FOLSOM DAM MODIFICATION PROJECT: PHASE V SITE RESTORATION AND RELATED MITIGATION ACTIVITIES

DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT/ ENVIRONMENTAL IMPACT REPORT

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US Army Corps of Engineers

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

CENTRAL VALLEY FLOOD PROTECTION BOARD

SAFCA Sacramento Area Flood Control Agency

EXECUTIVE SUMMARY

ES.1 Purpose of the SEA/EIR

This Supplemental Environmental Assessment/Environmental Impact Report (SEA/EIR) has been prepared for the Folsom Dam Safety and Flood Damage Reduction Project, Phase V Site Restoration and Related Mitigation Activities. This draft SEA/EIR is a supplement to the 2007 Final Environmental Impact Statement/Environmental Impact Report for the overall Folsom Dam Safety and Flood Damage Reduction Project (2007 FEIS/EIR), prepared by the U.S. Bureau of Reclamation. This project is also known as the Folsom Joint Federal Project (Folsom JFP). The Folsom JFP is a cooperative effort between the U.S. Army Corps of Engineers (Corps; USACE), the U.S. Bureau of Reclamation (USBR), the State of California Central Valley Flood Protection Board (CVFPB), and the Sacramento Area Flood Control Agency (SAFCA).

The 2007 EIS/EIR indicated that various portions of the overall Folsom JFP project would ultimately be restored following completion of project construction activities. The 2012 Folsom Dam Modification Project, Approach Channel Supplemental Environmental Impact Statement/Environmental Impact Report (2012 SEIS/EIR) was supplemental to the 2007 EIS/EIR and addressed various changes to the project since 2007. It also addressed potential project restoration activities in more detail than the 2007 EIS/EIR and included new commitments to mitigate certain project impacts to native trees (e.g. habitat) and to mitigate the temporary loss of recreational fisheries opportunities.

This SEA/EIR examines the impacts of proposed project restoration activities, which include: restoration of a 58-acre area referred to as the Haul Road Restoration Area (HRRA); restoration of a 0.9-acre parking lot within the Dike 7 Office Complex Parking Area, and; partial restoration of the 8.9-acre Prison Staging Area (PSA). It examines the impacts of proposed oak woodland mitigation that would be provided to mitigate for past tree impacts that occurred in the Dike 8 disposal area, as well as proposed mitigation for prior recreational fishing impacts. It further examines the impacts associated with construction of proposed new guardrails along Folsom Lake Crossing as well as some other project design changes.

While this SEA/EIR builds upon and incorporates work already completed as part of the project development process, it does not reproduce in full the prior 2007 EIS/EIR and its associated Record of Decision (ROD) documentation. Detailed discussions of the changes to the project and/or conditions of the project area since 2007 are presented in the 2012 SEIS/EIR. Other joint National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) documents generated for the Folsom JFP since the time of the 2007 EIS/EIR include: (1) 2010 Folsom Dam Safety and Flood Damage Reduction Project, Supplemental EA/EIR, Control Structure, Chute, and Stilling Basin Work (2010 SEA/EIR); (2) 2012 Folsom Dam Safety and Flood Damage Reduction Project, Supplemental EA/EIR, Prison Staging Area and Stilling Basin Drain (2012 SEA/EIR), and; (3) 2015 Folsom Dam Safety and Flood Damage Reduction Project, Supplemental EA/EIR, Right Bank Stabilization (2015 SEA/EIR).

This SEA/EIR incorporates information from the 2007 EIS/EIR, the 2012 SEIS/EIR, and the other NEPA/CEQA documents mentioned above by reference, where applicable. These documents can be reviewed by accessing the following websites:

- The 2007 EIS/EIR -- http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=1808

- The 2010 SEA/EIR – http://www.spk.usace.army.mil/Portals/12/documents/civil_works/JFP/Final%20JFP%20Control%20Structure%20EA%20-%2024Aug10%20-%20Board.pdf

- The 2012 SEIS/EIR -- http://www.spk.usace.army.mil/Portals/12/documents/civil_works/JFP/FolsomDamMods_ApproachChannel_FSEIS-EIR.pdf

- The 2012 SEA/EIR -- http://www.spk.usace.army.mil/Portals/12/documents/civil_works/JFP/Folsm%20Dnstrm%20Feat%20Final%20EA_EIR%20Sept.pdf

- The 2015 SEA/EIR) -- http://www.spk.usace.army.mil/Portals/12/documents/civil_works/JFP/JFP_Right_Bank_Stabilization_EA-EIR_wAppendices_Nov2014.pdf

ES.2 Project Area

Folsom Dam is located at the confluence of the North and South Forks of the American River, approximately 29 miles upstream from the city of Sacramento, near the city of Folsom (see Figure ES-1). The new auxiliary spillway is being constructed on the left abutment of the main dam, immediately downstream of the existing left wing dam.

For the purposes of this document, the "project area" consists of the site of the ongoing spillway construction including all existing project haul roads, staging areas, and disposal areas at the Folsom Prison property, Folsom Overlook, Dike 7, Dike 8, MIAD West, MIAD East, and the Dike 7 office complex. The project area also includes a proposed oak woodland mitigation site located within Rossmoor Bar Park in Rancho Cordova.

ES.3 Background and Need for Action

The potential effects of the Folsom Dam Modification Project on environmental resources were evaluated by Reclamation in the 2007 EIS/EIR. The Corps was a cooperating agency in the development of the 2007 EIS/EIR, and a joint Record of Decision was signed on May 3, 2007. A Notice of Determination (NOD) and Statement of Findings were issued by the CVFPB on July 20, 2007. The 2007 FEIS/EIR conducted a programmatic or general analysis of proposed design features available at that time. The anticipated future site restoration was included in the 2007 EIS/EIR, however, design and construction changes have occurred that were not previously evaluated. The Corps and CVFPB have determined that a supplemental EA/EIR is required. This SEA/EIR is being prepared as a supplement to the 2007 FEIS/EIR to incorporate new information and consider alternatives to the proposed action.

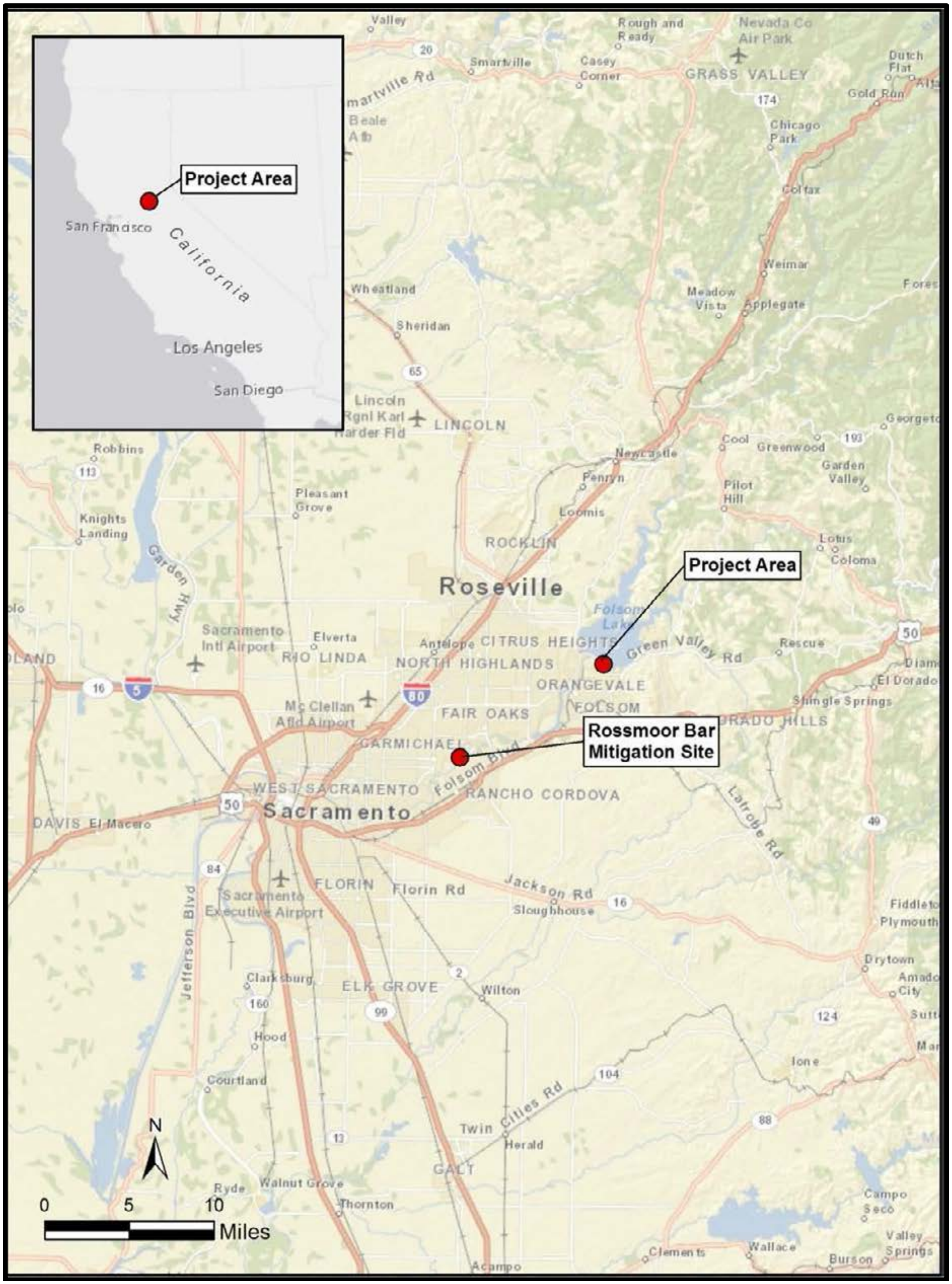

Figure ES-1. Project location map.

JFP Phases

The 2007 EIS/EIR noted that the overall Folsom JFP would involve multiple phases of construction occurring over the course of several years. Since the 2007 EIS/EIR was based on relatively conceptual project design plans, this document anticipated that supplemental NEPA and CEQA documents might be necessary in the future to address subsequent project design refinements and related changes not accounted for in the original 2007 EIS/EIR.

Phase I and II of the Folsom JFP included the construction of a long haul internal road from the auxiliary spillway excavation site to the MIAD West staging area and MIAD East disposal area. Cut and fill material from the Phase I and II excavation was reused to construct this interior haul road. To facilitate a continuous interior haul road to the MIAD staging area, a large cut was excavated through a hill at the entrance to the Folsom Point Recreation Area. A pre-manufactured bridge, referred to as the Folsom Point access bridge, was installed over the interior haul road to carry public traffic to the recreation area and boat launch. The interior haul road and Folsom Point access bridge provided a safety separation between construction activities and public access.

Stockpile, staging, and disposal areas were developed during the earlier phases of the Folsom JFP. The Dike 7 stockpile area was used for temporary stockpiling of construction materials (i.e., rock and soil), and as a permanent disposal site for waste rock and soil from Phase I and Phase II. The Dike 8 disposal area is a permanent disposal site for waste rock and soil from the Phase IV excavation. The MIAD West staging area served as both a temporary and permanent disposal location for waste rock and soil generated in Phases I, II and III, as well as a construction staging area. The MIAD East disposal area was to serve as a temporary disposal site for excavated materials (sediments, decomposed granite, etc.) generated by Phase IV. However, this area has thus far only been used by USBR for soil and rock excavation and processing associated with USBR's MIAD modification project.

During prior phases of the Folsom JFP, a construction office complex including two parking areas was built immediately west of Dike 7. This complex has been used to house offices for construction contractors and includes a portion of an access route extending from Folsom Lake Crossing to the Dike 7 stockpile area. A construction staging area, known as the Prison Staging Area, was also built on the south side of Folsom Lake Crossing on property owned by the California Department of Corrections and Rehabilitation. This area has been used for construction staging, to house office trailers, and to store various construction materials, supplies, and equipment.

The disposal of materials at Dike 8 required the removal of trees (see Section 2.3.4). The Corps is required to compensate for this loss by creating a 14-acre oak woodland site, protected in perpetuity, as addressed in the 2012 SEIS/EIR. The site would be monitored for 5 years or until it is determined that the planted seedlings are well established and self-sustaining. The 2012 SEIS/EIR also determined that prior phases of the Folsom JFP (the JFP) would temporarily impair recreational fishing opportunities in Folsom Lake (the reservoir) and required this impact to be compensated by re-stocking fish in the lake.

The auxiliary spillway is currently under construction by the Corps and completion is expected in the fall of 2017. Operation of this spillway would increase water discharge capability from the reservoir and help to provide a 200-year level of flood protection to the Sacramento area. Under the land use agreement (LUA) the Corps has with USBR, the Corps is obligated to remove all temporary structures, equipment, or other improvements from the premises upon completion of the overall JFP. The Corps is also obligated to restore areas disturbed by project construction activities.

Prior to implementation, the effects of the site restoration measures must be evaluated to determine whether they would have any significant environmental or cultural effects that could not be avoided or mitigated to less than significance. Without these site restoration measures, the Corps and CVFB would not be able to meet their obligations as per the 2007 EIS/EIR, the 2007 Record of Decision (ROD) associated with the 2007 EIS/EIR, and the LUA.

ES.4 Alternatives

ES.4.1 Alternative 1 – No Action

Under the No Action alternative, the Corps and the CVFPB would not implement the site restoration measures or the mitigation measures proposed in this SEA/EIR and therefore would not meet the obligations of the 2007 FEIS/EIR and its ROD, the 2012 SEIS/EIR and its ROD, the LUA, CEQA's Statement of Findings, and Mitigation Monitoring and Reporting Plans (MMRP). The interior haul road, stockpile, and disposal areas discussed in Section 2.3.1 would remain in place. The northern parking lot of the Dike 7 Office Complex would also remain in place. These features would continue to visually contrast with the surrounding landscape. The existing security fencing along the interior haul road would remain in place which prevents the public from accessing the site. USBR would likely need to maintain the interior haul road, stockpile areas, and disposal areas to prevent erosion or would need to complete the restoration work proposed herein.

Under the No Action alternative, the Prison Staging Area would remain in its current condition, thereby violating the lease agreement between the California Department of Water Resources (DWR) and the California Department of Corrections and Rehabilitation (CDCR). Additionally, no new guardrails would be installed along the north side of Folsom Lake Crossing as discussed in Section 2.3.3.

ES.4.2 Alternative 2 – Implement Phase V Site Restoration Measures and Related Mitigation Activities (Preferred Action/Proposed Action)

Major elements of Alternative 2, the proposed action, can be divided into three main categories of activities/actions. Some of these categories can be divided into different subcategories. The following provides a synopsis of the main categories and subcategories.

1. Site Restoration Activities

This category or group consists of proposed activities whose objective is to help restore various areas that were previously disturbed by construction of prior phases of the Folsom JFP. This category can be subdivided into the three subcategories identified below that are based on the location of the restoration activities.

(A) Haul Road Restoration Area (HRRA)

Restoration activities in the HRRA (see Figures ES-2 and ES-3) would mainly include topographic restoration (contouring, grading) followed by the planting of native grasses and forbs, along with oak acorns in certain places. The main restoration goal is to restore a more natural looking topography (landscape) that mimics the appearance of adjacent natural areas and is similar to pre-project conditions, while ensuring natural drainage patterns and stable, safe slopes are attained. The restored area would encompass the majority of the existing internal haul road, the Dike 7 stockpile area, and the Dike 8 disposal area. During the construction process, a temporary bypass road to Folsom Point would be built to allow removal of the existing Folsom Point Access Bridge without interrupting vehicular access to the Folsom Point boat launch and day use area. Folsom Point Road, the primary access to Folsom Point and location of the bridge removal, would be restored after the bridge is removed. The temporary bypass road would then be removed.

The northern boundary of the HRRA situated west of the Dike 8 area would vary depending on Folsom Lake's water level at the time HRRA construction activities commence. If the water level is very low, the northern boundary (limits of construction) would extend to elevation 440 feet NAVD88 in several, but not all places. This condition is referred to as the 440 Design Option or the 440 Option and the HRRA would encompass approximately 58.0 acres based on this option (see Figure ES-2). If the lake's water level is relatively high, the northern boundary would only extend to elevation 460 feet NAVD88 in most places, although there would be isolated portions that would still extend to elevation 440 feet to ensure proper HRRA drainage. This condition is referred to as the 460 Design Option or the 460 Option and the HRRA would encompass approximately 57.4 acres based on this option (see Figure ES-3). It is likely that the northern HRRA boundary located west of the Dike 8 area would actually fall somewhere in between the two extremes represented by the 440 Option and the 460 Option. All other portions of the HRRA boundary would essentially be the same under either the 440 Option or the 460 Option.

Restoration construction in the HRRA would require removal and disposal of substantial quantities of rip-rap. One or more of 3 options would be used for rip-rap disposal. Option 1 would involve a state or other non-federal agency picking up the excavated rip-rap and transporting it off-site to one of the agency's projects. Option 2 would involve permanent disposal of the rip-rap within a portion of the MIAD East disposal site (see Figure ES-4). The resultant rip-rap field would occupy as much as 6.5 to 8 acres. Option 3 would involve permanent disposal of the rip-rap within the existing Overlook In-Lake Disposal (OILD) site (see Figure ES-5). The rip-rap would be placed along the side slopes of the disposal mound(s) created within this site by JFP Phase IV construction activities. The open-water impact "footprint" of the rip-rap disposed would vary depending on the amount of rip-rap and the configuration of the Phase IV disposal mound(s); however, it would be completely contained within the boundaries of the 21.2-acre OILD site.

The rip-rap disposal option(s) that would actually be used will be determined prior to starting rip-rap removal activities within the HRRA. If a non-federal agency executes a binding agreement to gather the rip-rap and transport it off-site for use at a non-federal project site, then it is likely this option would be employed and might be the only one used if the receiving agency can use all the rip-rap. If such an agreement is not executed in

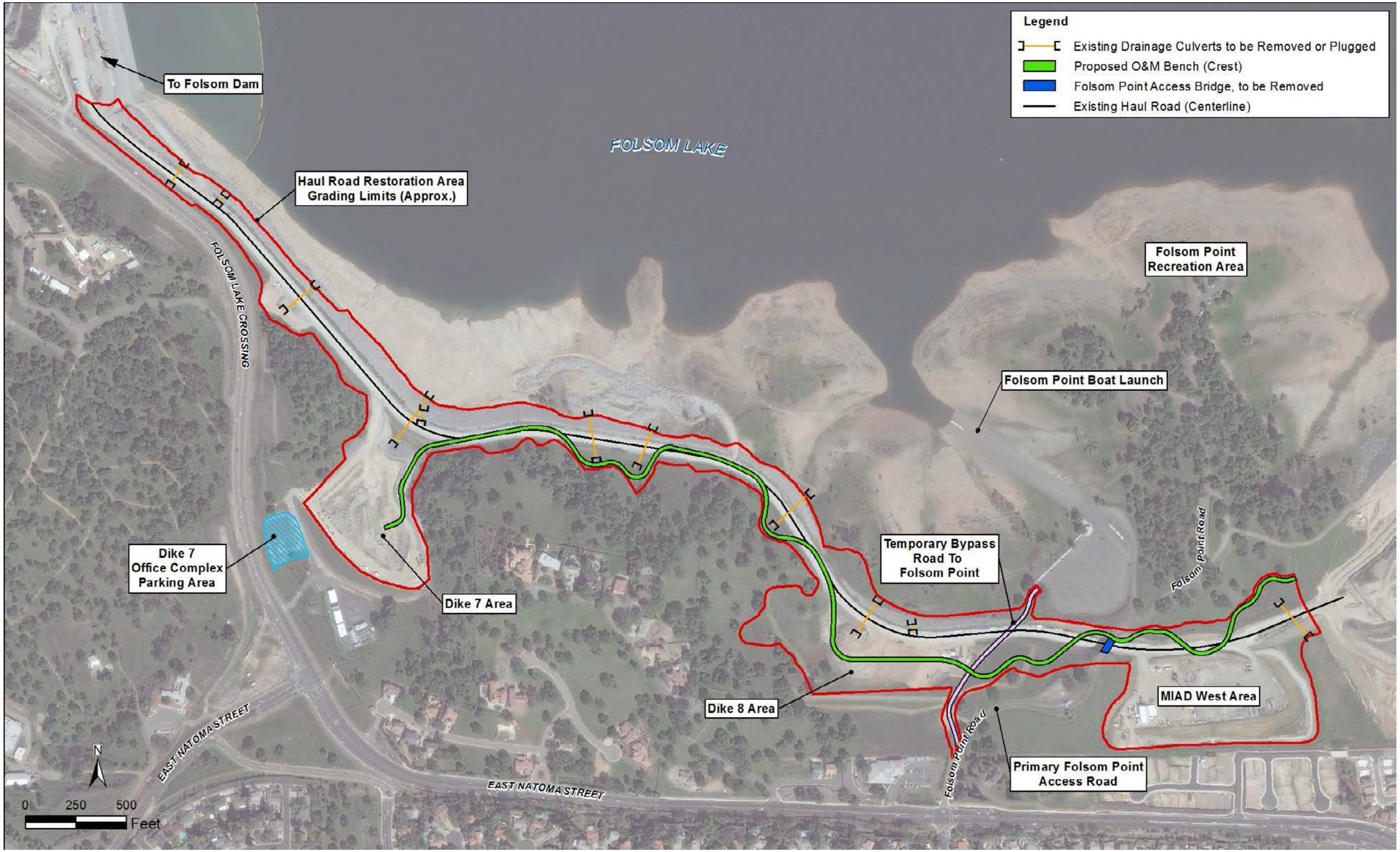

Figure ES-2. Proposed Haul Road Restoration Area (HRRA) and the Dike 7 Office Complex Parking Area. HRRA boundaries, shown in red, are based on the 440 Design Option.

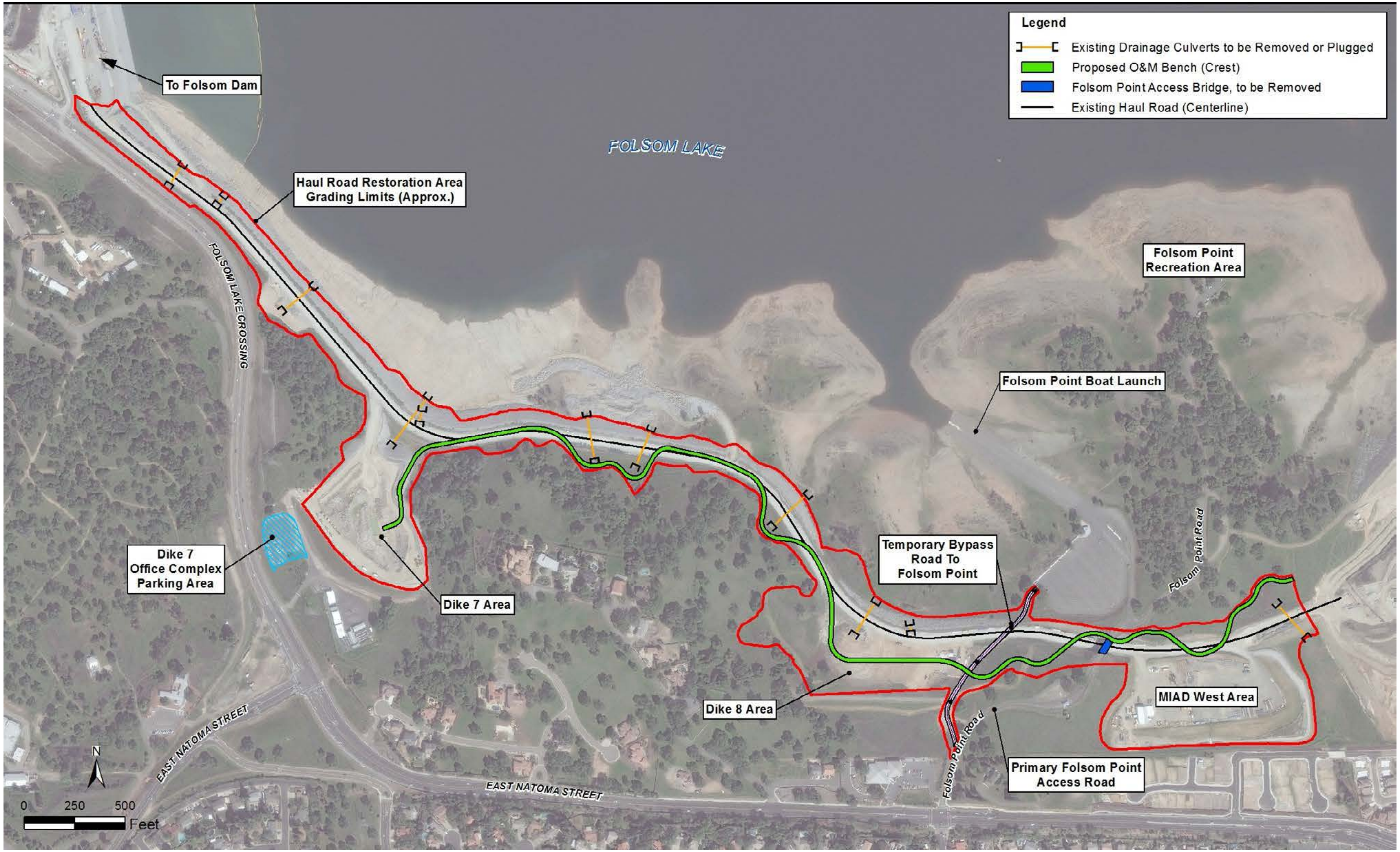

Figure ES-3. Proposed Haul Road Restoration Area (HRRA) and the Dike 7 Office Complex Parking Area. HRRA boundaries, shown in red, are based on the 460 Design Option.

Figure ES-4. MIAD East Area and the Potential Disposal Site within this Area.

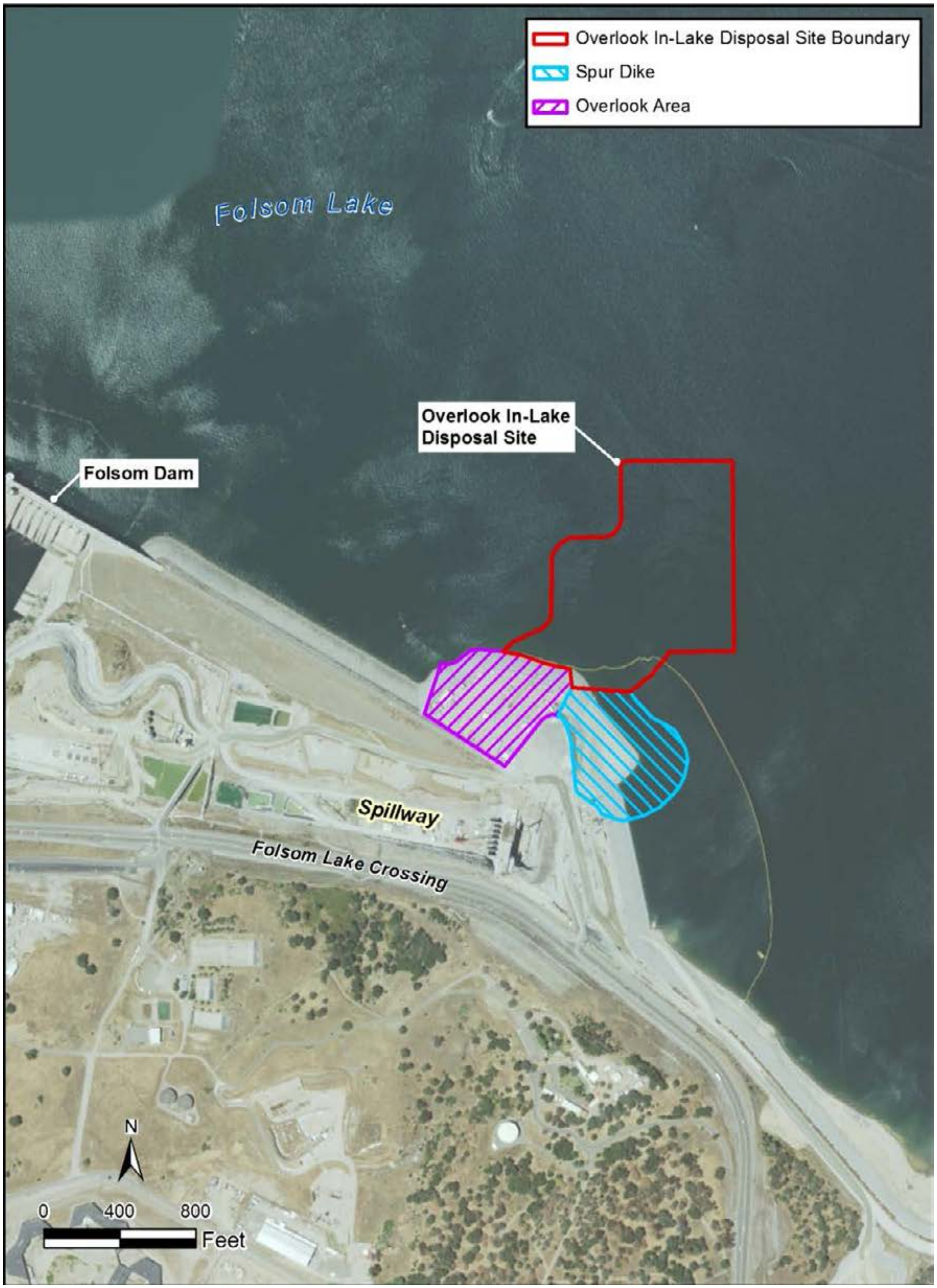

Figure ES-5. Overlook In-Lake Disposal Site (OILD site).

advance of the date rip-rap removal needs to start, then rip-rap disposal at the MIAD East site would be selected as the preferred option. Use of the MIAD East area for disposal purposes first requires executing a land use agreement between the Corps and the Bureau since the Bureau is the underlying property owner. In the unlikely case that the necessary land use agreement cannot be completed in advance of the date rip-rap removal needs to begin, then the last remaining rip-rap disposal option would be used, e.g. disposal within the OILD site. Note that the quantity of rip-rap requiring disposal is still being determined. If the quantity is larger than presently anticipated, it is possible that more than one of the optional disposal areas discussed would be utilized to accommodate the large quantity.

(B) Dike 7 Office Complex Parking Area

Restoration activities here would include the removal of the northern parking area, encompassing roughly 0.9 acre (see Figures ES-2 and ES-3). This area would be re-graded to restore pre-construction topography and then planted with native grass and forb seeds. It is noted that the future Folsom Dam Raise project may need to use the northern parking area for construction staging or related purposes. If it is determined that this is the case, the JFP Phase V project would not restore the northern parking area. Instead, restoration of this parking area would be conducted as part of the Folsom Dam Raise project (e.g. Dam Raise project would restore the parking area as described above after the parking area is no longer needed for construction purposes).

(C) Prison Staging Area (PSA)

Restoration activities at the 8.9-acre Prison Staging Area (see Figure ES-6) would include the removal of office trailers, materials, equipment, and a septic system. The area occupied by the office trailers would be re-graded to match the surrounding grade. A portion of the west end of the site would be re-graded to route stormwater runoff westward. All re-graded areas would be planted with native grass and forb seeds.

2. Miscellaneous Project Construction Activities

This category includes only one proposed activity; the construction of new guardrails along the north side of Folsom Lake Crossing (roadway) for safety purposes. This new construction was not covered in prior NEPA/CEQA documents for the Folsom JFP. There would be five guardrail segments totaling roughly 5,300 linear feet, beginning near the bridge over the American River and continuing eastward (see Figure ES-6).

3. Mitigation Activities for Prior JFP Impacts

This category consists of proposed activities whose objective is to provide mitigation (compensation) for certain impacts resulting from prior phases of the JFP. These impacts and the proposed mitigation were addressed in the 2012 SEIS/EIR. This category can be subdivided into two subcategories identified below that address two different mitigation actions.

(A) Rossmoor Bar 14-Acre Mitigation Site (mitigation for past tree/habitat impacts)

Approximately 3,140 native trees and shrubs would be planted to mitigate for the prior removal of 29 native trees at the Dike 8 disposal site. The mitigation area would occupy approximately 14 acres located in Rossmoor Bar Park (see Figure ES-7) and would be protected and preserved in perpetuity.

Figure ES-6. Prison Staging Area (PSA) to be Partially Restored and the Proposed Guardrails Along Folsom Lake Crossing.

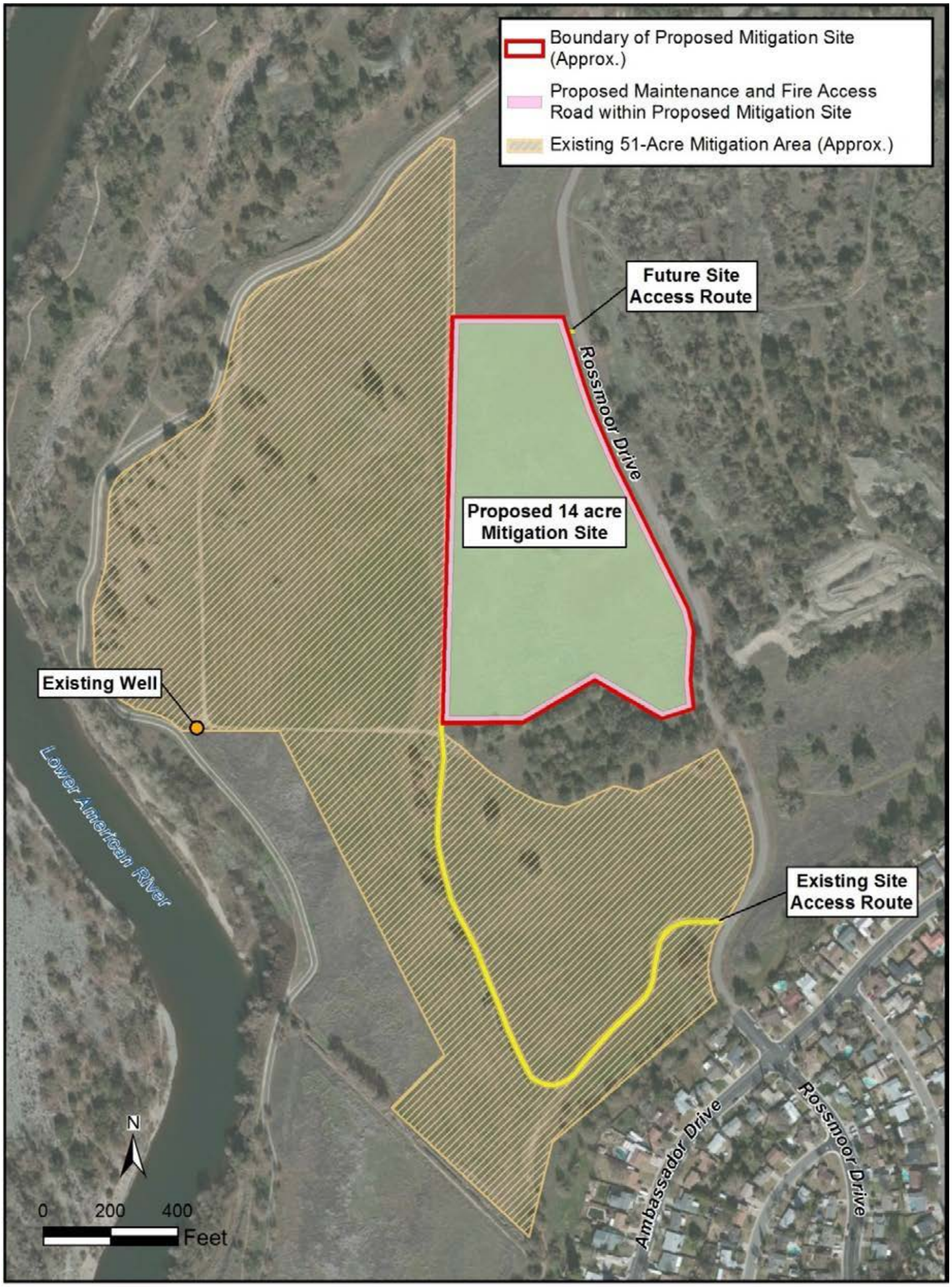

Figure ES-7. Proposed Rossmoor Bar 14-acre Mitigation Site and Adjacent Features.

(B) Mitigation for Recreational Fishing Impacts

The 2012 SEIS/EIR included a commitment to compensate (mitigate) for lost angler opportunities within Folsom Lake that may have occurred due to actions in earlier phases of the JFP (e.g. actions detrimental to recreational fisheries). The proposed mitigation would involve a stocking program (re-stocking) whereby 6,000 catchable-size triploid (sterile) rainbow trout would be placed in Folsom Lake.

ES.5 Environmental Effects and Mitigation

There would be no significant effects to resources. The project would cause temporary effects to air quality, noise, traffic, recreation, vegetation and wildlife, fisheries, water quality, and Waters of the United States but these effects would be less than significant. Restoration elements of the project would cause permanent effects to aesthetics; however, these effects would largely improve aesthetics and visual resources and thus would be less than significant. Construction associated with the project's restoration elements would cause permanent effects to 11 elderberry shrubs and would thereby affect the federally-listed valley elderberry longhorn beetle. By providing mitigation for this impact in accordance with US Fish and Wildlife Service (USFWS) requirements, the effect would be less than significant. Table ES-1 summarizes the potential effects of the alternatives, the significance of those effects, and any potential mitigation measures that would be implemented to reduce any effects to less than significance.

ES.6 Compliance with Applicable Laws, Policies, and Plans

This document will be adopted as a joint Supplemental EA/EIR and will fully comply with National Environmental Policy Act and California Environmental Quality Act requirements. The project will comply with all Federal laws, regulations, and Executive Orders. In addition, the non-Federal sponsor will comply with all State and local laws and permit requirements.

ES.7 Public Involvement

This draft Supplemental EA/EIR will be circulated for a 45-day review to: Federal, State, and local agencies; organizations; and individuals who have an interest in the project. A public meeting to discuss the proposed action and obtain public input will be held during the 45-day public review period. All comments received during the public review period will be considered and incorporated into the final SEA/EIR, as appropriate.

ES.8 Areas of Controversy

No significant issues have been identified for implementing the proposed action. Significant issues identified as areas of controversy by agencies and the public related to construction of the entire Folsom JFP are summarized below. These issues are based on preliminary studies and comments from previous phases during formal and informal agency meetings, workshops, public meetings, telephone discourse, letters, and emails.

- Preliminary air quality emission calculations indicated that concurrent construction of the JFP project phases would result in air emissions that could lead to violations of applicable State ambient air quality standards and not comply with the Federal Clean Air Act (CAA).

- Construction is expected to increase noise levels, affecting local recreationists and adjacent residents, even under circumstances of compliance with the City of Folsom noise ordinances.

- Public comments to the 2007 EIS/EIR identified concerns over temporary curtailment of recreational activities in the project area. However, Folsom Point and the Folsom Point boat launch area will remain open to recreationists.

- Recreational experience may be degraded in and adjacent to the Folsom JFP project area. Noise, visual aesthetics, and access will be compromised during construction during years 2013 to 2017.

ES.9 Unresolved Issues

The only unresolved issue at this time is which of the three options under consideration for the disposal of rip-rap removed from the HRRA will be utilized (see Section ES.4.2). The Corps will continue working with the Sacramento Metropolitan Air Quality Management District and the California Air Resources Board to ensure compliance with the CAA.

ES.10 Preferred Plan

Based on the results of the technical, economic, and environmental analyses; coordination with the non-Federal sponsor; and public input, Alternative 2 has been identified as the preferred plan.

Table ES-1. Comparative Summary of Environmental Effects, Mitigation, and Levels of Significance.

	Alternative 1 – No Action	Alternative 2 – Implement Proposed Action
Geology, Mineral Resources, & Seismicity		
Effect	No effect.	No effect.
Significance	Not applicable.	Not applicable.
Mitigation	Not applicable.	Not applicable.
Hazardous, Toxic, and Radiological Waste		
Effect	No effect.	No effect.
Significance	Not applicable.	Not applicable.
Mitigation	Not applicable.	Not applicable.
Land Use and Socioeconomics		
Effect	No effect.	No effect.
Significance	Not applicable.	Not applicable.
Mitigation	Not applicable.	Not applicable.
Aesthetics		
Effect	No effect.	Temporary degradation of aesthetics/visual resources during construction. Long-term improvement of aesthetics/visual resources following project completion.
Significance	Not applicable.	Less than significant.
Mitigation	Not applicable.	Not applicable.
Air Quality		
Effect	No effect.	NO_x and PM_{10} would exceed SMAQMD thresholds during construction. Other temporary adverse impact to air quality during construction.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Incorporation of SMAQMD Basic Construction Emission Control Practices, Enhanced Exhaust Control Practices, Fugitive Dust Emission Mitigation Measures, Enhanced Fugitive Particulate Matter Dust Control Practices. Use of other air quality mitigation measures (ex., use of higher tiered equipment, use of model year 2010 or newer haul trucks). State mitigation fee payments for excess NO_x and PM_{10} emissions.

	Alternative 1 – No Action	**Alternative 2 – Implement Proposed Action**
Climate Change		
Effect	No effect.	Temporary increase in GHG emissions during construction. GHG emissions would not exceed federal thresholds; however, CO_2 emissions would exceed SMAQMD recommended CO_2 threshold. After construction, increased sequestration of CO_2.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Refer to mitigation for air quality effects. In addition, GHG emissions would be monitored and any emissions over the GHG threshold of 25,000 metric tons of carbon dioxide equivalent (MTCO2e) would be mitigated through a GHG Reduction Plan.
Cultural Resources		
Effect	No effect.	No adverse effect.
Significance	Not applicable.	Not applicable.
Mitigation	Not applicable.	If archeological deposits/historic properties are found during project activities, work would be stopped in the area of discovery pursuant to 36 CFR 800.13(b), *Discoveries without Prior Planning*, to determine the significance of the find and, if necessary, complete appropriate discovery procedures.
Noise		
Effect	No effect.	Increased noise during construction. Construction activities during non-exempt hours could exceed local noise ordinance standards.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Conduct continuous noise monitoring at designated locations if any construction occurs during non-exempt hours, and cease such construction if exterior noise standards are exceeded until adequate noise attenuation measures are implemented. Prohibit use of engine brakes within city limits. Schedule heavy truck deliveries during hours exempt from noise standards. Provide residents and businesses near project area with advance notice of project activities/schedule, and maintain a 24-hour hotline for noise complaints.

	Alternative 1 – No Action	Alternative 2 – Implement Proposed Action
Recreation		
Effect	No effect.	Temporary re-routing of vehicular access to Folsom Point until Folsom Point Access Bridge is removed and Folsom Point Road is restored at bridge site. Recreational fishing and boating access in waters within and adjacent to the OILD site temporarily prohibited during construction (if OILD site used for rip-rap disposal). Rip-rap would remain within the OILD site following construction completion (if OILD site is used for rip-rap disposal). Roughly 1.7 acres to 1.9 acres of existing rip-rap would remain along the Folsom Lake shoreline adjacent to the north boundary of the HRRA. Temporary closure of one lane of 2-lane bike path along north side of Folsom Crossing during guardrail installation. Public access to 14 acres within Rossmoor Bark Park (at 14-acre Rossmoor Mitigation site) prohibited for up to 5 years.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Employ traffic safety measures during HRRA construction activities and installation of guardrails. Install traffic warning signs and restricted access signs as necessary. Conduct public outreach (mailings, signs, etc.) to inform public of temporary Folsom Point access changes. Install hazard buoys in Folsom Lake parallel to rip-rap bands remaining in the lake adjacent to the northern HRRA boundary. If the OILD site is used for rip-rap disposal, install hazard buoys around areas of disposed rip-rap.

