engine refueling will be immediately cleaned up with oil absorbents). The SPCCP will outline descriptions of containment facilities and practices such as double-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures, and spill response kits. It will also describe how and when employees are trained in proper handling procedure and spill prevention and response procedures. Release of contaminants into adjacent water bodies could result in significant effects.			
VEG-1	**Retain, Protect, and Plant Trees On-Site:** Project designs will be refined to reduce impacts on vegetation and wildlife to the extent practicable. Refinements implemented to reduce the loss of riparian habitat will include reducing the impact footprint, constructing bank protection rather than launchable rock trench whenever feasible, and designing planting benches. Where practicable, trees will be retained in locations where the bank protection and planting bench are constructed. Trees will be protected in place along the natural channel during the placement of rock. Additional plantings will be installed on the newly constructed bench to provide habitat for fish and avian species. The planting bench will be used where practicable to minimize impacts on fish and wildlife species. The on-site habitat will be created in accordance with the ARCF GRR Habitat Mitigation Monitoring and Adaptive Management Plan (HMMAMP), which includes conceptual mitigation proposals, performance standards, and adaptive management tasks.	D, P, C, M	CVFPB, USACE	CVFPB

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VEG-2	**Compensate for Riparian Habitat Removal:** • To compensate for the removal of riparian habitat, replacement habitat will be created at a ratio of 2:1 to account for the temporal loss of habitat while newly created habitat is growing. Species selected to compensate for the riparian corridor removal will be consistent with the approved list of trees, shrubs, and herbaceous plants native to the American River Parkway (Parkway). The riparian replacement habitat will create habitat connectivity and wildlife migratory corridors that will provide for the habitat needs of important native wildlife species without compromising the integrity of the flood control facilities, the Parkway's flood conveyance capacity, and the Parkway management goals in the Parkway Plan. Some of the replacement riparian habitat will be planted on top of the rock trench. Additionally, to comply with the Parkway Plan, lands within the Parkway will be evaluated for compensation opportunities. The exact location of the compensation lands in the Parkway will be coordinated with the Sacramento County Department of Regional Parks during the design phase of the project and will comply with the Parkway Plan's objectives and goals. It is assumed that sufficient lands are available within the Parkway. The replacement habitat will be created in accordance with the ARCF GRR HMMAMP, which includes conceptual mitigation proposals, performance standards, and adaptive management tasks. • Within the Project Area, USACE has designated permanent and temporary construction zones. In temporary zones, some or all of the vegetation will be removed for site access, haul routes, and staging areas. Then, upon completion of the project, temporary impact zones will be seeded with native grassland species. Permanent construction zones will require that most riparian vegetation be removed, but riparian vegetation will be planted at a planting bench and within the site on buried revetment or among the revetment. To compensate for the temporal loss of riparian vegetation and shaded riverine aquatic (SRA) habitat, creation of off-site habitat will also occur at sites that will be protected in perpetuity. These sites will include a mitigation site in the Parkway that will be selected and designed in coordination with National Marine Fisheries Services (NMFS) and U.S. Fish and Wildlife Service (USFWS) as part of the consultation under the Endangered Species Act. In addition, riparian habitat will be planted at the elderberry shrub mitigation areas, the Glenn Hall Park mitigation site, and the two Rio Americano mitigation sites.	D, P, C	CVFPB, USACE	CVFPB
BIRD-1	**Avoid and Minimize Effects on Nesting Birds:** To avoid and minimize effects on nesting birds, USACE will implement the following measures: • Before ground disturbance, all construction personnel will participate in a USFWS-approved worker environmental awareness program. A qualified	D, P, C	CVFPB, USACE	CVFPB

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	biologist will inform all construction personnel about the life history of Swainson's hawk, western yellow-billed cuckoo, western burrowing owl, bank swallow, and other relevant species, as well as the importance of nest sites and foraging habitat. • Where feasible, construction and maintenance activities that have the potential to affect special status nesting birds and common nesting birds will occur at times of the year when adverse effects on those species will be avoided. If activities are conducted outside the nesting seasons specified in the Final Supplemental EA/EIR, no additional measures are required to mitigate adverse effects on nesting birds. • A breeding season survey for nesting birds will be conducted by a qualified biologist for all trees and shrubs to be removed or disturbed that are located within 500 feet of construction activities, including grading. Swainson's hawk surveys will 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. An area with a radius of 0.5 mile from construction activities will be surveyed for Swainson's hawk nests. No fewer than three surveys will be completed in at least two survey periods, and at least one of these surveys will occur immediately before project initiation. Western burrowing owl surveys will follow suggested guidelines set forth in the California Department of Fish and Wildlife (CDFW) *Staff Report on Burrowing Owl Mitigation* such as conducting three or more daytime survey visits at least 3 weeks apart during the peak of breeding season from April 15 to July 15. Other 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. If at any time during the nesting season construction stops for a period of 2 weeks or longer, pre-construction surveys will be conducted before construction resumes. • If nesting birds have been identified within or adjacent to the construction footprint, USACE will establish avoidance buffers as indicated in the Final Supplemental EA/EIR. Reduced buffers may be implemented if recommended by the monitoring biologist and approved by CDFW (and/or USFWS if the species is Federally listed). Buffers will be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffers. Specific buffer distances for burrowing owl, which vary depending on time of year and level of disturbance, are presented in Table 3.6-6 in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation*. Reduced buffers for burrowing owl may be			

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	implemented if recommended by the monitoring biologist, due to the nature of the activity, and if approved by CDFW. • Tree and shrub removal and work in other areas scheduled for vegetation clearing, grading, or other construction activities will not be conducted during the nesting season (generally February 15 through September 30, depending on the species and environmental conditions for any given year) where feasible. • During rodent abatement efforts, no fumigation, use of treated bait, or other means of poisoning nuisance animals will occur within 100 feet of areas where burrowing owls are known to occur (e.g., burrows with observed nesting owls).			
FISH-1	**Observe In-Water Work Windows:** In-water construction will be restricted to the general estimated work window of July 1 through October 31. During preconstruction engineering and design, the work window may be adjusted on a site-specific basis, considering periods of low fish abundance, and in-water construction 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.	C	USACE	CVFPB
FISH-2	**Analyze Hazardous Materials Spills and Implement Measures to Control Contamination:** Because of the deleterious effects on native resident fish of numerous chemicals 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.	C	USACE	CVFPB
VELB-1	**Implement Current USFWS Avoidance, Minimization, and Compensatory Measures for Valley Elderberry Longhorn Beetle (VELB):** To reduce direct and indirect impacts on shrubs that will not be transplanted and that occur within 50 meters (165 feet) of the project, the following mitigation measures will be implemented: Fencing: All areas to be avoided during construction activities will be fenced and/or flagged as close to construction limits as feasible. Avoidance area. Activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 6 meters (20 feet) from the dripline, depending on the type of activity.	D, P, C, M	USACE	CVFPB

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	Worker education. A qualified biologist will provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for non-compliance. Construction monitoring. A qualified biologist will monitor the initial groundbreaking activities, vegetation removal, installation of protective fencing, and will be present during all transplanting and trimming activities. Weekly site visits will also be conducted to ensure all mitigation measures are being implemented and maintained. Additional monitoring may be required per the USFWS Biological Opinion (BO). Timing. As much as feasible, all activities that could occur within 50 meters (165 feet) of an elderberry shrub will be conducted outside of the flight season of the VELB (March–July). Trimming. Trimming may remove or destroy VELB eggs and/or larvae and may reduce the health and vigor of the elderberry shrub. To avoid and minimize adverse effects on VELB when trimming, trimming will occur between November and February and will avoid the removal of any branches or stems that are 1 inch or larger in diameter unless they were approved and compensated for by following the USFWS requirements. Chemical Usage. Herbicides will not be used within the dripline of the shrub. Insecticides will not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals will be applied using a backpack sprayer or similar direct application method. Mowing. Mechanical weed removal within the dripline of the shrub will be limited to the season when adults are not active (August–February) and will avoid damaging the elderberry shrub. Erosion Control and Revegetation. Erosion control will be implemented, and the affected area will be revegetated with appropriate native plants. Dust Control. Dust will be controlled by reducing speed limits to 10 miles per hour, regularly watering roads, and wetting down soil before removal and during placement. Transplanting and Compensatory Mitigation: • Affected elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that could feasibly be transplanted in accordance with the 2017 Framework must be transplanted to a mitigation site as approved by USFWS. Elderberry compensation will be planted in the Parkway, but outside of the Project Area (off-site) because of construction timing. USACE will find areas in the Parkway to either expand existing compensation areas or provide connectivity between areas of conserved VELB habitat. Sites within the Parkway will be coordinated with the Sacramento County Department of Regional Parks and USFWS during the design phase of the project. Sites will be designed and developed in accordance with the criteria listed below before any effects on VELB habitat. • For impacts on 0.10 acres of VELB habitat, USACE will mitigate at a 3:1 ratio and create a total of 0.30 acres of riparian habitat off-site. The elderberry shrub that will be affected will be transplanted to either the Glenn Hall Park Mitigation Site, the Rio Americano West Mitigation Site, or the Rio Americano East			

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	Mitigation Site. These sites will be used for the transplantation and compensation for impacts on elderberry shrubs as described in the *Compensatory Mitigation* section below. • Monitor. A qualified biologist will be on-site for the duration of transplanting activities to assure compliance with avoidance and minimization measures and other conservation measures (as listed above). • Exit Holes. Exit-hole surveys will be completed immediately before transplanting. The number of exit holes found, the GPS location of the plant to be relocated, and the GPS location where the plant is transplanted will be reported to USFWS and to the California Natural Diversity Database (CNDDB). • Timing. Elderberry shrubs will be transplanted when the shrubs are dormant (November through the first 2 weeks in February) and after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the shrub and increase transplantation success. • Transplanting Procedure. Transplanting will follow the most current version of the ANSI A300 (Part 6) guidelines for transplanting shrubs (http://www.tcia.org/). • Trimming Procedure. Trimming will occur between November and February and should minimize the removal of branches or stems that exceed 1 inch in diameter. Compensatory Mitigation • A Compensatory Mitigation Proposal will be prepared detailing the management of on-site and off-site lands. This plan will meet the standards for long-term management and protection of the site as outlined in USFWS's 2017 *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* and the Habitat Mitigation, Monitoring, and Adaptive Management Plan for the ARCF GRR (December 2015). The Compensatory Mitigation Proposal will be prepared and submitted by USACE to USFWS for approval. It will include habitat goals that will be suitable for the yellow-billed cuckoo and VELB, with specific information regarding site selection and development, a planting plan that includes appropriate buffers, success standards, monitoring specifications, and a reporting schedule with data as outlined in Section 6.1 and Appendix C of the 2017 Framework. • Site Selection and Development. Site selection will use a landscape-level approach that will benefit not only the VELB and yellow-billed cuckoo, but all other species that rely on riparian habitat in the Parkway. Mitigation sites will focus on restoring riparian areas adjacent to the American River that will provide connectivity for VELB populations as described in the 2017 Framework.			