	Alternative 1 – No Action	Alternative 2 – Implement Proposed Action
Special Status Species		
Effect	No effect.	Permanent loss of 11 elderberry shrubs, thereby affecting the valley elderberry longhorn beetle (VELB). If present, potential disturbance to Swainson's hawk, Cooper's hawk, and white-tailed kites. Potential disturbance of migratory birds.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Purchase 6 conservation credits from VELB conservation bank; remove affected existing elderberry shrubs and transplant them at the conservation bank. Conduct surveys for active nests of state-listed birds and, if necessary, implement CDFW recommendations concerning active nests. Prior to demolition of Folsom Point Access Bridge, remove migratory bird nests from the bridge during non-nesting season and install bird exclusion materials to prevent further nesting. Conduct surveys for active nests of other migratory birds and, if necessary, implement USFWS recommendations concerning any active nests.
Vegetation and Wildlife		
Effect	No effect.	Limited short term disturbance of wildlife. Potential for removal or trimming of few native trees. Restoration of 14-acre previously cleared Rossmoor Bar Mitigation Site to oak woodland habitat. Revegetation of JFP restoration sites with native grasses and forbs. Long-term improvements to wildlife habitat values.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Protect native woody vegetation where feasible. Prohibit nesting of migratory birds at the Folsom Point Access Bridge. Conduct surveys for active nests of other migratory birds and, if necessary, implement USFWS recommendations concerning any active nests. Plant native grasses and forbs in JFP restoration sites. Implement BMPs to avoid and minimize secondary water quality impacts to adjacent Waters of the United States (WOUS).

	Alternative 1 – No Action	Alternative 2 – Implement Proposed Action
Fisheries		
Effect	No effect.	Potential short-term adverse effects to fish and other aquatic organisms resulting from increased turbidity, lowered dissolved oxygen, inadvertent release of contaminants. If rip-rap disposed at OILD site, potential for crushing fish and other aquatic organisms. If barges used, potential for introduction of invasive aquatic species.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Implement appropriate erosion/turbidity control measures (via SWPPP) and related BMPs. Implement fuels spill management plan. Adhere to requirements of Section 401 WQC. Ensure any barges and support vessels are free from invasive aquatic species. To the extent practicable, avoid construction during the wet season and, where construction would directly impact WOUS, conduct construction “in the dry”. Stock Folsom Lake with at least 6,000 triploid rainbow trout (mitigation for prior JFP impacts).
Topography and Soils		
Effect	No effect.	Permanent change in topography within HRRA, Dike 7 Office Complex Parking Area, and, to lesser degree, Prison Staging Area. Permanent change in topography at MIAD East disposal site if used for disposal of rip-rap (or for Phase IV disposal activities). Temporary disturbance to soils during construction. Long-term improvement to topography as part of restoration activities at HRRA and Dike 7 Office Complex Parking Area.
Significance	Not applicable.	Less than significant.
Mitigation	Not applicable.	Not applicable.
Traffic		
Effect	No effect.	Temporary increased traffic on public roadways during construction activities. Temporary closure of one lane of Folsom Lake Crossing during installation of guardrails. Temporary traffic conflicts between construction equipment/vehicles and other vehicles using Folsom Point Road.
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Implement traffic safety management plan.

	Alternative 1 – No Action	Alternative 2 – Implement Proposed Action
Water Quality and Waters of the United States		
Effect	No effect.	Temporary increased erosion and turbidity during construction. Potential for introduction of contaminants into surface waters during construction via accidental spills/releases of fuels and oils. If OILD site is used for rip-rap disposal, temporary mobilization of sediments affecting turbidity, dissolved oxygen, pH, and water temperature, plus potential for release of various metals including mercury. Temporary direct impacts to anywhere from 2.8 acres to 3.6 acres of jurisdictional WOUS (Folsom Lake) by rip-rap removal and earthwork in HRRA. Permanent direct impacts to 0.1 acre of jurisdictional WOUS (Folsom Lake) in the HRRA that would be converted to upland. However, 0.5 acre of jurisdictional WOUS (extension of Folsom Lake) would be restored within the HRRA as part of the grading activities. If the OILD site is used for rip-rap disposal, temporary direct impacts to roughly 3 acres of WOUS (Folsom Lake).
Significance	Not applicable.	Less than significant with mitigation.
Mitigation	Not applicable.	Implement standard BMPs to avoid or minimize any effects of construction on surface waters as part of the SWPPP and NPDES (CGP) permit. Comply with requirements set forth in the Section 401 WQC (including associated WDR Order). Implement a fuels spill management plan. Frequently inspect and maintain construction equipment and vehicles. To the extent practicable, avoid construction during the wet season and, where construction would directly impact WOUS, conduct construction "in the dry". If OILD site is used for rip-rap disposal, conduct water quality monitoring outside the mixing zone until disposal activities are complete.

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ACRONYMS & ABBREVIATIONS

APE	area of potential effects
BMPs	best management practices
CARB	California Air Resources Board
CAA	Clean Air Act
CCAA	California Clean Air Act
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CH_4	methane
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
Corps	U.S. Army Corps of Engineers
CVFPB	Central Valley Flood Protection Board
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
cy	cubic yards
dB	decibels
dBA	"A-weighted" decibel
DBH	diameter at breast height
EA	Environmental Assessment
EA/EIR	Environmental Assessment/Environmental Impact Report
EA/IS	Environmental Assessment/Initial Study
EFH	essential fish habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
FEIS/EIR	Final Environmental Impact Statement/Environmental Impact Report
FSRA	Folsom State Recreation Area
Folsom Facility	Folsom Dam and its associated facilities
FONSI	Finding of No Significant Impact
GCR	General Conformity Rule
GHG	greenhouse gas
HFC	hydrofluorocarbons
HOV lanes	bus/carpool lanes
HRRA	haul road restoration area
HTRW	hazardous, toxic, and radiological wastes
JFP	Joint Federal Project
L_{50}	noise level exceeded more than 30 minutes per hour
LOS	level of service
µg/m3	micrograms per cubic meter
MIAD	Mormon Island Auxiliary Dam
N_2O	nitrous oxide

NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OPR	Governor's Office of Planning and Research
Pb	lead
PFC	perfluorocarbons
PM	particulate matter
$PM_{2.5}$	fine particulate matter
PM_{10}	inhalable particulate matter
Reclamation	U.S. Bureau of Reclamation
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SAFCA	Sacramento Area Flood Protection Agency
SEA/EIR	supplemental environmental assessment/environmental impact report
SF_6	sulfur hexafluoride
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VELB	valley elderberry longhorn beetle
WOUS	Waters of the United States
WRDA	Water Resources Development Act

1.0 INTRODUCTION

1.1 PROPOSED ACTION

The U.S. Army Corps of Engineers (Corps; USACE) and the State of California Central Valley Flood Protection Board (CVFPB) propose to implement design refinements to the Folsom Dam Modification Project (the Folsom Joint Federal Project, or Folsom JFP), previously addressed in the Folsom Dam Safety and Flood Damage Reduction, Final Environmental Impact Statement/Environmental Impact Report (2007 FEIS/EIR), issued by the U.S. Bureau of Reclamation (Reclamation) in 2007 (Reclamation, 2007). The proposed action is largely based on the commitments made in the 2007 FEIS/EIR, the 2012 Folsom Dam Modification Project Approach Channel Supplemental EIS/EIR (2012 SEIS/EIR), and the land use agreement (LUA) between the Corps and Reclamation. The design refinements include: site restoration activities encompassing an interior haul road, the Dike 7 stockpile area, the Dike 8 disposal area, and the Mormon Island Auxiliary Dam (MIAD) West staging area (see Figures 2 and 3); site restoration activities encompassing a parking lot that is part of the Dike 7 Office Complex (see Figures 2 and 3) as well as the Prison Staging Area (see Figure 5); construction of guardrails along a segment of Folsom Lake Crossing; removal of the temporary Folsom Point access bridge (see Figure 5); establishment of an oak woodland mitigation site (see Figure 6), and; fish restocking in Folsom Lake. The proposed action would comply with required mitigation, and restore various areas affected by the previous project phases to a more natural state. Components of proposed action (the subject project) are detailed in Section 2.3, while figures and photographs pertaining to this action are provided in Section 10.

1.2 BACKGROUND AND NEED

The Folsom JFP is a cooperative effort among the Corps, CVFPB, Reclamation, and the Sacramento Area Flood Control Agency (SAFCA). The Folsom JFP is designed to improve the dam safety, security, and flood damage reduction features at Folsom Dam and associated facilities, including construction of a gated auxiliary spillway southeast of the main dam.

The potential effects of the Folsom Dam Modification Project on environmental resources were evaluated by Reclamation in the 2007 FEIS/EIR. The Corps was a cooperating agency in the development of the 2007 FEIS/EIR, and a joint Record of Decision was signed on May 3, 2007. A Notice of Determination (NOD) and Statement of Findings were issued by the CVFPB on July 20, 2007. The 2007 FEIS/EIR conducted a programmatic or general analysis of proposed design features available at that time. The site restoration was included in the 2007 EIS/EIR, however, design and construction changes have occurred that were not previously evaluated. The Corps and CVFPB have determined that a supplemental EA/EIR is required. This 2015 SEA/EIR is being prepared as a supplement to the 2007 FEIS/EIR to incorporate new information and consider alternatives to the proposed action.

Folsom Dam is a concrete gravity dam 340 feet high and 1,400 feet long flanked by left and right earthfill wing dams. The Folsom Facility also includes MIAD and eight earth filled dikes. The storage capacity for the reservoir is 977,000 acre-feet at an elevation of 466 feet NAVD88.

Construction of Folsom Dam by the Corps began in October 1948 and was completed in May 1956.

A major flood in 1986 severely strained Sacramento area flood protection systems including Folsom Dam. Following that flood, work was conducted to determine means to increase the levels of downstream flood protection and insure dam safety. This work resulted in the recommendation for an auxiliary spillway to be constructed jointly between USACE and Reclamation, a 3.5 foot raise of the dam and reservoir dikes, and three ecosystem restoration projects at Folsom Dam. The JFP auxiliary spillway is being constructed by both USACE and Reclamation in five construction phases.

- Phase I included initial spillway excavation and the work is complete.
- Phase II included completion of spillway excavation, which has been accomplished.
- Phase III included construction of the gated control structure. Construction was initiated in late 2010 and is anticipated to be completed in the late summer of 2015.
- Phase IV includes completion of the excavation and concrete lining of the upper downstream chute, stepped section, and stilling basin downstream of the control structure. Construction was initiated in 2013 and is anticipated to be completed in fall of 2017.
- Phase V includes final site studies and necessary remedial actions, facility testing, site demobilization and restoration, oak woodland mitigation, fish impacts mitigation, minor construction of necessary improvements not included in earlier phases, and project transfer. It is anticipated that most Phase V activities would start in the early spring of 2016 and would end in the fall of 2017.

Phase I and II of the Folsom JFP included the construction of a long haul road from the auxiliary spillway excavation site to the MIAD West staging area. Cut and fill material from the Phase I and II excavation was reused to construct this interior haul road. To facilitate a continuous interior haul road to the MIAD staging area, a large cut was excavated through a hill at the entrance to the Folsom Point Recreation Area. A pre-manufactured bridge, referred to as the Folsom Point access bridge, was installed over the interior haul road to carry public traffic to the recreation area and boat launch. The interior haul road and Folsom Point Access Bridge provided a safety separation between construction activities and public access.

Stockpile, staging, and disposal areas were developed during the earlier phases of the Folsom JFP. The Dike 7 stockpile area was used for temporary stockpiling of construction materials (i.e., rock and soil), and as a permanent disposal site for waste rock and soil from Phase I and Phase II. The Dike 8 disposal area is a permanent disposal site for waste rock and soil from the Phase IV excavation. Approximately 700,000 cubic yards of material was placed as permanent disposal. The MIAD West staging area served as both a temporary and permanent disposal location for waste rock and soil generated in Phases I, II and III, as well as a construction staging area.

During prior phases of the Folsom JFP, a construction office complex including two parking areas was built immediately west of Dike 7. This complex has been used to house offices for construction contractors and includes a portion of an access route extending from Folsom Lake Crossing to the Dike 7 stockpile area. A construction staging area, known as the Prison Staging Area, was also built on the south side of Folsom Lake Crossing on property owned by the California Department of Corrections and Rehabilitation. This area has been used for construction staging, to house office trailers, and to store various construction materials, supplies, and equipment.

The disposal of materials at Dike 8 required the removal of trees (see Section 2.3.4). The Corps is required to compensate for this loss by creating a 14-acre oak woodland site, protected in perpetuity, as addressed in the 2012 SEIS/EIR. The site would be monitored for 5 years or until it determined that the planted seedlings are well established and self-sustaining. The 2012 SEIS/EIR also determined that prior phases of the Folsom JFP (the JFP) would impair recreational fishing opportunities in Folsom Lake (the reservoir) and required this impact to be compensated by re-stocking fish in the lake.

The auxiliary spillway is currently under construction by the Corps and completion is expected in the fall of 2017. Operation of this spillway would increase water discharge capability from the reservoir and help to provide a 200-year level of flood protection to the Sacramento area. Under the land use agreement the Corps has with Reclamation, the Corps is obligated to remove all temporary structures, equipment, or other improvements from the premises upon completion of the overall JFP. The Corps is also obligated to restore areas disturbed by project construction activities.

Prior to implementation, the effects of the site restoration measures must be evaluated to determine whether they would have any significant environmental or cultural effects that could not be avoided or mitigated to less than significance. Without these site restoration measures, the Corps and CVFB would not be able to meet their obligations as per the 2007 FEIS/EIR, the 2007 Record of Decision (ROD) associated with the 2007 FEIS/EIR, and the LUA.

1.3 PROJECT AREA LOCATION

Folsom Dam is located at the confluence of the North and South Forks of the American River, approximately 29 miles upstream from the city of Sacramento near the town of Folsom. The new auxiliary spillway is being constructed on the left abutment of the main dam, immediately downstream of the existing left wing dam.

For the purposes of this document, the “project area” consists of the site of the ongoing spillway construction including all existing project haul roads, staging and disposal areas at the Folsom Prison property, Folsom Overlook, Dike 7, Dike 8, MIAD West, MIAD East, and the Dike 7 office complex. The staging areas, disposal areas, haul roads, and temporary office complex used for this project were previously evaluated in the 2007 FEIS/ EIR (Reclamation, 2007), the 2010 SEA/EIR (USACE, 2010), and the 2012 SEIS/EIR (USACE, 2012). Therefore, the analysis of impacts in this SEA/EIR will be focused on areas slated for restoration activities as described in Sections 2.3.1 and 2.3.2. The project area also includes a proposed mitigation site located within the Rossmoor Bar Park in Rancho Cordova. Figure 1 provides a project location map.

1.4 FOLSOM JFP AUTHORITY

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project (Folsom Dam Modifications and Folsom Dam Raise) (USACE, 2007).

1.5 PURPOSE OF THE SUPPLEMENTAL EA/EIR

This Supplemental EA/EIR: (1) describes the existing environmental and cultural resources in the project area; (2) evaluates the effects and significance of the proposed site restoration measures on these resources; and (3) proposes measures to avoid, minimize, or mitigate any adverse effects to less than significance. This SEA/EIR has been prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This SEA/EIR is intended to supplement the 2007 FEIS/EIR.

Based on the results of this Supplemental EA/EIR, the District Engineer, Commander of the Sacramento District, will decide whether or not the proposed action qualifies for a Finding of No Significant Impact (FONSI) under NEPA or whether a supplemental EIS must be prepared. An EA and a FONSI will be sufficient if it is determined that the proposed refinements do not result in new significant effects on the environment beyond the significant effects identified in the 2007 FEIS/EIR and if the magnitude of impacts are within the range of impacts identified in the 2007 FEIS/EIR. In addition, CVFPB will consider certifying the EIR, adopting its findings and the proposed mitigation plans, and approving the design refinements to the project.

1.6 RELATED DOCUMENTS

The following documents are relevant to the modifications described in this Supplemental EA/EIR.

- <u>2007 Folsom Dam Safety and Flood Damage Reduction FEIS/EIR.</u> The 2007 FEIS/EIR was prepared by USBR and contains the initial analysis of environmental effects and potential mitigation associated with the overall Folsom JFP.

- <u>2010 Folsom Dam Safety and Flood Damage Reduction Supplemental EA/EIR, Control Structure, Chute, and Stilling Basin</u>. The 2010 SEA/EIR was supplemental to the 2007 FEIS/EIR and analyzed design refinements for the auxiliary spillway's chute, stilling basin, and construction of the control structure.

- 2012 Folsom Dam Safety and Flood Damage Reduction Project EA/EIR, Prison Staging Area and Stilling Basin Drain. The 2012 EA/EIR was supplemental to the 2007 FEIS/EIR and analyzed design refinements that included: use of Folsom State Prison land for staging and operating a concrete batch plant; installing a temporary traffic signal on Folsom Lake Crossing; widening an existing dirt access road; construction of a drain at the stilling basin.

- 2012 Folsom Dam Modification Project Approach Channel SEIS/EIR. The 2012 SEIS/EIR was supplemental to the 2007 FEIS/EIR and analyzed the construction of the approach channel to the auxiliary spillway.

- 2015 Folsom Dam Safety and Flood Damage Reduction Project Supplemental EA/EIR, Right Bank Stabilization. The 2015 SEA/EIR was supplemental to the 2007 FEIS/EIR and analyzed design refinements to construct slope protection measures along approximately 400 feet of the right bank of the American River to minimize bank erosion and scour.

2.0 ALTERNATIVES

2.1 ALTERNATIVES NOT CONSIDERED FURTHER

The Corps, CVFPB, SAFCA, and Reclamation agree that site restoration design can range from a very minimalist effort reflected in the most literal reading of the 2007 FEIS/IER and its ROD, to a restoration effort that resembles the prior project conditions before construction. Restoring the Folsom JFP project area to the actual pre-project conditions was considered and determined not to be feasible because of the greater adverse impacts on air quality, traffic, noise, and waters of the United States resulting from restoration construction activities. This alternative was also considered not practicable since it would not achieve some of the desired goals for the largest area of proposed restoration, referred to as the Haul Road Restoration Area (see Section 2.3.1), and would significantly increase project construction costs. The goals that would not be achieved include; minimizing nuisance drainage that could lead to erosion or ponding, ensuring safe and stable slopes, minimizing long-term maintenance, and avoiding the export of significant quantities of materials during restoration construction. Furthermore, restoring the Haul Road Restoration Area to match pre-project topography would not leave a means for safely accessing this area for long-term maintenance or emergency response purposes. Restoring the Folsom JFP project area to a minimally restored condition was also considered and determined not to be feasible because it would increase long-term maintenance costs and not meet the visual appeal of the project's goal. Maintenance costs would likely increase because of factors such as, but not limited to: greater need for eradication of invasive plant species; more extensive and intensive erosion control measures; increased stormwater management needs; maintenance of unnecessary fences; maintenance and ultimate replacement of the Folsom Point bridge.

2.2 ALTERNATIVE 1 – NO ACTION

A No Action alternative is required pursuant to NEPA, and a no project alternative is required for CEQA. For consistency in this Supplemental EA/EIR, the no project alternative is referred to as the No Action Alternative. The No Action Alternative constitutes the future without-project conditions that would reasonably be expected in the absence of the proposed action and serves as the environmental baseline for NEPA against which the effects and benefits of the action alternatives are evaluated. The environmental baseline for CEQA is assumed to be the existing conditions.

CEQA section 1525 suggests that the description of physical existing conditions (pre-project) at the time the Notice of Preparation (NOP) was published should be considered the environmental setting (e.g., baseline conditions). If an NOP is not published at the time environmental analysis is commenced, then the physical conditions should be considered from both a local or regional perspective.

Potential significant impacts to pre-project conditions resulting from the JFP were analyzed in the 2007 EIS/EIR. In addition, supplemental documents have analyzed design refinements to the JFP. Mitigation measures approved by the CVFPB and commitments made by the project partners to reduce significant impacts for the JFP are required to be implemented during the Phase V restoration effort. This Phase V supplemental document evaluates potential impacts associated with restoring various existing sites. Restoration activities were limited to a few sentences in the 2007 EIS/EIR and impacts associated with restoration were not discussed at all. For purposes of baseline conditions, the Phase V supplemental EA/EIR should consider the regional and local setting (current setting) instead of the original NOP conditions. To evaluate potential restoration impacts against pre-JFP site conditions would be redundant, since it was covered in the 2007 EIS/EIR and supplemental documents.

Under the No Action alternative, the Corps and the CVFPB would not implement the site restoration measures or the mitigation measures proposed in this SEA/EIR and therefore would not meet the obligations of the 2007 FEIS/EIR and its ROD, the 2012 SEIS/EIR and its ROD, and the LUA. The interior haul road, stockpile, and disposal areas discussed in Section 2.3.1 would remain in place. The northern parking lot of the Dike 7 Office Complex would also remain in place. These features would continue to visually contrast with the surrounding landscape. The existing security fencing along the interior haul road would remain in place which prevents the public from accessing the site. Reclamation would likely need to maintain the interior haul road, stockpile, and disposal areas to prevent erosion or would need to complete the restoration work proposed herein.

Under the No Action alternative, the Prison Staging Area would remain in its current condition, thereby violating the lease agreement between the California Department of Water Resources (DWR) and the California Department of Corrections and Rehabilitation (CDCR). Additionally, no new guardrails would be installed along the north side of Folsom Lake Crossing as discussed in Section 2.3.2.

2.3 ALTERNATIVE 2 – PHASE V SITE RESTORATION MEASURES AND RELATED MITIGATION ACTIVITIES (PREFERRED ACTION/PROPOSED ACTION)

This section describes the elements of the preferred action (e.g. the proposed project). Other construction features described in the 2007 FEIS/EIR and supplemental joint NEPA/CEQA documents would remain the same unless otherwise indicated. All of the figures cited herein are provided in Section 10. Photographs of existing site conditions are also provided in Section 10.

Major elements of the overall proposed project can be divided into three main categories of activities/actions. Some of these categories can be divided into different subcategories. The following provides a brief outline of the main categories and subcategories.

1. **Site Restoration Activities**
   This category or group consists of proposed activities whose objective is to help restore various areas that were previously disturbed by construction of prior phases of the Folsom JFP. Restoration work is necessary to comply with prior commitments set forth in the 2007 FEIS/EIR and in the LUA. This category can be subdivided into the three subcategories identified below that are based on the location of the restoration activities.
   (A) Haul Road Restoration Area
   (B) Dike 7 Office Complex Parking Area
   (C) Prison Staging Area

2. **Miscellaneous Project Construction Activities**
   This category includes only one proposed activity; the construction of new guardrails along the north side of Folsom Lake Crossing (roadway) for safety purposes. This new construction was not covered in prior joint environmental documents for the Folsom JFP.

3. **Mitigation Activities for Prior JFP Impacts**
   This category or group consists of proposed activities whose objective is to provide mitigation (compensation) for certain impacts resulting from prior phases of the JFP. These impacts and the proposed mitigation were addressed in the 2012 SEIS/EIR. The mitigation actions are discussed herein to provide more specifics about the mitigation projects. This category can be subdivided into two subcategories identified below that address two different mitigation actions.
   (A) Rossmoor Bar 14-Acre Mitigation Site (mitigation for past tree/habitat impacts)
   (B) Mitigation for Fish Impacts

2.3.1 Haul Road Restoration Area

The 2007 FEIS/EIR included a restoration commitment that called for ensuring "…that sites used for borrow development, staging, and construction activities will be re-contoured…to pre-construction conditions, or to contours which do not pose a safety hazard" (Reclamation, 2007). The activities proposed within the Haul Road Restoration Area (HRRA) are intended to satisfy this commitment to the degree practicable. The main goals of restoration activities in the HRRA include:

- Restore landscape to a more natural looking topography that generally mimics the appearance of adjacent natural areas and is similar to pre-project conditions, without the need for significant importing or exporting of materials (e.g. achieve a balanced cut and fill project).
- Perform restoration grading and contouring such that the majority of the restored area drains back to Lake Folsom following natural drainage paths that were present prior to project construction.
- Perform restoration grading and contouring in a manner that minimizes or eliminates nuisance drainage that could lead to erosion, slope instability, or ponding.
- Perform restoration grading and contouring such that the finished grades help ensure stable, safe slopes.
- Minimize long-term maintenance required by Reclamation staff and prevent erosion or adverse site stormwater runoff using permanent revegetation methods that establish native vegetation in the restoration area.

Figures 2 and 3 depict the approximate boundaries of the proposed HRRA, which are labeled as the “haul road restoration area grading limits”. These two figures illustrate the HRRA boundaries based on two different design options, which are discussed later in this subsection. Overall, the boundaries of the HRRA would encompass roughly 58 acres.

Earlier phases of the Folsom JFP included the construction of a haul road from the primary auxiliary spillway excavation, located just west of the HRRA, to the MIAD, located just east of the HRRA. During haul road construction, cuts were excavated through several hillsides along the lake, including a hill that carried a public road (Folsom Point Road) to the Folsom Point Recreation Area. Material from the cuts was used in haul road construction fills in addition to material from the Auxiliary Spillway Channel excavation. The boundaries of the HRRA contain approximately 7,200 linear feet (1.36 miles) of the existing haul road, which is also referred to as the interior haul road or upper haul road. The existing haul road tends to be approximately 60 feet wide, not including the road’s side slopes, but this width varies depending on the location.

The area south of the existing haul road and labeled as “Dike 7 Area” in Figures 2 and 3 was originally an arm of Folsom Lake but was converted (filled) to a relatively flat area in earlier phases of the Folsom JFP. The flat area has slopes armored with rip-rap that extend to the neighboring hillsides. This area has been used as a permanent storage site for material excavated from previous project phases. Approximately 160,000 cubic yards (cy) of processed rock and material have been placed in the Dike 7 stockpile area thus far. The southern boundary of the Dike 7 stockpile area runs along Dike 7, which is a saddle dike built long ago as part of the Folsom Dam system.

The area south of the existing haul road and labeled as “Dike 8 Area” in Figures 2 and 3 was also originally an arm of Folsom Lake. Roughly 8 acres within this area was converted (filled) to a relatively flat area in earlier phases of the Folsom JFP. This area has been used as disposal site for materials excavated during earlier phases the project. Approximately 160,000 cy of material has been placed in the Dike 8 disposal area thus far, with this fill extending to the crest of Dike 8. The far southern boundary of the Dike 8 area runs along Dike 8, which is also a saddle dike.

The area south of the existing haul road and labeled as "MIAD West Area" in Figures 2 and 3 encompasses an approximately 8-acre site known as the MIAD West Staging Area. This area has served as both a temporary and permanent disposal location for waste rock and soil generated during Phases I through III of the JFP. An extensive staging yard was also constructed here as part of Phase IV of the JFP. Over 200,000 cy of material is present in the constructed staging area. A steel maintenance building and other temporary features have also been erected within the staging area.

The proposed topographic restoration of the HRRA would largely be accomplished by re-distributing the existing native ground materials ("soil") located within the HRRA through excavation, filling, and grading. This process would not require importing new fill or exporting excavated soil. Newly contoured slopes would not be steeper than 3H:1V (e.g. a slope that has at least a 3-foot horizontal (H) distance per each foot of vertical (V) elevation change). Restored areas would be re-contoured in a manner to mimic natural slope appearance and to restore natural hillside slopes where practicable to pre-project conditions. There would be some exceptions to this general approach that are discussed in subsequent sections. It is also emphasized that restoring topography in the HRRA to be exactly the same as the topography that was present prior to JFP construction activities is not practicable. However, it is the intent of the design philosophy that the restored area should not appear "engineered" but instead would be re-contoured such that the finished topography conforms to adjacent natural topography and generally mimics the natural topography present prior to JFP alterations in the HRRA.

It is anticipated that most of the fill required to achieve the topographic restoration objectives would be obtained from excess material generated through re-grading of the existing haul road and through re-grading of the MIAD West Area. The project construction (restoration) work would be performed using typical heavy construction equipment such as tractors, motor graders, hydraulic excavators, scrapers, backhoes, bulldozers, rippers, track and wheel loaders, haulers, hydraulic shovels, dump trucks, water trucks, and similar equipment. The restoration construction work would effectively eliminate (remove) that segment of the existing haul road located within the boundaries of the HRRA and the Dike 7 stockpile area, the Dike 8 disposal area, and the MIAD West staging area would be decommissioned. One or more of the latter three areas would be used for temporary stockpiling and staging purposes during the activities necessary to complete earthwork and related construction work during the process of topographic restoration. However, these uses would be discontinued following completion of the project.

During the construction of the existing internal haul road, a layer of rip-rap armor was placed extensively along the north side (lake side) of the road. The rip-rap consists of rock boulders up to 3 feet in diameter and the rip-rap layer along the haul road is up to 6 to 10 feet thick (deep). The Dike 7 stockpile area has existing rip-rap boulders (armoring) along much of its eastern, western, and northern sides. The MIAD West staging area also has a limited quantity of existing rip-rap boulders present along a construction access roadway in the southeast portion of the staging area.

Two potential "design options" are presently being considered for the HRRA. These options are referred to as the "440 Option" or "440 Design Option", and the "460 Option" or "460 Design Option". The primary differences between these two design options are discussed in the subsections below. Unless otherwise indicated, the restoration elements (components) of the HRRA discussed above and subsequently in this document would be the same regardless of the design option ultimately used.

HRRA 440 Design Option

Figure 2 depicts the overall boundaries of the HRRA based on the 440 Design Option. Under this option, the HRRA would encompass approximately 58.0 acres.

The northern HRRA boundary is situated on the northern side of the existing internal haul road and it abuts the shoreline of Folsom Lake in several places. The 440 Option would take the proposed grading and rip-rap removal activities down to as low as elevation 440 feet NAVD88 along several portions of the northern HRRA boundary, hence the name for this design option. Using the 440 Option, it is estimated that the total volume of riprap that would be removed throughout the entire HRRA would range from approximately 120,000 cy to 220,000 cy. This option would leave a long band of existing rip-rap remaining along the shoreline of Folsom Lake immediately adjacent to the northern HRRA boundary. This band would begin at the far western end of the HRRA and continue eastward approximately 1,515 linear feet, ending north of the western end of the Dike 7 area. The width of this rip-rap band would vary from roughly 25 to 70 feet (as measured perpendicular to the lake's shoreline) and would occupy approximately 1.7 acres.

HRRA 460 Design Option

Figure 3 depicts the overall boundaries of the HRRA based on the 460 Design Option. Under this option, the HRRA would encompass approximately 57.4 acres.

The 460 Option would only take the proposed grading and rip-rap removal activities down as low as elevation 460 feet NAVD88 along portions of the northern HRRA boundary; hence the name for this design option. The exact elevation marking the limits of the northern HRRA boundary would vary based on the grading plans and would be as low as elevation 440 feet in some locations.

Using the 460 Option, it is estimated that the total volume of riprap that would be removed throughout the entire HRRA would range from approximately 100,000 cy to 200,000 cy. This option would leave two bands of existing rip-rap remaining along the shoreline of Folsom Lake adjacent to the northern HRRA boundary. The first band would begin at the western end of the HRRA and continue eastward approximately 1,765 linear feet, ending north of the western end of the Dike 7 area. The width of this band, as measured perpendicular to the lake's shoreline, would vary from roughly 25 feet to 70 feet and the band would occupy approximately 1.9 acres. The second rip-rap band would begin north of the eastern end of the Dike 7 area and would continue eastward for approximately

480 feet. The width of this band would vary from roughly 20 feet to 30 feet and the band would occupy approximately 0.4 acre.

General Discussion of HRRA 440 and 460 Design Options

The following provides some general comparisons between the 460 Option and the 440 Options. All values indicated are approximate.

- Total HRRA acreage:
  - 460 Option = 57.4 acres.
  - 440 Option = 58.0 acres.
- Total rip-rap removed throughout the entire HRRA:
  - 460 Option = 100,000 to 200,000 cy
  - 440 Option = 120,000 to 220,000 cy
- Existing rip-rap bands that would remain along the north HRRA boundary:
  - 460 Option: 2 bands totaling 2,245 feet in length and occupying a total of 2.3 acres.
  - 440 Option: 1 band 1,515 feet in length and occupying 1.7 acres.
- The overall boundaries of the HRRA would be the same under both options except for portions of the northern boundary north of the Dike 7 area.

Although the 440 Option and the 460 Option are referred to as HRRA design options, this terminology is used simply to differentiate between two potential end states of HRRA grading activities. The 440 Option would be preferable to the 460 Option in that the 440 Option would allow more rip-rap to be removed along the lake shoreline. However, Folsom Lake's water level at the time of HRRA rip-rap removal and other grading activities could prohibit extending the northern limits of the HRRA to those shown for the 440 Option (see Figure 3) in the zone beginning about 1,400 feet west of the Dike 8 area and continuing westward.

If the lake's water level is relatively high, portions of the HRRA zone mentioned above would be several feet underwater. If the grading limits indicated for the 440 Option were followed (see Figure 2), rip-rap removal in the deepest submerged areas could be performed but this would require using barges equipped with cranes and excavators to perform the rip-rap removal and grading of the substrate underlying the rip-rap. This approach would cause the Phase V construction cost to exceed the authorized project budget, thereby rendering this approach non-viable. Besides this overarching problem, this approach would make it difficult, if not impossible, to achieve the desired grades for the substrate beneath the rip-rap following its removal. The substrate (lake sediments) would be saturated with water and, once excavated/graded, would be prone to sloughing.

Following the grading limits indicated for the 460 Option (see Figure 3) would avoid most of the problems described above, even when the lake's water level is high. It is noted that, similar to the 440 Option, the northern HRRA grading limits for the 460 Option do get as low as elevation 440 feet NAVD88 in a few key locations within the problematic HRRA zone mentioned. This is necessary to restore natural stormwater drainage patterns within the adjacent HRRA areas. However, the 460 Option's northern grading boundary still significantly reduces the extent of grading below elevation 460 feet when compared to the 440 Option, thereby reducing Phase V construction costs under high water conditions to the point that these costs would not exceed the authorized project budget.

The decision to construct the HRRA using the limits (boundary) depicted for the 440 Option or the limits depicted for the 460 Option would be made a few weeks prior to starting earthwork activities near the lake north of the internal haul road. If the lake's water level is very low, then it is likely the 440 Option's limits would be used and if it is relatively high then it is likely the 460 Option's limits would be used. In reality, it is quite probable that the final grading limits may fall somewhere in between those of the 440 Option and the 460 Option in locations where the limits differ, based on the specific field conditions encountered at the time of construction. This is why the reader is cautioned not to view these two HRRA design "options" as being "either/or" cases. It is not necessarily the case that the HRRA boundaries would just follow the 440 Option or would just follow the 460 Option. Instead, these two design possibilities represent two ends of a spectrum of HRRA grading limits (boundaries; limits of construction). The 440 Option and the 460 Option are called options only to provide a name for the two ends of this range. When the project's potential impacts to environmental resources are discussed in this SEA/EIR, the two options are used to evaluate the potential "worst case" scenarios for the range of possible effects that might result from the proposed restoration activities within the HRRA. For certain resources, there would be no significant differences between the effects of the two options; hence separate discussions for the two options are not presented.

HRRA Rip-Rap Removal Options

Some of the rip-rap within the HRRA may be removed by the JFP Phase IV construction contractor prior to beginning the JFP Phase V (subject) project. If this is done, it is likely the rip-rap would be moved to the existing approach channel for use at this location. A limited quantity of rip-rap would be retained at the Dike 7 area as part of the Phase V project. This would be used to construct a drainage feature under the proposed O&M Bench, as discussed later in this section. However, it is likely that the majority of the existing rip-rap situated within the HRRA would be removed from the HRRA as part of the Phase V restoration work. The fate of this rip-rap following removal is still being determined, but would involve one or more of three options: (1) Off-site transport to a different project; (2) Disposal in the MIAD East Area; (3) Disposal in the Overlook In-Lake Disposal Site. The following subsections describe each of these three options.

Option 1: Off-site Transport of Rip-Rap

Under this option, the rip-rap removed from the HRRA would be collected by another agency, such as DWR or SAFCA, and transported to an off-site location for use in another project. The specific non-federal project and its location have not yet been determined. The rip-rap located within the boundaries of the HRRA would first be removed (excavated) by the JFP Phase V construction contractor and possibly temporarily stockpiled in the Dike 7 area and possibly the Dike 8 area and/or the MIAD East Area. The non-federal agency would then collect the rip-rap and transport it to the off-site project location. The non-federal agency would be responsible for preparing a California Environmental Quality Act (CEQA) environmental document to address the environmental impacts associated with the collection, transport, and use of the rip-rap that would be removed from the subject project by the non-federal agency. This CEQA document would also address implementation of mitigation measures and/or BMPs if necessary.

Option 2: Disposal of Rip-Rap in the MIAD East Area

Under this option, the JFP Phase V construction contractor would permanently dispose of the rip-rap within the MIAD East Area. Figure 7 illustrates the overall boundary of the MIAD East Area along with the approximate limits of the potential area within the overall boundary where the rip-rap would be disposed. The overall boundary would encompass approximately 31.4 acres, while the disposal area boundary within this area would encompass approximately 22.9 acres

The 2012 SEIS/EIR identified the “MIAD disposal area” as one of several proposed disposal sites that would be used to receive disposal material (excavated materials) associated with construction of the JFP approach channel project. The boundaries of the MIAD disposal area encompassed approximately 67.7 acres as evaluated in the 2012 SEIS/EIR, and contained all of the MIAD East Area and all of the MIAD West Area discussed herein plus additional lands contiguous to these latter two areas. The 2012 SEIS/EIR also indicated that the MIAD disposal area would serve as a temporary disposal site for up to 1 million cy of excavated materials, and these materials would eventually be removed and used for other purposes.

The MIAD East Area has thus far not been used as a JFP disposal site. Instead, this area and lands immediately east of this area have been used by Reclamation to obtain materials used in the overlay phase of Reclamation’s Mormon Island Auxiliary Dam Modification project. Materials (soil, rock, decomposed granite, etc.) have been excavated and processed in these areas by Reclamation’s contractor. This phase of the MIAD Modification project will be completed in the near future. When construction activities are complete, Reclamation’s contractor will restore disturbed areas to pre-construction conditions, to the extent feasible (Reclamation, 2010). These areas will be revegetated by Reclamation’s contractor using native plant species selected based on existing vegetation in the project area and consultation with USFWS (Reclamation, 2010). The specifics of Reclamation’s restoration and revegetation plans for the MIAD East Area are not known at this time. It is likely that these plans will include topographic restoration similar to that proposed within the HRRA, followed by hydroseeding of native grasses and forbs.

It is possible that up to 300,000 cy of material excavated during construction of the JFP Phase IV project (approach channel project) may still need to be disposed of within the MIAD East Area. Should this be necessary, disposal would begin after Reclamation has finished the restoration activities discussed above and would likely be completed before any rip-rap removed from the HRRA is disposed here. The Phase IV material would be placed within the MIAD East disposal area as a layer having relatively uniform thickness. Using this approach, the topography of the disposal area would mimic the topography restored by

Reclamation to the extent practicable following completion of Phase IV material placement. The finished grade elevations would simply be higher than the elevations restored by Reclamation. The average finished grade could be as much as 8 feet higher if all 300,000 cy of material from Phase IV is indeed permanently disposed in MIAD East.

The Phase IV construction contractor may build temporary, shallow stormwater detention ponds within the disposal area of MIAD East and/or within that portion of the MIAD East Area situated outside the boundaries of the disposal area for stormwater treatment purposes. Treated water from these ponds could be pumped into Folsom Lake or directed toward the southern boundary of the MIAD East Area, where it would then flow southward under Green Valley Road (the existing and pre-construction drainageway). Alternatively, the contractor may pump stormwater into treatment tanks prior to the final discharge of this water. These tanks could be positioned within the MIAD East Area or in the Dike 7 area.

Following the completion of any Phase IV material disposal in MIAD East, the stormwater treatment ponds would be filled and any disturbed areas would be re-graded to mimic pre-construction natural topography to the extent practicable. The Phase IV contractor would then hydroseed all disturbed areas, including the disposal area, with the same mixture of native grass and forb seeds used for revegetating the HRRA.

Rip-rap removed from the HRRA would be placed within the disposal area of MIAD East after completion of the Phase IV material disposal activities in this same area. As mentioned, this could involve as much as 100,000 cy of rip-rap. The rip-rap would be removed using equipment such as excavators and bulldozers, placed in dump trucks, then hauled to the MIAD East disposal area. It is likely that the rip-rap would be placed (disposed of) in the northern portion of the disposal area near the existing haul road; however, the final placement location has not yet been determined. The maximum area occupied by the disposed rip-rap would range from approximately 6.5 to almost 8 acres, based on a rip-rap pile height ranging from 8 to 10 feet above the soil surface. The top of the completed rip-rap disposal pile would be relatively level, although it would follow the topography of the underlying soil, and edges of this pile would have approximately 1H:2V side slopes.

It is possible that a local, state, or federal agency might eventually remove some or all of the rip-rap disposed of in the MIAD East Area under this option. Under this scenario, the agency's contractor would remove the rip-rap and transport it off-site for use in another project. Should this occur, the agency or agencies performing the removal and transport would be responsible for preparing an appropriate environmental document to address the environmental impacts associated with the collection, transport, and use of the rip-rap removed from the MIAD East Area. This document would also address implementation of mitigation measures and/or BMPs if necessary.

Option 3: Disposal of Rip-Rap in the Overlook In-Lake Disposal Site

Under this option, the JFP Phase V construction contractor would permanently dispose of the rip-rap within the Overlook In-Lake Disposal Site (OILD site). Figure 8 illustrates the current boundary of the OILD site, which is located in Folsom Lake near the spur dike and overlook area. The OILD site encompasses approximately 21.2 acres.

The 2012 SEIS/EIR evaluated two sites within Lake Folsom that would be used for the permanent disposal of materials associated with construction of the approach channel project (JFP Phase IV): the "in-lake disposal area (site 1)", situated immediately north of the Dike 7 area, and; the OILD site, referred to in the 2012 SEIS/EIR as the "overlook expansion in-lake disposal area (site 2)". The OILD site was to cover approximately 16.6 acres and would receive dredged and excavated materials generated during the JFP Phase IV project, such as sediments and decomposed granitic materials but excluding materials such as vegetation debris and asphalt.

Unusually low lake water levels occurring in 2013 and 2014 exposed lakebed areas that had not been previously surveyed for cultural resources. New cultural surveys of the exposed lake bed identified two cultural sites within the original boundaries of the OILD site. To protect the cultural sites, the boundaries of the OILD site were shifted eastward. The configuration of these boundaries was also adjusted to encompass a total of approximately 21.2 acres. This acreage expansion of roughly 4.6 acres allowed the projected depth (thickness) of disposal material to be reduced. The maximum amount of material to be deposited within the OILD site did not change with the boundary adjustments, remaining at 720,000 cy.

Dredged and excavated materials generated by JFP Phase IV are presently being disposed of within the OILD site. It is estimated that up to 620,000 cy of material may be placed in the OILD site by the Phase IV construction activities. Upon completion of these disposal activities, the disposal mound(s) would have a maximum crest (top) elevation of 400 feet NAVD88 whereas the existing lake bottom elevations within the OILD site range from approximately 310 feet (north end of site) to 400 feet (south end of site) NAVD88. The disposal mound (pile) would have a relatively level top surface of varying width, with side slopes varying from 3H:1V to 4H:1V.

If rip-rap from the HRRA is disposed in the OILD site, it would first be removed from the HRRA using land-based bulldozers and excavators. If lake levels are sufficiently low, the rip-rap would be loaded in dump trucks and transported directly to the OILD site, gaining access to the crest of the Phase IV disposal mound within the OILD by traveling through the existing overlook area that borders the OILD. The rip-rap would then be dumped along the edges of the crest of the disposal mound and finally pushed into place down the face of the mound's side slopes. If the lake level prohibits this approach (e.g. work "in the dry"), the rip-rap would be loaded in dump trucks then transported to a floating barge. To accept the rip-rap, the barge would be stationed either at the transload facility (discussed in the 2012 SEIS/EIR) or at the end of an existing ramp that extends from the internal haul road to the lake. A crane on the barge would be used to off-load the rip-rap at the OILD site, depositing the rip-rap along the disposal mound's side slopes. Regardless of the disposal method employed, the rip-rap would be placed along the side slopes of the Phase IV disposal mound. It is anticipated that the final thickness of this additional layer of boulders added to the side slopes could be up to 35 feet.

The rip-rap disposal option(s) that would actually be used will be determined prior to starting rip-rap removal activities within the HRRA. The total amount of rip-rap requiring disposal is still being determined. If the quantity is large, then it may be necessary to use two or three of the 3 options discussed above. If the quantity is relatively small (close to roughly 100,000 cy), then it is likely only one of the three options would be used. The priority order of selecting the option(s) to be used would generally be as follows.

If a non-federal agency executes a binding agreement to gather the rip-rap and transport it off-site for use at a non-federal project site, then it is likely this option would be the one employed. If such an agreement is not executed in advance of the date rip-rap removal needs to start, then rip-rap disposal at the MIAD East site would be selected as the preferred option. Use of the MIAD East area for disposal purposes first requires executing a land use agreement between the Corps and the Bureau since the Bureau is the underlying property owner. In the unlikely case that the necessary land use agreement cannot be completed in advance of the date rip-rap removal needs to begin, then the last remaining rip-rap disposal option would be used, e.g. disposal within the OILD site.

Following the removal of the haul road rip-rap in the HRRA, some areas previously occupied by this armoring would be excavated (cut into) as part of the grading efforts to restore the natural look of the lake shore and to facilitate drainage back to the lake. To avoid large planar surfaces that do not appear natural, some of the re-graded slopes immediately adjacent to the lake would incorporate "scalloped" slopes. After removing the haul road rip-rap in certain areas, the underlying ground material may simply be lightly graded to achieve a relatively smooth surface.

The Dike 7 stockpile area has existing rip-rap boulders (armoring) along much of its eastern, western, and northern sides. Some of this rip-rap would also be excavated by the project construction contractor and subsequently removed using one of the disposal options previously described. The remainder of the rip-rap would be excavated by the project construction contractor and used to build a portion of the proposed O&M Bench, as discussed elsewhere in this section.

Miscellaneous HRRA Construction Activities

Restoration grading in the Dike 7 area would not include the removal of fill back to the pre-construction grade (the original lake bed). Reclamation requested the area be minimally graded to give it a natural appearance and to make surface runoff drain back to the lake. Reclamation also asked that an approximately 150 feet wide corridor along the northern toe of Dike 7 (basically the southern boundary of the HRRA by Dike 7) be left open with a gradual slope so that Reclamation can use this corridor for future dike maintenance work. Restoration grading in the Dike 7 area would include placing some fill along the east, west, and north sides of the Dike 7 stockpile area to achieve the desired drainage and to support the proposed O & M Bench discussed below. Some of this fill and grading would extend slightly into adjacent areas not previously disturbed during the construction of the stockpile area.

The Dike 8 disposal site within the Dike 8 area would be subject to minimal grading during the restoration process. Generally, this would involve smoothing (grading) the area to a minimum 2 percent slope to allow surface water runoff to drain toward the lake. As with Dike 7, Reclamation has asked that an approximately 150 feet wide corridor be provided along the north side of Dike 8 be left open with a gradual slope to allow Reclamation to use this corridor for future dike maintenance work if necessary. The southwest corner of the Dike 8 disposal site was previously filled in a manner that created a berm that could impound storm water draining from the site. The restoration grading would eliminate any ponding potential by extending fill material up the adjacent hillside and by creating a slight “valley” pathway within the Dike 8 area to direct surface runoff back toward the lake.

Unlike the majority of the HRRA, the MIAD West staging site and natural areas immediately adjacent to the east and west of the site drain toward the south/southeast rather than toward Folsom Lake. Prior to beginning restoration grading at this site, any remaining structures and materials would be removed. Next, any material needed to help provide fill in other portions of the HRRA would be excavated. Following this, the site would be graded and contoured to a natural looking hill similar to nearby hillsides. The finished grades would be such that stormwater runoff from the MIAD West Area would flow toward the southeast into an existing natural “draw” (slight valley) along the east side of the site that carries flows offsite to the south.

<u>O&M Bench</u>

In addition to the activities described above, proposed work in the HRRA would include construction of what is referred to as the “Operations and Maintenance Bench” or the “O&M Bench”. The primary purposes of this proposed permanent corridor/access feature are:

- To provide a permanent access route for Reclamation staff/vehicles/equipment and emergency personnel.
- To allow vehicular and personnel access to the HRRA following completion of the subject project construction activities for purposes of short-term and long-term maintenance.
- To help ensure the stability of certain slopes primarily adjacent to the south side of the O&M Bench.

The O&M Bench would be similar to the existing haul road but much narrower. It would have a crest width of 20 feet and variable earthen side slopes no steeper than 3H:1V. Portions of the bench would be built using existing native ground materials (soil), with the upper 18 to 36 inches of the bench compacted. Other portions would be built using engineered fill that would also be compacted. The top of the bench may include a layer of gravel. The O&M Bench would be constructed in conjunction with the topographic grading and contouring work performed throughout the overall HRRA, and thus would blend into the restored topography as much as practicable.

Figures 2 and 3 illustrate the proposed alignment of the O&M Bench. It would begin within the Dike 7 Area and continue eastward to the east boundary of the HRRA which stops at an existing fence along the east boundary of the MIAD West Area. The eastern end of the bench would align with an existing off-site recreational trail that goes to the top of MIAD. Overall, the O&M Bench would be approximately 6,000 feet long (1.14 miles) and the bench's top (bench crest; bench corridor) would occupy roughly 2.8 acres. The route of the bench would somewhat follow the existing haul road, but due to topography and drainage objectives, the bench would conform to restored hillside contours as much as possible in an effort to minimize elevation changes, meander around in-filled low areas, and to help stabilize relatively steep slopes near portions the bench. The bench's proposed alignment also would provide a buffer distance of at least 150 feet between the bench and a few heritage oaks that would remain following project construction.

To generate the engineered fill material that would serve as the base for portions of the O&M bench, the construction contractor would utilize a temporary material processing plant that would be located in the Dike 7 Area. Some of the rip-rap removed as part of HRRA construction would be processed at this plant to generate the engineered fill material. Generally speaking, the processing would involve sorting and crushing the rip-rap (rocks) and screening the crushed rock to achieve the gradation desired for the engineered fill material. Material processing would likely be conducted early in the overall HRRA construction schedule and it is anticipated that processing would last roughly 1 month or slightly longer. Following completion of processing efforts, the processing plant would be removed from the project site thereby allowing completion of restoration activities in the Dike 7 Area.

The HRRA is located within the boundaries of the Folsom Lake State Recreation Area (FLSRA). It is noted that the California Department of Parks and Recreation (California State Parks), the manager of the FLSRA, has expressed an interest in using the constructed O&M Bench as the location for a portion of a future Class 1 paved trail that would ultimately extend from the Dike 7 Area to the existing Mormon Island Cove Trailhead situated east of the HRRA. This paved trail was addressed in the Final Environmental Impact Report prepared for the FLSRA General Plan/Resource Management Plan (California Dept. of Parks and Recreation and Bureau of Reclamation, 2009). If this paved trail were to be built, it would be developed, funded, and managed by California State Parks. It is emphasized, however, that this paved trail is not a component of the proposed HRRA restoration activities and there is no assurance that this trail would ultimately be built.

Drainage Structures

Prior phases of the JFP included the installation of drainage culverts to help appropriately route stormwater runoff, particularly from the south side of the existing haul road to the north side of this road. There are 11 such culverts present within the HRRA as shown in Figures 2 and 3. Of these existing culverts, 6 would be abandoned in place and 5 would be removed during HRRA construction activities. Central portions of the culverts to be abandoned in place are several feet below the existing soil surface and the proposed re-grading activities near these culverts would not substantially reduce this soil cover. Because of this, it would be too costly to remove these culverts compared to leaving them buried. Those culverts abandoned in place would remain below ground following completion of the re-grading and contouring (topographic restoration). They would be filled with grout and, where necessary, ends would be cut back and hidden from the ground surface for safety purposes and to reduce visual impacts.

Near the northeast corner of the Dike 7 Area, the proposed O&M Bench would cross an existing ravine that drains northward toward Lake Folsom, with flows passing under the existing haul road via one of the existing culverts mentioned above. Since the crest of the bench where it crosses this ravine must be at an elevation that is the same as the bench crest elevation on either side of the ravine, the O&M Bench would block drainage within the ravine. To avoid this situation, a layer of rip-rap with geotextile filter fabric would be installed at the base of the O&M Bench where it crosses the ravine. This would allow stormwater runoff flowing northward down the ravine to basically pass through the O&M bench. The proposed topography restored north of the bench would be such that stormwater flowing through the rip-rap base of the O&M Bench would naturally drain into the lake.

Fencing

Extensive segments of chain link security fencing are present within and adjacent to the HRRA. During proposed construction activities within the HRRA, various stretches of this fencing would be removed and replaced as necessary to maintain site security. Following completion of the HRRA restoration activities, much but not all of the security fencing would be removed. The final details of security fence removal have not been completed. However, the following areas of existing fencing are presently targeted for permanent removal: Fencing along the south side of the Dike 7 Area; Fencing along the south side of the HRRA boundary between the Dike 7 and Dike 8 areas; Fencing along the south side of the Dike 8 Area and along the north side of the existing haul road near this area.

Temporary Bypass Road to Folsom Point and Removal of Folsom Point Access Bridge

The primary, permanent access road to the Folsom Point boat launch and to the Folsom Point Recreation Area (the Folsom Point day-use area) is Folsom Point Road, as indicated in Figures 2 and 3. The existing haul road was designed such that vehicles travelling on Folsom Point Road could pass over the haul road. This was achieved by cutting into the hillside near the future haul road/Folsom Point Road intersection thereby lowering the elevation of the haul road, and installing a pre-manufactured temporary bridge along Folsom Point Road over the haul road. As part of the proposed topographic restoration activities within the HRRA, the temporary bridge (Folsom Point Bridge) would be removed, a paved roadway segment would be built in the former bridge location, and a temporary bypass road would be built to maintain public access to Folsom Point during the construction process as described below.

Once appropriate finished grades are established, including construction of the O&M Bench, a temporary public bypass road would be constructed, as shown in Figures 2, 3, and 4. This road would begin near the south end of Folsom Point Road and continue northward to the existing paved parking lot for the Folsom Point boat launch. The route of this road would be along the same general alignment that was used for construction access during the construction of the existing temporary bridge. The temporary bypass road would have a paved surface 24 feet wide (two travel lanes) with 4 feet wide shoulders on each side of the pavement comprised of aggregate base material for the road. The total length of the bypass road would be approximately 1,050 linear feet. A temporary ranger station (recreation area entry station) would be built near the north end of the bypass road (see Figure 4). No trees would need to be removed to construct the bypass road or the ranger station, but one oak near the north end of the road may need to be trimmed. If this is necessary, trimming would be conducted by or under the direct supervision of a certified arborist.

Once the temporary bypass road is completed, the bridge would be demolished and removed from the site, while the bridge abutments, shotcrete, and anchors beneath the bridge would be abandoned in place. The existing haul road cut beneath the bridge would be backfilled with engineered fill obtained within the HRRA such that finished grade would match existing grades on either side of the former bridge. In the area where the bridge is removed, a replacement road segment would be constructed on the newly established ground surface. This permanent road, which would merge with and become part of Folsom Point Road, would be roughly 300 feet long starting approximately 100 feet south of the south end of the existing bridge and ending about 100 feet north of the north end of the existing bridge. Existing road pavement in this area would be removed during the process of removing the bridge since grades on either side of the bridge would be altered. The new permanent road segment would have a paved surface 24 feet wide (for 2 travel lanes) with 4 feet wide shoulders on each side comprised of aggregate base material that goes under the pavement. Upon completion of this work, Folsom Point Road would once again be the main public access route to and from Folsom Point. The temporary bypass road would then be removed as would be the temporary ranger station.

It is noted that cliff swallows (*Petrochelidon pyrrhonota*), house finches (*Haemorhous mexicanus*), and a barn owl (*Tyto alba*) have been observed nesting under the Folsom Point Bridge. Before the bridge is removed, a USACE biologist would inspect the bridge and gaps along the bridge abutments for bird nests during the non-nesting season applicable to the particular species of bird nests encountered. Based on the bird species cited above, the period from September 2 through February 14 would capture the non-nesting season for all three species although the general migratory bird nesting season is frequently considered to be from July 16 through the end of February. The biologist would check any nests encountered to ensure none of these are active (e.g. no viable eggs present, no young present). Assuming this is the case, the project construction contractor would remove the existing nests and then install barriers such as plastic exclusion netting beneath the bridge and along bridge abutment gaps to prevent future nesting. If active nests are found, the Corps would coordinate with USFWS staff and CDFW staff to determine an appropriate course of action.

The public would be notified prior to construction of the temporary bypass road, removal of the existing bridge, and construction of the new (replacement) Folsom Point Road segment. During construction activities, appropriate signage would be installed and traffic safety measures would be employed (ex. warning signs, directional signs, information signs, traffic cones, traffic barricades, flaggers, etc.).

Revegetation

Following the completion of the major proposed construction activities within the HRRA (e.g. re-grading and contouring, O&M Bench construction, construction and removal of the temporary bypass road, removal of the temporary bridge and construction of replacement Folsom Point Road segment), a mixture of native grass and forb seeds would be planted throughout the HRRA except for where pavement is to remain in order to establish a permanent vegetative groundcover. All seeds would be procured from California native seed growers. Table 2.1 below provides a preliminary list of the grass/forb seed mixture that would be planted. This list and/or the seeding rates (pounds per acre) may be revised somewhat to account factors such as specific site conditions, the planting method used, and the availability of seed stock.

Table 2.1. Preliminary list of grasses and forbs to be planted (seeded) in the HRRA.

Common Name	Scientific Name	Pounds PLS per Acre
California brome	*Bromus carinatus*	10
Blue wildrye	*Elymus glaucus*	2
Squirrel tail	*Elymus elymoides*	2
California poppy	*Eschscholzia californica*	3
California fescue	*Festuca californica*	2
Meadow barley	*Hordeum brachyantherum*	5
Creeping wildrye	*Leymus triticoides*	4
Miniature lupine	*Lupinus bilcolor*	3
Nodding needlegrass	*Nasella cernua*	2
Purple needlegrass	*Nassella pulchra*	2
Pine bluegrass	*Poa secunda*	5
Tomcat clover	*Trifolium willdenovii*	3
Small fescue	*Vulpia microstachys*	2
	Total Seed Mixture	**45**

PLS = Pure Live Seed. Pounds indicated are based on broadcast seeding or hydroseeding.

Disking would be performed prior to seeding to prepare the soil for seed placement. In compacted areas, the soil would be ripped or scarified to help reduce compaction. The method of seeding would be left to the contractor to determine, using hydroseeding, broadcast seeding, drill seeding, or a combination of these methods. In addition, soil imprinting would be employed in some areas to minimize seed runoff and help with local rainwater infiltration. Imprinting is a technique of soil-rolling that leaves small depressions in the soil surface that help break runoff, improve water infiltration, and prevent seed washout. Following completion of the initial seeding, the goal would be to achieve an average ground cover of 80 percent accounted for by native grasses and forbs, regardless of whether these are species actually planted (seeded) or volunteer species that colonize the area.

In addition to the planting of native grasses and forbs, oak acorns would be planted in portions of the HRRA to help break up the visual sight lines and mimic nearby undisturbed habitats to a limited degree. Oak acorns (seeds) would be planted in shallow planting pits with 2 to 3 acorns of a given species placed in each pit. The average density of the planting pits (the planting locations) would be approximately 300 per acre. The oak species planted would include blue oak (*Quercus douglasii*) and valley oak (*Quercus lobata*), but may also include interior live oak (*Quercus wislizenii*). If only blue oaks and valley oaks are planted, then half of the planting locations would contain blue oak acorns and half would contain valley oak acorns. If interior live oaks are also planted, then the planting locations would consist of 50% blue oak acorns; 25% valley oak acorns, and 25% interior live oak acorns. The survival goal for the plantings would be to achieve an average density of at least 25 living oak trees per acre planted.

An underground gopher cage would be installed at each planting location (planting pit) prior to planting the acorns within the cage. Wire or plastic mesh browse guards supported by wooden stakes would be installed above ground around each planting pit to help protect the oak seedlings from herbivory. After completion of the initial planting of the native grass and forb seeds as well as the oak acorns, the planted areas would be fertilized once.

Various vegetation management activities would be performed from the time the plantings have been completed through the fall of 2017. The revegetated areas would be monitored once a year by USACE staff for invasive plant species. As used herein, the term invasive plant species or invasive plants refers to those plants listed in the California Invasive Plant Inventory database generated by the California Invasive Plant Council, and having an invasive rating of "high" or "moderate" (Cal-IPC, 2015). Examples of these invasive species include French broom (*Genista monspessulana*), pampas grass (*Cortaderia selloana*), yellow star-thistle (*Centaurea solstitialis*), Himalayan blackberry (*Rubus discolor*), klamathweed (*Hypericum perforatum*), salt cedar (*Tamarix parviflora*), scotch broom (*Cytisus scoparius*), bull thistle (*Cirsium vulgare*), and Italian thistle (*Carduus pycnocephalus*). If it is determined invasive plants are becoming established, such plants would be eradicated through directed herbicide applications, physical removal, or both. Any herbicides used would be applied in accordance with the manufacturer's label guidance, using care not to damage desirable native plants as much as possible. Eradication events would likely occur 4 times per year and would be performed by a USACE contractor. The overall goal would be to control and eradicate invasive plant species such that they account for 5 percent or less of the total plant cover.

As set forth in the 2007 FEIS/EIR (Reclamation, 2007), Reclamation would continue monitoring revegetated or disturbed areas for invasive non-native plant species for 3 to 5 years following completion of the subject project. During this period, Reclamation would remove (eradicate) such plant species at times that preclude the plants from setting new seed. It is also noted that the 2007 FEIS/EIR states that Reclamation will develop its own Revegetation Plan that includes planting native plants and seeds to reestablish habitats in areas disturbed by the JFP project. This plan would be implemented following completion of all construction work. At this time the particulars of this Revegetation Plan, including when it would be implemented, are unknown; but it is assumed that this plan would include additional plantings within the HRRA.

Permits and Utilities

Prior to initiation of the project, the construction contractor would be required to obtain all Federal, State, and local permits and approvals necessary to perform the work, including those related to storm water discharge, water quality, air quality, and traffic safety. The contractor would be required to verify if any utilities exist in or near the project area and that they would not be damaged or disrupted; with the exception of those utilities that are identified herein for disconnection. If utilities are found, potentially affected utility companies would be contacted by the contractor concerning the timing and scope of the proposed work.

Construction Best Management Practices (BMPs)

Prior to initiating project construction activities, the construction contractor would be required to:

- Obtain a National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (DWQ Order No. 2009-009-DWQ; NPDES No. CAS000002), otherwise known as a Construction General Permit (CGP), from the Central Valley Regional Water Quality Control Board (CVRWQCB) prior to initiating construction activities.
- Develop and implement a site-specific Storm Water Pollution Prevention Plan (SWPPP). Among other things, the SWPPP would identify measures necessary to mitigate potential construction-related water quality concerns, erosion and sediment control measures, control of non-stormwater discharges, hazardous spill prevention and response measures, BMP inspections, monitoring, and maintenance.
- Develop and implement a Spill Prevention, Containment, and Cleanup Plan (SPCC) that would address practices to prevent, minimize, and/or clean up potential spills during project construction.

Some of the proposed rip-rap removal, soil excavation, and grading activities adjacent to Folsom Lake would occur below the ordinary high water (OHW) elevation of the lake. Because of this, USACE would obtain a Clean Water Act (CWA) Section 401 Water Quality Certification (401 WQC) from the CVRWQCB prior to initiating project construction activities. If the optional rip-rap disposal method involving disposal in the OILD site is used, this activity would also be covered in the 401 WQC. The construction contractor would be required to comply with the applicable technical certification conditions set forth in this permit.

Impacts to water quality would be minimized during construction through adherence to the SWPPP, the CGP, and the 401 WQC, including any surface water sampling and monitoring requirements. Measures to minimize soil or sediment from migrating into Waters of the United States (WOUS) would include the installation and maintenance of erosion control devices such as silt fencing, straw wattles, and, if necessary, floating turbidity curtains (silt curtains). Such measures may also include the establishment of temporary water detention basins situated landward of the lake. Construction work necessary to remove the rip-rap, excavate soil, and conduct grading in areas below the lake's OHW elevation would be timed to coincide with low lake water levels when possible to minimize water quality impacts. Although the establishment of grasses and similar vegetation on disturbed soils is typically considered a construction BMP, the permanent revegetation of most areas within the HRRA would be an integral component of site restoration.

Fugitive dust emissions would be minimized during construction through frequent watering of haul routes and open disturbed areas that have yet to be revegetated. In general, the potential adverse air quality impacts that might occur during project construction would be reduced through the implementation of applicable air quality mitigation measures set forth in the 2012 SEIS/EIR and further discussed in Sections 3.3.2 and 3.3.3.

Construction equipment and vehicles would be properly maintained and inspected to help prevent spills or leaks of liquids, including petroleum products. On-site fueling of the equipment and vehicles would only occur in designated staging areas with appropriate spill controls. Any hazardous materials and wastes would be appropriately managed to prevent spills or similar discharges. The construction contractor would be required to comply with measures called for in the SWPPP and the SPCC to help avoid and minimize non-stormwater discharges and hazardous spills.

Mobilization and Staging

The City of Folsom has specified haul routes for the Folsom JFP. The route via I-80 would exit Sierra College Boulevard south to Douglas to Auburn-Folsom Road (no trucks would use Auburn-Folsom north of Douglas). The route from Highway 50 would exit East Bidwell Street to Oak Avenue, to Blue Ravine Road, to East Natoma Street.

General construction access to the site would come from the southeast by way of Folsom Lake Crossing Road. A turnoff at the main project site entrance area, at the Dike 7 office complex, and/or at Dike 8 would allow connection to the internal haul road and other construction access roads. The contractor would also have the option to construct and use a second site access off Green Valley Road. The area required for access from Green Valley Road to the project site was included as part of the project in the 2012 SEIS/EIR.

The construction contractor would require staging areas for the following main items and activities: stockpiling of materials; contractor’s lay-down area; construction and excavation equipment. Temporary staging and stock pile areas could be located at Dike 7 Area, the Dike 8 Area, the MIAD West Area, Folsom Overlook, the Folsom Prison Staging Area, and along the interior haul road.

Demobilization and Clean Up

Once the site restoration measures are completed, the contractor would remove all construction equipment, temporary fencing, and unused materials from the project area. In addition, all work areas would be cleaned of work-related debris and rubbish, and work areas would be left in a neat and presentable condition. Any roadway pavement or parking area gravel damages due to construction equipment or haul trucks would be repaired to pre-project conditions, with the exception of those paved areas and parking areas slated to be removed as part of the proposed restoration activities as discussed herein. These stipulations would apply to the HRRA and the two other site restoration areas discussed in Section 2.3.2.

HRRA Project Schedule and Work Hours

It is anticipated that the HRRA restoration activities discussed above would begin in the early spring of 2016 and would end in the fall of 2017. One of the first construction priorities would be to complete construction of the temporary bypass road to Folsom Point so that public access to the Folsom Point boat launch and the Folsom Point recreation area (day use area) would not be interrupted by other project construction activities, particularly the removal of the temporary bridge and re-establishment of that portion of Folsom Point Road impacted by the bridge's removal. It is noted that the temporary bypass road would not be removed until bridge removal and construction of the paved roadway segment that will take its place have been completed.

Current projections are that the construction work necessary to complete topographic restoration (excavation, filling, grading, contouring, bypass road construction and removal, etc.) would take approximately 7 to 8 months. The initial planting of the grass/forb seed mixture and the oak acorns would likely occur in the fall or winter of 2016, following completion of this construction.

Project construction work hours would typically be limited to 7:00 AM to 6:00 PM on weekdays, and 8:00 AM to 5:00 PM on Saturdays and Sundays. These hours coincide with the hours specified in the Folsom Municipal Code (Code) as being exempt from the Code's exterior and interior noise level standards (thresholds) in the case of construction activities (reference Folsom Municipal Code, Chapter 8.42 Noise Control). The construction contractor would be allowed to work during hours outside those specified above (e.g. outside the construction exempt noise hours) if necessary. Should this occur, work performed outside the construction exempt noise hours would be required to not exceed the exterior and interior noise level standards set forth in the Code. Noise monitoring would be conducted for any work performed outside the construction exempt noise hours to help ensure noise level standards are not violated.

2.3.2 Other Site Restoration Features

In addition to the HRRA, two additional sites (features) would be subject to restoration activities as part of the subject project. These features and the work proposed in each feature are described in the following sub-sections.

Dike 7 Office Complex Parking Area

A construction office complex was built immediately west of Dike 7 during prior phases of the Folsom JFP. This complex includes two parking areas; one located south of the entry road to the complex and one located north of the entry road. California State Parks and the City of Folsom expressed interest in keeping one of the existing paved parking lots at the complex for potential future use as a recreation access point for the Johnny Cash – Folsom Blues Trail and the existing Folsom Crossing bike path. Because of this, the main paved entry road (access road) and the southern office complex parking area would remain in place. The existing temporary office structures present at the office complex would be removed as part of JFP Phase III.

The subject restoration project may include removal of the northern parking area, identified in Figures 2 and 3 as the "Dike 7 Office Complex Parking Area". This area would encompass approximately 0.9 acre. The restoration work would include removing the existing pavement and sub-grade materials, then re-grading the area to restore pre-construction natural topography. After completing the re-grading, the disturbed area would be planted with native grass and forb seeds as described for the proposed HRRA restoration activities. In conjunction with these activities, existing security fencing along the west side of Dike 7 would be removed and replaced with large boulders to act a security barrier yet not restrict wildlife movement.

It is noted that the future Folsom Dam Raise project may need to use the northern parking area for construction staging or related purposes. If it is determined that this is the case, the JFP Phase V project would not restore the northern parking area. Instead, restoration of this parking area would be conducted as part of the Folsom Dam Raise project (e.g. Dam Raise project would restore the parking area as described above after the parking area is no longer needed for Dam Raise construction purposes).

Prison Staging Area

During prior phases of the JFP, a construction staging area was built on the south side of Folsom Lake Crossing, just east of where this road crosses the American River and adjacent to the grounds of Folsom Prison. This staging area is referred to as the Prison Staging Area (PSA) and is shown in Figure 5. The subject project would include partial restoration of the PSA, with the affected area encompassing approximately 8.9 acres. The property involved is currently under a lease agreement between the California Department of Corrections and Rehabilitation (CDCR) and the DWR.

The fenced PSA site is partially paved and consists of several areas containing office trailers, parking areas, and equipment staging areas. The restoration activities proposed would include removal of the trailers, materials, and equipment. An existing septic system would be cleaned out and backfilled, and existing utilities would be cut and capped at the site entrance. Two existing graveled areas project southward from the east/west portion of the PSA. These would likely remain in their existing state, other than the aforementioned removal of equipment and supplies as well as the removal of some interior fencing. All perimeter fencing would remain in place. All existing pavement (entrance road and a paved parking area at the far eastern end of the PSA) would remain in place. The area presently containing the office trailers (along south side of eastern arm of the site) would be re-graded to match the surrounding grade.

As currently graded, much of the rainfall on the PSA area runs north off the site and down towards Folsom Crossing Road. It discharges near the northwest corner of the PSA via a swale that projects northward to the roadway. Some of the water also infiltrates into the steep hillside abutting the site where it contributes to erosion and soil instability down slope of Folsom Lake Crossing. Restoration activities would include re-grading a portion of the west end of the site in a manner that would route stormwater runoff westward such that it would flow more directly into the American River, thereby relieving water pressure on the hill slope and helping its stability. To accomplish the drainage alteration, one option would be to line and improve an on-site drainage swale present along the north boundary of the west half of the PSA. Another option would be to replace the on-site swale with a culvert (corrugated metal pipe) equipped with a drainage catch basin. The design option actually employed would be determined when final design plans are prepared for the project. Under either of these 2 options, a short segment of drainage culvert would be installed that extends west from the northwest corner of the PSA in order to carry the flow off-site in the desired direction. The existing swale that carries drainage northward to Folsom Lake Crossing would be partially plugged and abandoned.

After the completion of the work described above, all re-graded areas would be planted with the same native grass and forb seed mixture that would be used to plant the HRRA.

Construction Schedule, Work Hours, and BMPs

Restoration of the Dike 7 Office Complex Parking Area and the Prison Staging Area would take place during the same overall project construction period previously stated for the HRRA restoration activities. The same work hours for the HRRA construction would apply to work activities necessary to achieve the objectives for these two restoration areas.

The Best Management Practices (BMPs) described for the HRRA restoration work would apply to construction activities proposed for the Dike 7 Office Complex Parking Area and the Prison Staging Area, with the exception that a Section 401 water quality certification would not be necessary for work in these two areas.

2.3.3 Miscellaneous Project Construction – Proposed Guardrails

The overall project would include installing five new segments of guardrail totaling approximately 5,300 linear feet. These guardrails would be constructed on the north side of Folsom Lake Crossing, beginning at the eastern end of the bridge over the American River and continuing eastward as shown in Figure 5. The purposes for installing the new guardrail include: (1) to protect motorists from potentially driving off the road (e.g. Folsom Lake Crossing) into steep, excavated areas of the JFP project; (2) to protect pedestrians and bicyclists using the Type I bicycle trail that runs along the north side of the road from vehicles that may veer off the road, and; (3) to protect various existing JFP structures from a potential vehicular impact.

Most of the guardrail segments would be located in the approximately 4-foot wide disturbed area situated between the northern curb or northern paved shoulder of Folsom Lake Crossing and the southern edge of the paved bike path. The breaks or gaps in the proposed guardrail (hence the 5 segments) would be for things like: access passage for City of Folsom maintenance trucks; access to the Gate 2 entrance road to the JFP; access to the Gate 1 entrance road to the JFP. The guardrail design would be that called for in the California Department of Transportation (Caltrans) “Midwest Guardrail System, Standard Railing Section (Wood Post with Wood Block), 2010 Revised Standard Plan RSP A77L1”. This design is basically a metal guardrail attached to wood blocks that are then attached to wood support posts. These types of guardrails are common throughout the general region.

Construction of the new guardrail segments would occur during the same period as for the rest of JFP Phase V restoration construction activities, e.g. early spring 2016 through the fall of 2017. Once guardrail construction begins, it is anticipated that all the work would be completed within 1 to 2 weeks. The west-bound traffic lane (northern travel lane) of Folsom Lake Crossing and the southern "lane" (east-bound lane) of the adjacent bike trail near the guardrail construction zone would need to be temporarily closed during guardrail installation. Temporary lane closures would occur during daily working hours only. Traffic control features, such as traffic cones and safety barricades, would be set up in the morning before work starts and removed every evening after work is completed. Only one work zone (lane closure zone) would be set up at a time. The length of each work zone would vary depending on the daily anticipated production length, but would be at least 250 feet long. Portable message signs would be set up by the construction contractor along the roadway to inform the public of these moving lane closures. Flaggers would be positioned at each end of the work zone, primarily to observe and guide traffic on the bike path and to assist vehicles entering or leaving the work zone. The construction contractor would be required to obtain an Encroachment Permit from the City of Folsom. All traffic control (maintenance of traffic) would be performed in compliance with the general provisions of the Encroachment Permit.

2.3.4 Rossmoor Bar 14-Acre Mitigation Site

The 2012 SEIS/EIR anticipated the loss of 30 trees due to the construction and use of the Dike 8 disposal site and committed to providing off-site mitigation of this loss. A drawing depicting the approximate locations of these trees is provided in Appendix F. Table 2.2 below lists the tree impacts as estimated in the 2012 SEIS/EIR.

Table 2.2. Anticipated tree impacts in the Dike 8 disposal site (from 2012 SEIS/EIR).

Tree ID Number	Species	Stem DBH (inches)	Total DBH (inches)
1	Cottonwood	16.5	16.5
2	Eucalyptus	38.5	38.5
3	Eucalyptus	11, 9, 10, 12.5	42.5
4	Willow	19.5, 10.5, 4.5, 8, 8, 8	55.5
5	Willow	33	33.0
6	Cottonwood	2, 2, 2, 2, 2, 2	12.0
7	Willow	6.5	6.5
8	Willow	16	16.0
9	Willow	6.5	6.5
10	Willow	7, 10.5, 10	27.5
11	Valley Oak	33.5	33.5
12	Valley Oak	34	34.0
13	Valley Oak	30.5	30.5
14	Conifer, unknown	18	18.0
15	Eucalyptus	12, 15.5	27.5
16	Cottonwood	13, 40	53.0
17	Buckeye	N/A	N/A
18	Cottonwood	14, 20, 17	51.0

Tree ID Number	Species	Stem DBH (inches)	Total DBH (inches)
19	Cottonwood	41	41.0
20	Live Oak	17.5, 16.5, 18.5	52.5
21	Valley Oak	24	24.0
22	Valley Oak	24.5	24.5
23	Valley Oak	15.5	15.5
24	Valley Oak	4.5	4.5
25	Valley Oak	5.5	5.5
26	Live Oak	6.5, 5, 4	15.5
27	Valley Oak	31.5	31.5
28	Valley Oak	13	13.0
29	Valley Oak	26.5	26.5
30	Valley Oak	27.5	27.5
Totals		**783.5**	**783.5**

Notes:

- DBH = Diameter at Breast Height.
- Where multiple DBH measurements are indicated in the “Stem DBH” column, this indicates the tree had multiple stems that had a DBH of 2.0 inches or greater.
- The “Total DBH” column contains data that are the sum of the stem DBH measurements for a given tree.
- Eucalyptus and the unidentified conifer tree are non-native species.
- The buckeye tree listed (tree #17) had a DBH less than 2.0 inches, and thus was not considered in determining tree impact mitigation requirements.

Mitigation was required to compensate for the loss of trees having a DBH of 2 inches or greater through the planting of replacement native trees and shrubs (woody native plant species typical of an oak woodland habitat) in an off-site mitigation area. The total number of replacement plants required was 3,134. This was calculated by multiplying the total DBH of all the trees impacted (783.5 inches) by 4 (e.g. 783.5 x 4 = 3,134 trees). The multiplication factor of 4 was used based on the assumption that the mitigation seedlings would typically be ¼-inch diameter stock.

The boundaries used to estimate the Dike 8 disposal site construction impacts in the 2012 SEIS/EIR were conservative and captured some areas that were not directly impacted by this construction. The anticipated limits of grading necessary for the proposed HRRA activities (see Section 2.3.1) in the Dike 8 Area largely fall within and capture a smaller area than did the Dike 8 disposal site construction impact boundaries estimated in the 2012 SEIS/EIR. Given these points, it appears that trees 7, 8, 9, 10, 11, 12, and 22 identified in Table 2.2 were not destroyed during construction of the Dike 8 disposal site and would also not be impacted by proposed construction work within the HRRA. Based on the data in Table 2.2, these seven trees combined have a total DBH of 149.5 inches. The current plan is to still provide tree mitigation (habitat mitigation) in accordance with the original commitment; that is, the proposed mitigation would include planting at least 3,134 trees and shrubs (combined). Once final plans for the HRRA are generated, USACE will determine the exact tree impacts that would result from HRRA construction. If it is found that the proposed planting of 3,134 trees and shrubs exceeds the actual mitigation necessary, then the excess mitigation would be "reserved" to help compensate for unanticipated tree impacts that may occur as a result of the overall Folsom JFP.

The proposed tree/habitat mitigation site is referred to as the Rossmoor Bar 14-Acre Mitigation Site or simply the Rossmoor 14-Acre Mitigation Site. The site would encompass a total of 14 acres within Rossmoor Bar Park, which is owned by the Sacramento County Parks and Recreation Department. This mitigation site is near Rancho Cordova and just east of the south (east) bank of the American River. As shown in Figure 6, the proposed mitigation site would be immediately adjacent to an existing 51-acre oak woodland mitigation site that was established for mitigating Folsom Bridge impacts.

The overall goal of the proposed mitigation would be to restore oak woodland habitat within the mitigation site, which has been previously cleared and disturbed, possibly for former agricultural uses. A maintenance and fire access band 15 feet wide would run along the interior perimeter of the mitigation site boundaries, leaving approximately 12.8 acres of the 14-acre site available for planting trees and shrubs. This interior area would be planted with native trees and shrubs at an average density of 235 seedlings per acre, yielding a total of approximately 3,140 total seedlings planted. Table 2.3 below provides a preliminary tree and shrub planting list for the Rossmoor 14-Acre Mitigation Site. The species indicated and the quantity of each species listed may be revised to account for specific site conditions and the availability of planting stock.

Table 2.3. Preliminary tree and shrub planting list for the Rossmoor 14-Acre mitigation site.

Common Name	**Scientific Name**	**Quantity**
Boxelder	*Acer negundo* var. *californicum*	200
California buckeye	*Aesculus californica*	175
Coyote brush*	*Baccharis pilularis*	225
Oregon ash	*Fraxinus latifolia*	325
Toyon*	*Heteromeles arbutifolia*	50
California black walnut	*Juglans hindsii*	75
Western sycamore	*Platanus racemosa*	310
Fremont cottonwood	*Populus fremontii*	80
Blue oak	*Quercus douglasii*	350
Valley oak	*Quercus lobata*	400
Interior live oak	*Quercus wislizenii*	300
California coffeeberry*	*Frangula californica*	250
California blackberry*	*Rubus ursinus*	50
California wild rose*	*Rosa californica*	150
Snowberry*	*Symphoricarpos albus*	150
California grape*	*Vitus californica*	50
	TOTAL	**3,140**

* Stock size for "shrub" species would be Deepot 40 size container (2.5" diagonal X 10" long, approx.). All other species listed (tree species) would have a stock size of TreePot 4 container (4" square X 14" long, approx.).

Native grasses and forbs would also be planted throughout the mitigation site, excluding the perimeter maintenance and fire access band ("road"). Table 2.4 provides a preliminary planting list for the native grasses and forbs. The species indicated and the quantity of seeds (seeding rate) for each species listed may be revised to account for the planting method, specific site conditions, and the availability of seeds.

Table 2.4. Preliminary list of grasses and forbs to be planted (seeded) in the Rossmoor 14-Acre mitigation site.

Common Name	Scientific Name	Pounds PLS per Acre
California brome	*Bromus carinatus*	10
Blue wildrye	*Elymus glaucus*	4
Squirrel tail	*Elymus elymoides*	4
California poppy	*Eschscholzia californica*	3
California fescue	*Festuca californica*	2
Red fescue	*Festuca rubra*	1
Meadow barley	*Hordeum brachyantherum*	5
California gray rush	*Juncus patens*	4
Creeping wildrye	*Leymus triticoides*	4
Miniature lupine	*Lupinus bilcolor*	3
Nodding needlegrass	*Nasella cernua*	2
Purple needlegrass	*Nassella pulchra*	2
Pine bluegrass	*Poa secunda*	5
Tomcat clover	*Trifolium willdenovii*	3
Small fescue	*Vulpia microstachys*	2
	Total Seed Mixture	**52**

PLS = Pure Live Seed. Pounds indicated are based on broadcast seeding or hydroseeding.

Disking would be performed prior to seeding to prepare the soil for seed placement. The method of seeding would be left to the contractor to determine, using hydroseeding, broadcast seeding, drill seeding, or a combination of these methods. Tree and shrub seedlings would be installed in pre-dug planting pits. At each planting pit, a wire gopher cage would be installed below ground and a controlled-release tablet of 10-20-5 fertilizer would be placed within the pit. After installing the seedling, a “water retention” basin (slight circular mound of soil) would be formed and covered with water permeable geotextile fabric with an opening for the seedling to help retain moisture and inhibit weed growth. A plastic mesh browse guard browse guard supported by a wooden stake would be installed around each seedling to help prevent herbivory.

A drip irrigation system would be installed in the mitigation site to provide water to the plantings. The water source for this system would be an existing well located west of the site (see Figure 6); the same well that was used to supply irrigation water to the adjacent 51-acre mitigation site. An irrigation line would be run from the well to the drip irrigation system installed within the subject mitigation site. A deer fence 8 feet tall would be installed along the entire boundary of the Rossmoor 14-acre Mitigation Site, with one exception. A deer fence was previously installed around the adjacent 51-acre mitigation site. All of this fencing has been removed except for a segment that coincides with the western boundary of the Rossmoor 14-acre Mitigation Site. Thus, new deer fence would only be installed along the north, south, and east boundaries of the subject mitigation site with the northern and southern segments joining the existing deer fence along the site's west boundary. Temporary signs would be attached to the deer fence to notify the public of the on-going restoration. Examples could include "Temporary Deer Fence, to be Removed at End of Contract" and "On-Site Revegetation in Progress, Please Do Not Disturb", or something similar.

Access to the Rossmoor 14-acre Mitigation Site would be achieved by using an existing site access road that extends from Rossmoor Drive to the southwest corner of the site, as shown in Figure 6. This is the same access route that was used for the establishment and management of the existing 51-acre mitigation area. A second access route would be constructed near the northeast corner of the subject mitigation site, as shown in Figure 6. This would be short gravel road extending from Rossmoor Drive to the proposed maintenance and fire access band (road) within the mitigation site. An existing maintenance and fire access dirt road extends from near the southwest corner of the subject mitigation site to the existing well located west of the site. This road would serve as the means of accessing the well and the irrigation water line conveying water from the well to the subject mitigation site would likely be installed along the northern edge of this road.

Project work hours would be limited to 7:00 AM to 6:00 PM on weekdays, and 8:00 AM to 5:00 PM on Saturdays. No work would be conducted on Sundays.