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	• Planting Plan. A planting plan will be prepared that will consider site specifics that will influence the success of the elderberry shrub and associated plantings and create a healthy riparian system. The plan will establish a diverse natural community with a complex vegetation structure that will support species present in the Project Area that rely on riparian habitat. The plan will be designed to achieve the following goals described in the 2017 Framework: 1. Maximize the number of stems between 2 centimeters (0.8 inches) and 12 centimeters (4.7 inches). 2. Minimize competition for sunlight and water. Native associates should be planted at a ratio of one native associate for every three elderberry plants. 3. Achieve an average elderberry stem density of 240 stems per acre. Buffers. An appropriate buffer will be established between mitigation lands and adjacent lands in accordance with the 2017 Framework. Success Standards. Performance standards including survival rates, stem densities, and recruitment as outlined below and detailed in the 2017 Framework will be established and met to meet compensatory mitigation goals: • A minimum of 60 percent of the initial elderberry and native associate plantings must survive over the first 5 years after the site is established. As much as feasible, shrubs should be well distributed throughout the site; however, in some instances, underlying geologic or hydrologic issues might preclude elderberry establishment over some portion of the site. If significant die-back occurs within the first 3 years, replanting may be used to meet the 60 percent survival criterion. However, replanting efforts should be concentrated in areas containing surviving elderberry plants. In some instances, overplanting may be used to offset the selection of a less suitable site. • After 5 years, the site must show signs of recruitment. A successful site should have evidence of new growth on existing plantings as well as natural recruitment of elderberry shrubs. New growth is characterized as stems less than 3 centimeters (1.2 inches) in diameter. If no signs of recruitment are observed, the agency or applicant should discuss possible remedies with USFWS. • The Performance Standards outlined in Appendix C, Table 2 for VELB mitigation will be complied with for monitoring years 2 through 7. If performance standards are not met, additional years will be required to meet the performance standards and monitoring years will start over. Monitoring. The population of VELB, the general condition of the mitigation site, and the condition of the elderberry and associated native plantings in the mitigation site should be monitored at appropriate intervals. In any survey year, a minimum of two site visits between February 14 and June 30 of each year must be conducted by a USFWS-approved biologist. As indicated in the 2017 Framework, surveys must include:			

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	• A search for VELB exit holes in elderberry stems, noting the precise locations and estimated ages of the exit holes. The location of shrubs with exit holes should be mapped with a GPS. Because adult VELB are rarely encountered, targeted surveys for adults are not required. However, surveyors should record all adult VELB seen. Record photographs should be taken for all observations of adult VELB and their location mapped with a GPS. All exit-hole or adult VELB observations should be reported to the CNDDB. • An evaluation of the success standards outlined above. • An evaluation of the adequacy of the site protection (fencing, signage, etc.) and weed control efforts on the mitigation site. Dense weeds and grasses such as Bermuda grass (*Cynodon dactylon*) are known to depress elderberry recruitment and their presence should be controlled to the greatest extent practicable. • An assessment of any real or potential threats to VELB and its host plant, such as erosion, fire, excessive grazing, off-road vehicle use, vandalism, and excessive weed growth. • A minimum of 10 permanent photographic monitoring locations, established to document conditions present at the mitigation site. Photographs should be included in each report. Reports. In accordance with the 2017 Framework, yearly survey reports will be submitted to USFWS within 6 months of the final survey each year for monitoring years 2–7 (2017 Framework, Appendix C).			
TURTLE-1	**CVFPB will implement measures to avoid and minimize effects on western pond turtle:** • A qualified biologist will conduct a pre-construction survey within 7 days before the start of project activities. If no western pond turtles are observed, USACE will document that information for the file, and no additional measures will be required. • Should any western pond turtles be detected on land during the pre-construction survey, the qualified biologist will identify the location using GPS coordinates. With prior CDFW approval, a qualified biologist may relocate any western pond turtles found on land or in aquatic habitat within the construction footprint to suitable aquatic habitat at least 200 feet away from the construction footprint. • If western pond turtles are observed on land within the construction footprint during Project activities, USACE will stop work within approximately 200 feet of the turtle, and a qualified biologist will be notified immediately. If possible, the turtle will be allowed to leave on its own and the qualified biologist will remain in the area until the biologist deems his or her presence no longer	P, C	CVFPB	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	necessary to ensure that the turtle is not harmed. Alternatively, with prior CDFW approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at least 200 feet outside the construction footprint. If a western pond turtle nest is unintentionally uncovered during project activities, work will stop in the vicinity of the nest and USACE will contact CDFW to determine the appropriate next steps.			