It is anticipated that planting of the Rossmoor 14-acre Mitigation Site would begin early in the first quarter of 2016, or possibly during the late fall of 2015. The first year of mitigation work is referred to as the establishment period (initial plantings, installation of irrigation system, installation of deer fence) and all mitigation activities would be performed by a USACE contractor. Management and maintenance activities would be performed by the USACE contractor during this first year and during the following 4 years (years 2 through 5). Once the final success criterion is achieved, long-term management and maintenance of the site would be the joint responsibility of the Non-Federal sponsors, CVFPB and SAFCA. It could be determined that success has been achieved at the end of the third year following the establishment period (e.g. year 4). Such a determination would be made by USACE in coordination with U.S. Fish and Wildlife Service (USFWS). Should this occur, then long-term management and maintenance responsibilities would be turned over to the Non-Federal sponsors at that time.

The success criteria for the mitigation at the subject site would be as follows:

- Years 2 and 3 – Achieve a minimum 90% average survival of the planted trees and shrubs.
- Years 4 and 5 – Achieve a minimum 60% average survival of the planted trees and shrubs, or achieve a minimum average density of 141 living planted trees per acre within that portion of the site initially planted. This is the final success criterion.

Management and maintenance activities during the initial 5 years of the project would likely include:

- During the first 3 years, replace any dead trees and shrubs that were planted.
- Re-plant (re-seed) areas where the ground cover accounted for by planted native grasses and forbs is sparse. The general goal for the planted native grasses and forbs would be to

achieve an average 80 percent ground cover accounted for these species or volunteer native grasses and forbs.
- Provide irrigation watering weekly from April through October of each year.
- Mow the ground cover 4 times per year to help suppress the growth of invasive plant species.
- Apply appropriate herbicides to invasive plants approximately 4 times per year or as necessary. Herbicides would be applied in accordance with the manufacturer's label and in a manner that avoids damaging desirable native plants, including the planted trees and shrubs, as much as possible.
- Maintenance of the irrigation system, browse guards, and perimeter deer fence.

Once the final success criterion is achieved, the perimeter deer fence would be removed as would be the browse guards. The irrigation system would also be removed unless otherwise requested by the Non-Federal sponsors.

A monitoring and reporting program would be conducted during the initial 5 years of the mitigation project. This program would include, but not necessarily be limited to:
- Preparation of as-builts to document the initial plantings (species, number, time of plantings, location) and the final property boundary and access easement to the property.
- Monthly monitoring records to document maintenance/management activities performed and the general condition and progress of the mitigation.
- Yearly monitoring to determine the percent survival and average density of the planted trees and shrubs, to estimate the average ground cover and the percentage of this cover accounted for by native grasses and forbs, to estimate the percentage of the total plant cover accounted for by invasive plant species, and to record the general condition and progress of the mitigation plantings. The results of this monitoring would be documented in annual reports, which would also include a general summary of the monthly monitoring records and a history of significant events that may have impacted the site. The annual reports would be submitted to USACE, DWR, SAFCA, and USFWS.

The Rossmoor 14-acre Mitigation site would be preserved and protected in perpetuity through the establishment of a conservation easement, environmental easement, or similar legal instrument.

2.3.5 Mitigation for Fish Impacts

The 2012 SEIS/EIR included a commitment to compensate (mitigate) for lost angler opportunities within Folsom Lake that may have occurred due to actions in earlier phases of the JFP (e.g. actions detrimental to recreational fisheries). This mitigation would be provided as part of the current project.

The proposed mitigation would involve a stocking program (re-stocking) whereby 6,000 catchable-size triploid (sterile) rainbow trout (*Oncorhynchus mykiss*) would be placed in Folsom Lake. USACE would contract with a California registered aquaculturist to purchase the trout, transport these fish to the lake, and place them in the lake. The trout would be stocked in the lake immediately upon completion of the proposed restoration activities previously discussed, which is anticipated to be in the fall of 2017. Prior to procuring the trout, USACE would obtain a Private Stocking Permit from the California Department of Fish and Wildlife (CDFW). USACE would ensure compliance with all the conditions set forth in this permit.

The 2012 SIES/IER also addressed the potential for fish mortality that could result from proposed construction blasting activities within the lake. Surface water monitoring was to be performed during these blasting events to help assess the numbers, size, and species of fish killed due to the blasting. These blasting activities are part of a prior phase of the overall JFP, but the blasting had not yet occurred when this Environmental Assessment was being prepared.

After the blasting has been completed and fish mortality estimates are completed, the need for additional fish mitigation will be assessed by USACE. This assessment will be coordinated with CDFW and USFWS staff. If it is determined that compensation is warranted for blasting impacts to fish, such compensation (mitigation) would be achieved by appropriately increasing the number of catchable-size triploid rainbow trout proposed as mitigation for lost angler opportunities discussed above.

3.0 AFFECTED RESOURCES AND ENVIRONMENTAL EFFECTS

3.1 INTRODUCTION

This section evaluates the following environmental resources, for which the proposed Folsom Dam JFP refinements could have new or potentially significant direct, indirect, and/or cumulative environmental effects:

- Aesthetics
- Air quality
- Climate Change
- Cultural resources
- Vegetation and Wildlife
- Fisheries
- Special Status Species
- Recreation
- Topography and Soils
- Traffic
- Noise
- Water Quality
- Growth inducing and cumulative effects

In this document, “affected resources” refers to the current, existing environmental conditions of the project area. Both beneficial and adverse effects are considered, including direct effects during construction and indirect effects resulting from the project implementation. Each section contains a discussion of the methods used to analyze effects as needed. The basis of significance is derived from NEPA and CEQA requirements. The Corps has integrated NEPA requirements into its regulations, policies, and guidance. Engineering Regulation 1105-2-100, "Planning Guidance Notebook," April 2000, establishes the following significance criteria:

- Significance based on institutional recognition means that the importance of the effect is acknowledged in the laws, adopted plans, and other policy statements of public agencies and private groups. Institutional recognition is often in the form of specific criteria.

- Significance based on public recognition means that some segment of the general public recognized the importance of the effect. Public recognition may take the form of controversy, support, conflict, or opposition expressed formally or informally.

- Significance based on technical recognition means that the importance of an effect is based on the technical or scientific criteria related to critical resource characteristics.

For this Supplemental EA/EIR, these three significance criteria apply to all resources and are not repeated under each resource section. CEQA criteria can be more specific, and are listed in Appendix G of the CEQA Guidelines. CEQA criteria relevant to an urban setting, as well as other agency criteria and thresholds of significance that apply to each resource, are identified under the appropriate resource section below. Measures are proposed below to avoid, minimize, or reduce adverse effects on resources to less than significant.

3.2 RESOURCES NOT CONSIDERED IN DETAIL

Because of the relatively small size and short duration of this project, no additional effects are expected on geology, mineral resources, seismicity, land use, socioeconomics, and hazardous, toxic, and radiological waste. These resource categories are therefore only addressed briefly in the following subsections.

3.2.1 Geology, Mineral Resources, and Seismicity

Geology

A detailed discussion of geology, mineral resources, and seismicity are presented in the 2012 SEIS/EIR. The project area is located between the Central Sierra Nevada and the Central Valley geomorphic provinces. The Sierra Nevada geomorphic region is characterized by a north-northwest trending mountain belt with extensive foothills on the western slope. Folsom Reservoir is situated within this foothill setting, a geomorphic region primarily consisting of rolling hills and upland plateaus between major river canyons.

Geological mapping by Wagner, Jennings, Bedrossian, and Bortugno (1981) identifies two major rock divisions within the Folsom JFP project area: granodiorite intrusive rocks, and metamorphic rocks. Granodiorite intrusive rocks are similar to granite. Folsom Dam and the western side of Folsom Reservoir mainly consist of Mesozoic dioritic rocks. They are composed of a coarse grained crystalline matrix with slightly more iron and magnesium-bearing minerals and less quartz than granite.

The Sacramento Valley is situated on vast alluvial deposits which have slowly accumulated over the last 100 million years. The materials have been derived from the surrounding uplands; transported by major streams; and deposited in successive clay, silt, sand, and gravel layers on the valley floor. The Rossmoor Bar mitigation site is comprised of Modesto-Riverbank Formation (Arkosic alluvium) (Wagner, Jennings, Bedrossian, and Bortugno, 1981).

Mineral Resources

Metamorphic rock units are part of the Jurassic-Age Amador Group, referred to as the Copper Hills volcanic. Copper Hill volcanic (Jch) rocks occur in the project area near Folsom Point and at MIAD disposal area. These rocks are described as metamorphosed basaltic breccia and ash (mafic pyroclastic) rocks, pillow lava, and minor bodies of granitic composition (felsic porphyrite). The origin of most of these rocks is at or near an oceanic island volcanic arc that was later added (accreted) to the continent and deformed. These rocks are generally resistant to erosion and form thin, clayey soil. Naturally occurring asbestos may be found in this formation. However, extensive testing of excavations made within and near the HRRA has not revealed the presence of any asbestos materials.

The MIAD West staging area is located in the Copper Hills Volcanic unit. Excavated material from this staging area and the internal haul road would be re-used as fill to accomplish topographic restoration within the HRRA; therefore, there is a minimal potential for naturally-occurring asbestos (NOA) to occur throughout the HRRA due to soil and dust migration associated with vehicle traffic.

An Asbestos Dust Management Plan (ADMP) was previously prepared for the Folsom JFP and approved by the Sacramento Metropolitan Air Quality Management District (SMAQMD). This plan included measures such as, but not limited to:

- Installation of washing stations where equipment and vehicles exit the work area in order to remove dirt and mud from tires to reduce track out of dirt to public roads. If there is any visible track-out on a paved public road where vehicles enter and exit the work area, it would be removed at the end of the work day or at least one time per day.
- Watering of active storage piles and stockpiles or covering of these features with tarps.
- For recently disturbed surface areas and storage piles that would remain active for more than seven days: water areas twice daily, or; spray the areas with hydromulch, or; treat the areas which a chemical dust stabilizer, or; cover with tarps.
- Vehicle and equipment traffic on unpaved roads are limited to 15 miles per hour or less and roads are watered every two hours of active operation or as necessary to keep surfaces adequately wetted.
- During earthmoving operations, pre-wet the ground surface and apply additional water, as needed, to control dust during excavation and grading operations.

Implementation of these measures during construction work within the HRRA would help ensure that NOA does not migrate beyond the reaches of the project area, and thus, there would be no effects associated with NOA.

Near MIAD in the southeast corner of Folsom Lake are the Laguna and Mehrten Formations. The Mehrten Formation is a complex unit of volcanic sediments mixed with volcanic mudflows (or lahars). It contains volcanic conglomerate, sandstone, and siltstone, all derived from andesitic sources. Portions of the Mehrten are gravels deposited by ancestral streams. The Laguna Formation, deposited on the Mehrten Formation, is a sequence of gravel, sand, and silt derived from granitic sources that was deposited as debris flows. The area that would be affected by HRRA construction activities was previously disturbed by prior phases of the JFP. The additional soil surface and subsurface disturbance that would occur during HRRA topographic alternations would therefore not result in any additional disturbance to geological conditions in this area.

Seismicity

The Folsom JFP project area is within the Foothills Fault system, which is located in the metamorphic belt. This system consists of northwest trending vertical faults and is divided into two zones, the western Melones Fault zone and the western Bear Mountains Fault zone. The west trace of the Bear Mountains Fault zone transects the upper reaches of the North Fork arm near Manhattan Bar Road, and crosses the South Fork arm in the region of New York Creek.

Potential seismic hazards from a nearby moderate to major earthquake can be classified as primary and secondary. The primary effect is fault ground rupture, including hazards such as ground shaking, landslides, and liquefaction. Secondary seismic hazards are those that are caused by the primary hazards, such as fires, flooding, and tsunamis. . However, no active faults have been mapped in the Folsom JFP project area or the Rossmoor Bar 14-acre Mitigation Site by the California Geological Survey or U.S. Geological Survey (Jennings, 1994). In addition, the project area is not located in the one of the Alquist-Priolo Earthquake Fault Zones (California Geological Survey, 2007). Given this, the risk of fault ground rupture is negligible. As a result, the proposed project would have no effect on seismic conditions in the area.

Landslides, mudflows, and rockfalls are not considered a major hazard in the immediate vicinity of the proposed action as most soils are too thin and slopes are too low to create conditions for mass movement. As discussed in Section 2.3.1, newly contoured slopes formed as a result of topographic restoration in the HRRA would be no steeper than 3H:1V. Such slopes are relatively stable, thereby further minimizing the potential for landslides. Due to the low potential for landslides to occur, the proposed project is not expected to expose people or structures to substantial adverse effects.

3.2.2 Hazardous, Toxic, and Radiological Waste

In January 2012, the Corps prepared an updated Phase I Environmental Site Assessment (ESA) to identify and evaluate potential hazardous, toxic, and radiological waste (HTRW) in and near the approach channel feature of the Folsom JFP. The purpose of the ESA was to review available documentation regarding past and current land use activities to assess the possible presence of hazardous substances and waste. The records investigation identified 78 HTRW sites, many of which were duplicated in multiple databases. The actual physical sites consisted of 16 above-ground storage tanks, underground storage tanks, treatment, generator, storage, or disposal facilities, as well as 23 mitigating sites or sites that had reported spills in the past. No sites were identified within or near the proposed project area.

Sites that were reported by Environmental Data Resources, Inc. would not affect the proposed construction because they are under control, exhibit no signs of continuing release and are generally more than one-fourth mile away from the project area. Based on the ESA and field reconnaissance, the project would have no effects on HTRW sites, and there is no apparent HTRW contamination that would interfere with construction of the project.

While the proposed restoration activities would not require long-term storage or use of hazardous materials, there are potential health and safety hazards that include possible accidental spills or leaks involving fuels, or lubricants. Prior to initiation of construction, the contractor would be required to prepare a hazardous materials control and response plan, which would include BMPs and other measures to avoid or minimize any potential hazard. As result, the proposed action would not be expected to have any effects from use of hazardous materials.

3.2.3 Land Use and Socioeconomics

A detailed discussion of socioeconomics (population, housing, and the economy) and land use are presented in the 2012 SEIS/EIR. The land surrounding Folsom Dam and Reservoir is primarily Federally-owned and designated for recreation and flood control use. The major land use in the project area is Reclamation's Central California Area Office, the Folsom Dam industrial complex, Folsom State Prison, and a utility corridor. Implementation of the proposed project would not result in any changes in the designated zonings or existing land uses in or near the project area. As a result, the proposed project would have no effect on the overall land use.

As directed in Executive Order 12898, all Federal agencies must identify and address adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. There are no minority or low-income populations that would be disproportionately affected by the proposed action. All nearby residents would benefit equally from the overall Folsom JFP project.

3.3 RESOURCES CONSIDERED IN DETAIL

Results of an initial evaluation indicated that the proposed action could affect the following resources. Sections 3.3.1 through 3.3.12 describe the existing conditions, effects, and proposed mitigation for the resources that could be significantly affected by the implementation of the proposed action. Both direct and indirect effects are evaluated.

3.3.1 Aesthetics

This section describes the existing conditions for aesthetics, regulatory background, significance thresholds, effect analysis, and a qualitative analysis of effects.

Regulatory Background

There are no Federal laws or regulations associated with aesthetics and visual resources. The State of California regulatory guidance for visual resources in the project area is associated with the Folsom Lake State Recreational Area (FLSRA) General Plan and Resource Management Plan (RMP). The aesthetic goal of the RMP is the protection and enhancement of views and distinct landscape features that contribute to the FLSRA's setting, character, and visual experience (State Parks and USBR, 2007a).

Existing Conditions

The project area containing the proposed restoration features is located in largely open spaces. Regional views include Folsom Lake as well as the surrounding foothills, which include open space preserves and/or recreational areas, plus a few residential developments. Prominent features in the local viewshed are Folsom Dam, the out flow channel, the auxiliary spillway, Folsom Lake Crossing, East Natoma Street, the Folsom Point boat launch, the Folsom Point recreation area (day-use area) and, in the case of the Prison Staging Area, various Folsom Prison facilities.

The project area containing the proposed Rossmoor 14-Acre Mitigation Site is located in an open space area given that it is located within Rossmoor Bar Park. Prominent features in the local viewshed include the American River, the American River Parkway, Jedediah Smith Memorial Trail (multi-use recreation trail), and the nearby Rossmoor residential neighborhood.

Environmental Effects

Significance Criteria

Pursuant to the CEQA guidelines, a proposed alternative would result in a potentially significant impact to aesthetics and 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 which would adversely affect day or nighttime views in the area.

No Action

Under the No Action alternative, the Corps and the CVFPB would not participate in the proposed restoration activities and therefore would not cause any additional effects to visual resources in the general vicinity of the three restoration sites. Under this alternative, the conditions in the project area would remain consistent with current conditions. Conditions within the HRRA, the Dike 7 Office Complex Parking Area, and the Prison Staging Area would remain highly disturbed and of low aesthetic quality.

Also under the No Action alternative, mitigation activities proposed at the Rossmoor 14-Acre Mitigation Site would not be conducted. Conditions at the site would likely remain as they exist now, at least for the next several years. The mitigation site would thus remain as a previously disturbed open field with limited aesthetic qualities.

Implement Proposed Action

Construction activities within the HRRA would temporarily affect the local viewshed due to the temporary presence of various construction equipment and supplies, the temporary presence of rip-rap stockpiles prior to the final removal/disposal of the rip-rap, as well as changes to topography during the course of construction activities. However, the HRRA has incurred ongoing construction work associated with dam improvements since 2008. Given this, the construction necessary to complete restoration efforts in the HRRA would not be an appreciable change from current, existing conditions.

The HRRA is visible to various parties depending on the location. Examples of visual receptors include: residents on a hilltop immediately adjacent to the Dike 7 Area and Dike 8 Area; residents immediately south of the MIAD West Area; people travelling along certain segments of Folsom Lake Crossing and East Natoma Street; people travelling to and from the Folsom Point boat launch area as well as people travelling to and from the Folsom Point recreation area; people in boats on Folsom Lake. Such parties would be exposed to the HRRA construction activities, but the negative effects of this construction would be temporary and thus would be considered to have a less-than-significant effect on aesthetics and visual resources. Proposed activities within the HRRA would not create any new source of light or glare. Once construction activities are completed, lands within the HRRA will have been restored to resemble natural topography that was present prior to disturbance of the lands by prior JFP phases. These lands will also have been revegetated with native grasses and forbs, as well as some scattered oak trees. Thus, the end result of the HRRA construction efforts would improve aesthetics, which is one of the goals of the restoration project.

The long-term improvement to aesthetics/visual resources resulting from HRRA construction activities would be somewhat less if the 460 Design Option for the HRRA is used rather than the 440 Design Option. This is because the 460 Option would leave bands of rip-rap along the Folsom Lake shoreline adjacent to the HRRA that would be significantly longer than the band that would be left under the 440 Design Option. The band that would remain using the 440 option would be approximately 1,515 feet long and would occupy roughly 1.7 acres. The two bands that would remain using the 460 option would be total approximately 2,245 feet long and combined would occupy about 2.3 acres. The rip-rap bands left adjacent to the HRRA under the either option would not be visible when the lake's water level is near its ordinary high water elevation. As the water level drops below elevation 460 feet NAVD88, the entire length of the rip-rap bands would be exposed and the width (north/south direction) visible would steadily increase until all of the rip-rap would be visible once the lake's water level falls below roughly elevation 440 feet NAVD88.

Once exposed, the remnant rip-rap bands left by either the 460 Option or the 440 Option would be visible to: boaters using the lake near the HRRA; people visiting certain portions of the Folsom Point day-use area; residents on a hilltop situated between the Dike 7 and Dike 8 Areas; vehicles traveling on Folsom Lake Crossing near the far west end of the HRRA, and; various workers at the Folsom Prison facilities situated on a hill located southwest of the western end of the HRRA. The exposed rip-rap would contrast with lake shoreline areas that are largely comprised of soil and/or lake sediments where scattered vegetation may or may not be present. This contrast may be unsightly to many observers while others may find the structural diversity offered by the rip-rap to be acceptable. In general, however, it seems likely that most observers would consider the rip-rap left along the lake's shoreline as undesirable, with the 460 Option being less desirable than the 440 Option since more rip-rap would remain under the 460 Option.

While the HRRA 460 Option would result in greater adverse aesthetics impacts when compared to those that would result from using the 440 Option, both options would still result in a net positive effect to visual resources compared to existing conditions. The rip-rap bands that would be left along the Folsom Lake's shoreline adjacent to the HRRA under the 460 Option would amount to less than 0.6 percent of the overall lake shoreline, which totals approximately 75 miles. The rip-rap band remaining under the 440 Option would amount to less than 0.4 percent of the overall lake shoreline. It is also noted that various segments of the lake's existing natural shoreline include scattered rocks and boulders as well as rock outcrops, including some at nearby Folsom Point. Considering these points, implementation of the 460 Option would result in less than significant effects to aesthetics and visual resources similar to implementation of the 440 Option. Overall, both options would result in improved aesthetics compared to the no action alternative.

The MIAD East Area may be used for the permanent disposal of materials generated during Phase IV of the JFP. Aesthetic impacts of this action were previously addressed in the 2012 SEIS/EIR. This same area may also be used as a permanent disposal site for rip-rap removed from the HRRA during its restoration. The presence of construction equipment used to haul and place the rip-rap would temporarily affect the local viewshed in the vicinity of the MIAD East Area. This area has been the location of ongoing construction work for Reclamation's MIAD modification project since 2010; thus, the additional temporary construction activities for JFP Phase V would not be a significant change from existing conditions. Use of the MIAD East Area for disposal purposes would not create any new source of light or glare.

Portions of the MIAD East disposal site are visible to various receptors, including: residents immediately south of the MIAD East Area; a limited number of residents located at the northeast corner of the intersection of Green Valley Road and East Natoma Street; motorists traveling on Green Valley Road near the MIAD East site; people using the Folsom Point day use recreation area, and; people using the recreational trail along the top of MIAD. It is anticipated that the rip-rap removed from the HRRA would be placed in the northwest portion of the MIAD East disposal site (see Figure 6) where it would occupy roughly 6.5 to 8 acres and would form a mound extending approximately 8 to 10 feet above the restored topography within the disposal site. An existing hill in the southwest corner of the MIAD East Area would block the view of the rip-rap mound (field) from several, but not all, of the residents living in the subdivision situated immediately south of the MIAD East Area. This hill, plus other intervening objects like residential structures, would also block the view of the rip-rap field from all but possibly 8 of the residences located in the subdivision at the northeast corner of the intersection of Green Valley Road and East Natoma Street.

The rip-rap field would add some structural diversity to the immediate viewshed. For observers in the Folsom Point day use area and those using the MIAD crest recreational trail, this field would not be appreciably different from the extensive rip-rap already along MIAD. It seems likely that residents having a view of the rip-rap disposal area would consider the rip-rap field as a feature that degrades aesthetics and visual resources of the open space bordering MIAD. This is not based on existing conditions, since the area is currently heavily disturbed by ongoing construction. Instead, this assumption is predicated on the conditions anticipated after the MIAD East Area and disturbed lands to the northeast are restored to mimic pre-construction natural topography by Reclamation's construction contractor. The lands where residences may have views of the rip-rap field have elevations roughly equal to or somewhat lower than the anticipated elevation of lands that would contain the rip-rap field. Therefore, these residences would only have an oblique view of limited portions of the edges of said field. Given these considerations, disposal of rip-rap in the MIAD East disposal site would result in a less-than-significant impact on aesthetics and visual resources. It is also probable, but not assured, that another project may eventually remove some or all of this rip-rap for use in that project. Should this occur, any adverse impacts to visual resources caused by disposal of rip-rap at the MIAD East disposal site would be minimized or eliminated.

The OILD site may be used as a disposal site for rip-rap removed from the HRRA, rather than the MIAD East disposal site. The rip-rap would be placed along the side slopes of the disposal mounds/platforms formed by disposal of materials generated during JFP Phase IV construction activities. When the lake water level is high, the rip-rap would be under water and thus not easily visible. As the lake water level drops below elevation 400 feet NAVD88, the maximum elevation of the rip-rap, more and more of the rip-rap would be exposed and would appear like a rocky shoreline along the isolated peninsula formed by materials disposed during the Phase IV project. This feature would be visible to lake users in the immediate vicinity, to people using certain portions of Folsom Point, and to a few residences on a hill just east of the Dike 7 Area. The exposed rip-rap would blend into the existing rip-rap along the dam overlook area, spur dike, and left wing of Folsom Dam, and would occupy a relatively limited area. Given this blending effect and considering the limited area occupied by the rip-rap, disposal of rip-rap at the OILD disposal site would affect visual resources and aesthetics in a manner that is less than significant.

The Dike 7 office complex parking area to be restored is visible to drivers on Folsom Lake Crossing and to a few residences on nearby hilltops. Construction work necessary to remove the parking lot here would temporarily affect the local viewshed. It would not include constructing any new sources of light or glare. Upon completion of this work, the parking lot will have been restored to a grassy area that blends into the limited surrounding undisturbed areas, thereby improving aesthetics here. As a result of the temporary nature of construction activities and the net improvement to the visual characteristics of the site, the restoration of the parking area would be considered a less-than-significant effect on aesthetics and visual resources.

The Prison Staging Area (PSA) to be partially restored is partially visible to drivers on Folsom Lake Crossing and is visible to workers at nearby Folsom Prison Facilities. The proposed restoration activities would result in the removal of various temporary buildings, supplies, and equipment from the PSA, which would somewhat improve the aesthetic value of this site. These activities would not include installation of any new sources of light or glare. However, the site would remain visually unappealing similar to existing conditions. As a result, the partial restoration of the PSA would be considered a less-than-significant effect on aesthetics and visual resources.

The proposed Rossmoor 14-Acre Mitigation Site is visible to users of Rossmoor Park, drivers traveling on Rossmoor Drive adjacent to the site, and to people using the nearby Jedediah Smith Memorial Trail. It is also partially visible from a few residents on Ambassador Lane near its intersection with Rossmoor Drive. The proposed mitigation activities at this site would permanently convert the open, disturbed field that presently exists within the site boundaries to a forested oak woodland habitat. The site would also be surrounded by an 8-feet tall deer fence for a period of 4 to 5 years. There would be no lighting installed and no establishment of any sources of glare. The permanent change from open field to oak woodland may be considered by some individuals who prefer an open vista to be an adverse impact to existing aesthetics and visual resources of the immediate area. It is likely, however, that most individuals would consider this change to be a marked improvement to existing aesthetics and visual resources, with the future forest blending in with adjacent forested areas that represent the natural habitat of the immediate region. Given this assumption, the permanent habitat change would be considered consistent with the overall aesthetic quality of the area. While the presence of the deer fence would somewhat degrade the aesthetic quality of the immediate area, this fence would be removed when mitigation success has been achieved (see Section 2.3.4). Therefore, effects to aesthetics from the establishment of the Rossmoor 14-Acre Mitigation Site would be considered less-than-significant.

Mitigation

The proposed action would result in no significant impacts on visual resources; therefore, no mitigation is required.

3.3.2 Air Quality

This section describes the existing conditions for air quality, regulatory background, significance thresholds, effect analysis, and a qualitative analysis of effects.

Regulatory Background

Air quality management responsibilities exist at Federal, State, and local levels of government. The primary statutes that establish ambient air quality standards and the regulatory authorities necessary to enforce the regulations designed to attain those standards are the Federal Clean Air Act (CAA) and California Clean Air Act (CCAA). The enforcement of Federal and

State air statutes and regulations is complex and the various agencies have different, but interrelated responsibilities.

The Federal Clean Air Act, which was last amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment (40 CFR part 50). Federal ambient air quality standards have been established for six "criteria pollutants":

- Carbon monoxide (CO),
- Ozone (O_3),
- Inhalable particulate matter (PM_{10} and $PM_{2.5}$—particulates 10 microns or less in diameter and 2.5 microns or less in diameter, respectively),
- Nitrogen dioxide (NO_2),
- Sulfur dioxide (SO_2), and
- Lead.

Primary standards were established to promote human health with an adequate margin of safety to protect those most vulnerable such as asthmatics, infants, and elderly persons. More stringent secondary standards were established to promote human welfare to prevent impaired visibility, and building and crop damage. Primary and secondary NAAQS set forth by EPA can be found at the website, http://www.epa.gov/airprogm/oar/criteria.html.

The California Clean Air Act establishes California Ambient Air Quality Standards (CAAQS). These standards are more stringent than Federal standards and include pollutants not listed under Federal standards. All Federal projects in California must comply with the stricter State air quality standards. In California, the Air Resources Board (CARB) is the responsible agency for air quality regulation. The National AAQS and the California AAQS tables are provided in Appendix A.

Areas are classified as either "in attainment" or "in nonattainment" with respect to State and Federal AAQS. These classifications are made by comparing actual monitored air pollutant concentrations to State and Federal standards. If a pollutant concentration is lower than the State or Federal standard, the area is considered to be in attainment of the standard for that pollutant. If pollutant levels exceed a standard, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified.

To implement Section 176 of the CAA, the EPA issued the General Conformity Rule which states that a Federal action must not cause or contribute to any violation of the NAAQS, or delay timely attainment of air-quality standards. A conformity determination is required for each pollutant where the total of direct and indirect emissions caused by a Federal action in a non-attainment (or maintenance) area exceeds *de minimis* rates listed in the rule (40 CFR 93.153). The Federal standard and local thresholds for Sacramento County are shown in Table 3.1.

Table 3.1. Air Emission Thresholds for Federal and Local Criteria Pollutants.

Criteria Pollutant	Federal Standard (tons/year)	SMAQMD Threshold (lbs/day)
NO_x	25	85
CO	100	*
SO	100	*
PM_{10}	100	80
$PM_{2.5}$	-	82
ROG	25	*

NO_x = nitrogen oxides CO = carbon monoxide SO = sulfur oxides PM_{10} = particulate matter
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District * = default to Federal standard
Source: www.airquality.org/ceqa/index.shtml, 2005

Local AQMDs (Air Quality Management Districts) are responsible for implementing Federal and State regulations at the local level. The project area is in the Sacramento Valley Air Basin. The air quality in the area is managed by SMAQMD, which is included in the Sacramento Federal Ozone Nonattainment Area (SFNA) and is also subject to regulations, attainment goals, and standards of the U.S. and California EPA's.

As a part of the SFNA, Sacramento County is out of compliance with the State and Federal ozone standards. The EPA General Conformity Regulation requires that "serious" designated nonattainment areas further reduce NOx and reactive organic gas (ROG) thresholds to 50 tons/year rather than 100 tons/year. Additionally, SMAQMD and CARB have petitioned the EPA for voluntary reclassification from "serious" to "severe" for the 8-hour ozone nonattainment area with an associated attainment deadline of June 15, 2019, was submitted from the Air Resources Board to EPA on February 14, 2008. EPA approved the request effective June 4, 2010. The designate "severe" nonattainment status lowered NOx and ROG thresholds to 25 tons/year.

The area is designated as nonattainment for the PM_{10} NAAQS; however, no approved State Implementation Plan for PM_{10} currently exists. The area has achieved the PM_{10} NAAQS, but the SMAQMD must request redesignation to attainment and submit a maintenance plan to be formally designated as attainment.

Toxic Air Contaminants

In addition to the Federal and State criteria pollutants, the Federal CAA and CCAA have identified another class of pollutants. Hazardous air pollutants is a term used by the Federal CAA that includes a variety of pollutants that are known or suspected carcinogens and are generated or emitted by a wide variety of industries. Ten toxic air contaminants (TAC) under the CCAA have been identified through ambient air quality data as posing the greatest health risk in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to brain and nervous system and respiratory disorders. The TAC of interest to this project is diesel particulate matter (PM).

TACs do not have ambient air quality standards because no safe levels of TAC have been determined. Instead, TAC effects are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act apply to facilities that use, produce, or emit toxic chemicals. Facilities that are subject to the toxic emission inventory requirements of the Act must prepare and submit toxic emission inventory plans and reports, and periodically update those reports.

Diesel-fueled mobile sources including motor vehicles and off-road equipment emit compound emissions such as diesel PM, which is recognized as a TAC by CARB. Emissions of diesel PM have been related to long-term health effects, including non-cancer chronic hazards and increased cancer risk. Health risks associated with exposure to carcinogenic substances are typically measured over 70 years of exposure. Temporary construction activities would include operation of diesel-fueled off-road equipment resulting in emissions of diesel PM. However, construction activities would occur over a finite period of time (approximately 6 to 9 months); therefore, diesel PM emissions would result in short-term, temporary impacts, and would not result in long-term cancer risk to residents and workers. Because of the short-term duration of emissions, no TAC facilities nearby, and the project would not expose new receptors to a TAC facility, a health risk assessment would not be required; thus, prioritization screening was not conducted for this analysis. Additionally, the SMAQMD's "Basic Construction Emission Control Practices and Enhanced Exhaust Control Practices" would be implemented which would reduce PM exhaust emissions.

Existing Conditions

Sacramento County is in attainment for all National and State AAQS except for State and Federal ozone standards and State particulate matter standards. The area is designated a "severe" nonattainment area for the National 8-hour AAQS for ozone and is a "serious" nonattainment area for the State's 1-hour ozone standard. Sacramento County exceeded the State's annual PM_{10} standard by 40% and the State's $PM_{2.5}$ standard by 4% on average over the last 5 years. In addition, the State's 24-hour PM_{10} standard was exceeded up to 14 days per year over the past 5 years.

Sensitive Receptors

Some locations are considered more sensitive to adverse effects from air pollution than others. These locations are termed sensitive receptors. For CEQA purposes, a sensitive receptor is generically defined as a location where human populations are found, and there is reasonable expectation of continuous human exposure according to the averaging period for the ambient air quality standard (e.g., 24-hour, 8-hour, and 1-hour). These typically include residences, hospitals, and schools. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Hospitals, schools, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation can place a high demand on the respiratory system. Sensitive receptors near the project area include residents and recreational users.

Environmental Effects

Significance Criteria

Effects to air quality would be considered significant if the proposed project would result in any of the following:

- Violate any of the air quality standards;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Not conform to applicable Federal and State standards, and local thresholds on a long term basis.
- Create objectionable odors affecting a substantial number of people.

The CEQA thresholds of significance were obtained from the SMAQMD CEQA Guide to Air Quality Assessment (SMAQMD, 2015), which lists a NO_X (oxides of nitrogen) threshold of 85 pounds per day, a PM10 threshold of 80 pounds per day and 14.6 tons per year, and a PM2.5 threshold of 82 pounds per day and 15 tons per year for construction emissions.

Methodology

In response to the increased construction activities and schedule changes in 2014, a General Conformity evaluation report was completed on November 5, 2014 to address air quality emissions for the remaining Folsom JFP construction, including the proposed site restoration measures. Emissions from off-road construction equipment and portable engines, on-site trucks, and worker vehicles were calculated based on emission factors derived from EMFAC2011 model. Assumptions for ongoing construction from other Folsom JFP project phases included the equipment type, horsepower rating, model year, and actual (or projected) hours of operation. Assumptions on construction equipment necessary for the proposed project are described in Section 2.3.

These data were input into the 2012 SEIS/EIR Air Quality Spreadsheet, a tool similar to SMAQMD's Construction Mitigation Calculator, which has been developed to perform the emission calculations. The tool derives emission factors for ROG, NOx, PM_{10}, $PM_{2.5}$ and CO_2 based on user inputs. Appendix B provides additional information concerning emission calculations.

Emissions from haul trucks were calculated based on the model year, number of trips, and the round trip distance of each truck trip. Haul truck emission factors were derived from CARB's EMFAC2011 emissions model, using the heavy-heavy-duty diesel technology group applicable to construction trucks. Emission factors in units of grams per mile (g/mi) were determined based on the fleet operating in the Sacramento Valley Air Basin (SVAB) in each calendar year. The emission factors are weighted to include all operating speeds, which include both on-site and off-site operation.

Emissions from the onsite usage of pickup and mechanical trucks were calculated based on emission factors derived from EMFAC2011. Emission factors were derived based on the basin-wide fleet average model year of light-duty trucks operating in each calendar year.

Emissions from worker vehicles were calculated based on emission factors derived from EMFAC2011, and fleet composition as contained in the California Emissions Estimation Model (CalEEMod). CalEEMod also contains a default worker commute distance which was incorporated into the analysis. Emissions were calculated from the estimated number of worker vehicles. There are no specific mitigation measures applicable to worker vehicles.

Fugitive dust emissions originate from a variety of sources, including excavation, stockpiling, wind erosion of disturbed areas, vehicle travel on unpaved roadways, and vehicle travel on paved roadways.

No Action

Under the No Action alternative, the Corps and CVFPB would not participate in the site restoration measures. As a result, there would be no increase in air quality effects from the construction activities associated with the site restoration measures, including equipment emissions and fugitive dust. However, if the site restoration measures are not implemented, there would be an increase in emissions from maintenance activities to repair and/ or maintain the interior haul road and Folsom Point Bridge, from dust generated by the lack of revegetation, and from erosion repairs at the stockpile and disposal areas. In addition, air quality would be influenced by emissions due to the ongoing and future construction of other improvement projects, climate and geographic conditions, and local and regional emissions from vehicles, and local commercial and industrial land uses.

Implement Proposed Action

Construction of the proposed action would result in short-term temporary generation of ROG, CO, NO_X, PM_{10}, $PM_{2.5}$, and CO_2 emissions from earthwork operations, motor vehicle exhaust associated with construction equipment, employee commute trips, material transport, material handling, and other construction activities. Annual emissions were calculated based on assumptions on the type of construction equipment required for each construction phase.

Table 3.2 summarizes the total emissions for ROG, CO, NO_x, PM_{10}, $PM_{2.5}$, and CO_2, estimated for the proposed Folsom JFP construction activities in 2016 and 2017, and compares them to both the general conformity rule (GCR) *de minimis* thresholds and the SMAQMD CEQA NO_x threshold for determination of significance of impacts. Total tons/year was calculated by multiplying the project emissions lbs/day by 365, then dividing by 2,000 for the purposes of emissions estimates. It is important to note that the emissions estimates provided in Table 3.2 were based on implementing various air quality BMPs and mitigation measures that are discussed later in this section. These emissions estimates were based on using the HRRA 440 Design Option rather than the HRRA 460 Design Option. It is also noted that these emissions estimates did not include emissions that would result from the proposed transport of rip-rap removed from the HRRA to an off-site location (see Section 2.3.1; discussion for rip-rap removal option 1). As previously discussed, the non-federal agency using this rip-rap would separately contract this work and thus it would not be a federal action subject to NEPA. Instead, the agency would prepare a separate CEQA document for this action to address potential air quality impacts of this action. If necessary, mitigation measures and BMPs would be provided as mitigation.

Based on the estimates presented in Table 3.2, construction activities in 2016 and 2017 would not produce emissions that are greater than the GCR *de minimis* values for criteria pollutants. The estimated worst-case annual emissions generated from the Folsom JFP would exceed SMAQMD NOx thresholds in 2016 but would not exceed SMAQMD NOx threshold in 2017. These emissions would also exceed the SMAQMD PM_{10} threshold in 2016 but not in 2017.

Table 3.2. Estimated Emissions After Mitigation.

Site Preparation & Construction	**ROG**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**	**CO_2** **(metric tons/year)**
Total emissions (lbs/day) of the Folsom JFP in 2016	11.05	83.84	96.97	104.1	15.9	20,834
Total emissions (lbs/day) of the Folsom JFP in 2017	3.29	13.7	32.33	1.64	1.09	2,049
SMAQMD thresholds (lbs/day)	N/A	N/A	85	80	82	1,100
Exceed SMAQMD Threshold?	**-**	**-**	**Yes**	**Yes**	**-No**	**Yes***
Emissions (tons/year) of the Folsom JFP in 2016	2.1	15.3	17.7	19.0	2.9	20,834
Emissions (tons/year) of the Folsom JFP in 2017	0.6	2.7	5.9	0.3	0.2	2,049
Federal Standards (tons/year)	25	100	25	100	N/A	N/A
Exceed Federal threshold?	**No**	**No**	**No**	**No**	**-**	**-**

* SMAQMD threshold for CO_2 is a recommended threshold only. Refer to the Climate Change section (Section 3.3.3) for further discussion of CO_2 emissions.

The emissions estimate of NO_x would be above SMAQMD's threshold of 85 lbs/day in 2016. The emissions estimate for PM10 would be above SMAQMD's threshold of 80 lbs/day in 2016. The project would implement the standard construction mitigation measures as recommended by SMAQMD and continue to include the mitigation measures as described in the 2012 SEIS/EIR to reduce NO_x emissions and minimize particulate (PM_{10} and $PM_{2.5}$) emissions. These measures are listed in the mitigation section below. Although implementation of the exhaust emission mitigation measures would reduce NOx emissions from the project, the maximum daily emissions could still potentially exceed the SMAQMD threshold as indicated in Table 3.2. Similarly, the proposed mitigation measures would reduce PM_{10} emissions, but the maximum daily emissions could potentially still exceed the SMAQMD threshold as indicated in Table 3.2.

At the current level of project design, it is not possible to accurately estimate the daily NO_x and PM_{10} emissions due to uncertainties regarding the exact types of construction equipment that will be used and the timing and sequencing of various construction activities. Such details are typically not known until a construction contractor has been selected. Refined emissions estimates may indicate that NO_x and/or PM_{10} emissions would still exceed applicable SMAQMD thresholds. Should this be the case, "off-site" mitigation in the form of payment of mitigation fees to SMAQMD would be made as discussed in the mitigation section below. Payment of any required mitigation fees would reduce significance of the NO_x and PM_{10} emissions to a less-than-significant level. The refined emissions estimates could indicate that NO_x and/or PM_{10} emissions would not exceed the applicable SMAQMD thresholds, in which case the emissions would be less-than-significant.

The project would result in short-term generation of criteria pollutants concentrations, including diesel exhaust emissions, from the use of off-road construction equipment required for grading, contouring, and other activities, and on-road haul trucks used for hauling materials. Grading, earthmoving, filling, and excavation are the activities that generate the most dust and PM_{10} emissions. The duration of such activities would be approximately 7 to 8 months. Following this, the use of smaller equipment (ex. tractors, seed drills, hydroseeders, small trucks, mowers etc.) would be necessary to revegetate and subsequently manage disturbed areas. The duration of these activities would begin once all topographic restoration work is completed and would continue until project completion in the fall of 2017.

The use of heavy-duty diesel engines at the project sites could expose nearby residents to diesel particulate matter. Diesel particulate matter is a chemical known to the State of California to cause cancer in certain concentrations. Due to the relatively short-term exposure, nearby residents would not be exposed to substantial pollutant concentration. Because sensitive receptors would not be exposed to substantial pollutants, the effect would be less than significant.

The proposed action is a relatively short-term construction project and has been designed to not require continual maintenance. As a result, there would not be a long-term increase in regional emissions of ROG, CO, NO_x, PM_{10}, $PM_{2.5}$, and CO_2. The proposed action would conform to all applicable Federal and State standards, and local thresholds on a long-term basis. Therefore, the effect would be less than significant.