BEE-1	**Implement Measures to Avoid and Minimize Effects on Crotch Bumble Bee:** Before construction activities, a qualified biologist will conduct a pre-construction survey within the construction disturbance area for active Crotch bumble bee nests. If an active bumble bee nest is located, recommendations for avoiding or minimizing disturbance of the colony will be developed (e.g., establishing a buffer surrounding entry/exits and avoiding direct disturbance) in coordination with CDFW.	P, C	CVFPB	CVFPB
BATS-1	**Implement Measures to Protect Maternity Roosts of Special Status Bats** • Wherever feasible, USACE will conduct construction activities outside of the active season for special status bats (May 1 to August 31). • If construction activities that could affect occupied special status bat roosts cannot be conducted outside the bats' active season, USACE will conduct pre-construction surveys for special status bats using a qualified biologist. Survey duration will be a minimum of 1 day and 1 evening. • If special status bats are found in trees in the area where project activities will occur, a minimum 100-foot avoidance buffer will be established around the roost/maternity until it is no longer occupied. High-visibility construction fencing will be installed around the buffer and will remain in place until the tree is no longer occupied by bats. The trees or structures will not be removed until a biologist has determined that the roost is no longer occupied by special status bats. If construction activities must occur within the avoidance buffer, then the activities will be monitored by a qualified biologist either continuously or periodically during work, as determined by the qualified biologist. The qualified biologist will be empowered to stop activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special status bats. If construction activities are stopped, USACE will consult with CDFW to determine appropriate measures to implement to avoid adverse effects. • For trees containing suitable bat roosting habitat that are planned for removal or trimming (irrespective of the time of year), such trees must be trimmed and/or removed in a two-phase removal system conducted over two consecutive days. The first day (in the afternoon), limbs and branches will be removed, using chainsaws only. Removal activities must avoid limbs with cavities, crevices, or deep bark fissures, and remove only branches or limbs without those features. On the second day, the entire tree will be removed.	P, C	CVFPB, USACE	CVFPB

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	• A qualified biologist will conduct a pre-construction emergence survey for special status bats within 14 days before the start of work within 250 feet of the Howe Avenue Bridge, the Guy West Bridge, or the H Street Bridge. The survey will be conducted 1 hour before dusk to 1 hour after dusk to identify whether special status bats are occupying the bridges as day roosts. If special status bats are found roosting beneath any of these bridges and work will occur within 250 feet of the roost, one-way doors will be installed at roost entrances, allowing bats to exit but preventing them from entering, to encourage the bats to relocate. If maternity roosts are found, they will be avoided by at least 250 feet until the offspring have fledged. If avoidance is not feasible, additional mitigation will be developed in consultation with CDFW.			
BADGER-1	**Implement Measures to Avoid and Minimize Effects on American Badger:** • CVFPB will conduct pre-construction clearance surveys for American badgers. These surveys will be conducted within 14 days of the start of any ground-disturbing activity. If no potential American badger dens are present, no further mitigation is necessary. • If a potential American badger den is discovered but deemed inactive, the qualified biologist will excavate the den during the initial clearance survey to prevent badgers from reoccupying the den during the construction period. • If found to be present, occupied badger dens will be flagged and ground-disturbing activities will be avoided within 50 feet of an occupied den. Maternity dens will be avoided during pup-rearing season (February 15 through July 1) and a minimum 200-foot buffer will be established. • If avoidance of a non-maternity den is not feasible, badgers will be relocated by carefully evacuating the burrow (either by hand or using mechanized equipment, under the direct supervision of a qualified biologist) before or after the rearing season (February 15 through July 1). Any relocation of badgers will occur only after consultation with CDFW.	P, C	CVFPB	CVFPB
PLANT-1	**Implement Measures to Avoid and Minimize Effects to Special Status Plants:** Sanford's arrowhead is the only special status plant observed to be present in the Project Area, based on a focused rare-plant survey conducted in July 2019. To avoid and minimize effects on Sanford's arrowhead, the CVFPB will implement the following measures: • The location of Sanford's arrowhead plants identified during the 2019 rare-plant survey will be marked or fenced off as an avoided area during construction. A qualified biologist will establish a buffer of at least 25 feet around the Sanford's arrowhead plants. If a buffer of 25 feet is not possible, the next maximum possible distance will be fenced off as a buffer.	P, C	CVFPB, USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	• If operations and maintenance (O&M) activities are to occur near the Sanford's arrowhead plants, a qualified biologist will mark their location with pin flags. The qualified biologist will instruct all personnel conducting the O&M activities regarding the location, appearance, and extent of these plants and the importance of avoiding impacts on this species. • Herbicides will not be used within 3 meters (10 feet) of a known Sanford's arrowhead plant. All chemicals will be applied using a backpack sprayer or similar direct application method			
FISH-3	**Implement Measures to Avoid and Minimize Effects to Listed Fish Species:** • In-water construction activities (e.g., placement of rock revetment) will be limited to the work window of July 1 through October 31. If USACE needs to work outside of this window, it will consult with USFWS and NMFS. • Erosion control BMPs will be implemented, including a Storm Water Pollution Prevention Plan and Water Pollution Control Plan, to minimize the entry of soil or sediment into the American River. BMPs will be installed, monitored for effectiveness, and maintained throughout construction operations to minimize effects on Federally listed fish and their designated critical habitat. Maintenance will include daily inspections of all heavy equipment for leaks. • USACE will participate in an existing Interagency Working Group or work with other agencies to participate in a new Bank Protection Working Group to coordinate stakeholder input into future flood risk reduction actions associated with the Project. • USACE will coordinate with NMFS during pre-construction engineering and design as future flood risk reduction actions are designed to ensure that conservation measures are incorporated to the extent practicable and feasible and projects are designed to maximize ecological benefits. • USACE will include a Riparian Corridor Improvement Plan as part of the Project, with the overall goal of maximizing the ecological function and value of the existing levee system in the Sacramento metropolitan area. • USACE will implement an ARCF GRR Habitat Mitigation Monitoring and Adaptive Management Plan (HMMAMP) with an overall goal of ensuring that the conservation measures achieve a high level of ecological function and value. The HMMAMP will include: o Specific goals and objectives and a clear strategy for maintaining all Project conservation elements for the life of the Project. o Measures to be monitored by USACE for 10 years after construction. USACE will update its O&M manual to ensure that the HMMAMP is adopted by the local sponsor to ensure that the goals and objectives of the conservation measures are met for the life of the Project.	D, P, C, M	CVFPB, USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	○ Specific goals and objectives and a clear strategy for achieving full compensation for all project-related impacts on listed fish species. • USACE will continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting annual meetings and issuing annual reports throughout the construction period as described in the HMMAMP. • USACE will seek to avoid and minimize adverse construction effects on listed species and their critical habitat to the extent feasible and will implement on-site and off-site compensation actions as necessary. • For identified designated critical habitat, where feasible, all efforts will be made to compensate for impacts where they have occurred or in close proximity. USACE will develop and implement a compensatory mitigation accounting plan to ensure the tracking of compensatory measures associated with implementation of the Project. USACE will continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting meetings and issuing annual reports throughout the construction period. • USACE will minimize the removal of existing riparian vegetation and instream woody material (IWM) to the maximum extent practicable. Where appropriate, removed IWM will be anchored back into place, or if not feasible, new IWM will be anchored in place. • USACE will ensure that the planting of native vegetation will occur as described in the HMMAMP. All plantings must be provided with the appropriate amount of water to ensure successful establishment. • USACE will provide a copy of the BO, or similar documentation, to the prime contractor, making the prime contractor responsible for implementing all requirements and obligations included in the documents and for educating and informing all other contractors involved in the Project as to the requirements of the BO. • A NMFS-approved Worker Environmental Awareness Training Program for construction personnel will be conducted by the NMFS-approved biologist for all construction workers before the start of construction activities. Written documentation of the training will be submitted to NMFS within 30 days of the completion of training. • USACE will consider installing IWM of at least 40 percent shoreline coverage at all seasonal water surface elevations in coordination with the Interagency Working Group or the Bank Protection Working Group. The purpose is to maximize the refugia and rearing habitats for juvenile fish.			

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	• USACE will protect in place all riparian vegetation on the lower waterside slope of any levee, unless removal is specifically approved by NMFS, following completion of project construction. • Screen any water pump intakes, as specified by the 2011 NMFS screening specifications. Water pumps will maintain an approach velocity of 0.2 feet per second or less. Screen openings will be for a perforated plate: circular or square openings shall not exceed 3/32 inch (2.38 millimeters [mm]), measured on a side, and slotted or rectangular screen face openings must not exceed 1.75 mm (approximately 1/16 inch) in the narrow direction. Screen material shall provide a minimum of 27 percent open area.			
SRA-1	**Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat:** • For identified designated critical habitat of listed fish species, where feasible, all efforts will be made to compensate for impacts where they have occurred, or elsewhere in the Parkway. Impacts on designated critical habitat, SRA habitat, and instream components combined, and the compensation value of replacement habitat will be based on the interagency-approved SAM model used throughout the Sacramento River basin and Sacramento–San Joaquin Delta flood control system. • USACE will incorporate compensation for SRA habitat losses either by constructing off-site compensation sites or purchase of credits at a NMFS-approved conservation bank, where appropriate, or by implementing a combination of the two. USACE will compensate for lost habitat using NMFS-approved mitigation actions at a 1:1 ratio prior to construction, 2:1 ratio during construction, or a 3:1 ratio if mitigation actions occur after construction. SRA habitat compensation sites will be established in coordination with NMFS and USFWS as part of consultation under Section 7 of the Endangered Species Act for the ARCF GRR, consistent with the American River Parkway Plan, and in coordination with the Sacramento County Department of Regional Parks. On-site created SRA habitat acreage will also be counted toward offsetting lost SRA habitat. • Compensation sites will be monitored, and vegetation will be replaced as necessary based on performance standards in the ARCF GRR HMMAMP.	D, P, C, M	CVFPB, USACE	CVFPB
CR-1	**Resolve Adverse Effects through a Programmatic Agreement and Historic Properties Treatment Plan:** A Programmatic Agreement has been executed for the ARCF 2016 Project. A Historic Properties Treatment Plan (HPTP) will be developed if the Project is found to result in adverse effects.	D, P, C	USACE	CVFPB
CR-2	**Prepare an Archaeological Discovery Plan and an Archaeological Monitoring Plan:** In accordance with the procedures described in Section 9.2 of the ARCF Historic Properties Management Plan (HPMP), an archaeological discovery plan will be developed for the	P, C	USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	Project. The discovery plan will specify what actions must be taken by the contractor in the event of an archaeological discovery and describe what actions USACE may take in the event of a discovery.			