It is again noted that there would be additional air quality impacts not addressed in the preceding assessment if the rip-rap disposal option involving another agency's removal and off-site transport of the rip-rap from the HRRA (e.g., Option 1) is used rather than one of the two other options discussed in Section 2.3.1. Impacts to air quality at the JFP site under this scenario would largely result from the emissions of dump trucks and other equipment used to collect the rip-rap, plus dust generated by movement of this equipment. The non-federal agency conducting the rip-rap removal and transport would prepare a CEQA document where air quality impacts would be analyzed. If required, measures would be provided to mitigate adverse air quality impacts. It is further noted that air quality impacts addressed in the preceding assessment were based on the HRRA 440 Design Option discussed in Section 2.3.1. If the HRRA 460 Design Option is employed rather than the 440 Option, air quality impacts would be slightly reduced since there would be a reduction in the construction equipment usage involved with removing rip-rap from the HRRA.

General Conformity

The Federal CAA requires Federal agencies to ensure that their actions conform to applicable implementation plans for the achievement and maintenance of the NAAQS for criteria pollutants. To achieve conformity, a Federal action must not contribute to new violations of NAAQS, increase the frequency or severity of existing violations, or delay timely attainment of standards in the area of concern (for example, a state or a smaller air quality region).

The proposed action is located in an area with a designated Federal status of severe nonattainment for O_3 (8-hour standard). In addition the State has designated the area as nonattainment for PM_{10} and $PM_{2.5}$. As shown in Table 3.2, the proposed action would not increase emissions to the Folsom JFP project that are greater than the Federal GCR *de minimis* values for criteria pollutants. However, the Folsom JFP was expected to exceed the NO_x Federal GCR *de minimis* threshold in 2014. As a result, the Folsom JFP completed a general conformity re-evaluation report. The re-evaluation report includes project emission estimates in 2014 through the completion of the Folsom JFP in 2017. Emission estimates for the site restoration measures were included in the General Conformity Determination. The updated General Conformity Determination draft was published and provided for public, agency, and EPA review for 30 days in September 2014 pursuant to 40 C.F.R. §93.158(a)(5)(i)(b). A final notification was published November 5, 2014. The General Conformity Determination can be found in Appendix B.

Mitigation

Mitigation would be required to reduce air quality impacts to less than significant. There would be no significant impacts after mitigation. Due to the nonattainment status of Sacramento County with respect to O_3, $PM_{10,}$ and $PM_{2.5}$, SMAQMD (2009) recommends that projects within the basin implement a set of Basic Construction Emission Control Practices as BMPs regardless of the significance determination. Use of these practices can result in a 55 percent reduction of fugitive PM_{10} dust emissions from soil disturbance areas and a 44 percent reduction of fugitive PM dust emissions from entrained PM_{10} road dust from unpaved roads (SMAQMD, 2009).

The following subsections address all the BMPs and other mitigation actions that would be implemented to minimize and mitigate air quality impacts.

Basic Construction Emission Control Practices

The construction contractor would be required to implement the following basic construction emission control practices:

- Water all exposed surfaces two times 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 be traveling along freeways or major roadways should be covered.

- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to five minutes (as required by the state airborne toxics control measure [Title 13, Sections 249(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 determine to be running in proper condition before it is operated.

Enhanced Exhaust Control Practices

The construction contractor would be required to implement the following enhanced exhaust control practices:

- Provide a plan for approval by the lead agency and SMAQMD demonstrating that the heavy-duty (50 horsepower or more) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, would achieve a project-wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction compared to the most recent California Air Resources Board (ARB) fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The SMAQMD's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction. The subject plan would be submitted in conjunction with the equipment inventory discussed below.

- Submit to the lead agency and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 hp, that would be used an aggregate of 40 or more hours during any portion of the construction project. The inventory would include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The inventory would be updated and submitted monthly throughout the duration of the project, except that an inventory would not be required for any 30-day period in which no construction activity occurs. At least 4 business days hours prior to the use of subject heavy-duty off-road equipment, the contractor would provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The SMAQMD's Model Equipment List can be used to submit this information.

- Ensure that emissions from all off-road diesel-powered equipment used on the project site do not exceed 40 percent opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) would be repaired immediately. Non-compliant equipment would be documented and a summary provided to the lead agency and SMAQMD monthly. A visual survey of all in-operation equipment would be made at least weekly, and a monthly summary of the visual survey results would be submitted throughout the duration of the project, except that the monthly summary would not be required for any 30-day period in which no construction activity occurs. The monthly summary would include the quantity and type of vehicles surveyed as well as the dates of each survey.

- If at the time of construction, SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with the SMAQMD prior to construction would be necessary to make this determination.

Fugitive Dust Emission Mitigation Measures

The construction contractor would be required to implement the fugitive dust mitigation measures listed below:

- Limit vehicle speeds on unpaved roads to 15 miles per hour.
- Water at least every 2 hours of active construction activities or sufficiently often to keep disturbed areas adequately wet.
- Remove all visible track-out from a paved public road at any location where vehicles exit the work site. This would be accomplished using wet seeping by a HEPA filter-equipped vacuum device on a daily basis.
- Install one or more of the following track-out prevention measures:
    - A gravel pad to clean the tires of exiting vehicles.
    - A tire shaker.
    - A wheel wash system
    - Pavement extending at least 50 feet from the intersection with the paved public road, or
    - Any other measure(s) as effective as the measures listed above.
- Pre-wet the ground to the depth of anticipated cuts.
- Suspend any excavation operations when wind speeds are high enough to result emissions across the property line, despite the application of other dust mitigation measures.

Enhanced Fugitive Particulate Matter (PM) Dust Control Practices

The construction contractor would be required to implement the following enhanced fugitive PM dust control practices:

(1) For Soil Disturbance Areas:

- Water exposed soil with adequate frequency for continued moist soil, but do not overwater to the extent that sediment flows off the project site.
- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.
- Install wind breaks (ex. solid fencing) on the windward side(s) of construction areas.
- Plant vegetative ground cover in disturbed areas as soon as possible.

(2) For Unpaved Roads:

- 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 with the telephone number and person to contact at the lead agency regarding dust complaints. This person would respond and take corrective action within 48 hours of receiving a complaint. The phone number of SMAQMD would also be provided on the sign to help ensure compliance.

Additional Air Quality Mitigation Measures

The Corps would also continue to implement the following mitigation measures to reduce the potential adverse air quality effects of the project, as described in the 2012 SEIS/EIR. The construction contractor would be required to comply with the following:

- Model year 2010 (MY2010) or newer haul trucks would typically be used for the duration of the project. Use of these trucks would provide the best available emission controls for NO_x and PM emissions. There could potentially be occasions when the availability of MY2010 or newer haul trucks is limited, thereby forcing the need to use older trucks to meet construction schedule goals. Should a situation like this arise, the construction contractor would first be required to demonstrate that MY2010 or newer trucks are not available in the general project region before the use of older trucks is authorized by USACE.

- All off-road diesel-powered construction equipment greater than 50 horsepower would meet Tier-4 off road emission standards (reference 40 CFR Part 1039), where available. In addition, if not already supplied with a factory-equipped diesel particulate filter, all construction equipment would be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emissions control device used by the construction contractor would 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. In the event that a certain tier engine is not available for any off-road equipment larger than 50 hp, that equipment would be equipped with the next lower tier engine (e.g., if Tier 3 is not available use Tier 2), or an engine that is equipped with retrofit controls to reduce exhaust emissions of NO_x and diesel PM to no more than the next available tier, unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. If the construction contractor proposes to use off-road diesel powered construction equipment greater than 50 hp that does not meet Tier-4 off road emissions standards, such usage would first have to be approved by the Corps.

- Construction equipment would incorporate emissions-reducing technology such as specific fuel economy standards. Idling would be restricted to a maximum of 5 minutes, except as provided in the CARB 13CCR, Section 2485 exceptions.

Off-Site Mitigation Measures

(1) Mitigation for Emissions Exceeding the SMAQMD NO_x Threshold:

The construction contractor would provide the Corps and SMAQMD with updated and revised air quality emissions estimates prior to beginning project construction activities. If these estimates still indicate that the NO_x threshold (e.g. 85 pounds per day of NO_x) would still be exceeded despite the use of the mitigation measures and BMPs addressed previously, the contractor would coordinate with SMAQMD to determine the level of any mitigation fees that must be paid. Any remaining emissions over the NO_x threshold would be reduced via a mitigation fee payment to SMAQMD. The construction contractor would pay these fees, including associated administrative fees. The cost of reducing one ton of NO_x starting July 1, 2015 is $18,030 per ton of emissions (SMAQMD, 2015).

(2) Mitigation for Particulate Matter Emissions Exceeding the SMAQMD Thresholds:

The construction contractor would provide the Corps and SMAQMD with updated and revised air quality emissions estimates prior to beginning project construction activities. If these estimates still indicate that the PM_{10} threshold (80 pounds per day) and/or the $PM_{2.5}$ threshold (82 pounds per day) would be exceeded despite the use of the mitigation measures and BMPs addressed previously, the contractor would coordinate with SMAQMD to determine the level of mitigation fees, if any, that must be paid. Any remaining emissions over the applicable PM threshold(s) would be reduced via a mitigation fee payment to SMAQMD. The construction contractor would pay these fees, including associated administrative fees. The cost of reducing one ton of PM starting July 1, 2015 is $18,030 per ton of emissions (SMAQMD, 2015).

3.3.3 Climate Change

This section describes the existing conditions for climate changes, regulatory background, significance thresholds, effect analysis, and a qualitative analysis of effects.

Ongoing scientific research has identified the general impacts of anthropogenic greenhouse gasses (GHG) emissions and changes in biological carbon sequestration due to land management activities on global climate. The term “greenhouse gas” or “greenhouse gases” includes but is not limited to: CO_2, methane (CH_4), and NO_2.

GHG naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the Earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect on the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, historic industrialization and burning of fossil carbon sources have caused carbon dioxide equivalent concentrations to increase dramatically, and clearly contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC) concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations" (IPCC, 2007).

Global mean surface temperatures have increased nearly 1.8 degrees Fahrenheit (°F) from 1890 to 2006 (IPCC, 2007). Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° North) have exhibited temperature increases of nearly 2.1 degrees Fahrenheit (°F) since 1900, with nearly a 1.8°F increase since 1970 alone (IPCC, 2007). Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years.

Regulatory Background

No Federal regulations regarding climate change apply to the proposed action. The Environmental Protection Agency has started the process of regulating large sources of GHG emissions (e.g., power plants, cement manufacturing), but these proposed regulations are not applicable to the proposed action. California laws and executive orders that address GHGs and climate change are summarized in Table 3.3.

Table 3.3. Summary of State Laws and Executive Orders that Address Climate Change.

Legislation Name	Signed into Law/ Ordered	Description	CEQA Relevance
SB 1771	09/2000	Establishment of California Climate Registry to develop protocols for voluntary accounting and tracking of GHG emissions.	In 2007, DWR began tracking GHG emissions for all departmental operations.
AB 1473	07/2002	Directs CARB to establish fuel standards for noncommercial vehicles that would provide the maximum feasible reduction of GHGs.	Reduction of GHG emissions from noncommercial vehicle travel.

Legislation Name	Signed into Law/ Ordered	Description	CEQA Relevance
SB 1078, 107, EO S-14-08	09/2002, 09/2006, 11/2008	Establishment of renewable energy goals as a percentage of total energy supplied in the State.	Reduction of GHG emissions from purchased electrical power.
EO S-3-05, AB 32 [1]	06/2005, 09/2006	Establishment of statewide GHG reduction targets and biennial science assessment reporting on climate change impacts and adaptation and progress toward meeting GHG reduction goals.	Projects required to be consistent with statewide GHG reduction plan and reports will provide information for climate change adaptation analysis.
SB 1368	9/2006	Establishment of GHG emission performance standards for base load electrical power generation.	Reduction of GHG emissions from purchased electrical power.
EO S-1-07	01/2007	Establishment of Low Carbon Fuel Standard.	Reduction of GHG emissions from transportation activities.
SB 97[1]	08/2007	Directs OPR to develop guideline amendments for the analysis of climate change in CEQA documents.	Requires climate change analysis in all CEQA documents.
SB 375	09/2008	Requires metropolitan planning organizations to include sustainable communities strategies in their regional transportation plans.	Reduction of GHG emissions associated with housing and transportation.
EO S-13-08 [1]	11/2008	Directs the Resource Agency to work with the National Academy of Sciences to produce a California Sea Level Rise Assessment Report, and directs the Climate Action Team to develop a California Climate Adaptation Strategy.	Information in the reports will provide information for climate change adaptation analysis.
EO B-30-15 [1]	04/2015	The order established a new interim greenhouse gas (GHG) reduction target to reduce GHGs to 40% below 1990 levels by 2030 in order to meet the target of reducing GHGs to 80% below 1990 levels by 2050.	State agencies with jurisdiction over sources of GHGs shall implement measures, pursuant to statutory authority, to achieve reductions of GHGs to meet the 2030 and 2050 GHG reduction targets.

[1]Significant laws and orders.

<u>Existing Conditions</u>

Local Climatic Conditions

In general, the climates of California formed due to topography and the position of the semi-permanent subtropical cell, a center of high atmospheric pressure in the Pacific Ocean off the California coast. During the summer, the cell moves over northern California and Nevada and effectively blocks the movements of the Pacific storm systems into California, creating drought-like conditions. During the winter, the cell retreats to the southwest, allowing storms and frontal systems to move into northern and central California. As a result, California has a Mediterranean, semi-arid climate that is typically characterized by cool, wet winters and hot, dry summers.

During the summer months the project area (in the vicinity of Folsom Reservoir and Rossmoor Bar) normally experiences cloudless, warm-to-hot dry days, and mild, pleasant nights. Summer temperatures average approximately 90 degrees Fahrenheit (ºF) during the day and 60 ºF at night. Summer average rainfall amount in the area is generally around 1.05 inches. The winter "rainy season" is from November through March when periodic storms move in from the Pacific Ocean. The average rainfall during these months is 19.96 inches. Winter daytime temperatures average in the upper 50's, and nighttime temperatures average in the lower 40's. Moist winds are predominately from the southwest, building strength from the Delta region, while occasional dry winds originate from the north.

Greenhouse Gases (GHG)

The six principal GHGs of concern are CO_2, methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), and perfluorocarbons (PFC). The EPA does not currently regulate the GHG pollutants that could contribute to global warming. However, on December 7, 2009, the Administrator of the EPA signed two findings regarding the threat to public health and welfare from GHGs under section 202(a) of the Federal CAA. Accordingly, in the future, the EPA can promulgate regulations pertaining to emissions of GHGs under the authority of the Federal CAA.

While the Federal Government has not regulated emissions of GHG, the State of California has been proactive in the study of effects of climate change with a 20-year history of doing so. State actions to address global climate change target automobile emissions, stationary sources and power generation, land-use planning, and the development of sustainable communities.

California is a substantial contributor of global GHG as it is the second largest contributor in the U.S. and the sixteenth largest in the world (CEC, 2006). While California has a high amount of GHG emissions, it has low emissions per capita. California produced in 2008 approximately 478 million metric tons of CO_2 equivalent (478 $MMTCO_2e$), equal to about 525 million tons, or about one percent of 49,000 MMTCO2e emitted globally (IPCC, 2007). The main sources of GHG emissions in California are the transportation and energy sectors.

GHG emissions are now being considered as a relatively new issue in CEQA documents because of their effects to climate change. Historically, there have been no standard, widely used methodologies or significance criteria to address climate change effects from GHG emissions. Air districts have generally provided guidance on analysis methodologies and significance criteria for criteria pollutant and toxic air contaminant effects, but they have not established guidelines for GHG emissions and their effects.

To assist lead agencies with this new impact area, the California Air Pollution Control Officer's Association prepared a "white paper" reviewing policy choices, analytical tools, and mitigation strategies (CAPCOA, 2008). This paper considers the application of thresholds (there are currently no widely-accepted significance thresholds or criteria) and offers three alternative programmatic approaches towards determining whether GHG emissions are significant.

CARB prepared proposed interim GHG significance thresholds, which are sector-specific in terms of what types of activities generate the GHG emissions. Until a statewide standard or threshold of significance for GHG emissions is completed, the Office of Planning and Research (OPR) advises that each lead agency should develop its own approach to performing an analysis for projects that generate GHG emissions, consistent with available guidance and current CEQA practice (OPR, 2008).

OPR sets out the following process for evaluating GHG emissions:

- Agencies should determine whether GHG emissions would be generated by a proposed project, and if so, quantify or estimate the emissions by type or source. Calculation, modeling, or estimation of GHG emissions should include the emissions associated with vehicular traffic, energy consumption, water usage, and construction activities.
- Agencies should assess whether the GHG emissions are individually or cumulatively significant. When assessing whether a project's effects on climate change are "cumulatively considerable" even though a project's GHG emissions could be individually limited, the lead agency must consider the effect of the project in connection with the effects of past, current, and probable future projects.

If the lead agency determines that the GHG emissions are potentially significant, then it must investigate and implement ways to mitigate the emissions (OPR, 2008).

<u>Environmental Effects</u>

Significance Criteria

The impacts of the proposed project related to climate change are evaluated using the criteria listed below. For this analysis, an effect pertaining to climate change was analyzed based on 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:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The following significance criteria will be used to determine the significance of GHG emissions from this project:

- If the relative amounts of GHG emissions resulting from implementation of the proposed project are substantial compared to emissions major facilities are required to report,(25,000 metric tons CO2e per year); or
- If the proposed project has the potential to contribute to a substantially lower carbon future.

No existing threshold levels for GHGs were developed at the Federal level for NEPA projects with the exception of the Council of Environmental Quality's 2014 Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts (CEQ, 2014). SMAQMD has recently established a threshold for GHG emissions; however, since the site restoration measures are an extension of the overall Folsom JFP and not a new project, the same significant criteria and thresholds that have already been established under previous phases of the project are being used to evaluate effects.

Methodology

In response to the increased construction activities and schedule changes in 2014, a General Conformity evaluation report was conducted to address air quality emissions. GHG emissions were updated separately and include the site restoration measures and the overall JFP Project emissions as a whole.

Construction emissions for the project were analyzed in detail in a technical report that is provided in the 2012 SEIS/EIR. This report includes a discussion of the methodology used for emission calculations, which included emissions data input into the 2012 SEIS/EIR Air Quality Spreadsheet. This tool is similar to SMAQMD's construction mitigation calculator, using emission factors from many different models built into the spreadsheet for each specific type of construction equipment. For GHGs, CO_2 emissions were calculated based on the brake-specific fuel consumption (BSFC) contained in OFFROAD2011, and CH_4 and N_2O emissions were calculated based on data contained in the California Climate Action Registry, 2014 Climate Registry Default Emission Factors, Released April 11, 2014 (the 2014 TCR).

For fugitive dust sources, GHG emissions originate from indirect emissions from power plants producing electricity (for rock crushing), and from the indirect emissions from the production of cement used in concrete. For emissions from indirect electricity usage, emissions were derived using the Sacramento Metropolitan Utilities District (SMUD) emission factors contained in the California Emissions Estimation Model (CalEEMod), Version 2013.2.2. Air quality calculations are summarized in Appendix B.

The Air Quality Technical Report from the 2012 SEIS/EIR was used as the basis for the update of CO_2 emissions. CO_2 emissions and CO_2 equivalents including methane (CH_4) and nitrous oxide (N_2O) were estimated from various emission models and spreadsheet calculations, depending on the source of the emission and data availability. Direct emissions from off-road construction equipment, marine engines, haul trucks, on-site pickup trucks and indirect emissions from electricity usage were calculated. Mitigation measures from the 2012 SEIS/EIR were incorporated into the models and the models were based on implementing the HRRA 440 Option rather than the HRRA 460 Option discussed in Section 2.3.1. The methods and models used are summarized below.

Off-road construction equipment. Emissions were calculated from equipment lists received from the Contractor and the Corps that were then inputted into a tool similar to SMAQMD's Construction Mitigation Calculator. For off-road vehicles and portable engines, the tool calculates emissions based on CARB's OFFROAD2011 model. CO2 emissions were calculated using brake-specific-fuel-consumption contained in the OFFROAD 2011, and CH4 and N20 emissions were calculated based on data contained in the 2014 TCR.

Haul trucks, On-site Pickup Trucks, and Worker Vehicles. Derived from CARB's EMFAC 2011, emissions were calculated based on the model year, number of trips, and round trip distances of each truck trip. Emission factors were based on the aggregated fleet (i.e. all model years) projected to be operating in the Sacramento Valley Air Basin during each calendar year. GHG emissions were then determined from EMFAC2011 and from emission factors contained in the 2014 TCR.

Indirect emissions. Indirect emissions include emissions from power plants producing electricity for use on site. These include rock crushing and producing cement in the use of concrete. Emissions were derived using SMUD emission factors contained in CalEEMod, version 2013.2.2.

No Action

Under the No Action alternative, the Corps and CVFPB would not participate in the proposed restoration activities. As a result, there would be no additional generation of GHGs from the site restoration, miscellaneous construction activities, and mitigation activities, including operation of motorized equipment and vehicles. Climate change would be influenced by emissions due to the ongoing and future construction of other Folsom JFP features, local and regional emissions from vehicles, and local commercial and industrial land uses.

Implement Proposed Action

Implementation of the site restoration measures would result in a net increase of GHG emission over a finite period, approximately twelve to eighteen months. Construction activities would contribute to CO_2 emissions from the use of on-site construction equipment and off-site worker trips. Construction emissions were estimated using various models, equipment lists and spreadsheets. Table 3.2 in Section 3.3.2 summarizes CO_2e emissions from activities undertaken from construction of the overall JFP project in 2016 and 2017. An estimated 20,834 metric tons of CO_2e emission would be emitted during 2016 for all Folsom JFP project phases and 2,049 metric tons of CO_2e emissions would be emitted during 2017. Minimal long term operation or maintenance emissions are associated with the site restoration measures (a few truck trips over approximately 3 years).

While the total amount of CO_2e emissions would likely exceed SMAQMD's recommended threshold of 1,100 metric tons of CO_2 per year in both 2016 and 2017, it is emphasized that this is only a recommended threshold. The total amount of CO_2e emissions would not exceed the USEPA 25,000 metric tons CO_2e per year reporting rule used as significance criteria for NEPA and CEQA in this document. This would be the case regardless of whether the HRRA 440 Option or the HRRA 460 Option is used, although the 460 Option would result in lower CO_2e emissions than would the 440 Option. The proposed action would thus not generate significant GHG emissions; therefore, this effect would be less than significant.

The Climate Change Scoping Plan, approved by CARB on December 12, 2008 (CARB, 2008), and updated May 15, 2014, provides an outline of actions to reduce California's GHG emissions. The scoping plan requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs to meet the GHG reduction goals (GHG reduction to 1990 levels by 2020). Furthermore, executive order (E.O.) S-3-05 establishes California's goal to reduce GHG emissions to 1990 levels by 2020 and 80% of 1990 levels by 2050, while Sacramento County's Climate Action Plan suggests about a 13-15% reduction in GHGs by 2020 to meet their reduction goal.

State and local agencies have provided guidance documents and plans on how to reduce GHG emissions in their delegated area/region and comply with their air attainment plans or general plans. Lead agencies should make a good faith effort, based on the best available science and facts to describe, calculate or estimate the amount of greenhouse gases from the project (CEQA Section 15016.4). In the case of the Folsom JFP, the USEPA 25,000 metric ton CO_2e annual reporting rule was used as the best available science to establish significance criteria.

The Scoping plan and update aim to develop California's strategy to meet AB 32's goal to reduce GHG emissions to 1990 levels by 2020, and E.O. S-3-5 goal to further reduce 1990 levels by 80% by 2050. These long term goals will be met by the Folsom JFP. The Folsom JFP emissions are short term construction emissions. The short term construction emissions (through fall 2017) are expected to be minimal when averaged over the life span of the Folsom JFP, and when contrasted to potential carbon production that would be incurred from catastrophic flooding.

In addition, implementation of BMPs would further reduce GHG emissions. Futhermore, revegetation activities at the Rossmoor 14-acre mitigation site and at the JFP restoration sites are expected to provide sequestration of CO_2. With implementation of BMPs and prevention of extra carbon from the operation of the Folsom JFP, the project would contribute to a lower carbon future. By contributing to a lower carbon future to a limited degree, the Folsom JFP is expected to remain consistent with applicable GHG reduction plans, policies, or regulations. Therefore, site restoration measures, inclusive of the overall Folsom JFP project, would be less than significant.

As mentioned, one of the potential options for disposing of rip-rap removed from the HRRA involves another agency collecting the rip-rap and transporting it off-site to use at a non-federal project (e.g. rip-rap removal Option 1). If this option is used, there would be additional short-term GHG emissions at the JFP site as well as off-site resulting from the construction equipment used to gather and transport the rip-rap. The non-federal agency would prepare a CEQA document where GHG emissions would be analyzed. If necessary, appropriate measures and/or BMPs would be provided as mitigation.

Mitigation

Section 3.3.2 discusses various BMPs and other mitigation measures that would be used for the subject project to help minimize potentially adverse air quality impacts. Many of these actions would also help reduce GHG emissions to a less-than-cumulatively considerable level. In addition to these actions, CO_2e emissions at the JFP site would be monitored by CVFPB. If Folsom JFP CO_2e emissions exceed 25,000 metric tons of CO_2e/year, then feasible mitigation measures would be required to reduce GHG emissions to less than significant.

The following mitigation measures could be implemented by the Contractor, Corps, and/or CVFPB to further reduce GHG emissions if necessary.

- Improve fuel efficiency from construction equipment by minimizing idling time either by shutting equipment off when not in use or reducing the time of idling to no more than three minutes (five minute limit is required by the state airborne toxics control measure [Title 13, Section 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).
- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- Use of a CARB approved low carbon fuel for construction equipment.
- Purchase of CO_2 offsets to mitigate GHG emissions to less than 25,000 metric tons CO_2e per year. Potential offsets could be purchased from the following sources:
  - AB 32 U.S. Forest and Urban Forest Project Resources
  - AB 32 Livestock Projects
  - AB 32 Ozone Depleting Substance Projects
  - AB 32 Urban Forest Projects
  - Other California-based Offsets
  - United States Based Offsets
  - International Offsets (e.g., clean development mechanisms)
- Funding incentive programs from SMAQMD or supplementing existing programs such as Sacramento Emergency Clean Air Transportation (SECAT) program to obtain GHG reductions.

3.3.4 Cultural Resources

This section describes the existing conditions for cultural resources, regulatory background, significance thresholds, effect analysis, and a qualitative analysis of effects.

Regulatory Setting

Federal

Prior to implementation of an undertaking with the potential to cause effects to historic properties, the project must be in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR § 800). Section 106 requires Federal agencies, or those they fund or permit, to consider the effects of their actions on the properties that may be eligible for listing or are listed in the National Register of Historic Places (NRHP). To determine whether an undertaking could affect NRHP-eligible or listed properties, cultural resources (including archeological, historical, and traditional cultural properties) must be inventoried and evaluated for listing in the NRHP. The term "historic property" specifically refers to a cultural resource that has been found eligible for listing in, or is listed in, the NRHP.

State

CEQA also requires that for public or private projects financed or approved by public agencies, the effects of the projects on historical resources and unique archeological resources must be assessed. Historical resources are defined as buildings, sites, structures, objects, or districts that have been determined to be eligible for listing in the California Register of Historical Resources. Properties listed in the NRHP are automatically eligible for listing in the California Register.

Existing Conditions

The history of Folsom as a city connects back to several broader themes that have been prevalent in California history: mining, railroads, and early farming and agriculture. The following summary is specific to the historic presence of the Native Americans, the development of Folsom Dam, and the city of Folsom and helps to place it within the history of the region and the State.

Ethnography and Prehistory

The Nisenan were a southern linguistic group of the Maidu people, sometimes referred to as the "Southern Maidu." The name "Nisenan" was a self-designation by the native groups occupying the Yuba and American River drainages (Wilson and Towne, 1978). Along with the Maidu and Konkow, the Nisenan form a subgroup of the California Penutian linguistic family. The Nisenan's range covered a significant portion of the Central Valley and reached into the Sierra Nevada Mountains.

The climate of the area occupied by the Nisenan was of mild weather with wet winters and warm, dry summers. The Nisenan often inhabited areas near rivers, some major areas of significance included sites on the American, Sacramento, Bear, Feather, and Yuba Rivers (Moratto, 1984). The basic political unit was a village community or tribelet with one primary village and a few satellite villages under one head authority. Villages within the valley were aware of one another and these varying groups of Nisenan had shared political and cultural connections. Generally, villages consisted of 15 to 20 people and as many as several hundred in one group. House structures were conical, dome shaped, and covered with earth, tule mats, grass thatch, and occasionally bark. These structures, along with the ceremonial lodges or chief's residences, which were large and circular or elliptical, would be situated on low knolls near streams and above marshy floodplains.

The Nisenan mostly settled in permanent or winter settlements and followed a yearly gathering cycle that led them away from the lowlands and into the hill country each summer. During the annual gathering cycle, the Nisenan harvested acorns, nutmeg, pine nuts, buckeyes, and sunflower seeds and often stored these for long periods. Other vegetation, such as greens, tule and cattail roots, brodiaea bulbs, manzanita berries, black berries, and California grapes, was harvested and eaten as it ripened. All valley groups, including the Nisenan, fished trout, perch, chub, sucker, hardhead, eels, Sturgeon, and Chinook salmon. Fishing methods included hook, net, harpoon, trap, weir, and poison (Moratto, 1984). The Nisenan crafted tools from stone such as obsidian and basalt to make flaked stone knives and projectile points. They also made ground stone tools such as mortars, pestles, pipes, and charms from locally available rock. Using wood, bone, and plant material, the Nisenan also made weapons, bows, arrow shafts, paddles, canoes, rafts, fishing nets, and baskets (Wilson and Towne, 1978).

Early contact occurred at the southern end of Nisenan territory as the Spanish, notably José Canizares in 1776, explored Miwok land. Although there is no record of the Nisenan removal to the Spanish missions, by the late 1820s, white settlement began to encroach on Nisenan land as American and Hudson's Bay Company trappers began to trap beaver in the Nisenan territory under peaceful occupation. In 1833, a disease, believed to be malaria, swept through the Sacramento Valley and decimated the valley Nisenan. An estimated 75 percent of the native population was killed; as a result, there were very few Nisenan left in the valley to face the settlers and gold miners who came soon after the epidemic (Hoover 1990).

History

By January 1850, the discovery of gold in Coloma in 1848 had encouraged development in the Sacramento area. Shortly after the initial discovery of gold, a group of Mormons previously employed by Sutter to work his mill were mining for riches near Folsom. At the juncture of the North and South Forks of the American River, the town of Mormon Island was established around 1848 by Samuel Brannan and a group of about 100 men. By 1855 a small town was flourishing on Mormon Island, populated with 2,500 people and complete with two stage lines, a post office, a school, four hotels, seven saloons, and more than a dozen other businesses. The completion of the Sacramento Valley Railroad to Folsom in 1856 marked the firm establishment of Folsom as a destination and began the slow decline of Mormon Island. By 1880 the mining community on Mormon Island had disappeared.

The early history of Folsom includes founders such as William Alexander Leidesdorff and Joseph Libby Folsom. Both individuals helped establish the city of Folsom, downstream of the current Folsom Dam. In 1856, Theodore Judah surveyed and laid out the city of Folsom where the 2,048 lots sold in the first day and the city began to flourish.

Mining continued to draw people to Folsom. By 1878, Folsom had a sizeable Chinese population, numbering more than 3,500. With the population continuing to rise, in 1870 Horatio Livermore devised and implemented a project to dam the American River and provide power to Folsom. Completed in 1893 with the use of convict labor from Folsom Prison, the original Folsom Dam provided local power as well as electricity to Sacramento, located 22 miles downstream. There are remnants the Old Folsom Dam just downstream of the current dam and Folsom Lake Crossing Bridge.

Mining activities took the form of dredging operations in 1900 and the population of Folsom slowly grew in the beginning decades of the new century. Eventually water resource needs for the region increased above what the Old Folsom Dam could provide. Although the town of Mormon Island disappeared decades earlier, there were a number of farmers occupying and utilizing the land at and near the juncture of the North and South Forks of the American River at the time of the construction of Folsom Dam (Folsom History Museum, 2006).

Folsom Lake and the surrounding area have had an important role in the history of water and growth in California. During the 1920s, drought, water rights, and lack of sufficient storage facilities endangered the State's agricultural future. As a result, the CVP was designed and constructed. Before the construction of Folsom Dam, there was great concern in the Sacramento region about potential flooding if both the Sacramento and American Rivers should ever crest at the same time.

Construction began on Folsom Dam in 1948 under contracts supervised by the Corps. In 1956, the dam joined the overall CVP, and USBR took possession of the dam for operation and maintenance on May 15, 1956. The addition of the dam to the CVP operations added significant reservoir size to the dams on the Trinity, American, and Stanislaus Rivers. As a component of the CVP, Folsom Dam has been a significant contributor to the water and agricultural history of California. As an individual structure, Folsom Dam has had an important effect on flood control in the Sacramento region (Bailey, 2005).

Records and Literature Search and Archeological Field Survey

A records and literature search was conducted at the North Central Information Center located at California State University, Sacramento in February 2015. The records search indicated that several areas near the area of potential effects (APE) for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103-H) and a possible prospecting pit (CA-SAC-943-H).

In 2007, the Folsom Dikes (CA-SAC-1103H), were found eligible for listing in the NRHP as contributing features to Folsom Dam and important structural components in the formation of Folsom Lake. The other potential historic property located within the Phase V APE for the proposed design refinements, CA-SAC-943H, was determined to have very limited data potential due to a lack of associated occupation or artifacts. Although CA-SAC-943H has not been formally evaluated, it has been avoided by all previous project phases and will be avoided by

Phase V of the Project as well. There are no previously recorded prehistoric archaeological sites within the APE for the proposed design refinement work.

On April 8, 2015, Corps Archaeologist, Mr. Rodney Parker and Corps Cultural Resources Specialist, Ms. Stefanie Adams performed a pedestrian survey of the APE, inspecting the ground surface in the areas of the proposed site restoration activities. The two known resources within the APE for the proposed design refinements, CA-SAC-1103-H and CA-SAC-943-H were both relocated and verified during the April survey. No other potential historic properties were identified during the survey.

The Rossmoor mitigation site has been surveyed numerous times in the past, including surveys by Patti Johnson in 1975; MacBride, R.S. in 1976; Neuenschwander and Peak in 1988; Dames & Moore, Inc. in 1995; and Jerald Johnson, Elena Nilsson and Sandra Flint in 1995. These surveys discovered two resources outside but within a ½-mile radius of the APE. Those resources include CA-SAC-155/156 and CA-SAC 308. CA-SAC-155/156 is a multi-component site consisting of a prehistoric occupation area with shell, fire-affected rock, and Debitage, and overlain with historic Japanese and Euro-American material. CA-SAC-308 is a multi-component mining district that covers approximately 70 square miles. The Rossmoor mitigation site was most recently surveyed in March of 2009 and was described as having undergone repeated and significant disturbance from agricultural activities, grading for access roads and construction of the bike trail through the American River Parkway. Historically, the site is known to have been plowed and used as an orchard and for grazing.

The Rossmoor 14-Acre Mitigation Site was resurveyed by Corps Archaeologist, Ms. Nikki Polson and Corps Cultural Resources Specialist, Ms. Stefanie Adams on April 22, 2015 and was negative for cultural resources. The two known sites that are adjacent to the APE for the mitigation site (CA-SAC-155/156 and CA-SAC-308) were relocated and verified. Aside from those resources described above, no other cultural resources were observed during the surveys.

Native American Coordination

Letters documenting the APE and describing the project activities were sent to local Tribes including the Shingle Springs Band of Miwok Indians, the United Auburn Indian Community of the Auburn Rancheria, Buena Vista Rancheria, Wilton Rancheria, the El Dorado Miwok Tribe, the Enterprise Rancheria of Maidu Indians, the Ione Band of Miwok Indians, the Nashville-El Dorado Miwok Tribe, the Colfax-Todds Valley Consolidated Tribe, the Strawberry Valley Rancheria, and the T'si-Akim Maidu on August 10, 2015. Any responses received will be included in the final SEA/EIR.

Environmental Effects

Significance Criteria

Any adverse effects on cultural resources that are listed in or eligible for listing in the NRHP 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. The criteria for the NRHP (36 CFR 60.4) are listed below:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That have yielded, or may be likely to yield, information important in prehistory or history.

In California, under CEQA, effects to a historic resource or unique archeological resource are considered to be adverse if they materially impair the significance of a historical or archeological resource.

No Action

Under the no action alternative, the Corps and CVFPB would not participate in the site restoration measures. The existing features located within the HRRA (ex. interior haul road, stockpile and disposal areas, etc.) would remain in place. Although removing the interior haul road, stockpile, and disposal areas would alter the visual setting of the area, these activities would not impact the criteria that make the Folsom Dikes eligible for listing in the NRHP. The Dike 7 Office Complex parking area slated for removal would remain in place as would the various components within the Prison Staging Area. As a result, the no action alternative would result in no adverse effects to cultural resources.

Implement Proposed Action

The proposed action would have no adverse effects on any cultural resources that are listed in or eligible for listing in the NRHP. Access to the site would be via existing access points off Folsom Lake Crossing. Haul routes, construction areas, staging areas, and disposal areas would be confined to existing roads and areas previously used by prior project phases.

CA-SAC-155/156and CA-SAC-308 are located outside of the project APE and CA-SAC-943-H, while located within the project APE, will be avoided by the proposed project. The only resource that would potentially be affected by the proposed project is CA-SAC-1103H, the Folsom Dikes. However, the Folsom Dikes have undergone extensive alteration since their construction and the proposed project would result in only minor changes to the visual setting of the Dikes (e.g. Dike 7 and Dike 8) in that areas immediately north of the Dikes would be regraded, contoured and revegetated to give them a more natural looking appearance similar to the surrounding hillsides. These changes would not affect the form or function of the Dikes in any way. As a result, and in accordance with the implementing regulations of Section 106 of the NHPA, 36 CFR § 800.5(b), No adverse effects to historic properties, the project would not cause adverse effects to historic properties. Therefore, impacts are considered less than significant. A

Memorandum for Record documenting this determination is included in Appendix C. The Corps is seeking concurrence from SHPO on this determination.

Mitigation

For the proposed action there would be no adverse effects to historic properties and no mitigation would be required. Should any potential historic property be discovered during construction, all ground-disturbing activities would cease in the area of the discovery, and the Corps would take action as required by 36 CFR 800.13(b), "discoveries without prior planning." Data recovery or other mitigation measures could be necessary to mitigate adverse effects to significant cultural resources. Implementation of mitigations measures, which could include avoidance and recordation or evaluation of a previously unidentified historic property by a qualified archeologist, would reduce these effects to less than significant.

3.3.5 Noise

This section describes the existing conditions for noise in the vicinity of the project areas, regulatory background, significance thresholds, effect analysis, and mitigation measures.

Regulatory Background

Acceptable levels of environmental noise are regulated at the local level through the general plan process and city and county noise ordinances. The proposed project is located in the vicinity of five jurisdictions: the City of Folsom, the City of Rancho Cordova, Sacramento County, Placer County, and El Dorado County. Construction noise from the project may impact noise sensitive receptors in each of these five jurisdictions.

The City of Folsom's noise standards will be applied to this project because it has the most restrictive noise ordinance. The local noise standards for the City of Rancho Cordova, Sacramento County, Placer County and El Dorado can be found in Appendix D. Compliance with the City of Folsom standards will assure compliance with all other local noise standards.

The City of Folsom's exterior noise standards (thresholds) are provided in Table 3.4 below. One should note that these standards do not apply to noise generated by construction activities being performed from 7 am to 6 pm on week days (Monday through Friday) or from 8am to 5pm on weekends (Saturday and Sunday). Construction activities performed outside of these specified times (e.g. the construction exemption hours) are subject to the standards identified in Table 3.4. The City of Folsom's noise standards also provide that, in the event that the measured ambient noise level exceeds the applicable noise level standard in any of the noise level categories, then the applicable standard will be equal to the ambient noise level.

Table 3.4. Exterior Noise Standards.

Noise Level Category	Cumulative Number of Minutes in Any 1-Hour Time Period	dBA Daytime (7am to 10 pm)	dBA Nighttime (10pm to 7am)
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Source: Folsom Municipal Code, Section 8.42.040 Exterior noise standards
dBA = sound level in decibels as measured with a sound level meter using the A-weighted (scale) at slow meter response.

Noise level measurements would be performed in accordance with the criteria set forth in the Folsom Municipal Code (reference: Folsom Municipal Code, Section 8.42.030). Among other things, these criteria require noise levels to be measured within 50 feet of any affected residence.

Existing Conditions

Sound is a disturbance in an elastic medium resulting in an audible sensation. Sound is also defined as mechanical energy transmitted from a vibrating or flowing source by longitudinal (or compression) waves through a compressible medium such as air. The term “noise” is both qualitative and quantitative, and is typically referred to as “unwanted” sound.

Most ambient environmental noise includes a mixture of noise from nearby and distant sources that creates an ebb and flow of sound, including some identifiable sources plus a relatively steady background noise in which no particular source is identifiable. A detailed discussion of noise and vibrations at the Folsom JFP project area is presented in the 2012 SEIS/EIR. The primary sources of ambient (background) noise at the Folsom JFP project area are construction equipment around Folsom Dam and vehicular traffic on area roadways is the dominant source of noise affecting noise-sensitive land uses in the project area. Occasional aircraft overflights and natural background sound sources are also part of the existing noise environment, but are not significant contributors to the overall noise levels.

The noise levels in the project areas vary, depending on the time of day, number and types of noise sources, and distance from the sources of noise. Extensive ambient noise data was obtained by URS in February 2012 to characterize existing noise conditions at the Folsom JFP project area (Corps, 2012). The noise data can be found in Appendix D. Based on this report; levels of noise during the day are highest along city streets during commute hours because of the increased number of motor vehicles. Typical noise levels in decibels (dB) range from 32 to 50 dB’s in quiet residential areas to 60 to 75 dB’s on busy streets. Noise-sensitive receptors near the Folsom JFP project area include residents.

The Rossmoor 14-Acre Mitigation Site is located within the Rossmoor Bar Park in Rancho Cordova along the American River Parkway. The primary sources of ambient noise include motor vehicles, human activity, and natural sounds.

Environmental Effects

Significance Criteria

Effects of noise and vibration would be considered significant if the proposed project would result in any of the following:

- Substantial temporary, periodical, or permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- City of Folsom assessment standards are exceeded outside of the City's exempt hours and permitted thresholds; or
- Expose people to or generate ground-borne vibration or ground-borne noise levels that exceed California Department of Transportation's (Caltrans) recommended standards.

Short-term construction noise impacts are considered significant if construction generated noise levels exceed the applicable exterior noise standards of the City of Folsom (see Table 3.4) at times that are outside noise exempt hours (e.g. at times other than 7:00 AM to 6:00 PM on weekdays, and 8:00 AM to 5:00 PM on weekends) at nearby noise sensitive land uses.

Short and long-term vibration impacts would be significant if the project construction would expose sensitive receptors to or would generate vibration levels that exceed Caltrans recommended standard of 0.2 inch per second (in/sec) peak particle velocity (PPV) or the Federal Transit Administration's (FTA's) maximum acceptable vibration standard of 80 vibration decibels (VdB) at nearby sensitive land uses.