CR-3	**Conduct Cultural Resources Awareness Training:** In accordance with the procedures described in Section 9.1 of the ARCF HPMP, USACE will require the contractor to provide a cultural resources and Tribal Cultural Resources (TCR) sensitivity and awareness training program for all personnel involved in project construction, including field consultants and construction workers. The training will be developed in coordination with an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, as well as culturally affiliated Native American tribes. USACE may invite Native American representatives from interested culturally affiliated Native American tribes to participate. The training will be conducted before any project-related construction activities begin in the area of potential effect (APE) and will include relevant information regarding sensitive cultural resources and TCRs, including applicable regulations, protocols for avoidance, and consequences of violating Federal and State laws and regulations. The training will also describe appropriate avoidance and impact minimization measures for cultural resources and TCRs that could be located in the APE and will outline what to do and whom to contact if any potential cultural resources or TCRs are encountered. The training will emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values.	C	USACE	CVFPB
CR-4	**Implement Procedures for Inadvertent Discovery of Cultural Material**: If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, any human remains, bottle glass, ceramics, building remains), TCRs, sacred sites, or landscapes is made at any time during project-related construction activities, USACE in consultation with the CVFPB and other interested parties will develop appropriate protection and avoidance measures where feasible. These procedures will be developed in accordance with the ARCF Programmatic Agreement (PA) and ARCF HPMP, which specifies procedures for post-review discoveries. Additional measures, such as development of HPTPs prepared in accordance with the PA and HPMP, may be necessary if avoidance or protection is not possible.	P, C	CVFPB, USACE	CVFPB
CR-5	**Evaluate Any Tribal Cultural Resources Discovered and Implement Avoidance and Minimization Measures to Avoid Significant Adverse Effects:** California Native American Tribes that are traditionally and culturally affiliated with the geographic area in which the Project is located may have expertise regarding their TCRs (PRC Section 21080.3.1). Consistent with the California Natural Resources Agency's Tribal Consultation Policy, culturally affiliated Tribes will be consulted concerning TCRs that may be affected, if these types of resources are discovered before or during construction. Consultation with culturally affiliated Tribes will focus on identifying measures to avoid or minimize impacts on any such resources discovered during construction. If TCRs are identified in the APE before	C	CVFPB	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	or during construction, the following performance standards will be met before any further construction and associated activities that may result in damage to or destruction of TCRs: Each identified Tribal Cultural Resource will be evaluated for California Register of Historic Places (CRHR) eligibility through application of established eligibility criteria (14 CCR 15064.636), in consultation with interested Native American Tribes. If a Tribal Cultural Resource is determined to be eligible for listing in the CRHR, USACE, in consultation with the CVFPB, will avoid damaging the Tribal Cultural Resource in accordance with PRC Section 21084.3, if feasible. If the CVFPB determines that the Project may cause a substantial adverse change to a Tribal Cultural Resource, and measures are not otherwise identified in the consultation process, the following are examples of mitigation steps capable of avoiding or substantially lessening potential significant impacts on a Tribal Cultural Resource or alternatives that will avoid significant impacts on a Tribal Cultural Resource. These measures may be considered, where feasible, to avoid or minimize significant adverse impacts: • Avoid and preserve resources in place, including, but not limited to, planning construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria. • Treat the resource with culturally appropriate dignity, considering the Tribal cultural values and meaning of the resource, including, but not limited to, the following: • Protect the cultural character and integrity of the resource. • Protect the traditional use of the resource. • Protect the confidentiality of the resource. • Establish permanent conservation easements or other interests in real estate, with culturally appropriate management criteria for the purposes of preserving or using the resources or places. • Protect the resource.			
CR-6	**Implement Procedures for Inadvertent Discovery of Human Remains:** The roles and responsibilities of USACE during the response to the inadvertent discovery of human remains are outlined in the HPMP. To minimize adverse effects from encountering human remains during construction, CVFPB will implement the following measures: • In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the CVFPB will consult with USACE, and USACE will immediately halt potentially damaging excavation in the area of the burial and notify the Sacramento County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner	C	CVFPB	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (California Health and Safety Code Section 7050[c]). After the coroner's findings have been made, the archaeologist and the NAHC-designated most likely descendent (MLD), in consultation with the landowner, will determine the ultimate treatment and disposition of the remains. • Upon the discovery of Native American human remains, USACE, in coordination with the CVFPB, will require that all construction work must stop within 100 feet of the discovery until consultation with the MLD has taken place. The CVFPB will lead consultation with the MLD, in coordination with USACE. The MLD will have 48 hours to complete a site inspection and make recommendations to the landowner after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. PRC Section 5097.98(b)(2) suggests that the concerned parties may mutually agree to extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. The following is a list of site protection measures that the CVFPB will employ: o Record the site with the NAHC or the appropriate Information Center. o Record a document with the county in which the property is located. o Rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance. Reburial of the remains will be completed by the CVFPB or its authorized representative. If the NAHC is unable to identify an MLD, or if the MLD fails to make a recommendation within 48 hours after being granted access to the site, the CVFPB or its authorized representative may reinter the remains in a location not subject to further disturbance. If the CVFPB rejects the recommendation of the MLD and mediation by the NAHC fails to provide measures acceptable to the CVFPB, the CVFPB will implement mitigation to protect the burial remains. Construction work in the vicinity of the burials will not resume until the mitigation is completed.			
TR-1	**Prepare and Implement a Traffic Control and Road Maintenance Plan:** Before the start of project-related construction activities, USACE and the CVFPB will require the contractor to prepare a Traffic Control and Road Maintenance Plan. This plan will describe the methods of traffic control to be used during construction. All on-street construction traffic will be required to comply with the local jurisdiction's standard construction specifications. The items listed below will be included in the plan and as terms of the construction contracts:	P, C	CVFPB, USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	• The contractor will 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 will 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 affected 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. • 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 will be used to allow for continued use by bicycle commuters. • Safe pedestrian and bicyclist access will be maintained 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 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 will 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. • The construction contractor will assess damage to roadways used during construction and will repair all potholes, fractures, or other damages. • 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.			

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	• Emergency vehicle access will be made available at all times. The contractor will be required to coordinate with local emergency responders to inform them of the construction activities.			