Methodology

Construction of the site restoration measures at the Folsom JFP site would require the use of heavy equipment that would temporarily increase noise and/or ground borne vibration levels at properties near the work sites. Revegetation of the restoration sites and the creation of the Rossmoor 14-Acre mitigation site would require comparatively small equipment including a small auger and a water truck. The site restoration measures are short-term projects and would not require substantial long-term maintenance. Therefore, the analysis of noise impacts focused primarily on noise generation during construction of each design refinement.

Construction-related noise impacts were calculated using the Federal Transit Noise and Vibration Impact Assessment methodology (Federal Transit Administration, 2006). Project activities that were assessed include: construction activities and revegetation activities slated for the HRRA, Dike 7 Office Complex parking area, and the Prison Staging Area; the establishment of an oak woodland mitigation site (the Rossmoor 14-Acre Mitigation Site). Construction noise impacts for each design refinement were evaluated based on overlapping activities. Table 3.5 presents typical noise levels for various types of construction equipment.

Table 3.5. Typical Noise Emission Levels for Construction Equipment.

Equipment	Typical Noise Level (dBA) 50 feet from Source
Auger, powered	84
Backhoe	80
Compactor	82
Crane	83
Dozer	85
Excavator	85
Generator	81
Grader	85
Loader	80
Roller	74
Scraper	84
Truck	74-88

[1]Extracted from table in U.S. Army Garrison-Hawaii, 2004.
Source: Federal Transit Administration 2006, Federal Highway Administration 2006.

For each design refinement, noise generated by the peak construction phase was estimated using the FTA sound propagation method for construction noise sources (Federal Transit Administration, 2006). Noise levels were calculated assuming continuous operation of the three loudest pieces of equipment. In reality, construction activities would be intermittent, so actual noise levels could be somewhat lower than the estimated values. Noise from construction activity generally attenuates (decreases) at a rate of 6.0 to 7.5 dBA per doubling of distance from the source. Any shielding effects that may result from local barriers such as topography, fences, vegetation, etc., are not incorporated, so the calculated noise levels represent a conservative or "worst-case" estimation.

Haul traffic would be routed on main arterial roadways and was evaluated in the 2010 SEA/EIR and the 2012 SEIS/EIR. These analyses concluded a temporary incremental increase in traffic noise during the daytime (7 a.m. to 6 p.m.) due to the transportation of material and equipment associated with project activities would range from less than one dBA to less than three dBA. Small increases less than three dBA are typically not perceived and therefore, the project would not contribute to an increase in traffic noise levels.

Similar to noise, vibration also attenuates with increasing distance, as a complex function of energy transfer into the ground and the soil conditions through which the vibration is transmitted. Calculations of vibration attenuation followed standard FTA methods (Federal Transit Administration, 2006).

No Action

Under the No Action alternative, the Corps and CVFPB would not participate in the site restoration measures. As a result, there would be no additional increase in noise or vibration from construction activities associated with the site restoration measures, including use of motorized equipment and haul trucks. However, if the site restoration measures are not implemented, there would be periodic noise from maintenance activities to repair and/or maintain the interior haul road, Folsom Point Bridge, and the stockpile and disposal areas within the HRRA. The types and levels of noise and vibration would continue to be influenced by future construction of Folsom Dam improvements, roadway traffic, human activities, and other sources such as wind. Similarly, if the proposed restoration activities at the Dike 7 Office Complex parking area and the proposed restoration activities at the Prison Staging Area were not implemented, there would still be periodic noise from sources such as vehicles and periodic maintenance work. Noise-sensitive receptors would be expected to be the same as identified under existing conditions.

None of the activities proposed within the Rossmoor 14-Acre mitigation site would be performed under the No Action alternative. This area would be subject to the same noise conditions as exist currently under this scenario and there would be no increase in noise or vibration on the site.

Implement Proposed Action

Potential noise would occur from the proposed JFP site restoration activities and from the establishment of the Rossmoor 14-acre mitigation site. Noise was assessed for traffic and construction equipment operation on sensitive receptors, including local residences and users of the Folsom Point State Recreation Area.

Construction noise and corresponding noise levels in the project area would greatly fluctuate depending on the construction actions, equipment type, number, traffic, and duration of noise involved. The effect of construction noise on nearby receptors depends upon the noise level generated, distance from noise-sensitive receptors, frequency, type, and duration of noise produced, and the ambient noise levels at the receptors.

Restoration Activities within the Haul Road Restoration Area (HRRA), the Dike 7 Office Complex Parking Area, and the Prison Staging Area. These activities would occur concurrently and the most intensive actions, as regards noise, would involve earth moving work. Earth moving equipment including dozer, loader, excavator, compactor, haul trucks, and a water truck would be used to perform much of the necessary earthwork. The loudest construction equipment would consist of a dozer, excavator and a compactor operating simultaneously. These estimates are considered the worst-case scenario for noise levels. Based on these assumptions and the typical noise emission levels listed in Table 3.5, the combined equipment noise level for the earthwork would be 90dB at 50 feet. The construction equipment noise levels decrease at a rate of 6 dBA per doubling of the distance. At 400 feet, the combined construction noise would be less than current ambient noise levels. Intervening structures and topography can act as noise barriers and reduce noise levels further.

Noise sensitive land uses closest to the interior haul road and the Folsom Point Access Bridge within the HRRA are approximately 450 feet away. Noise sensitive land uses closest to the stockpile, disposal, and staging areas to be restored within the HRRA are approximately 45 feet away (south of MIAD West staging area). Noise sensitive land uses closest to the proposed disposal site within the MIAD East disposal area, should this be used as a disposal site for

HRRA restoration activities, are approximately 260 feet away. If the OILD site is used as a disposal site for HRRA restoration activities, the closest noise sensitive land uses are roughly 1,900 feet away.

Should the option whereby rip-rap removed from the HRRA is collected by a non-federal agency and transported off-site is used (e.g. rip-rap removal Option 1), noise levels in the HRRA during project construction would increase due to the presence of the agency's motorized equipment. Collection and transport activities by the other agency while on the JFP site would not be allowed except during hours exempt from the City of Folsom exterior noise standards. The agency contracting the rip-rap collection and transport services would also be required to take any other measures deemed necessary to ensure the additional noise produced by these on-site activities do not result in significant noise impacts.

As previously discussed, the majority of construction necessary for restoration of the HRRA, Dike 7 Office Complex parking area, and the Prison Staging Area would be performed during hours exempt from the City of Folsom exterior noise standards (e.g. from 7:00am to 6:00pm on weekdays, and from 8:00am to 5:00pm on weekends). If the construction contractor needs to perform construction activities within the HRRA or the MIAD East disposal area outside of these "exempt" hours and such work is first approved by USACE, the contractor would be required to perform continuous noise level monitoring at certain locations during the time work is performed outside of the exempt hours. The noise level monitoring locations would include: (1) along the southern boundary of the MIAD West Area; (2) along the southern and eastern boundaries of the Dike 7 Area; and; (3) along the southern boundary of the MIAD East Disposal Area, but only if this area is used for disposal purposes. If the monitoring indicates the applicable City of Folsom exterior noise standards are being violated, USACE would order the contractor to cease work immediately. Work would not be allowed to resume until measures to mitigate noise levels are developed and the contractor demonstrates that continued work will not exceed the aforementioned noise standards.

Most sensitive noise receptors near the HRRA would not be exposed to construction noise that exceeds current ambient noise levels. Due to the short-term nature of construction and since the majority of work would occur within the City of Folsom exempt construction noise hours, the noise impacts would be less than significant. If there are instances when construction activities would be conducted at times not subject to the exempt construction noise hours, the noise monitoring described above, in combination with the actions taken to ensure noise levels do not exceed applicable City of Folsom exterior noise standards, would render noise impacts less than significant during such instances.

Noise sensitive receptors closest to the Dike 7 Office Complex parking area to be restored are approximately 800 feet away from the site, while those closest to the Prison Staging Area are roughly 460 feet away from the PSA. As discussed above, the combined construction noise at either of these restoration sites would be less than current ambient noise levels. Thus, the noise impacts produced during restoration work at these sites would be less than significant. Noise generated during the installation of the proposed guardrail segments would be less than ambient noise levels generated by traffic on Folsom Lake Crossing and there are no noise sensitive land uses in the immediate vicinity of the future guardrails; hence construction noise would be less than significant.

While the proposed restoration activities would result in construction noise levels considered significant, various mitigation measures would be implemented to help reduce noise effects from general construction activities. These measures are discussed in the mitigation section below.

Rossmoor 14-Acre Mitigation Site. Noise sensitive land uses closest to the Rossmoor 14-Acre mitigation site are situated approximately 750 feet south of this proposed mitigation area if not further away. At that distance, construction noise (land preparation, installation of trees and shrubs, installation of deer fence) would result in less volume than the surrounding ambient noise levels. Construction work would be performed between the hours of 7:00am and 6:00pm on weekdays, and between the hours of 8:00am and 5:00pm on Saturdays. Due to the short-term nature of the "construction" phase of this mitigation project and considering ambient noise levels at the nearest sensitive receptors would be greater than noise generated construction activities, noise is expected to be a less-than-significant impact.

Vibration

In addition to generating noise, traffic and heavy construction equipment can generate ground borne vibration. On-site construction equipment used in JFP restoration sites could include excavators, backhoes, scrapers, rollers, graders, and different types of trucks. Intense generation of ground vibration would be associated with trucks that generate levels of 0.076 in/sec PPV and 86 VdB at a distance of 25 ft. These levels would attenuate to 0.027 in/sec PPV and 77 VdB at a distance of 50 ft. Vibration sensitive receptors are beyond 50 feet of the project area. Since the proposed action is short-term and temporary, and would not exceed Caltrans' or FTA's recommended standards, impacts related to vibrations would be less-than- significant.

Mitigation

The following measures would be implemented by the contractor during construction activities in order to further reduce any potential noise effects:

- Appropriate level of sound attenuation would be used during construction to meet local ordinances. Potential sound attenuation measures that could be considered include, but are not limited to, temporary sound barriers near positioned between the sources of construction noise and noise-sensitive receptors, as appropriate.
- Residents and businesses near the project area would be provided with advance notices of project activities, schedule, anticipated traffic, and potential noise issues. The advance notice would describe the potential noise disruption and the steps that would be taken to minimize the noise.
- Heavy truck deliveries would be scheduled during exempt working hours and, whenever possible, avoid multiple deliveries during a single hour, especially during non-exempt hours. Haul trucks operating near noise sensitive receptor sites would be spaced apart to avoid noise effects from simultaneous operation.

- Engine brake (jake brake) use within city limits would be prohibited. Many noise complaints arise from heavy truck use of engine brakes to slow the truck down. Use of this type of braking can be avoided by proper speed control.
- The contractor would properly maintain and tune engines of all equipment and maintain properly functioning mufflers on all internal combustion engines to minimize noise levels.
- A standard 24-hour hotline for noise complaints would be maintained.
- If the contractor is authorized to conduct construction activities within the HRRA and/or within the MIAD East disposal site during hours that are not exempt from the City of Folsom exterior noise standards, the contractor would perform continuous noise level monitoring while any construction is occurring during these non-exempt hours. This monitoring would be performed along the southern boundary of the MIAD West Area, along the southern and eastern boundaries of the Dike 7 Area, and along the southern boundary of the MIAD East Disposal Area, assuming the MIAD East Area is used as a disposal site. USACE would require the contractor to cease construction work during the non-exempt work hours if monitoring shows the applicable City of Folsom exterior noise standards are violated. Such work would only be allowed to resume if the contractor takes steps to ensure further work will not exceed the noise standards.

3.3.6 Recreation

This section describes the existing conditions for recreation in the vicinity of the project, including regulatory background, significance thresholds, effect analysis, and mitigation measures.

Regulatory Setting

Public recreation facilities in the project vicinity are provided by the State, County and area cities, consistent with their land use planning policies.

Existing Conditions

A detailed discussion of recreation at the Folsom JFP project area is presented in the 2012 SEIS/EIR. The Folsom JFP project area is located within the Folsom Lake State Recreation Area (FLSRA). This area includes Folsom Lake and the surrounding landscapes that provide a variety of land and water-based activities such as camping, hiking, marinas, bicycling, and boating. Additionally, on the north side of Folsom Lake Crossing there is a Class I bike path that runs parallel to the roadway and on the south side of this road there is a Class II bike lane. On the north side of Folsom Lake Crossing, there is also a Class I Bike Trail approximately 4 feet north of the Class II trail. The Rossmoor 14-acre mitigation site is located within the Rossmoor Bar Park in Rancho Cordova along the American River Parkway. The American River Bike Trail (Jedediah Smith Memorial Trail) runs though Rossmoor Bar Park. Recreational activities at Rossmoor Bar Park include pedestrian trails to the river, fishing, and raft launching areas. The park is open year-round from sunrise to sunset.

Environmental Effects

Significance Criteria

Effects on recreation would be considered significant if the proposed project would result in any of the following:

- Substantially restrict or reduce the availability or quality of existing recreational facilities and opportunities in the project vicinity;

- Implement operational or construction-related activities that would cause a substantial long-term disruption of any institutionally recognized recreational activities; or

- Displace recreation from sites due to construction such that it would substantially contribute to overcrowding or exceed the facility capacity at other recreation sites (including sites within the FLSRA).

Methodology

The FLSRA and Rossmoor Bar Park supports a diverse range of outdoor recreation activities and opportunities. Impacts on recreation are evaluated qualitatively based on temporary and permanent changes that would occur with the implementation of the project. In making a determination of the affects upon recreation, consideration was given to:

- Closure or reduced public availability to recreation sites and access points;
- Truck traffic and construction activity interference with recreation activities and access points;
- A need for additional facilities or expansion of existing recreation facilities as a result of construction activity.

Potential receptors in the area include staff, day use recreationists, campers, boaters, and other water based recreationists. All recreational groups are taken into account during analysis of impacts.

No Action

Under the No Action alternative, the Corps and CVFPB would not participate in the site restoration measures; therefore, the project would not disturb existing recreational opportunities. The conditions at Rossmoor Bar Park would remain similar to existing conditions as would conditions along Folsom Lake Crossing near the JFP. The conditions at FLSRA would also remain similar to existing conditions. The public would have continued use of the FLSRA without any closures or access restrictions. However, the Folsom Point Bridge was built as a temporary bridge with a 10-year life span. If the site restoration measures do not occur, the Folsom Point Bridge would need to be replaced in the future and/or continually maintained which could cause temporary closures and/or access restrictions to the Folsom Point boat launch and Folsom Point Recreation Area (day-use area) within the FLSRA.

Implement Proposed Action

Potential recreational effects could occur within the Folsom Lake State Recreation Area, within the Rossmoor Bar Park, a County park in the city of Rancho Cordova, and within a portion of the Class I bike path that runs along the north side of Folsom Lake Crossing.

Folsom Lake State Recreation Area. The entrance to the Folsom Point boat launch area and the Folsom Point day-use area, both components of the FLSRA, is located near the Dike 8 Area. The primary access route to these areas is Folsom Point Road, as shown in Figures 2, 3, and 4. This route presently includes a temporary bridge (Folsom Point Bridge) that allows traffic on the roadway to pass over the existing haul road within the HRRA. Construction activities proposed within the HRRA could temporarily affect the efficiency of public access to the aforementioned state recreation areas.

As part of the proposed topographic restoration activities within the HRRA, the temporary Folsom Point Bridge would be removed, a paved roadway segment would be built in the former bridge location, and a temporary bypass road would be built to maintain public access to Folsom Point during the construction process as described below.

Once appropriate finished grades are established, a temporary public bypass road would be constructed, as shown in Figure 4. A temporary ranger station (recreation area entry station) would also be built near the north end of the bypass road (see Figure 4). Once the temporary bypass road is completed, the bridge would be demolished and removed from the site. The existing haul road cut beneath the bridge would be backfilled such that the finished grade would match existing grades on either side of the former bridge. In the area where the bridge is removed, a replacement road segment would be constructed on the newly established ground surface. This permanent road segment would merge with and become part of Folsom Point Road. Upon completion of this work, Folsom Point Road would once again be the main public access route to and from Folsom Point. The temporary bypass road would then be removed as would be the temporary ranger station.

The public would be notified prior to construction of the temporary bypass road, removal of the existing bridge, and construction of the new (replacement) Folsom Point Road segment. During construction activities, appropriate signage would be installed and traffic safety measures would be employed (ex. warning signs, directional signs, information signs, traffic cones, traffic barricades, flaggers, etc.).

Construction activities within the HRRA would begin in the spring of 2016, and would be completed in approximately 7 to 8 months. Construction of the temporary bypass road and the subsequent removal of Folsom Point Bridge and restoration of Folsom Point Road would be conducted during a period that would minimize, to the extent practicable, potential conflicts between construction work and users of the Folsom Point boat launch and Folsom Point recreation area. These construction activities would be short-term and temporary. Since the Folsom Point boat launch and Folsom Point recreation area would remain open without limiting any recreational activities and/or areas, recreationists would not be displaced. The proposed project would not contribute to overcrowding or exceed the facility capacity at other recreation sites. Therefore, this effect is considered less-than-significant.

The HRRA 440 Option would leave a band of rip-rap along Folsom Lake's shoreline adjacent to the far west end of the HRRA (see Figure 2). This band would be approximately 1,515 feet long and would cover roughly 1.7 acres. If the 460 Option is used instead of the 440 Option, two bands of rip-rap totaling approximately 2,245 feet long and covering a total of about 2.3 acres would be remain along the lake's shoreline adjacent to much of the western half of the HRRA (see Figure 3). Under either option, these remnant rip-rap bands would not be visible to vessels (boats, jet skis, etc.) traversing the lake or to swimmers in the lake when it is at its ordinary high water elevation since the bands would be completely submerged. The rip-rap bands would gradually be exposed as the lake's water level falls, but the full width (north/south direction) of these bands would not be visible until the water level reaches about elevation 440 feet NAVD88.

The presence of these shoreline rip-rap bands could pose a safety hazard to recreational vessels (boats, jet skis, etc.) and swimmers when the bands are completely submerged due to their lack of visibility. When the bands are partially exposed, they could still present a safety hazard since unwary boaters and swimmers may underestimate the extent of the underwater rip-rap.

To help reduce the potential safety hazards posed by the shoreline rip-rap bands, hazard marker buoys (danger buoys) would be installed in Folsom Lake parallel to the remnant bands. These orange and white buoys would be installed by the Phase V construction contractor and would be marked with the word "Rocks" or similar text within each buoy's warning triangle. Folsom Lake and the HRRA fall within the boundaries of the Folsom State Recreation Area (FSRA), which is managed by the California Department of Parks and Recreation (State Parks). State Parks is responsible for ensuring public safety within the FSRA, with a mission to safeguard both FSRA visitors and resources. It is noted that there are existing FSRA rules that would also help minimize potential safety hazards. These include: a boating speed limit of 5 mph within 200 feet of the lake shoreline; prohibition of diving or jumping into the lake from its shoreline, and; once the lake's water level falls below elevation 400 feet, the maximum vessel (boating) speed is reduced to 5 mph throughout the entire lake (Preston, 2015). The installation of hazard buoys combined with the existing FSRA safety rules mentioned above would render the safety hazard posed by the remaining bands of rip-rap to a less than significant effect of the proposed project. Upon project completion, the Corps would also provide State Parks with drawings showing the location of the remnant rip-rap bands so that State Parks is aware of these hazards and can take any additional measures this agency feels may be needed help ensure public safety.

Certain lake shoreline areas adjacent to the northern boundary of the HRRA could be used for various public recreation purposes following completion of the proposed restoration activities. Examples include swimming, picnicking, fishing, and temporary landing spots for boats and other watercraft. The presence of the remnant rip-rap bands discussed above would somewhat restrict and reduce these recreational opportunities. These effects would be limited to approximately 1,515 feet of lake shoreline if the 440 Option is used, whereas they would apply to approximately 2,245 feet of lake shoreline if the 460 Option is used. Although this would adversely affect recreational opportunities, the long-term effects are considered less than significant since they would apply to less than 0.4 percent of Folsom Lake's total shoreline length under the 440 Option and would apply to less than 0.6 percent of the total shoreline length under the 460 Option. The presence of these rip-rap bands may displace the types of recreation mentioned from affected HRRA shoreline areas. There are ample areas for such recreational uses at nearby Folsom Point and any displacement of recreational users from the affected HRRA shoreline areas would not substantially contribute to overcrowding at Folsom Point or other portions of the FSRA. Hence, such effects would be less than significant.

Recreational fishing access within and immediately adjacent to the OILD site would be restricted if this site is used for the disposal of rip-rap removed from the HRRA. The affected area would not be accessible to any vessels other than construction vessels until disposal activities are completed. Phase IV disposal activities at the OILD site would already prevent access to this area; however, use of the site for rip-rap disposal would extend the duration of inaccessibility by a few months. This impact to recreational opportunities would be short-term and temporary. The affected area would encompass approximately 0.2 percent of Folsom Lake's total surface area at its ordinary high water elevation. Given the temporary nature of the access restriction and the limited extent of recreational lake access affected, this effect is considered less-than-significant.

If the OILD site is used for the disposal of rip-rap, those portions of the site where rip-rap is placed could also pose a limited safety hazard to vessels traversing the area following completion of the Phase V construction activities. Since the rip-rap disposed in this area would have a crest elevation of approximately 400 feet NAVD88 and would extend to the existing lake bottom, the rip-rap would not be visible until the water level in Folsom Lake is near elevation 400 feet NAVD88. As the lake's water level falls below this elevation, the rip-rap areas would gradually be exposed although the full extent of the rip-rap would likely never be visible in certain areas except when the lake is exceptionally low. When the rip-rap is slightly submerged, boaters unfamiliar with the presence of the rip-rap could run aground when traversing the OILD site. Similarly when the rip-rap is only slightly exposed above the water surface, unwary boaters could also collide with the rip-rap when travelling through the OILD site.

To help reduce the potential safety hazard posed by rip-rap disposal within the OILD site, hazard buoys (danger buoys) would be installed around those areas where rip-rap is present. Similar to hazard buoys that would be installed along a portion of the lake shoreline, these orange and white buoys would be installed by the Phase V construction contractor and would be marked with the word "Rocks" or similar text within each buoy's warning triangle. As previously mentioned, public use of Folsom Lake is already subject to safety rules enforced by State Parks. The safety risks generated by any disposal of the rip-rap within the OILD site would be less than significant due to the proposed installation of hazard buoys augmented by existing lake safety measures dictated by State Parks. The Corps would provide State Parks with a drawing showing the locations of rip-rap disposal at the OILD site upon completion of the Phase V project. It is noted, however, that no hazard buoys would be installed within the OILD site and a drawing would not be provided to State Parks if the Phase V project does not require disposal of rip-rap within the OILD site.

Guardrails along Folsom Lake Crossing. The overall project would include installing five new segments of guardrail totaling approximately 5,300 linear feet. These guardrails would be constructed on the north side of Folsom Lake Crossing, beginning at the eastern end of the bridge over the American River and continuing eastward as shown in Figure 4. Most of the guardrail segments would be located in the approximately 4-foot wide disturbed area situated between the northern curb or northern paved shoulder of Folsom Lake Crossing and the southern edge of the paved bike path located north of the roadway.

Construction of the new guardrail segments would occur during the same period as for the rest of JFP Phase V restoration construction activities, e.g. early spring 2016 through the fall of 2017. Once guardrail construction begins, it is anticipated that all the work would be completed within 1 to 2 weeks. The west-bound traffic lane (northern travel lane) of Folsom Lake Crossing and the southern "lane" (east-bound lane) of the adjacent bike trail near the guardrail construction zone would need to be temporarily closed during guardrail installation. Temporary lane closures would occur during daily working hours only. Traffic control features, such as traffic cones and safety barricades, would be set up in the morning before work starts and removed every evening after work is completed. Only one work zone (lane closure zone) would be set up at a time. The length of each work zone would vary depending on the daily anticipated production length, but would be at least 250 feet long. Portable message signs would be set up by the construction contractor along the roadway to inform the public of these moving lane closures. Flaggers would be positioned at each end of the work zone, primarily to observe and guide traffic on the bike path and to assist vehicles entering or leaving the work zone.

Guardrail construction would temporarily limit recreational use of the bike path to one lane rather than two lanes, but would permanently improve the safety of this bike path by helping protect path users from vehicles that might veer off the adjacent roadway. Because the proposed project would only temporarily interfere with recreational use of the bike path and traffic safety measures would ensure flow and safety of traffic and recreationists, the effect of the project is expected to be less-than-significant.

Rossmoor 14-Acre Mitigation Site. Recreation at Rossmoor Bar Park would mostly be unaffected by the establishment of the oak woodland mitigation site referred to as the Rossmoor 14-acre Mitigation Site.

Workers would enter the park on Rossmoor Drive and use an established maintenance road and a short new maintenance road to access the mitigation site. Workers and their vehicles would be located in the planting area and would not block Rossmoor Drive or reduce public access. Truck trips delivering plants to the site would be minimal and would not interfere with recreation activities or access.

An eight foot high deer exclusion fence would be installed around the perimeter of the mitigation site to prevent deer from grazing of the new vegetation. The fence would be removed after the vegetation has become fully established in approximately four to five years. While this fence would temporarily keep park visitors from using the 14-acre mitigation site, it is noted that this site (an open field without recreational facilities) currently is seldom used by visitors.

Instead, most park visitors bypass the site to access the Jedediah Smith Memorial Trail, a parking area, a boat/raft launch area, and the American River located north of the proposed mitigation site. Use of these areas would not be affected by plantings proposed within the mitigation site or by installation of the deer fence around this site.

Since the main use areas are located far away from the mitigation site and the proposed project would not limit recreational activities, the establishment of the mitigation site and fencing would not displace recreationists. The proposed project would not contribute to overcrowding or exceed the facility capacity at other recreation sites. The proposed project would not restrict or reduce the availability or quality of existing recreational facilities and opportunities. Construction activities (e.g. planting of trees and shrubs, installation of irrigation system and deer fence) necessary at the Rossmoor 14-acre Mitigation Site would be short-term and temporary, and this work would not appreciably affect recreational activities at Rossmoor Bark Park. Given these points, the project's effect on recreational resources would be less-than-significant.

Mitigation

The following measures would be taken to keep the public informed of the project and reduce adverse effects on recreational activities.

- To ensure public safety, warning signs and signs restricting access would be posted by the construction contractor before and during construction, as necessary.
- Public outreach would be conducted by the Corps through mailings, posting signs, coordination with interested groups, and meetings, if necessary, in order to provide information regarding changes to recreational access in and around Folsom Point.
- Appropriate traffic safety measures would be employed by the construction contractor during installation of the guardrails and during HRRA construction activities.
- The construction contractor would install hazard buoys in Folsom Lake parallel to the rip-rap bands that would be left within the lake adjacent to the northern side of the HRRA.
- If the OILD site is used for rip-rap disposal, the construction contractor would install hazard buoys around areas containing disposed rip-rap.

With the implementation of these measures, any effects to recreation would be considered less-than-significant.

3.3.7 Special Status Species

This section describes the existing conditions of the special status species in the vicinity of the project areas, regulatory background, significance thresholds, and evaluates the effects of the proposed project on special status species and their habitats in the project areas, and mitigation measures.

Regulatory Background

Certain special status species and their habitats are protected by Federal, State, or local laws and agency regulations. The Federal Endangered Species Act (ESA) of 1973 (50 CFR 17) provides legal protection for plant and animal species in danger of extinction. This act is administered by USFWS and NMFS. The California Endangered Species Act (CESA) of 1977 parallels the Federal ESA and is administered by CDFW. Other special status species lack legal protection, but have been characterized as "sensitive" based on policies and expertise of agencies or private organizations, or policies adopted by local government. Special-status species are those that meet any of the following criteria:

- Listed or candidate for listing under the Federal ESA (50 CFR 17);
- Listed or candidate for listing under CESA;
- Nesting bird species and active nests of birds listed under the Migratory Bird Treaty Act;
- Species listed in the Bald and Golden Eagle Protection Act;
- Fully protected or protected species under State CDFW code;
- Wildlife species of special concern listed by the CDFW;
- Plant species listed as Rare under the California Native Plant Protection Act;
- Plant species listed by the California Native Plant Society;
- Species protected by local ordinances such as the Sacramento County Tree Preservation and Protection Ordinance, Chapter 19.12, the City of Sacramento Protection of Trees Ordinance, Chapter 12.56, and/or the City of Sacramento Heritage Tree Ordinance, Chapter 12.64;
- Species protected by goals and policies of local plans such as the American River Parkway Plan, which includes anadromous and resident fishes, as well as migratory and resident wildlife.
- Essential Fish Habitat listed under the Magnuson-Stevens Act.

Existing Conditions

Site restoration measures would occur at various locations within the Folsom JFP project area. Tree/habitat mitigation activities would occur within the Rossmoor Bar Park, a county park in the city of Rancho Cordova.

A detailed discussion of special status species at the Folsom JFP project area is presented in the 2012 SEIS/EIR. A listing of federally listed endangered, threatened, proposed, and candidate species (listed species) and critical habitat was obtained for the Folsom, Clarksville, and Carmichael 7.5-minute USGS quadrangles on February 24, 2015 via the USFWS website. In addition, a search of the California Natural Diversity Database (CNDDB) conducted on February 24, 2015 indicated no state or federal listed species were reported within the project boundaries. However, the CNDDB report showed a Swainson's hawk (*Buteo swainsoni*) nest within 1.5

miles of the Folsom JFP project boundary and another such nest situated within a quarter mile of the proposed Rossmoor 14-acre mitigation site project boundary. The CNDDB also reported a white-tailed kite (*Elanus leucurus*) nest within a quarter mile of the Rossmoor 14-acre mitigation site project boundary. Biological field surveys conducted by USBR identified coopers hawk (*Accipiter cooperii*) within four miles of the Folsom JFP project area (USBR, 2009). A compiled list from both the USFWS and CNDDB searches is presented in Appendix F.

Special-status species that were not identified as occurring or having habitat in the project area are not discussed further in this document. The following federal and state listed terrestrial special-status species were identified as having the potential to occur in the vicinity of the project area and be impacted by construction activities:

- Swainson's Hawk (State Threatened);
- Coopers Hawk (State Species of Concern);
- White-tailed Kite (CDFW Fully Protected);
- Valley elderberry longhorn beetle (Federal Threatened) and Critical Habitat.
- Various bird species covered under the Migratory Bird Treaty Act due to nesting activities.

Elderberry shrubs (*Sambucus* sp.) were also identified within the Folsom JFP project area. Although the site is not designated as critical habitat for the valley elderberry longhorn beetle (VELB) (*Desmoceros californicus dimorphus*), the shrubs are the sole host plant for the beetle. An elderberry survey was conducted on February 27, 2015.

Swainson's hawk

Swainson's hawk (*Buteo swainsoni*) is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and the Mojave Desert. Swainson's hawk breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley and forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures. Swainson's hawks breed in California and over winter in Mexico and South America. Swainson's hawks usually arrive in the Central Valley between March 1 and April 1, and migrate south between September and October. Swainson's hawks nest usually occur in trees near the edges of riparian stands, in lone trees or groves of trees in agricultural fields, and in mature roadside trees. Valley oak, Fremont cottonwood, walnut, and large willow with an average height of about 58 feet, and ranging from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Suitable foraging areas for Swainson's hawk include native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Swainson's hawks primarily feed on voles; however, they will feed on a variety of prey including small mammals, birds, and insects.

Construction of the proposed project is scheduled to begin in spring 2016. Additional raptor surveys will be conducted in early spring 2016 to determine if Swainson's hawk are present and nesting. If nests are discovered within one-half mile of the project area, consultation will be initiated with the California Department of Fish and Wildlife (CDFW).

Cooper's hawk

Cooper's hawk (*Accipiter cooperii*) nest in deciduous trees or conifers in crotches or cavities that are usually 20 to 50 feet off the ground. The nest is a stick platform lined with bark. Nests are usually placed in second growth coniferous stands or in the deciduous riparian areas that are closest to streams. Cooper's hawks are recorded as occurring in several locations along the American River and the riparian habitat in the vicinity of the project area provides suitable nesting habitat for this species.

White-tailed Kite

White-tailed kite (*Elanus leucurus*) is a common to uncommon, yearlong resident in coastal and valley lowlands and is rarely found away from agricultural areas. However, it does inhabit herbaceous and open stages of most habitats, mostly in cismontane California. The main prey of white-tailed kite is voles and other small, diurnal mammals, but it occasionally preys on birds, insects, reptiles, and amphibians. White-tailed kite forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Nests are made of loosely piled sticks and twigs and lined with grass, straw, or rootlets and placed near the top of a dense oak, willow, or other tree stand; usually 6-20 m (20-100 ft) above ground. Nests are located near open foraging areas in lowland grasslands, agricultural areas, wetlands, oak-woodland and savannah habitats, and riparian areas associated with open areas. White-tailed kite are recorded as occurring at several locations along the American River and the riparian habitat in the vicinity of the Rossmoor Bar mitigation project area provides suitable nesting habitat for this species.

Valley Elderberry Longhorn Beetle

The VELB is endemic to the riparian habitats in the Sacramento and San Joaquin Valleys where it resides on elderberry plants. The beetle's current distribution is patchy throughout the remaining riparian forests of the Central Valley from Redding to Bakersfield (USFWS, 1984). The beetle is a pith-boring species that depends on elderberry plants during its entire life cycle. The beetle tends to be located in population clusters that are not evenly distributed across the Central Valley (Barr, 1991).

A total of 11 elderberry shrubs were identified within or immediately adjacent to the proposed HRRA during biological surveys conducted February 27, 2015. As a part of their recovery plan, the USFWS has concluded that two areas in Sacramento County should be designated Critical Habitat for VELB based on the densest known population of the beetle. The Folsom JFP project area is not located within critical habitat. No Elderberry shrubs are located within 100 feet of the proposed Rossmoor 14-acre mitigation site.

<u>Environmental Effects</u>

Significance Criteria

Effects on special status species would be considered significant if the proposed project would result in any of the following:

- Direct or indirect reduction in the growth, survival, or reproductive success of species listed or proposed for listing as threatened or endangered under the Federal or State Endangered Species Acts;

- Direct mortality, substantial 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, or species of special concern or regionally important commercial or game species; or

- Have an adverse effect on a species' designated critical habitat.

No Action

Under the No Action alternative, the Corps and CVFPB would not participate in the Folsom JFP site restoration measures, would not install the proposed guardrails, and would not establish the Rossmoor 14-acre mitigation site. Therefore, the project would not affect special status species or critical habitat. The types of special status species and their associated habitats would remain the same as current conditions.

Implement Proposed Action

Implementation of the Folsom JFP site restoration measures and the Rossmoor 14-Acre mitigation site (oak woodland restoration/mitigation) could result in direct and indirect impacts to Swainson's hawk, Cooper's hawk, and white-tailed kite at both project areas. The project could directly affect the habitat (elderberry shrubs) of the federally-listed valley elderberry longhorn beetle at the Folsom JFP project area. The project could also adversely affect various nesting migratory birds at the Folsom JFP project area. These effects could be considered significant to these special status species unless mitigated.

Effects to Swainson's hawk, Cooper's hawk, and White-tailed kite. Construction activities at the Folsom JFP restoration sites, disposal activities at the MIAD East area or the OILD site, and construction activities at the Rossmoor 14-acre mitigation site could potentially result in direct and indirect effects to the Swainson's hawk, Cooper's hawk, and white-tailed kite if they begin nesting adjacent to the project areas. Construction activities in the vicinity of a nest have the potential to result in forced fledging or nest abandonment by adults. Preconstruction surveys would be conducted at both project locations to determine if there are nests present within 1,000 feet of the project area. If the survey determines that there are active nests in the project areas, CDFW would be contacted to determine the proper course of action. If necessary, a buffer would be delineated and the nests would be monitored during construction activities. With coordination and mitigation, as discussed below, it is anticipated that effects to Swainson's hawk, Cooper's hawk, and white-tailed kite would be less-than-significant.

Effects to Valley Elderberry Longhorn Beetle. Staff from USFWS and the Corps conducted elderberry surveys on February 27, 2015. The HRRA project area has a total of 11 elderberry shrubs within or immediately adjacent to the HRRA boundary. There is the potential for all eleven elderberry shrubs to be directly affected by the implementation of the site restoration measures. Stem counts and data on the elderberry shrubs and map are included in Appendix E. No exit holes were visible on the elderberry shrubs.

The Corps has determined that the restoration activities within the HRRA areas may effect, and is likely to adversely affect the VELB or its habitat. However, with the implementation of the proposed mitigation measures listed below, this affect would be less than significant. No VELB critical habitat exists in the Folsom JFP project area, therefore none will be adversely modified by the proposed project. This affect is less than significant.

Effects to Nesting Migratory Birds. Over the past several months, cliff swallows (*Petrochelidon pyrrhonota*), house finches (*Haemorhous mexicanus*), and a barn owl (*Tyto alba*) have been observed nesting under the Folsom Point Bridge located within the HRRA (see Figure 3). Before the bridge is removed, a biologist would inspect the bridge and gaps along the bridge's abutments for bird nests during the non-nesting season applicable to the particular species of bird nests encountered. Based on the bird species cited above, the period from September 2 through February 14 would capture the non-nesting season for all three species although the general migratory bird non-nesting season is frequently considered to be from July 16 through the end of February. The biologist would check any nests encountered to ensure none of these are active (e.g. no viable eggs present, no young present). Assuming this is the case, the project construction contractor would remove the existing nests and then install barriers such as plastic exclusion netting beneath the bridge and along bridge abutment gaps to prevent future nesting. Through implementing these measures, removal of the bridge would not affect nesting activities of migratory birds and the bridge removal impact would be less than significant. If active nests are encountered, then mitigation measures similar to those for Swainson's hawk, Cooper's hawk, and white-tailed kite would be implemented, as would be mitigation associated with potential vegetation and wildlife impacts (see Section 3.3.8). The Corps would also coordinate with USFWS and CDFW staff for guidance. In this manner, the bridge removal impacts to migratory birds would be reduced to less than significant.

None of the proposed project activities would result in the direct mortality of any Federal or State-listed threatened or endangered animal or plant species or candidates for Federal listing. These activities would not lower the reproductive success of such species and would not result in substantial long-term habitat loss for such species. It is remotely possible the VELB larvae or pupae may be present within one or more of the elderberry shrubs that would be impacted by HRRA construction, although no signs of potential larvae/pupae were observed during the initial survey of these shrubs. If larvae or pupae are present, it is somewhat possible that removal of the shrubs could result in their death. The removal of elderberry shrubs would constitute a long-term VELB habitat loss, but not a loss that is substantial. By providing VELB mitigation in accordance with USFWS's biological opinion (see Appendix E), these impacts would be rendered less than significant.

<u>Mitigation</u>

Valley Elderberry Longhorn Beetle

Formal consultation under Section 7 of the Endangered Species Act was initiated with the USFWS to assess potential impacts and required compensation (see Appendix E). USFWS issued the biological opinion for the proposed project on April 22, 2015 (see Appendix E) and determined that, while the proposed project would result in additional impacts to the VELB, it would not jeopardize the continued existence of the VELB. To minimize potential take of the VELB, the following measures taken from the USFWS "Conservation Guidelines for the Valley Elderberry Longhorn Beetle," July 1999 would be incorporated into the project:

- Dust suppression measures would be used.
- Construction representatives and contractor personnel would be given awareness training relating to the beetle and its habitat.
- The Corps would purchase 6 conservation credits from a USFWS-approved conservation bank that is authorized to provide VELB mitigation and whose service area encompasses the proposed HRRA. The Corps would also contract with the same conservation bank to remove the 11 elderberry shrubs threatened by HRRA construction for the project site and transplant these shrubs within the conservation bank.
- Disturbed areas within the HRRA would be reseeded with native grasses and forbs.
- Other measures identified within the USFWS biological opinion provided in Appendix E.

The implementation of these mitigation measures would reduce impacts to the VELB and its' habitat to a level less-than- significant.

Swainson's Hawk, Cooper's Hawk, and White-tailed Kite

If it is not feasible for construction to occur outside nesting periods for Cooper's hawk (March through August) and white-tailed kite (February through September), a qualified biologist would survey the project areas and areas within 0.5 mile of the project prior to initiation of construction. If the survey determines that a nesting pair is present, the Corps would coordinate with the California Department of Fish and Wildlife, and the proper avoidance and minimization measures would be implemented

Focused surveys for Swainson's hawk nests would be conducted during the nesting season (February 1 to August 31) to identify active nests within 0.25 mile of the project sites. These surveys would be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 mile of a particular project site, no construction would occur at that site during the active nesting season, or until the young have fledged, unless otherwise negotiated with the CDFW. If any work at a particular project site is begun and completed between September 1 and January 31, no surveys for Swainson's hawk nests would be performed for that site. It is highly unlikely that any active nests would be established during this period. Since pre-construction surveys for nests constructed by a variety of bird species (the listed species mentioned as well as migratory bird species) would be performed anyway, these surveys would help ensure no active Swainson's hawk nests remain at the project site.

The implementation of these mitigation measures would reduce the effects on the Swainson's hawk, Cooper's hawk, and White-tailed kite to less than significant.

Actively Nesting Migratory Birds

As discussed above, certain migratory birds have been documented nesting under the Folsom Point Bridge within the HRRA. The Corps and the construction contractor would follow the mitigation measures previously described to reduce the project effects on migratory birds nesting beneath this bridge to less than significant. These measures include:

- A preconstruction survey by a Corps biologist to locate and determine the activity of bird nests.
- Removal of inactive nests during the non-nesting season, followed by installation of bird exclusion barriers on the underside of the bridge and along the bridge abutments to prevent new nesting.
- Coordinating with regulatory staff from the USFWS and CDFW.
- Following any avoidance and minimization measures pertaining to migratory birds that are specified within the USFWS CAR or are recommended by CDFW.

In addition, other measures to avoid and minimize impacts to nesting migratory birds are discussed in Section 3.3.8.

3.3.8 Vegetation and Wildlife

This section describes the existing conditions of the vegetation and wildlife in the vicinity of the project areas, regulatory background, significance thresholds, and evaluates the effects of the proposed project on vegetation and wildlife, and mitigation measures.

Regulatory Background

Vegetation and wildlife are protected by numerous federal laws, including the Migratory Bird Treaty Act of 1918, and the Fish and Wildlife Coordination Act of 1934, as amended. State laws and policies include California Fish and Wildlife Codes.

Existing Conditions

Site restoration measures would occur at various locations within the Folsom JFP project area. Tree/habitat mitigation activities would occur within the Rossmoor Bar Park, a county park in the city of Rancho Cordova.

Folsom JFP project area. A detailed discussion of vegetation and wildlife at the Folsom JFP project area is presented in the 2012 SEIS/EIR. The Folsom JFP project area is highly disturbed from previous activities. There are four different types of vegetation communities in the proposed HRRA: (1) open water/ lake shoreline fluctuation zone (lacustrine habitat); (2) ruderal herbaceous; (3) annual grassland, and; (4) developed/disturbed areas. In addition, the Mormon Island Wetland Preserve is located outside of the project area, but within one-half mile of the MIAD West area. The Preserve contains a series of wetlands and ponded areas, some of which remain wet for most of the year. There are no vegetation associations present within the Dike 7 Office Complex parking area to be restored or within the Prison Staging Area to be partially restored.