TR-2	**Provide Bicycle and Pedestrian Access**: The contractor will prepare a Traffic Control and Road Maintenance Plan that will include the following provisions related to bicycle and pedestrian access: • Provide signs along affected pedestrian and bicycle pathways announcing scheduled closures and recommended detour routes. • Place signal personnel at intersections of construction vehicle pathways and active bicycle and pedestrian facilities.	P, C	USACE	CVFPB
AQ-1	**Implement Sacramento Metro Air Quality Management District (SMAQMD) Basic Construction Emissions Control Practices:** SMAQMD requires construction projects to implement basic construction emissions control practices to control fugitive dust and diesel exhaust emissions.72F1 USACE will implement the following control measures during project construction: • Control fugitive dust as required by District Rule 403 and enforced by District staff. • 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 freeboard space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that will travel along freeways or major roadways should be covered. • Use wet power vacuum street sweepers to remove any visible track-out of 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, lay building pads as soon as possible after grading unless seeding or soil binders are used. • Limit vehicle speeds on unpaved roads to 15 miles per hour. • Minimize idling time, either by shutting equipment off when not in use or by reducing the time of idling to 5 minutes (required by 13 CCR	C	USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	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.			
AQ-2	**Implement Enhanced Fugitive Dust Control Practices:** Fugitive dust mitigation for the Project will require the use of adequate measures during each construction activity and will include frequent application of water or application of soil additives, control of vehicle access, and vehicle speed restrictions. USACE will implement the dust mitigation measures listed below. • Water exposed soil with adequate frequency for continued moist soil; however, do not overwater to the extent that sediment flows from the site. • Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 miles per hour. • 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 access 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 identifying the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. To ensure compliance, SMAQMD's phone number will also be visible.	C	USACE	CVFPB
AQ-3	**Develop and Implement a Plan for Enhanced On-Site Exhaust Controls:** Actual emissions of nonattainment and maintenance pollutants will be tracked monthly using tools acceptable to SMAQMD (e.g., construction mitigation calculator, SMAQMD's Equipment List). USACE shall submit to SMAQMD a comprehensive inventory of all off-road construction equipment (50 horsepower or more) to be used 8 hours or more during Project construction. The tracking data will be used to verify that all pollutants remain below the CEQA and NEPA daily thresholds, General Conformity *de minimis* thresholds, or are fully mitigated and offset if emissions exceed either. The initial report will include all of the following details: • Information about the project information and the construction company. • The equipment type, horsepower rating, engine model year, projected hours of use, and California Air Resources Board (CARB) equipment identification number for each piece of equipment in the plan.	C	USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	• All owned, leased, and subcontracted equipment to be used. Updated reports will be submitted monthly to demonstrate continued project compliance. SMAQMD may conduct periodic site inspections to determine compliance. Nothing in this mitigation will supersede other air district, State, or Federal rules or regulations. *Mitigation Measure AQ-3 will be considered fulfilled on January 1, 2028, when full implementation of the CARB In-Use Off-Road Regulation is expected.*			
AQ-4	**Use Electric Construction Equipment:** To the extent available and feasible, construction equipment will be powered by electricity, rather than diesel fuel, to reduce construction-related criteria air pollutants, TACs, and tailpipe GHG emissions associated with diesel fuel combustion. Electrification will result in a small amount of indirect carbon dioxide emissions because of the operation of the electric grid. Various types of construction equipment may feasibly be run on electricity.	C	USACE	CVFPB
AQ-5	**Pay NO_X Mitigation Fee to SMAQMD:** As of July 1, 2017, the mitigation fee rate is $30,000 per ton of emissions. The contractor will pay the appropriate SMAQMD-required NO_X mitigation fee to offset the project's NO_X emissions when they exceed SMAQMD's threshold of 85 lb/day. The NO_X mitigation fee will apply to all emissions from the Project: on-road (on- and off-site), off-road, portable, stationary equipment, and vehicles.	C	USACE	CVFPB
GHG-1	**Avoid, Minimize, and Compensate for Greenhouse Gas Emissions Effects**: USACE will implement the following measures to avoid, minimize, and compensate for the Project's GHG emissions effects: • Encourage and provide carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes. • Recycle at least 75 percent of construction waste and demolition debris. • Purchase at least 20 percent of the materials and imported soil from sources within 100 miles of the Project area. • Minimize idling time, either by shutting equipment off when not in use or by reducing the time of idling to no more than 3 minutes (a 5-minute limit is required by the State airborne toxics control measure [13 CCR Sections 2449(d)(3) and 2485]). Clear signage identifying this requirement for workers will be posted at the entrances to the site. • Maintain all construction equipment in proper working condition according to the manufacturer's specifications. The equipment will 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).	C	CVFPB, USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	• Use a CARB-approved low-carbon fuel for construction equipment. (NO_X emissions from the use of low-carbon fuel will be reviewed and increases mitigated.) • Purchase a GHG offset for program-wide GHG emissions (direct plus indirect emissions from on-road haul trucks plus commute vehicles) exceeding SMAQMD's or CEQ's significance thresholds applicable at the time of construction. Carbon offset credits will be purchased from programs that have been approved by SMAQMD.			