There are no remaining vegetation associations present within the MIAD East disposal site, as this area has been completed disturbed by construction activities for Reclamation's MIAD modification project. A few native trees remain within those portions of the MIAD East area situated outside the limits of the potential disposal site, as do scattered patches of annual grassland. The OILD site is comprised solely of open water habitat.

The Folsom JFP project area (the three JFP restoration sites) has poor to non-existent wildlife habitat due to the presence of the dam and continuous dam improvements. The lack of vegetation for cover, nesting, and forage is not conducive for wildlife. The Folsom JFP project area is of low habitat quality to migratory birds, however, cliff swallows (*Petrochelidon pyrrhonota*), house finches (*Haemorhous mexicanus*), and a barn owl (*Tyto alba*) have been observed nesting under the Folsom Point Bridge. The MIAD East area also has poor to non-existent wildlife habitat and practically no potential migratory bird habitat because of past and ongoing construction disturbances. The OILD site provides fair habitat for a variety of fish species and other aquatic organisms.

Adjacent to the Folsom JFP project area is oak woodland habitat, and the Mormon Island Wetland Preserve which provide habitat to many bird species. Surveys documented acorn wood pecker (*Melanerpes formicivorus*), Anna's hummingbird (*Calypte anna*), Bewick's wren (*Thryomanes bewickii*), bushtit (*Psaltriparus minimus*), golden-crowned sparrow (*Zonotrichia atricapilla*), red-tailed hawk (*Buteo jamaicensis*), ash-throated flycatcher (*Myiarchus cinerascens*), tree swallow (*Tachycineta bicolor*), western kingbird (*Tyrannus verticalis*), great-horned owl (*Bubo virginianus*), and wild turkey (*Meleagris gallopavo*) nests near the internal haul road and disposal/ stockpile areas (USBR, 2010). Many open water and wetland species are known to forage within a half mile of the project area including the great egret (*Ardea alba*), great blue heron (*Ardea herodias*), Canada goose (*Branta Canadensis*), mallard (*Anas platyrhynchos*), and bald eagle (*Haliaeetus leucocephalus*). The Mormon Island Preserve also provides a perennial wetland for many species including pond turtles.

Rossmoor 14-acre mitigation site. The proposed mitigation site is comprised mostly of a ruderal herbaceous community dominated by annual grasses such as ripgut and wild oat, as well as various forbs. Wildlife in the area include occasional small mammals, resident and migratory birds, and reptiles. The majority of the planting area lacks substantial cover and vegetation structure and therefore is not conducive for prolonged periods of wildlife use for most denning, nesting, or rearing activities. Due to this lack of native vegetation and suitable habitat within the construction footprint of the planting area and access road, the site mitigation (restoration) measures would not be expected to have any negative effects on vegetation or wildlife.

Rossmoor Bar Park is a peninsula, bordered on three sides by the American River. Adjacent to the proposed mitigation site is a previous 52-acre Corps mitigation site planted in 2004 and remnant mine tailings with scattered oaks trees and herbaceous vegetation. Several birds species including killdeer (*Charadrius vociferus*), acorn wood pecker (*Melanerpes formicivorus*), Anna's hummingbird (*Calypte anna*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), and wild turkey can be found along the American River. Many open water and wetland species are known to forage within a half mile of the proposed mitigation site including the great egret (*Ardea alba*), great blue heron (*Ardea herodias*), Canada goose (*Branta Canadensis*), mallard (*Anas platyrhynchos*) and common golden eye **(***Bucephala clangula*).

<u>Environmental Effects</u>

Significance Criteria

Effects on vegetation and wildlife would be considered significant if the proposed project 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 United States, as defined by 40 CFR Parts 110, 112, 116, 117, 122, 230, 232, 300, 302, and 401and 33 CFR Part 328; or
- Substantial reduction in the quality or quantity of important habitat, or access to such habitat, for wildlife species.

No Action Alternative

Under the No Action alternative, the Corps and CVFPB would not participate in the Folsom JFP site restoration measures, would not install the proposed guardrails, and would not establish the Rossmoor 14-acre mitigation site. The types of vegetation, wildlife and their associated habitats would remain generally the same as current conditions.

Implement Proposed Action

Potential effects to vegetation and wildlife could occur at the HRRA, the Dike 7 Office Complex parking area, and at the Rossmoor 14-acre mitigation site. The overall project goal for these features is to return them to a more natural state and plant native vegetation. Disposal and related earthwork activities at the MIAD East area could have minimal effects to vegetation and wildlife. Disposal activities at the OILD site could affect fish and other aquatic organisms, as addressed in Section 3.3.9.

Construction would be performed to minimize disturbance of adjacent vegetated areas to the extent feasible. Temporary fencing would be used during construction to prevent disturbance of native trees and shrubs that are located adjacent to construction areas but can be avoided.

Earthwork activities (excavation, filling, grading) necessary to achieve the desired topography in the HRRA would impact a few relatively undisturbed areas within the boundaries of the HRRA. These areas would primarily be: along the south side of the existing haul road between the Dike 7 Area and the Dike 8 Area; along the west side and east side of the Dike 8 Area; at the far east end of the HRRA on the north side of the existing haul road (see Figures 2 and 3). These areas encompass limited acreage and have a vegetative cover of various grasses and forbs. It is anticipated that most animals that may occasionally frequent these areas would move elsewhere at the onset of construction. It is possible, however, that a few animals (if any) that use burrows in these areas and some slow-moving animals that do not flee the areas at the onset of construction could be injured or killed by the earthwork activities. Similarly, any animals using the many areas of rip-rap within the HRRA for cover could be harmed or killed when this rip-rap is removed as part of the HRRA construction work. For the most part, however, lands within the HRRA are heavily disturbed and subject to ongoing construction traffic and activities. Such lands show few signs of wildlife and proposed construction in these lands would likely not result in wildlife mortality.

The proposed construction activities within the HRRA would include removing rip-rap along the north side of the existing haul road and both excavation and fill in some locations along the north side of this haul road. Some of this work would occur below the ordinary high water elevation of Folsom Lake and would thus impact jurisdictional Waters of the United States (WOUS). The following impacts to WOUS (e.g. portions of the lake fluctuation zone) would occur if the HRRA 440 Option is used (see Figure 9): rip-rap would be removed from approximately 2.7 acres; rip-rap would be removed from another 0.5 acre area followed by placement of fill (soil) where the rip-rap is removed; fill (soil) would be placed in an approximately 0.5 acre area where rip-rap is currently absent. If the HRRA 460 Option is used, the following impacts to WOUS would occur (see Figure 10): rip-rap would be removed from approximately 1.9 acres; rip-rap would be removed from another 0.5 acre area followed by placement of fill (soil) where the rip-rap is removed; fill (soil) would be placed in an approximately 0.5 acre area where rip-rap is currently absent. Under both options, only approximately 0.1 acre of WOUS would be converted to non-jurisdictional uplands. The remaining impacts would all be temporary, with the affected areas still classifying as jurisdictional WOUS following project completion.

The affected WOUS areas are currently heavily disturbed and lack appreciable vegetation. HRRA construction work would restore an existing upland area on the north side of the Dike 8 area to a jurisdictional WOUS. This restored area would occupy approximately 0.5 acre and thus would more than compensate for the 0.1 acre of existing WOUS that would be converted to uplands. There would be no net loss of aquatic functions and services as a result of the proposed HRRA work and there would not be a decrease in the extent of WOUS following construction completion. Therefore, impacts to WOUS would be less than significant.

As discussed in Sections 3.3.1 and 3.3.6, relatively lengthy bands of rip-rap would remain along the lake shoreline adjacent to the north side of the HRRA. When the water level in Folsom Lake is low, the presence of this rip-rap could make it difficult for certain wildlife species (ex., deer, rabbits, raccoons, coyote, etc.) to access the lake. However, there would be stretches of the northern HRRA boundary in close proximity to the rip-rap areas where there would be no rip-rap blocking lake access. The distances wildlife would have to travel to avoid the rip-rap bands in order to gain lake access would be minimal; hence, the effects of the remnant rip-rap bands along the lake shoreline to wildlife would be less than significant.

If the MIAD East area is used for disposal of rip-rap removed from the HRRA, it is assumed that existing disturbed areas would have first been re-contoured and planted with native grass and forb seeds by Reclamation's construction contractor. Disposal of rip-rap within the disposal site would thus eliminate this ground cover underlying the approximately 6.5 to 8-acre footprint of the resultant rip-rap field. As mentioned, JFP Phase IV construction could include disposal of materials (soils, decomposed granite, sediments) within the MIAD East disposal site following restoration activities by Reclamation's contractor but prior to Phase V rip-rap disposal. Under this scenario, disposal of rip-rap would also eliminate ground cover established after completion of Phase IV disposal activities, although this effect would similarly be limited to the area occupied by the rip-rap field. It is doubtful that wildlife would have reoccupied the MIAD East area by the time rip-rap disposal occurs. Similar to the HRRA, any wildlife frequenting the area would likely move elsewhere until disposal activities cease. The rip-rap field remaining after disposal activities are complete would provide cover for smaller wildlife species and possibly denning/nesting habitat as well. While this habitat may not be as productive as some natural habitats in the area, it would be a marked improvement compared to existing conditions.

If the OILD site is used for disposal of rip-rap removed from the HRRA, disposal activities would result in short term, but less than significant, impacts to fish, other aquatic organisms, and fisheries habitat. These impacts are addressed in Section 3.3.9 and Appendix G. The disposal impacts would also result in temporary impacts to jurisdictional WOUS (e.g., Folsom Lake). Since these impacts, discussed in Section 3.3.9 (Fisheries) and Appendix G (Clean Water Act, Section 404 Evaluation), would not decrease the extent of WOUS and would not result in a net loss of aquatic functions and values, the long-term effects to WOUS would be less than significant.

Migratory birds and their habitats are protected under the Migratory Bird Treaty Act, as amended (16 U.S.C 703 et seq.). The project areas are highly disturbed, and generally lack suitable foraging, resting, and nesting areas. As previously discussed, preventative measures would be taken to deter birds from nesting under the Folsom Point Bridge (see Section 3.3.7). As a result, the site restoration measures are not expected to have any short-term adverse effects on migratory birds and would ultimately provide long-term benefits through the proposed revegetation measures. To ensure that there would be no adverse effect, pre-construction surveys would be conducted prior to any work scheduled during the nesting season. If any breeding birds or active nests are found, a protective buffer would be delineated and the USFWS and CDFW would be consulted for further action prior to construction. Due to the potential for revegetation to provide habitat in the future and with implementation of mitigation (i.e., surveys, coordination with USFWS and CDFW, avoidance and minimization measures), impacts to habitat or quality of habitat would be considered less than significant.

Following completion of proposed construction activities within the HRRA and the Dike 7 Office Complex parking area (removal of pavement, re-grading), all disturbed areas except for Folsom Point Road would be seeded with a mix of native grasses and forbs. Oak acorns would also be planted in scattered portions of the HRRA. In addition, the majority of the existing security fencing that borders the south side of the HRRA and that is also present with the HRRA would be removed.

Impacts to annual grassland at the HRRA would be minimized through the revegetation activities described above. The project area would be restored from a disturbed, active construction site that provides minimal, if any, habitat value to wildlife species, to grassland habitat with scattered oaks. The removal of substantial segments of existing security fencing would help restore former wildlife corridors along Folsom Lake. Following completion of the restoration activities, the HRRA would tie into the surrounding grassland and oak woodland habitat, thereby allowing wildlife species that are currently found surrounding Folsom Lake to disperse into the project area. This would result in an increase in the composition and number of wildlife species compared to what is currently present in the project area. Substantial adverse impacts to habitat are not expected to occur as a result of removal of fencing and revegetation of the HRRA combined with restoration of wildlife corridors along Folsom Lake.

Restoration at the Dike 7 Office Complex parking area would convert an existing paved parking lot to annual grassland. While this conversion could increase wildlife utilization of the affected area, it is likely such usage would be minimal given the close proximity of the site to Folsom Lake Crossing.

If the MIAD East area is used as a disposal site for Phase IV materials, these soil-like materials would be placed so as to form a layer of relatively uniform thickness (depth) over the restored topography left by Reclamation’s construction contractor following completion of Reclamation’s MIAD modification project. The affected area would then be planted with native grass and forb seeds in the manner described for the same activity within the HRRA. The end result would be a native grassland habitat that provides substantially better wildlife value that does the existing condition. After any disposal of Phase V rip-rap in the MIAD East disposal site, existing fencing that separates the MIAD East area from the MIAD West area would be removed. This would re-establish a wildlife corridor between the HRRA and the MIAD area, thereby benefitting terrestrial wildlife species.

The proposed mitigation activities at the Rossmoor 14-acre mitigation site would change vegetation at this site from disturbed grassland to oak woodland. The perimeter deer fence would temporarily exclude most wildlife other than birds and perhaps very small mammals from the site. However, the fence would be removed within approximately 4 to 5 years following the start of mitigation activities. The project site would then tie into the existing oak woodland mitigation area adjacent to the site and would tie into scattered oak grassland habitats surrounding the project area. The composition and numbers of wildlife species at the mitigation site would increase significantly compared to existing conditions due to the change in habitat type. Therefore, impacts are considered less than significant.

Overall, the proposed project would result in limited short term impacts to wildlife habitat and extremely minor areas of natural plant communities but it would not result in the substantial loss, degradation, or fragmentation of natural communities or wildlife habitats. As used herein, the term “important habitats” refers to habitats that are considered unique or rare in the general region and to habitats where any substantial adverse impacts to such habitats might threaten the continued existence of a particular wildlife species or might significantly decrease the regional population of a particular wildlife species. There are no important habitats within the areas directly impacted by the project, thus there would not be a reduction in the quality or quantity of such habitat. Instead, the long term effect of restoration activities would be an improvement of natural communities and wildlife habitats and, as regards the HRRA and even the MIAD East area, a substantial reduction in the fragmentation of wildlife habitats and corridors. No particularly sensitive natural upland vegetation associations would be adversely affected by the project. While there would be short term adverse impacts to jurisdictional WOUS, existing aquatic functions and values in the affected WOUS would not be reduced in the long term. Thus, the overall project impacts to vegetation and wildlife would be less than significant.

Mitigation

The Corps requested supplemental coordination with USFWS pursuant to the Fish and Wildlife Coordination Act (FWCA) in order to address the proposed project. In response, the USFWS prepared a supplemental Fish and Wildlife Coordination Act Report (CAR) addressing the proposed activities. A copy of this draft CAR, dated April 28, 2015, is provided in Appendix F. This CAR included various recommendations to help avoid, minimize, and mitigate potential adverse impacts of the proposed action.

The following measures would be implemented to help avoid and minimize potentially significant effects associated with the proposed project. These measures incorporate many of the recommendations set forth in the aforementioned CAR, with some modifications to the recommendations.

- Impacts to oak woodlands located outside, but in close proximity to, the project sites would be avoided by installing temporary orange construction fencing or cyclone fencing just outside the dripline of native woody vegetation.

- Impacts to native trees and shrubs would be avoided to the extent practicable. Any native trees or shrubs removed with a diameter at breast height of 2 inches or greater would be replaced with container plantings so that the combined diameter of the container plantings is equal to the combined diameter of the trees removed. The planting site(s) would be protected in perpetuity. The replacement plantings would be monitored for at least 5 years or until they are determined to be established and self-sustaining. Such mitigation for project impacts to native trees and shrubs would not apply to trees and shrubs that have re-colonized areas within the HRRA that were previously disturbed to establish the interior haul road, the Dike 7 stockpile area, the Dike 8 disposal area, and the MIAD West staging area.

- Any necessary trimming of native trees or shrubs would be supervised and/or conducted by a certified arborist in order to minimize the trimming impacts.

- Impacts to migratory birds nesting in trees within or adjacent to the restoration sites and the Rossmoor 14-acre mitigation site would avoided by conducting pre-construction surveys for active nests, unless construction work would take place in the non-nesting season. Work activity around any documented active nests would be avoided until the young occupying the nests have fledged.

- As described in Section 3.3.7, existing bird nests beneath the Folsom Point Bridge would be removed during the non-nesting season. Following nest removal, bird exclusion barriers would be installed on the underside of the bridge and along gaps along the bridge abutments to prevent new nesting.

- As discussed in Sections 2.3.1 and 2.3.4, the HRRA, the Dike 7 Office Complex parking area, portions of the Prison Staging Area, and the Rossmoor 14-acre mitigation site would be revegetated following completion of construction activities.

- Future potential secondary impacts to the HRRA would be avoided by ensuring fill material used within the HRRA is free of contaminants.

- Various Best Management Practices discussed in Section 3.3.12 would be employed during HRRA construction activities to help minimize impacts to Waters of the United States.

The long-term effects of the proposed project to vegetation and wildlife would be beneficial. Through implementation of the measures outlined above, the short-term impacts of the project would have a less-than-significant effect on vegetation and wildlife.

3.3.9 Fisheries

This section describes the existing condition of fisheries in the vicinity of the project area, regulatory background, significance thresholds, and evaluates the effects of the proposed project on fisheries, and mitigation measures.

Regulatory Setting

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) establishes a management system for national marine and estuarine fishery resources. This legislation requires that all Federal agencies consult with the National Marine Fisheries Service (NMFS) regarding all actions or proposed action permitted, funded, or undertaken that may adversely affect “essential fish habitat”. Essential fish habitat is defined as “waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The legislation states that migratory routes to and from anadromous fish spawning grounds are considered essential fish habitat. The phrase “adversely affect” refers to the creation of any impact that reduces the quality or quality of essential fish habitat.

The Fish and Wildlife Coordination Act (FWCA; 16 USC 661 et seq.) provides that fish and wildlife resources receive equal consideration with other features throughout the planning process of water resources development projects. The FWCA requires Federal agencies to consult with Federal and State fish and wildlife resource agencies before undertaking or approving water projects that control or modify surface water. The purpose of this consultation is to ensure that wildlife concerns receive equal consideration during water resource development projects and are coordinated with the features of these projects. The consultation is intended to promote the conservation of fish and wildlife resources by preventing their loss or damage and to provide for the development and improvement of fish and wildlife resources in connection with water projects. Federal agencies undertaking water projects are required to fully consider recommendations made by Federal and State fish and wildlife resource agencies in project reports and to include measures to reduce impacts on fish and wildlife in project plans.

Existing Conditions

A detailed discussion of fisheries is presented in the 2012 SEIS/EIR. The construction of Folsom Reservoir, completed in 1955, inundated portions of both the North and South Forks of the American River, creating a lake with approximately 85 miles of shoreline and approximately 12,000 surface acres (State Parks, 1979). The structure of Folsom Dam, and also of the downstream Nimbus Dam, effectively discontinued the migratory access for anadromous fisheries and obstructed passage of other fish species. The deepest point of the reservoir lies directly behind Folsom Dam at 266 feet, though the remainder of the reservoir is relatively shallow with a mean depth that averages 66 feet. In general, lake levels are the least variable during the spring and most variable during summer. Fluctuations of the reservoir level due to seasonal flows and anthropogenic drawdowns accounted for differences in lake elevations of almost 120 feet between 1985 and 2008 (URS, 2009). Decreases in water levels that begin in late spring can affect reproduction of a number of the reservoir's warm water species such as bass, catfish, and sunfish. Shallow water spring and summer nests can be exposed or desiccated as water levels recede affecting annual recruitment into reservoir populations.

Folsom Lake (Folsom Reservoir) is managed for native and introduced cold and warm water fish that utilize the stratified temperature layers of the lake according to thermal habitat needs. Thermal stratification begins in April and usually holds through November. Thermal stratification during summer results in an upper layer of warm water, a transitional zone (thermocline), and a lower layer of cold water (Wallace, Roberts, and Todd et al., 2003). The deepest section of the lake, directly in front of Folsom Dam, is used by salmon and trout during warm summer an early fall months to take advantage of less oxygenated, but colder temperatures in the hypolimnion (deepest) layer. Folsom Lake is not considered to be essential fish habitat (EFH) by NMFS (USACE, 2012).

Table 3.6 lists various fish species that may occur in Folsom Lake. The four native species known to occur include Sacramento pike minnow (*Ptychocheilus grandis*), Sacramento sucker (*Catostomus occidentalis*), rainbow trout (*Oncorhynchus mykiss*), and chinook salmon (*Oncorhynchus tshawytsha*). The latter two species from the salmonid family are important cold-water game species that are managed and maintained by CDFW's active hatchery-based stocking program. The most abundant non-native species originate from the centrarchid family, and include various bass and sunfish. Both native and nonnative introduced species form an active recreational fishery, and of these species, bass, trout and salmon are considered the most popular game fish species.

Folsom Dam effectively discontinued migratory access for anadromous fisheries, and obstructed passage of other fish species. Anadromous fish, including Chinook salmon and steelhead that travel up the Sacramento and American Rivers, are unable to pass over Nimbus Dam as well. The Nimbus Hatchery was constructed as a mitigative action for the construction of Folsom Dam. Nimbus Hatchery, located approximately one quarter mile downstream of Nimbus Dam and six and a quarter miles downstream of Folsom Dam, produces the majority of hatchery fish stocked in Folsom Reservoir. CDFW releases several sizes of rainbow trout in Folsom Lake including fingerlings, catchable size, and trophy fish with a stocking quota of approximately 14,000 catchable fish per year (J. Rowan, pers. comm. 2012). A management stocking goal for 100,000 fingerling Chinook salmon has not been realized since 2006, but the Inland Chinook Salmon Program managed by CDFW has shown substantial recruitment in Folsom Lake from salmon spawning in the upstream forks of the American River since 2009 (J. Rowan, pers. comm. 2012).

Table 3.6. Potential fish species in Folsom Lake

Common Name	Scientific Name	Native?	Common in Lake?
Cold Water Game Fish			
Chinook salmon	*Oncorhynchus tshawytcha*	Yes	Variable (stocked)
Rainbow trout	*Oncorhychus mykiss*	Yes	Variable (stocked)
Brown trout	*Salmo trutta*	No	Yes
Steelhead	*Oncorhynchus mykiss*	Yes	No
Kokanne salmon	*Oncorhynchus nerkus*	No	No (stocked)
Warm Water Game Fish			
Largemouth bass	*Micropterus salmoides*	No	Yes
Spotted bass	*Micropterus punctatus*	No	Yes
Smallmouth bass	*Micropterus dolomieui*	No	Yes
Bluegill	*Leopomis macrochirus*	No	Yes
Redear sunfish	*Lepomis microlophus*	No	Yes
Green sunfish	*Lepomis cyanellus*	No	Yes
White catfish	*Ictalurus catus*	No	No
Channel catfish	*Ictalurus punctatus*	No	Yes
White crappie	*Promoxis annularis*	No	No
Black crappie	*Promoxis nigromaculatus*	No	No
Brown bullhead	*Ictalurus nebulosus*	No	Yes
Non-Game Fish			
Sacramento pikeminnow	*Ptychochelilus grandis*	Yes	No
Sacramento sucker	*(Catostomus occidentalis)*	Yes	No
Callilfornia roach	*Lavinia symmetricus*	Yes	No
Sacramento perch	*Arcoplites interruptus*	Yes	Yes
Prickly sculpin	*Cottus asper*	Yes	No
Riffle sculpin	*Cottus gulosus*	Yes	No
Threespine stickleback	*Gasterosteus aculeatus*	Yes	No
Introduced Non-Game Fish			
Threadfin shad	*Dorosoma pretenense*	No	Yes
Wakasagi smelt	*Hypomesus nipponensis*	No	Yes
Mosquito fish	*Gambusia afinis*	No	Yes
Carp	*Cyprinus carpio*	No	Yes

Common Name	Scientific Name	Native?	Common in Lake?
Goldfish	*Carassius auratus*	No	Yes
Golden shiner	*Notemigonus crysoleucas*	No	No
Bigscale logperch	*Percina macrolepida*	No	No

Environmental Effects

Significance Criteria

An impact on fisheries would be considered to be significant if it would result in any of the following:

- Substantially reduce or curtail game fish populations for recreational fishing, reducing the availability or quality of existing angler opportunities;
- Substantially change the diversity or numbers of any aquatic community or species, or interfere with the survival, growth, or reproduction, of affected populations;
- Cause substantial deterioration or adverse alteration of existing fish habitat. Substantial is qualified as long term effects that can be verified by repeated measurement or includes habitat designated as “Critical Habitat” by NFMS;
- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the CDFW, NMFS, or USFWS;
- Introduce nonnative and invasive aquatic species.

No Action Alternative

Under the No Action alternative, the Corps and CVFPB would not participate in the Folsom JFP site restoration measures, would not install the proposed guardrails, and would not establish the Rossmoor 14-acre mitigation site. As a result, there would be no additional effects on fisheries. Fisheries would continue to be influenced by ongoing construction of other Folsom JFP features, as well as by stormwater runoff from urban, rural, and agricultural land uses in the drainage basins feeding Folsom Lake.

Implement Proposed Action

Potential actions within the HRRA that could contribute erosion into fisheries habitat include excavation, fill, and grading activities, drainage to the reservoir, and removal of rip-rap. However, the contractor would be required to develop and implement a SWPPP to minimize the potential for soil, grout, or contaminants to enter the reservoir. Erosion/sediment controls such as hay bales, straw wattles and silt fencing would be utilized as necessary to prevent soil, sediments, and turbid waters from entering the lake. A Section 401 WQC would be obtained from the CVRWQCB for the proposed HRRA activities. The contractor would be required to adhere to the technical certification conditions set forth in this WQC, including any water quality monitoring requirements. The contractor would not be allowed to store fuels, lubricants, or other potential hazardous substances near the lake. If equipment is to be refueled on site, the contractor would take measures to avoid and contain any spills. The contractor would be required to develop and submit a Spill Prevention, Containment, and Cleanup Plan (SPCC) prior to initiating construction activities. The SWPPP and SPCC must be approved by the Corps, who would require compliance with these plans following their approval. As discussed in Section 3.3.12, topographic restoration work within the HRRA would include excavation and removal of rip-rap and soil from a few areas adjacent to Folsom Lake that are below the lake's ordinary high water elevation. If feasible, this work would be performed when the lake is at its low water elevation to avoid in-water excavation.

Through the implementation of and adherence to the BMPs discussed above, as well as through the adherence to the WQC's technical certification conditions, it is anticipated that restoration work within the HRRA would reduce any temporary secondary impacts to fisheries and fish habitat (ex. turbidity, other temporary water quality impacts) to less-than-significant.

As mentioned, the MIAD East disposal area may be used to as a permanent disposal site for the rip-rap that would be removed from the HRRA. Soil disturbance resulting from the placement of this rip-rap in the MIAD East area would not directly contribute to erosion into fisheries habitat (e.g. Folsom Lake) since surface water flow in this area naturally drains away from Folsom Lake. However, the stormwater management system employed at the site during construction activities could potentially include pumping some of the stormwater runoff to the lake after pre-treatment.

Use of the MIAD East area as a disposal site would incorporate this area into the same SWPPP that would apply to the HRRA. Similarly, the Section 401 WQC obtained for the HRRA would incorporate disposal activities at MIAD East. Should any stormwater runoff from the MIAD East area be routed to Folsom Lake, any temporary secondary impacts to fisheries and fish habitat (turbidity, other temporary water quality impacts) would be reduced to less-than-significant through use of the BMPs discussed for the HRRA and through adherence to the WQC's technical certification conditions.

If the OILD site is used for disposal of rip-rap removed from the HRRA, such disposal could create turbidity that may adversely affect fish health, mortality, and reproduction. Excessive turbidity in aquatic systems can lead to indirect effects that could impact aquatic species. Increased turbidity alters aquatic light regimes that directly affect primary productivity, species distribution, behavior, foraging, reproduction, and survival of aquatic biota (Wilber and Clarke, 2001). Some of the potential effects of increased turbidity include: a decrease in dissolved oxygen concentrations; clogging of fish and amphibian gills; coating of fish and amphibian eggs; adverse shading of phytoplankton, zooplankton, and invertebrates that serve as food for smaller fish and larval fish; an increase in water temperature. Incidental physical crushing of fish could result from placement (disposal) of the rip-rap. Most fish would likely be excluded from crushing actions if the construction contractor uses a turbidity curtain (silt curtain) around the OILD site. With active disturbance to the area occurring during JFP construction activities, substantial numbers of fish are not expected to remain in close proximity to the OILD site. However, placement of the rip-rap could still crush small numbers of fish that do enter the area.

Underwater sound (noise) during the process of disposing rip-rap within the OILD site has the potential to adversely affect fish in the general vicinity of this site. Acoustic noise would result primarily from the placement of the rip-rap and from marine engines if a barge is used to dispose the rip-rap. Extremely loud sound levels can have negative effects on fish that include permanent or temporary deafness or hearing reduction, tissue damage, and even mortality. Fish response to sound can be highly variable, ranging from packing, polarizing, increased swimming speed, diving, or avoidance (Olsen, 1969). Fish can either ignore repetitive construction noise or avoid noise sources, resulting in temporary displacement. Adverse effects are usually manifested by a reduction in the ability to evade predation (stunning or reduced swimming ability), behavioral changes that lead to increased exposure to predation, or an inability to detect predators or prey effectively (Olsen, 1969).

Underwater noise thresholds for fish were developed by the Fisheries Hydroacoustic Work Group (2008). The current injury thresholds for fish are: 206 decibel (dB) peak; 187 dB cumulative sound exposure level (SEL) for fish > 2 grams, and; 183 dB SEL for fish <2 grams. If a barge is used to place rip-rap, the underwater noise generated by the barge is expected to remain below approximately 175 dB. Underwater noise produced by the dropping (placement) of rip-rap is expected to generate up to approximately 120 dB on an intermittent basis. Rip-rap disposal in the OILD site is not expected to generate acoustic energy that would exceed the aforementioned injury thresholds. However, the noise produced would cause intermittent disturbance to fish and may cause them to avoid waters within and immediately adjacent to the OILD site until disposal activities are completed.

The fish species within Folsom Lake are considered to be sound generalists and would be affected to a lesser degree by disposal noise (construction noise) than would be sound specialists. The use of silt curtains or bubble curtains surrounding the OILD site would serve to dampen amplitudes of acoustic wave energy. The fish population in Folsom Lake should not be significantly affected by temporary displacement from the OILD area due to noise since the affected area does not contain concentrated food sources, nesting habitat, or species of concern. Thus, the effects on fisheries due to a temporary increase in underwater noise levels would be less than significant.

Placement of rip-rap in the OILD site could require the use of barges if the lake water level is too high to allow terrestrial access to the site. If this happens, marine equipment activity poses the risk of oil and fuel spills. Contaminants could include occasional or remote small spills of oil and fuel from operation of barges, support vessels, and gas-powered equipment on-water. An uncontained contaminant spill could cause direct mortality to fish, particularly in larval stages. Other effects could include long-term contamination of shallow water breeding areas that could affect fish reproduction for years as well as decreased phytoplankton numbers with a subsequent reduction both in fish and forage biomass. The use of barges and other vessels could also pose a risk for the introduction of invasive aquatic species, i.e. quagga mussel (*Dreissena bugensis*) and zebra mussel (*Dreissena polymorpha*), into the lake if one or more of the vessels already harbor such species.

The construction contractor would install silt curtains around the OILD site or use other methods to minimize construction-generated turbidity outside the mixing zone and to help prevent fish from entering the area affected by rip-rap disposal. USACE would monitor Folsom Lake turbidity levels in the immediate vicinity of the OILD site in accordance with monitoring requirements set forth in the project's WQC. This monitoring would be conducted throughout the period that the OILD site is used for disposal purposes. Additional monitoring of turbidity levels would be performed adjacent to the lake side of Folsom Dam during June through October to ensure turbidity levels do not exceed CVRWQCB Section 401 thresholds, since this area is summer salmon habitat. Other water quality monitoring required by the project's WQC would be performed in compliance with the WQC's requirements.

Adverse turbidity is not expected outside of the turbidity control devices that would surround the OILD site during disposal activities, assuming water quality thresholds per the Section 401 WQC are maintained and required BMPs and mitigation measures are conducted. There are no known preferred foraging habitat or breeding sites that would be affected by increased and localized water turbidity in the project area. The affected area is not known to be integral to life stages of game fish within Folsom Lake. Deep-water areas are important to the survival of the lake's cold water game fish, particularly during the summer. The deepest portion of Folsom Lake is immediately adjacent to Folsom Dam, and the remnant American River channel extending in a northeastern direction from the dam also provides the deepest habitat in the general vicinity of the OILD site. It is noted that, at its closest point, the OILD site is separated from this channel by a distance of approximately 1,000 feet. Adverse effects upon lake habitats outside the disposal area footprint are not expected due to containment of silts.

If the construction contractor uses turbidity curtains, these would be installed such that these curtains surround the east, west, and north sides of the OILD site, tying into the lake shoreline on the south side of the OILD site. These curtains would prevent anglers from fishing in the cordoned off area until disposal activities are finished and the turbidity curtains are removed. The 2012 SEIS/EIR addressed this temporary decrease in angler opportunities and noted this impact would be mitigated by stocking rainbow trout in Lake Folsom following completion of construction activities. If the OILD site is used for rip-rap disposal, the turbidity curtains would remain in place roughly 2 to 4 months longer than if the site is used only for the disposal of materials generated by JFP Phase IV construction. This extended duration of reduced angler opportunities would be less than significant and adequately mitigated through the proposed stocking of 6,000 rainbow trout in the lake.

Disposal of rip-rap in the OILD site would be scheduled when the lake water level is low enough to allow disposal via terrestrial construction equipment, if feasible. If this is not possible and barges must be used instead, barges and support vessels would be decontaminated of any invasive aquatic species prior to use in the lake. Speeds for large construction vessels (barges) would be limited to 2 knots or less when approaching or operating within the OILD site, while speeds for any small support vessels would be limited to 5 knots. A fuels spill management plan would be developed and implemented by the construction contractor. Construction vessels and equipment would be inspected frequently and maintained by the construction contractor to help prevent the discharge of fuel, oil, lubricants, and similar fluids.

Any water quality impacts within Folsom Lake (turbidity, etc.) resulting from rip-rap disposal in the OILD site would be temporary as would be the secondary impacts to fisheries resulting from water quality changes. Direct impacts to fish through crushing would be limited to the few months when rip-rap is being disposed. Noise impacts to fish would also be limited to the time that rip-rap is being disposed. Through the mitigation measures discussed above, the use of appropriate BMPs, and through adherence to the WQC's technical certification conditions, the overall impacts to fisheries would be reduced to less-than-significant.

The addition of rip-rap to the OILD site could result in some secondary long-term benefits to fisheries. Artificial "reefs" of rip-rap have been used in some lakes to establish structural fish habitat and improve conditions for resident fish communities (Bolding et al., 2004; Wagner, 2009). The addition of structural diversity such as rip-rap can attract and concentrate structure-oriented fish species such as bass, bluegill, sunfish, crappie, and catfish, thereby helping increase angler harvest; however, salmonids like trout and salmon tend to not be attracted by such habitats. Other fisheries benefits potentially resulting from the addition of rip-rap include, but are not limited to: increased cover for fry and fingerlings, predators, and aquatic invertebrates; increased surface areas for algae attachment, aquatic insect colonization, and other food organisms; improved foraging habitat; improved primary production, and; increased spawning and nesting habitat for certain fish species.

Activities proposed within the Dike 7 Office Complex Parking Area and the Prison Staging Area would have no effect on fisheries or fish habitat. Both of these sites are far removed from both Folsom Lake and the American River.

Development of the mitigation site at Rossmoor Bar Park would not require in-water work. The American River is located approximately one-quarter mile away from the mitigation site. Water trucks would be used to for dust suppression along all areas of disturbed soil and the dirt access road. The contractor would not be allowed to store fuels, lubricants or other potential hazardous substances on site. If equipment is to be refueled on site, the contractor would take measures to avoid and contain any spills. There would be no effect on fisheries or fish habitat.

The proposed stocking of rainbow trout in Folsom Lake would have a slight beneficial effect on fisheries through the introduction of these additional fish into the lake.

In summary, Phase V project activities would not significantly affect the diversity or numbers of any aquatic community or species, nor would these activities interfere with the long-term survival, growth, or reproduction of affected fish populations. There would not be a substantial reduction in game fish populations and existing angler opportunities, while temporarily affected to a limited degree, would not be adversely affected on a long-term basis. There would not be a long-term deterioration or adverse alteration of existing fish habitat. Boats and water-based equipment used in the construction process, if any, would be inspected by qualified staff before entry into Folsom Lake, thus the likelihood of introducing non-native and invasive aquatic species would be minimal. Activities would not have a substantial adverse effect on any listed/special status fish species. Thus, through the use of mitigation measures previously discussed and described below, the project's impact on fisheries would be less than significant.

Mitigation

The following subsections address all the BMPs and other mitigation actions that would be implemented to minimize and mitigate effects to fish populations and habitat. Additional BMPs could be identified as part of the CGP permits and the Section 401 WQC.

- Appropriate erosion control measures would be incorporated into the SWPPP by the construction contractor in order to prevent sediment from entering waterways. Examples include, but are not limited to: straw bales/wattles, erosion blankets, silt fencing, silt curtains, mulching, revegetation, and temporary covers. Sediment and erosion control measures would be maintained by the contractor during construction at all times. Control measures would be inspected periodically by the construction contractor, particularly during and after significant rain events.
- A fuels spill management plan would be developed for the project by the construction contractor and would be implemented by the contractor.
- Fuels and hazardous materials would not be stored on site. Any spills of hazardous material would be cleaned up immediately by the construction contractor.
- Construction vehicles and equipment would be inspected frequently and appropriately maintained by the construction contractor to help prevent dripping of oil, lubricants, or any other fluids.
- Construction activities would be scheduled by the contractor to avoid as much of the wet season as practicable. Construction personnel would be trained in storm water pollution prevention practices by the construction contractor.
- In areas proposed for revegetation, initiation and completion of revegetation work would be done by the contractor in a timely manner to control erosion.
- Implementation and adherence to any additional requirements as mandated by the CGP and the Section 401 WQC. The construction contractor would obtain the CGP while the Corps would obtain the Section 401 WQC. The contractor would be responsible for implementing requirements set forth in these two permits.

If rip-rap removed from the HRRA is disposed at the OILD site, the following additional mitigation measures and BMPs would be followed.

- If possible, the construction contractor would dispose the rip-rap when the lake water level is sufficiently low to allow access to the OILD site using terrestrial construction equipment (e.g., construction activities "in the dry").
- If barges must be used to transport the rip-rap to this OILD site, barges and support vessels would be decontaminated of invasive species prior to placement in Folsom Lake per approval by CDFW. Prior to placement of construction vessels in the lake, the construction contractor would coordinate with CDFW to discuss the invasive species quagga mussel (*Dreissena bugensis*) and zebra mussel (*Dreissena polymorpha*) as well as appropriate decontamination methods and vessel inspections. A decontamination period of up to one month may be required for any vessels originating from infested water bodies.

- Speeds would be limited for construction vessels (barges) to 2 knots or less when approaching or operating in the OILD site. Any small support vessels carrying personnel and supplies would be limited to 5 knots.
- Silt curtains (floating turbidity curtains/barriers) or other devices (ex. bubble curtains) would be installed by the construction contractor around the OILD site as a method to comply with CVRWQCB Section 401 turbidity thresholds and help exclude fish from the disposal site.
- USACE would conduct a monitoring plan to evaluate turbidity effects on fish within the vicinity of the OILD site. Turbidity levels in the limnetic (lighted surface water), profundal (deep part of surface water below the range of effective light penetration), and benthic (lowest level of water body) zones would be monitored as specified by the CVRWQCB. Since turbidity levels must not increase to the point of adversely impacting summer salmon habitat in front of Folsom Dam (lake side of dam), additional monitoring of turbidity levels would be monitored at this location from June through October to ensure turbidity levels do not exceed CVRWQCB thresholds.

3.3.10 Topography and Soils

This section discusses topography and soils of the project areas, regulatory background, significance thresholds, and evaluates the effects of the proposed project on topography and soils as they relate to public safety and project design, and mitigation measures.

Regulatory Setting

In California, the State Water Resources Control Board (SWRCB) administers regulations promulgated by the U.S. Environmental Protection Agency (55 CFR 47990). In turn, the SWRCB's jurisdiction is administered through nine regional water quality control boards. To comply with Federal regulations, an operator must obtain a general permit through the NPDES Stormwater Program for all construction activities with ground disturbance of 1 acre or more. The general permit requires BMPs to be implemented to reduce sedimentation into surface waters and to control erosion. A SWPPP must also be prepared. It must address the control of water pollution, including sediment, in runoff during construction. Section 3.3.12 includes more information about the NPDES and SWPPPs.

In addition, the California Building Standards Code (CBSC) states that "the soil classification and design-bearing capacity shall be shown on the (building) plans, unless the foundation conforms to specified requirements." The CBSC provides standards for various aspects of construction, including excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss.

Existing Conditions

A detailed discussion of the area's topography, geology, and soils is presented in the 2012 SEIS/EIR. The project area is located in the American River watershed, which ranges in elevation from 10 feet above mean sea level at the confluence with the Sacramento River to

10,000 feet in the Sierra Nevada Mountains. Folsom Lake is in the foothills of the Sierra Nevada Mountains, set within the valley created by the confluence of the North and South Forks of the American River.

Environmental Effects

Significance Criteria

Effects on topography and soils would be considered significant if the proposed project would result in any of the following:

- Adversely change the elevation or surface relief of the area; or

- Result in substantial soil erosion or the loss of topsoil.

No Action Alternative

Under the No Action alternative, the Corps and CVFPB would not participate in the Folsom JFP site restoration measures, would not install the proposed guardrails, and would not establish the Rossmoor 14-acre mitigation site. The areas involved would remain the same as current conditions; hence this alternative would not alter topography and soils.

Implement Proposed Action

Potential effects to topography and soils could occur due to the proposed activities within the HRRA, the Dike 7 Office Complex paring area, the Prison Staging Area, the MIAD East area, and the Rossmoor 14-acre mitigation site. Construction of the proposed guardrails would not affect topography and soil disturbance would be minimal (less than significant)

Haul Road Restoration Area (HRRA). Proposed construction activities within the HRRA are fully described in Section 2.3.1. One of the overall goals of these activities is to restore topography to mimic conditions that were present prior to the area being disturbed by prior Folsom JFP phases (e.g. to restore natural topography as much as practicable). The resulting topography would be consistent with that of the surrounding area and would constitute an improvement over existing conditions, hence the effects to topography would be less-than-significant.

Construction work within the HRRA would result in substantial soil disturbance until construction activities are completed. Disturbed areas would be subject to erosion by wind and rainfall events. The construction contractor would be required to prepare and implement a SWPPP, which would include erosion and sediment control measures. The construction contractor would have to obtain an NPDES permit (also referred to as a Construction General Permit or CGP) for the project and would be required to adhere to the conditions set forth in this permit. After completing the construction work, the HRRA would be seeded with native grasses and forbs to help stabilize soils, plus oak acorns would be planted in several areas within the HRRA. Given these factors, soil erosion and soil loss would be minimized during project construction and the long-term result of the project would be a reduction in soil erosion compared to existing conditions since significant areas within the HRRA presently lack any vegetation. Thus, the project effects on soils would be less-than-significant.