NOISE-1	**Implement Noise Reduction Practices.** The following noise reduction practices will reduce noise generated by construction activities and will apply to construction activities within 500 feet of sensitive receptors, including but not limited to residences. • Coordinate with local residents, comply with noise ordinances, and implement other BMPs. • Provide written notice to residents within 1,000 feet of the construction zone, advising them of the estimated construction schedule. This written notice will be provided within one week to one month of the start of construction at that location. • Display notices with such information as 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., longer 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 the 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, prepare a vibration control plan prior to construction.	P, C	USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
NOISE-2	**Implement Vibration Control Measures.** USACE and the CVFPB will implement the following vibration control measures to reduce construction-related vibration effects. To the extent feasible and practicable, the primary construction contractors will employ vibration-reducing construction practices so that vibration from construction will comply with applicable noise-level rules and regulations, including the construction vibration standards of the City or County of Sacramento, depending on the jurisdictional location of the affected receptor(s). Project construction specifications will require the contractor to limit vibrations to less than 0.2 inch per second PPV (peak particle velocity), and less than 72 VdB (velocity decibels) for frequent events or 80 VdB for infrequent events within 50 feet at any building. If construction or truck hauling activity will occur within 50 feet of any occupied building, the contractor will prepare a vibration control plan prior to construction. The plan will include measures to limit vibration, including but not limited to the following: • Avoid vibratory rollers and packers near sensitive areas. • Route heavily loaded trucks away from residential streets, if possible. If no alternatives are available, select the streets with the fewest homes. Depending on the specific truck type that will be used, the contractor could demonstrate with substantial evidence, to the City of Sacramento, that trucks will not exceed applicable thresholds mentioned above. • Conduct a voluntary pre- and post-construction survey to assess potential architectural damage from levee construction vibration at each residence within 75 feet of construction. The survey will include visual inspection of the structures that could be affected and documentation of structures by means of photographs and video. This documentation will be reviewed with the individual owners prior to any construction activities. Post-construction monitoring of structures will be performed to identify (and repair, if necessary) damage, if any, from construction vibration. Any damage will be documented with photographs and video. This documentation will be reviewed with the individual property owners. • Place vibration monitoring equipment at the property line adjacent to large equipment and, with owner approval, at the back of the residential structures adjacent to the large equipment. Record measurements daily.	P, C	CVFPB, USACE	CVFPB
REC-1	**Avoid and Minimize Effects on Recreational Use.** USACE and the CVFPB will implement the following measures to reduce temporary, short-term construction effects on recreational facilities in the Project Area: • Coordinate with recreation user groups prior to and during construction for input into mitigation measures that will reduce effects to the maximum extent practicable. Advance notice will be given to recreation users, informing them of anticipated activities and detours to reduce the effects. Closures of paved trails will be noticed 14-days in advance via signage at the detour locations. • Post signs at major entry points for parks and recreation facilities clearly indicating closures and estimated duration of closures. Information signs will	P, C	CVFPB, USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	notify the public of alternate parks and recreation sites, including boat launch ramps, and provide a contact number to call for questions or concerns. • Provide flaggers and post warning signs and signs restricting access before and during construction to ensure public safety. • Provide marked detours for all bike trails and on-street bicycle routes that will be temporarily closed during construction. Detours will be developed in consultation with the City of Sacramento Bicycle and Pedestrian Coordinator at least 10 days before the start of construction activities, as applicable. Signs that clearly indicate closure routes will be posted at major entry points for bicycle trails, information signs will be posted to notify motorists to share the road with bicyclists where necessary, and a contact number will be provided to call for questions or concerns. Fences will be erected to prevent access to the Project Area. • Provide traffic control in areas where recreational traffic will intersect with construction vehicles. • If any access point needs to be closed during construction, post notices providing alternative access routes. • Upon completion of levee improvements, coordinate with the City of Sacramento and Sacramento County to restore access and repair any construction-related damage to recreational facilities to pre-project conditions			
UTIL-1	**Avoid and Minimize Service Disruptions and Damage to Utilities and Infrastructure.** USACE and the CVFPB will implement the measures listed below before construction begins to avoid and minimize potential damage to utilities and infrastructure and reduce service disruptions during construction. • Coordinate with applicable utility and service providers to implement the orderly relocation of utilities that need to be removed or relocated. • Notify the appropriate agencies and affected landowners regarding any potential interruptions of service. • Verify through field surveys and the use of Underground Service Alert services the locations of buried utilities in the Project Area, including natural gas, petroleum, and sewer pipelines. Any buried utility lines will be clearly marked in the area of construction (e.g., in the field) and on the construction specifications in advance of any earthmoving activities. • Before the start of construction, prepare and implement a response plan that addresses potential accidental damage to a utility line. The plan will identify chain-of-command rules for notifying authorities and appropriate actions and responsibilities regarding the safety of the public and workers. A component of the response plan will include worker education training in response to such situations.	P, C	USACE	CVFPB

Mitigation Number	Mitigation Measure	Implementation Timing	Implementation Responsibility	Responsible for Monitoring/Reporting Action
	• Stage utility relocations during project construction to minimize interruptions in service. • Communicate construction activities with first responders to avoid response delays caused by construction detours.			
HAZ-1	**Avoid and Minimize Hazards.** USACE and the CVFPB will implement the following measures to avoid and minimize the impact of hazards and hazardous materials. • Comply with applicable regulations to reduce the potential for an accidental release of hazardous materials during construction. The contractor will also be required to prepare a SWPPP, which details the methods to prevent run-on and discharges from the construction sites into drainage systems, lakes, or rivers. This plan will include SWPPP BMPs that will be implemented accordingly. • Test each erosion protection site for contaminants before construction and dispose of any materials found in accordance with all Federal, State, and local regulations at an approved disposal site.	P, C	CVFPB, USACE	CVFPB

D: To be implemented or included as part of project design, including pre-project permitting and agency coordination.
P: To be implemented prior to construction being initiated(pre-construction), but not part of project design or permitting.
C: To be implemented during project construction.
M: To be implemented as ongoing maintenance after construction is complete.