Dike 7 Office Complex Parking Area. Proposed construction activities within the cited parking area are described in Section 2.3.2. After removal of the parking lot, the area would be re-graded to match the topography of the immediately adjacent undisturbed areas (e.g. restore natural topography). The resulting topography would be consistent with that of the surrounding area and would constitute an improvement over existing conditions, hence the effects to topography would be less-than-significant. The SWPPP and the CGP mentioned above would also apply to this project site. The area disturbed by removal of the parking lot and re-grading would be seeded with native grasses and forbs. Through the adherence to the SWPPP and the conditions of the CGP, temporary soil erosion during construction would be minimized and re-vegetation of the restoration site would help permanently reduce soil erosion and soil loss. Therefore, it is anticipated that the project effects on topography and soils would be less-than-significant.

Prison Staging Area (PSA). Proposed construction activities within the PSA are described in Section 2.3.2. Construction work would only alter existing topography (grades) within a few isolated portions of the project site. These portions would include an area currently occupied by office trailers and the far western end of the PSA. After removal of the trailers, the area would be re-graded to match the topography (elevation and grades) of the immediately adjacent areas within the PSA. Grading of the far west end of the site would be conducted to re-direct stormwater discharge from the property in a more desirable direction. The final topography (grades) within the PSA would be appropriate for the site and, as concerns stormwater runoff and discharge, and would constitute and improvement compared to existing conditions. The SWPPP and the CGP mentioned above would also apply to this project site. The area disturbed by grading activities would be seeded with native grasses and forbs. Through the adherence to the SWPPP and the conditions of the CGP, temporary soil erosion during construction would be minimized and re-vegetation of re-graded areas would help permanently reduce soil erosion and soil loss. Therefore, it is anticipated that the project effects on topography and soils would be less-than-significant.

MIAD East Area. Most of the MIAD East Area (see Figure 7) was highly disturbed by excavation and materials processing activities performed as part of Reclamation's MIAD modification project. These activities were recently completed and Reclamation's construction contractor reportedly has restored the topography in disturbed areas such that it is now similar to the topography that was present prior to initiation of the MIAD modification project. Although the Corps requested Reclamation to provide as-built drawings depicting the restored topography, Reclamation has advised the Corps that these as-built drawings are not yet ready. Because of this, it is not currently possible to evaluate the restored topography as regards how it compares to pre-construction topography.

It is possible that up to 300,000 cy of material excavated during construction of the JFP Phase IV project may still need to be disposed of within the MIAD East Area. Such disposal would likely be completed before any rip-rap removed from the HRRA is disposed here. The

Phase IV material would be placed within the MIAD East disposal area as a layer having relatively uniform thickness. The topography of the disposal area would mimic the topography restored by Reclamation to the extent practicable following completion of Phase IV material placement. The finished grade elevations would be higher than the elevations restored by Reclamation. The average finished grade could be as much as 8 feet higher if all 300,000 cy of material from Phase IV is permanently disposed in MIAD East.

The Phase IV construction contractor may build temporary, shallow stormwater detention ponds within the MIAD East Area. Following completion of any Phase IV material disposal in MIAD East, the stormwater treatment ponds would be filled and any disturbed areas would be re-graded to mimic pre-construction natural topography to the extent practicable. The Phase IV disposal and related construction activities would not adversely change the surface relief or elevation of the MIAD East Area. Since the disturbed areas would be planted with native grasses and forbs as the final stage of construction work, these construction activities would not result in long-term soil erosion. No true topsoil remains in the disturbed portions of MIAD East, thus the Phase IV activities here would not result in the loss of topsoil. Given these considerations, any Phase IV disposal activities in the MIAD East Area would be less than significant.

Rip-rap removed from the HRRA may be placed within the disposal area of MIAD East after completion of the Phase IV material disposal activities in this same area. It is likely that the rip-rap would be placed (disposed of) in the northern portion of the disposal area near the existing haul road; however, the final placement location has not yet been determined. The maximum area occupied by the disposed rip-rap would range from approximately 6.5 to almost 8 acres, based on a rip-rap pile height ranging from 8 to 10 feet above the soil surface. The top of the completed rip-rap disposal pile would be relatively level, although it would follow the topography of the underlying soil. There would be no loss of topsoil and no substantial soil erosion. Although the rip-rap field would permanently change the elevation within the footprint of this field, this elevation increase would not adversely affect the surface relief (topography) to the extent that it would interfere with natural drainage patterns or lead to erosive conditions. Therefore, disposal of rip-rap within the MIAD East disposal area would be less than significant.

Rossmoor 14-Acre Mitigation Site. Proposed activities within this mitigation site are described in Section 2.3.4. No topographic alterations would be made, thus the project would not affect topography. Limited soil disturbance would occur when preparing the area for planting and when installing the saplings. This would result from scarifying or tilling the soil prior to planting and from augering planting pits for the saplings. The entire site would be seeded with native grasses and forbs and a total of approximately 3,104 native trees and shrubs would be planted. The mitigation contractor would be required to obtain a CGP for the project and to develop and implement a site-specific SWPPP. Through the adherence to the SWPPP and the conditions of the CGP, temporary soil erosion during construction would be minimized and installation of the mitigation plantings (grasses, forbs, trees, shrubs) help permanently reduce soil erosion and soil loss. Therefore, it is anticipated that the project effects on topography and soils would be less-than-significant

Mitigation

Since there would be no significant effects to topography or soils, no mitigation would be required. However, the standard BMPs would be implemented by the contractor or by the Corps to avoid or minimize any effects of potential erosion. Implementation of these BMPs would ensure that effects from erosion would remain at less-than-significant levels. Standard BMPs would include, but would not necessarily be limited to:

- Appropriate erosion control measures would be incorporated into the SWPPP in order to prevent sediment from entering waterways. The contractor would use a water truck or other appropriate measures to control fugitive dust on haul roads, construction areas, and stockpiles.
- Construction activities that would involve topographic alterations and soil disturbance would be scheduled to avoid as much of the wet season as possible.
- Disturbed areas slated for revegetation would be planted with native grass and forb seeds in a timely manner to control erosion.
- Geotextile fabric would surround rip-rap that would be used to create a stormwater drainage feature beneath a segment of the proposed O&M Bench situated in the Dike 7 Area (see Section 2.3.1). This material would help filter sediments contained in stormwater flowing through the drainage feature.

3.3.11 Traffic

Traffic is defined for this analysis as the movement of vehicles from one place to another through a roadway network. The focus of this particular traffic and circulation analysis is the roadway network adjacent to the project areas.

Regulatory Setting

Regulatory conditions for traffic analysis are generally dictated by overall transportation industry standards as published by the Federal Highway Authority and the U.S. Department of Transportation. These organizations serve as oversight agencies ensuring the respective regional, state, and local jurisdictions follow the appropriate guidelines and parameters. For traffic analysis parameters, delays are generally considered the leading indicators of traffic flow and operations; the shorter the delay, the better the roadway segment flows and the intersections operate. Federal regulations do not dictate specific levels of operation or minimum delays. Instead, it is primarily the local jurisdiction's judgment, supported by the analyst's qualitative calculations, that establishes the best options.

Existing Conditions

A detailed discussion of the Folsom JFP area's traffic and circulation is presented in the 2012 SEIS/EIR. The main roadway and access route to the JFP project area is Folsom-Auburn Road. This four-lane divided arterial which runs north and south, connecting Sacramento County to Placer County. The north-bound direction provides access to Granite Bay while the south-bound direction connects to the City of Folsom and Highway 50. Folsom-Auburn Road is used primarily by commuters, residents, and recreationists. Traffic consists mostly of private automobiles, light commercial vehicles, emergency vehicles, public buses, and bicycles.

Traffic volume on Folsom-Auburn Road peaks during the morning and evening rush hour and becomes a steady but lower volume during the day. The morning peak traffic hour is typically from 7:00am to 8:00am and the evening peak traffic hour is typically from 5:00pm to 6:00pm. A traffic study presented in the 2012 SEIS/EIR compiled average daily traffic (ADT) volumes along the roadways around Folsom Dam. According to the traffic study (2011), the ADT on Folsom-Auburn Road between Douglas Road to Folsom Dam Road was 44,918 and was projected to increase 2% each year.

Streets near the Rossmoor 14-acre mitigation site consist primarily of minor residential streets maintained by the City of Rancho Cordova. Traffic on the residential streets includes private automobiles and bicycles. Traffic on the residential roads tends to be light throughout the day with a peak during the morning rush hour and the evening rush hour. City sidewalks, which are used by local residents, are located on each side of the residential streets. The American River Parkway provides recreation trails used for pedestrian traffic (running and walking) and bicycling. One of these trails is located north of the proposed mitigation site.

The nearest major road to the Rossmoor 14-acre mitigation site is Coloma Road. This roadway is a major, four-lane urban roadway that connects local residential and commercial areas to state highways and other parts of the metropolitan area. Types of traffic on Coloma Road include private automobiles, light commercial vehicles, emergency vehicles, public buses, and bicycles. The City of Rancho Cordova posts average daily traffic counts on their web site for roadways. The ADT at Rossmoor Drive (east of Averell Court) is 1,599 vehicles and the ADT on Coloma Road (east of Georgetown Drives) is 20,427 vehicles (City of Rancho Cordova, 2014).

Environmental Effects

Significance Criteria

Effects to traffic would be considered significant if the proposed project would result in any of the following:

- Substantially increase traffic in relation to existing traffic load and capacity of the roadway system;
- Substantially disrupt the flow and/or travel time of traffic;
- Exceed the Institute of Transportation Engineers (ITE) significance threshold of 50 or more new peak-direction trips during the peak hour; or
- Expose people to significant public safety hazards resulting from construction activities on or near the public road system.

No Action Alternative

Under the No Action alternative, the Corps and CVFPB would not participate in the Folsom JFP site restoration measures, would not install the proposed guardrails, and would not establish the Rossmoor 14-acre mitigation site. As a result, there would be no additional increase in traffic, changes in level of service, or effects on circulation from construction activities associated with the design refinements, including movement of equipment and haul trucks on local roadways. Traffic and circulation patterns would continue to be influenced by future construction, as well as local and regional roadway use. The roadway network would be expected to remain the same as under existing conditions.

Implement Proposed Action

Potential effects on traffic could occur at the Folsom JFP project area in the city of Folsom and at a mitigation site located within the Rossmoor Bar Park in Rancho Cordova. Traffic generated by the proposed action would result in growth in two categories: labor force accessing the project site on a daily basis, and truck trips from deliveries of fuel and/or materials.

Access to and from the Folsom JFP project area for construction-related vehicles would be via local roadways, including Folsom-Auburn Road. These vehicles would include construction equipment, trucks, and worker vehicles. The equipment would be stored on site at the staging areas or other areas within the project area, while the worker vehicles would make daily trips to and from the project area. An estimated 20 to 30 workers would be on-site each day during construction depending on scheduled activities. These workers would access the area via regional and local roadways, and park their vehicles at the staging areas. Major construction activities would be completed in approximately 7 to 8 months. The daily total of worker vehicles would represent a less than one percent increase in traffic volume. The increase in traffic due to the project's labor force in relation to existing traffic load and capacity of the roadway system would be less-than-significant.

Deliveries to the Folsom JFP project area include fuel and other construction materials, which could be up to three per day. The increase in traffic due to the deliveries in relation to existing traffic load and capacity of the roadway system would be less-than-significant. While some roadways would experience a small increase in volume/ capacity, the increase would be less than the 50 or more new truck trips during the a.m. peak hour or the p.m. peak hour threshold of significance. Furthermore, deliveries and trucks trips at any given access route would be short-term.

Once the temporary bypass road is built within the HRRA, construction equipment and vehicles traveling on the proposed O&M Bench would occasionally have to cross the bypass road being used by vehicles travelling to or exiting from Folsom Point. To ensure the safety of the public and workers, road flaggers would be required to be on site daily during work hours. Similarly, after the Folsom Point Bridge is removed and a new road segment is built to take the bridge's place, construction equipment, vehicles, and maintenance vehicles traveling on the O&M Bench would occasionally have to cross Folsom Point Road being travelled by vehicles going to or coming from Folsom Point (note: the temporary bypass road would have been removed by the time Folsom Point Road is once more the primary and permanent access road to Folsom Point). Road flaggers would be stationed at the O&M Bench/Folsom Point Road intersection during construction work hours to help ensure the safety of the public and project workers. In addition, the contractor would prepare a traffic safety and management plan. The plan would be approved by the appropriate agencies and implemented prior to initiation of construction. The plan, among other things, would allow for the safe passage of emergency vehicles whenever necessary. With the implementation of these measures, a risk to public safety is not expected from construction activities; therefore this effect is less-than-significant.

One option for the disposal of rip-rap removed from the HRRA would involve a non-federal agency collecting the rip-rap at the HRRA, then transporting it off-site to a non-federal project that has not yet been determined. If this option (e.g., rip-rap removal Option 1) is employed there would be an increase in traffic on roadways in the immediate vicinity of the JFP compared to the construction traffic generated if one of the other two options for rip-rap disposal is used instead. It is not possible to estimate the additional traffic impacts since the loading capacity of the vehicles that would be used to transport the rip-rap is unknown and the quantity of rip-rap that would be transported is unknown. It would be the responsibility of the non-federal agency contracting the rip-rap removal/transport work to evaluate potential traffic impacts in a separate CEQA document.

During the installation of the guardrail, temporary closure of the northern (west bound) lane of Folsom Lake Crossing and the southern (east bound) lane of the bike trail on the north side of the road would be required to allow construction access and for public safety. To allow continued public access on the bike trail and ensure the safety of the public and workers, road flaggers would be required to be on site daily during work hours. Once guardrail construction begins, it is anticipated that all the work would be completed within 1 to 2 weeks. Temporary lane closures would occur during daily working hours only. Traffic control features, such as traffic cones and safety barricades, would be set up in the morning before work starts and removed every evening after work is completed. Only one work zone (lane closure zone) would be set up at a time. The length of each work zone would vary but would likely not exceed 1,000 feet long. Portable message signs would be set up by the construction contractor along the roadway to inform the public of these moving lane closures. The construction contractor would be required to obtain an Encroachment Permit from the City of Folsom. All traffic control (maintenance of traffic) would be performed in compliance with the terms and conditions of the Encroachment Permit.

Installation of the guardrails would temporarily disrupt the flow of traffic on Folsom Lake Crossing near the construction zones and would increase travel times for vehicles using this segment of the roadway. It would also temporarily disrupt the flow of pedestrian and bike traffic on the bike path. However, these adverse effects would be short-lived, would not be substantial, and public safety risks would be minimized through the measures described above; thus this impact would be less-than significant.

Access to and from the Rossmoor 14-acre mitigation site for construction-related vehicles would be via local roadways, including Coloma Road and Rossmoor Drive. These vehicles would include relatively small construction equipment, trucks, and worker vehicles. The initial construction activities necessary to establish the mitigation site would take approximately two to four months to complete and would include 3 to 4 worker vehicle trips each day, with approximately six additional trips to deliver vegetation to be planted. The increase in traffic due to the project's labor force in relation to existing traffic load and capacity of the roadway system would be less-than-significant. In addition, vehicle trips would not exceed the ITE significance threshold, nor would the project create a safety hazard. This impact would be less-than-significant.

Mitigation

The construction contractor for the JFP restoration sites would submit a traffic safety and management plan. Elements of the plan would include, but are not necessarily limited to, the following:

- Outline of proposed routes for approval by appropriate agencies, with implementation of the plan prior to initiation of construction.
- Description of how drivers would be informed and trained on the various types of haul routes, and areas that are more sensitive (e.g., high level of residential or education centers, or narrow roadways).
- Provisions for the use of flaggers and/or signage to safely direct traffic through construction work zones.
- A truck trip schedule that shows, to the extent feasible and as needed, methods to avoid adverse impacts on traffic flow, by scheduling truck trips outside of peak morning and evening commute hours.
- Plans to limit lane closures on public roadways during peak traffic hours to the extent possible.
- The construction contractor would develop and use signs to inform the public of the haul routes, route changes, detours, and planned road closures to minimize traffic congestion and ensure public safety.

By implementing the traffic safety and management plan, impacts to traffic resulting from the proposed project activities are considered less than significant.

3.3.12 Water Quality and Waters of the United States

This section describes the existing conditions of the water resources and jurisdictional Waters of the United States that could be affected and evaluates the effects of the proposed project on water resources, water quality, and Waters of the United States in the project areas.

Regulatory Setting

Federal and State law mandates a series of programs for the management of surface water quality. The Clean Water Act (33 U.S.C.§1251 et seq.) is the Federal law that establishes the baseline that all state and local water quality laws must meet. The CWA also gives states the authority to adopt more stringent water quality programs to manage waters within the state. California's Porter-Cologne Water Quality Control Act (California Water Code, Division 7), which created the SWRCB, regulates the California waterways and establishes pollution prevention plans and policies.

The SWRCB is divided into nine Regional Water Quality Control Boards (RWQCB). Each RWQCB is responsible for enforcing State water quality laws and objectives, establishing beneficial uses for each State waterway, and developing and updating basin plans that protect water quality based on beneficial use. The project area falls within the jurisdiction of the CVRWQCB, which authorizes discharges into State waterways under the National Pollutant Discharge Elimination System NPDES permitting process. NPDES permits apply to stormwater, groundwater, and other wastewater discharges in the project area. Construction activities that disturb more than one acre of land would require a NPDES permit for potential storm water discharges and construction dewatering.

Permit types are further divided into categories based on the project activity in question. Pertinent to this project, a storm water permit is required. All permits require a notice of intent to be submitted prior to commencing any soil disturbing activities, groundwater dewatering, or concrete batch plant operation. The storm water permit requires that a SWPPP be developed and implemented along with a monitoring and reporting plan.

Section 401 of the CWA regulates the water quality of bodies of water associated with any in-water work, or discharge of dredged or fill material. Section 401 is administered by CVRWQCB. The CVRWQCB either issues or denies water quality certifications based on whether or not the proposed in-water activity, discharge, or fill complies with all State and Federal laws, policies, and regulations governing the protection of the beneficial uses of the State's water resources.

Section 404 of the CWA regulates the discharge of dredged or fill material into jurisdictional Waters of the United States (WOUS), which include wetlands. Individual, general, and nationwide permits are issued by the Corps and EPA for activities that may impact jurisdictional WOUS. Although the Corps does not issue itself permits for its own Civil Works projects, Corps regulations state that the Corps must apply the guidelines and substantive requirements of Section 404 to its activities. Such guidelines are known as the "Section 404(b)(1) Guidelines."

Existing Conditions

A detailed discussion of the water quality in the Folsom JFP area is presented in the 2012 SEIS/EIR. The American River basin covers an area of approximately 2,100 square miles and has an average runoff of 2.7 million acre-feet per year. The American River is part of the Sacramento River watershed along with numerous other streams and rivers that drain the western slopes of the Sierra Nevada and Cascades. The North, Middle, and South Forks of the American River are the major tributaries draining into Folsom Lake. In general, these waters entering Folsom Lake from the upper American River watershed are of high quality. The mainstem American River channel below Folsom Dam receives water from Folsom Lake after it passes through the dam.

Flood-producing runoff occurs primarily during the months of October through April and is usually most extreme between November and March. From April to July, runoff is primarily generated from snowmelt from the upper portions of the American River watershed. Runoff from snowmelt usually does not result in flood producing flows; however, it is normally adequate to fill Folsom Lake's (Folsom Reservoir's) available storage. Approximately 40 percent of the runoff from the watershed results from snowmelt.

There are no jurisdictional WOUS or sensitive natural communities such as vernal pools at the Rossmoor 14-acre mitigation site. The American River is approximately 0.25 miles from the proposed mitigation site. There are no jurisdictional WOUS within or immediately adjacent to the Dike 7 Office complex parking area, the Prison Staging Area, or the area where guardrails would be installed as part of the proposed action. However, Folsom Lake is a jurisdictional WOUS and is adjacent to the proposed HRRA and is near the MIAD East disposal site. The OILD site is located within the lake itself.

Environmental Effects

Significance Criteria

Effects to water quality would be considered significant if the proposed project would result in any of the following:

- Violate any water quality standards or waste discharge requirements, create or contribute runoff water that would provide substantial additional sources of polluted runoff, or otherwise substantially degrade water quality;
- Substantially degrade surface water or groundwater quality such that it would substantially degrade water quality to the detriment of beneficial uses; or
- Substantially alter the existing drainage pattern of the site or area in a manner that would result in substantial erosion or siltation on or off the site, resulting in flooding on or off the site, or exceed the capacity of stormwater drainage systems.
- Have a substantial adverse effect on jurisdictional Waters of the United States through filling, dredging, or other means.

No Action Alternative

Under the No Action alternative, the Corps and CVFPB would not participate in the Folsom JFP site restoration measures, would not install the proposed guardrails, and would not establish the Rossmoor 14-acre mitigation site. As a result, there would be no additional effects on water resources or quality from construction activities, including movement of disturbed soil and accidental spills into surface drainage. Water quality would continue to be influenced by urban and natural stormwater runoff. There would also be no additional impacts to jurisdictional WOUS.

Implement Proposed Action

Potential water quality effects could occur from the Folsom JFP site restoration activities and from the establishment of the Rossmoor 14-acre mitigation site. Installation of the proposed guardrails would have essentially no water quality effects due to the nature of the construction work involved.

Haul Road Restoration Area (HRRA). Site preparation for the project would include ground disturbing activities including excavation, fill placement, grading, and contouring. Up to 58 acres of land could be exposed during construction activities. Exposed soil could potentially erode during rain events, causing increased turbidity in local waterbodies and waterways. Adjacent waterbodies that could potentially be affected include Folsom Lake, while local waterways that could potentially be affected include a few local drainages.

Construction activities have the potential to temporarily impair water quality if disturbed and eroded soil, petroleum products, or construction-related wastes are discharged into receiving waters or onto the ground where they can be carried into receiving waters. Soil and associated contaminants that enter receiving waters through stormwater runoff and erosion can increase turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms.

In order to help maintain existing water quality conditions, the contractor would be required to obtain an NPDES permit, in this case a Construction General Permit (CGP) from the CVRWQCB. The CGP pertains to the prevention of increased turbidity of adjacent waterways from site erosion and sedimentation. The contractor would be required to develop and implement a SWPPP prior to initiating construction activities and to implement standard Best Management Practices (BMPs), as discussed in Section 2.3.1. The Corps would obtain Clean Water Act Section 401 Water Quality Certification (WQC) from the CVRWQCB prior to initiating project construction activities. The construction contractor would be required to comply with the applicable technical certification conditions set forth in this permit, including any requirements pertaining to water quality monitoring. Precautions would be followed to avoid erosion and movement of soils into drainage systems. Implementation of BMPs and the SWPPP combined with adherence to CGP and Section 401 WQC conditions and requirements would reduce or avoid water quality impacts from construction to less-than-significant.

There is potential for fugitive dust and construction runoff to enter waterways due to excavation, equipment use, and movement of trucks in the project area. Frequent watering of haul routes, proper covering and control of material stock piles (e.g., dirt and aggregate) would help to prevent such pollution impacts, therefore; impacts on water quality due to fugitive dust would be less than significant.

Upon completion of the HRRA construction work, the area would be restored to a more natural state and graded to allow for natural drainage. Additionally, the majority of disturbed areas would be seeded with native grasses and forbs to provide a permanent vegetative ground cover and thereby control erosion. The implementation of the site restoration measures would not alter the existing drainage patterns of the area in a manner that would result in substantial erosion, result in flooding, or exceed the capacity of stormwater drainage systems. Therefore, this effect is less than significant.

MIAD East Area / MIAD East Disposal Site. The MIAD East disposal site may be used as a permanent disposal site for the rip-rap that would be removed from the HRRA (see Section 2.3.1). Soil disturbance resulting from the placement of this rip-rap in the MIAD East area would not directly contribute to erosion into Folsom Lake since surface water flow in this area naturally drains away from the lake. However, the stormwater management system employed at the site during construction activities could potentially include pumping some of the stormwater runoff to the lake after pre-treatment.

Surface water runoff from the majority of the MIAD East Area generally flows to the south/southeast and discharges through a culvert under Green Valley Road. South of this road, the flow appears to enter an ephemeral stream or drainageway that flows southward for several hundred feet. This off-site drainageway may also have direct hydrologic connections to a few scattered wetlands dominated by herbaceous vegetation that are located south of Green Valley Road. Soil disturbance and erosion generated by rip-rap disposal within the MIAD East disposal site could temporarily increase turbidity (suspended solids) within the off-site drainageway and possibly within one or more wetlands that periodically receive flow from the drainageway.

Any use of the MIAD East area as a disposal site would incorporate this area into the same SWPPP that would apply to the HRRA. Similarly, the Section 401 WQC and the CGP obtained for the HRRA would incorporate disposal activities at MIAD East. Should any stormwater runoff from the MIAD East area be routed to Folsom Lake, any temporary secondary impacts to water quality (ex. turbidity) would be reduced to less-than-significant through use of the BMPs discussed for the HRRA and through adherence to the WQC's technical certification conditions and adherence to the CGP's requirements. The same is true for temporary secondary impacts to water quality in the off-site drainageway and wetlands discussed above.

Drainage patterns would not be altered by the disposal of rip-rap in the MIAD East disposal site; therefore the effect upon local drainage would be less than significant. The disposal of rip-rap within the MIAD East disposal site would not directly impact any WOUS.

Overlook In-Lake Disposal Site (OILD Site). As discussed in Section 2.3.1, the OILD site may be used as a permanent disposal area for the rip-rap to be removed from the HRRA. This site is presently being used as a permanent in-lake disposal area for waste materials (sediments, decomposed granitic materials, etc.) generated during construction of JFP Phase IV and this usage will likely continue until Phase IV is completed. The potential impacts of these Phase IV disposal activities to water quality and WOUS (e.g. Folsom Lake) were evaluated in the 2012 SEIS/EIR and therefore, to a large extent, are not addressed herein. Instead, the following discussion primarily focuses on use of the OILD site for the disposal of rip-rap removed during JFP Phase V.

Placement (disposal) of rip-rap within the OILD site may disturb or mobilize sediments, which have the potential to affect turbidity, total suspended solids, dissolved oxygen, pH, and water temperature. The re-suspension of sediments may also affect the concentrations of various metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc) in the water column by releasing such metals from lake sediments, including sediments deposited at the OILD site by Phase IV construction. In addition to the potential adverse effects to general water quality that could result from mobilizing such metals, this could create the potential for bioaccumulation of mercury in the aquatic environment.

Use of the OILD site for rip-rap disposal would incorporate this area into the same SWPPP that would apply to the HRRA. The Section 401 WQC and the CGP obtained for the HRRA would also incorporate rip-rap disposal activities within the OILD site. The construction contractor would be required to comply with the provisions of the SWPPP, the Section 401 WQC (including any associated Waste Discharge Requirements (WDR) Order issued by the CVRWQCB), and the CGP.

The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (CVRWQCB, 2011), or the "Basin Plan", defines specific water quality objectives that should be obtained in order to protect beneficial uses of Folsom Lake. Typical lake water quality monitoring requirements contained in past Section 401 WQCs and WDR Orders issued for the JFP have focused on monitoring dissolved oxygen, pH, turbidity, settleable matter, and visible pollutants like oil, grease, fuel, and petroleum products. USACE would monitor Folsom Lake water quality parameters in the immediate vicinity of the OILD site in accordance with monitoring requirements set forth in the project's WQC. This monitoring would be conducted throughout the period that the OILD site is used for disposal purposes. Additional monitoring of turbidity levels would be performed adjacent to the lake side of Folsom Dam during June through October to ensure turbidity levels do not exceed CVRWQCB Section 401 thresholds, since this area is summer salmon habitat. Other water quality monitoring required by the project's WQC would be performed in compliance with the WQC. The construction contractor may install silt curtains around the OILD site to minimize construction-generated turbidity and related water quality effects outside the boundary formed by these curtains. However, the contractor may employ other BMPs to help ensure water quality thresholds identified in the WQC and applicable water quality thresholds set forth in the Basin Plan are not exceeded.

Disposal of rip-rap in the OILD site would be scheduled when the lake water level is low enough to allow disposal via terrestrial construction equipment, if feasible. If this is not possible, barges equipped with cranes or similar equipment would be used to transport rip-rap to and place rip-rap within the OILD site. This poses the risk of oil and fuel spills. Contaminants could include occasional or remote small spills of oil and fuel from operation of barges, support vessels, and gas-powered equipment. A fuels spill management plan would be developed and implemented by the construction contractor. Construction vessels and equipment would be inspected frequently and maintained by the construction contractor to help prevent the discharge of fuel, oil, lubricants, and similar fluids.

Regardless of the methods used to dispose of rip-rap, disposal within the OILD site would result in short-term adverse water quality impacts that would largely be confined to the immediate area. The impacts would be minimized through the use of the BMPs discussed above, by compliance with WQC and CGP requirements, and through implementation of a thorough monitoring plan. These mitigation measures would reduce long-term effects on water quality to a less than significant level.

Dike 7 Office Complex Parking Area and Prison Staging Area. The CGP permit and the SWPPP for the HRRA would also cover the restoration activities proposed at the Dike 7 Office Complex parking area and the Prison Staging Area. The construction contractor would be required to comply with the conditions set forth in the CGP, to implement the SWPPP, and to implement the aforementioned BMPs as these apply to construction activities proposed at the parking area site and the Prison Staging Area. The site restoration measures would not alter existing drainage patterns in a manner that would result in substantial erosion or siltation on or off-site, resulting in flooding on or off-site, or exceed the capacity of stormwater drainage systems. Therefore, this effect would also be less than significant. Implementation of BMPs and the SWPPP combined with adherence to CGP conditions and requirements would reduce water quality impacts from construction to less-than-significant.

Rossmoor 14-acre Mitigation Site. Site preparation at the Rossmoor 14-acre mitigation site would involve limited ground disturbing activities including disking and scarifying the ground plus excavation of planting pits to receive the saplings that would be planted. The mitigation contractor would be required to obtain a CGP and to comply with the conditions of this permit. This contractor would also be required to develop and implement a site-specific SWPPP. Through these measures, the project impacts to water quality would be less-than-significant. The site restoration measures would not alter existing drainage patterns that would result in substantial erosion, resulting in flooding, or exceed the capacity of stormwater drainage systems. Therefore, this effect is also less-than-significant.

Direct Impacts to Jurisdictional Waters of the United States

Construction work proposed in the HRRA would necessitate temporary and permanent impacts to jurisdictional WOUS. These impacts would consist of rip-rap removal, rip-removal followed by backfilling, and a lesser extent of filling below the ordinary high water (OHW) elevation of Folsom Lake, which is 466 feet NAVD 88. The OHW elevation or OHW “line” was previously established as the jurisdictional boundary of this waterbody.

The anticipated impacts to WOUS that would result from HRRA construction using the HRRA 440 Design Option are estimated in the table 3.7 below.

Table 3.7. HRRA construction impacts to jurisdictional Waters of the United States, based on the HRRA 440 Design Option.

Project Component	Impact Type	Impact Area (acres)	Excavation Quantity (cubic yards)	Fill Quantity (cubic yards)
Rip-Rap Removal	Temporary	2.7	43,500	0
Rip-Rap Removal, Followed by Backfill	Temporary	0.5	9,100	4,900
Soil Area Filled	Temporary	0.4	0	2,400
Soil Area Filled	Permanent	0.1	0	600
Total Temporary Impacts		**3.6**	**52,600**	**7,300**
Total Permanent Impacts		**0.1**	**0**	**600**
Grand Total – All Impacts		**3.7**	**52,600**	**7,900**

Note: All values indicated are approximate. The quantities indicated represent the maximum anticipated. Actual quantities would likely be less than those listed.

The anticipated impacts to WOUS that would result from HRRA construction using the HRRA 460 Design Option are estimated in the table 3.8 below.

Table 3.8. HRRA construction impacts to jurisdictional Waters of the United States, based on the HRRA 460 Design Option.

Project Component	Impact Type	Impact Area (acres)	Excavation Quantity (cubic yards)	Fill Quantity (cubic yards)
Rip-Rap Removal	Temporary	1.9	30,700	0
Rip-Rap Removal, Followed by Backfill	Temporary	0.5	9,100	4,900
Soil Area Filled	Temporary	0.4	0	2,400
Soil Area Filled	Permanent	0.1	0	600
Total Temporary Impacts		**2.8**	**39,800**	**7,300**
Total Permanent Impacts		**0.1**	**0**	**600**
Grand Total – All Impacts		**2.9**	**39,800**	**7,900**

Note: All values indicated are approximate. The quantities indicated represent the maximum anticipated. Actual quantities would likely be less than those listed.

Figure 9 shows the locations of the direct impacts to jurisdictional WOUS that would result from construction of the HRRA using the 440 Option and those that would result from construction of the HRRA using the 460 Option. All of these impacts would be situated on the north side of the existing haul road and would affect lake fluctuation zone habitats (open water habitats; lacustrine habitats) that were heavily disturbed by prior JFP construction phases.

Under the 440 Option (see Figure 9), there would be two separate areas of rip-rap removed from within the jurisdictional boundary of Folsom Lake (e.g. from below the lake's OHW line). These areas would encompass a total of approximately 2.7 acres. A maximum total of approximately 43,500 cy of solid stone rip-rap would be excavated by the construction contractor in these areas, which are both situated west of the Dike 8 area. Under the 460 Option (see Figure 9), there would be three separate areas of rip-rap removed in this same region rather than two. These areas would encompass a total of approximately 1.9 acres where a maximum total of roughly 30,700 cy of rip-rap would be excavated by the construction contractor. After the rip-rap is removed, the affected areas would be graded to establish relatively smooth surfaces that would blend with the re-graded topography created landward of these areas as part of the HRRA construction work. This grading would result in some incidental fallback of soil (fill) into the excavated jurisdictional WOUS, as would the initial excavation process. Such "fill" would be minor as regards both the extent and quantity of fallback material, and thus is considered a *de minimis* impact.

For both the 440 Option and the 460 Option, there would be one WOUS area where the existing stone rip-rap would first be removed and then the same area would be backfilled using soil obtained from the Dike 8 area. This area is located immediately north of the Dike 8 area. Under both design options, the limits of the affected area would be identical and would contain approximately 0.5 acre. A maximum of approximately 9,100 cy of rip-rap would be removed, then roughly 4,900 cy of fill would be placed in the excavated depression formed by rip-rap removal to establish the desired grades.

All of the proposed impacts to WOUS involving rip-rap removal and the impact to WOUS involving rip-removal and backfill are considered to be temporary because the affected areas would still be below the OHW elevation of the lake following the completion of HRRA construction activities and thus would still classify as jurisdictional WOUS. The impacted areas would still have a direct hydrologic connection to the lake and there would be no net loss of habitat/aquatic functions, services, and values. To the contrary, the functions and values of these areas would increase compared to existing conditions.

Immediately north of the rip-rap removal/backfill area described above, the existing surface is comprised of soil rather than rip-rap. Under both the 440 Option and the 460 Option, 0.5 acre of jurisdictional WOUS would be directly impacted by HRRA construction in this area (see Figure 9, area situated immediately north of the Dike 8 area). Approximately 3,000 cy of soil (fill) obtained from the Dike 8 area would be placed in the affected WOUS to establish the desired grades. Although the overall impact footprint would be 0.5 acre, only 0.1 acre would be a permanent impact while the remaining 0.4 acre would be a temporary impact. In the temporary impact portion, the final grade following fill placement would remain below elevation 466 feet and thus would still classify as a jurisdictional WOUS. This portion would retain a direct hydrologic connection to the lake and there would be no net loss of habitat/aquatic functions, services, and values. In the permanent impact portion, the final grade after fill placement would be above elevation 466 feet thereby converting the jurisdictional WOUS to a non-jurisdictional upland.

Grading called for in the HRRA under both the 440 Option and 460 Option would create a depression immediately adjacent to the south side of the area where rip-rap would be removed and backfilled (see Figure 9). This depression would extend southward into the central portion of the Dike 8 area. An approximately 0.5-acre portion of this depression would be lower than elevation 466 feet NAVD88 (Folsom Lake's jurisdictional WOUS boundary), thereby restoring roughly 0.5 acre of jurisdictional WOUS that was present prior to the JFP. This restoration feature would therefore more than compensate for the 0.1 acre of permanent WOUS impacts that would result from HRRA construction activities.

The 2007 EIS/EIR addressed various Folsom JFP impacts to WOUS, including impacts that would result from construction of the haul road running through the HRRA. This document estimated that a total of 24 acres of jurisdictional open water habitat (Folsom Lake) would be filled as a result of constructing that portion of the haul road extending from the auxiliary spillway (west of the HRRA) to MIAD (east of the HRRA) and through construction of a project haul road extending from the right wing dam to Dike 4 (both west of the HRRA). In order to build both haul roads and other features in the initial phase of the JFP, Reclamation obtained a Department of the Army (DA) permit (e.g. CWA Section 404 individual permit) from USACE. This permit, DA Permit #SPK-2007-01068, was originally issued on December 18, 2007 and authorized the filling of 24 acres of WOUS through construction of the haul roads. It also authorized and required compensatory mitigation for these fill impacts based on the presumption that all the affected areas would be converted to uplands. A Section 401 Water Quality Certification which covered the haul road construction impacts to WOUS was also issued to Reclamation by the CVRWQCB on December 5, 2007.

The impact footprint of the haul road extending from the auxiliary spillway to MIAD that was authorized by the 2007 Water Quality Certification and the 2007 DA Permit completely encompasses all the proposed WOUS areas that would be impacted due to HRRA construction activities. As discussed above, the majority of the HRRA construction impacts to WOUS would be temporary, would not result in a net loss of aquatic functions and values, and would not result in a decrease in the existing extent (acreage) of WOUS encompassed by Folsom Lake. Only one existing WOUS area encompassing 0.1 acre would be permanently impacted and converted to upland by HRRA construction. However, this loss would be more than fully compensated by the restoration of 0.5 acre of WOUS that would occur as part of HRRA grading activities. Mitigation was also previously provided by Reclamation for permanent impacts to WOUS that included the areas that would be impacted by the proposed HRRA construction activities. Based on these points and the CWA Section 404(b)(1) analysis provided in Appendix G, no additional mitigation for the HRRA project's direct impacts to WOUS is proposed and the subject project's effect to WOUS would be less-than-significant.

As described in Section 2.3.1, rip-rap removed from the HRRA during restoration construction activities would be disposed using one of three possible options. The option whereby rip-rap would be disposed in the MIAD East disposal site would not result in direct impacts to jurisdictional WOUS. The option whereby a non-federal agency transports the rip-rap off-site for use at one of the agency's projects (e.g., Option 1) would not directly impact jurisdictional WOUS as part of the JFP project. It cannot be determined whether this option could possibly impact off-site WOUS since details of the project where the rip-rap would be used are presently unknown. The non-federal agency conducting the removal and transportation of rip-rap would prepare a CEQA document where WOUS impacts would be analyzed, and if needed, measures would be provided as mitigation for such impacts.

The third option, whereby the rip-rap would be disposed at the OILD site, would result in direct temporary impacts to jurisdictional WOUS. In this case, the affected WOUS would be open water habitat (lacustrine habitat) within Folsom Lake.

The 2012 SEIS/EIR identified the OILD site as an area where some of the materials dredged and excavated during the construction of JFP Phase IV would be permanently disposed and it evaluated this activity's impacts to jurisdictional WOUS. At the time this document was prepared, the impact footprint of the OILD site was projected to be 16.6 acres and the total amount of material that might be disposed at the site was estimated to be roughly 720,000 cy. The 2012 SEIS/EIR determined this WOUS impact would be temporary and less than significant, thus no mitigation for the impact was proposed other than use of construction BMPs and monitoring to help minimize adverse water quality effects.

Since the time of the 2012 SEIS/EIR, the boundaries of the OILD site were reconfigured to avoid impacts to subsequently discovered cultural resource sites and to allow the maximum elevation of the disposal mound within the site to be lowered somewhat. This process increased the size of the OILD site from 16.6 acres to 21.2 acres, and the current limits of the site are shown in Figure 8. The estimated maximum total volume of Phase IV materials that may disposed in the OILD site was reduced to approximately 620,000 cy. However, the maximum total volume of rip-rap from JFP Phase V that may be disposed here is approximately 100,000 cy; hence, the total volume of materials disposed from Phase IV and Phase V combined would remain the same as the total disposal volume estimated when the 2012 SEIS/EIR was prepared, e.g. 720,000 cy.

Table 3.9 below provides data for impacts to jurisdictional WOUS that would occur if the OILD site is used as the disposal site for rip-rap removed from the HRRA as part of the JFP Phase V restoration activities. This table also includes data for estimated impacts within the OILD site that would result from completion of Phase IV disposal activities. One should note that the impact acreages listed for Phase IV and Phase V actions are highly speculative. The impact footprint of the Phase IV disposal mound will be a function of the total quantity disposed and the mound's construction configuration (determined by the construction contractor) within the overall OILD site boundary. The rip-rap from Phase V would be placed along the side slopes of the Phase IV disposal mound; thus, the total acres occupied by this rip-rap will be dependent on the configuration of the Phase IV disposal mound. The important consideration is the overall impact footprint occupied by Phase IV and Phase V disposal activities combined would affect no more than 21.2 acres, e.g. the overall size of the OILD site.

Table 3.9. OILD Site impacts to jurisdictional Waters of the United States

Project Component	Impact Type	Impact Area (acres)	Quantity Disposed (cubic yards)
Disposal of Material from Phase IV within OILD Site	Temporary	18.3	620,000
Disposal of Rip-Rap from Phase V HRRA within OILD Site	Temporary	2.9	100,000
Totals		**21.2**	**720,000**

Notes:
(1) The impact area acreages indicated for the material generated by Phase IV and for rip-rap from Phase V are speculative. These acreages cannot be accurately estimated until the total volume of the Phase IV material to be placed in the OILD site is known and the configuration of the Phase IV disposal mound(s) is determined.
(2) The total impact area for the OILD site represents the maximum that may be directly affected by disposal activities. The actual impact area will likely be less.
(3) All quantity values indicated are approximate. These quantities represent the maximum anticipated. Actual quantities will likely be less than those listed.

Rip-rap disposed at the OILD site would be a permanent feature in Folsom Lake, as would be the Phase IV materials disposed there. Despite this, the rip-rap disposal is considered a temporary impact since the affected area would still classify as a jurisdictional WOUS following completion of disposal activities (e.g. no loss of WOUS acreage) and there would be no net loss of aquatic functions and values. This impact classification was also applied to the Phase IV deposition of materials into the OILD site when the Phase IV impacts were considered in the 2012 SEIS/EIR.

The maximum elevation of rip-rap placed in the OILD site would be 400 feet NAVD88, matching the maximum elevation of Phase IV materials disposed at this site. Those portions of Folsom Lake at or below elevation 466 feet NAVD88 are classified as jurisdictional WOUS. Since the lake areas affected by disposal of rip-rap (and Phase IV materials) would be below elevation 466 feet, these areas would still classify as jurisdictional WOUS following completion of the disposal activities. Lake water elevation data from 1955 to 2005 indicate lake water levels remain above elevation 429 feet for approximately 50 percent of the time on average (USACE, 2012). Hence, on average, the rip-rap placed within the OILD site should remain completely inundated more than 50 percent of the time on average.

Folsom Lake has a water surface area (jurisdictional area) of approximately 11,450 acres when the lake is at its ordinary high water elevation. Disposal features within the OILD site would occupy a maximum of 21.2 acres or roughly 0.2% of the lake's total jurisdictional acreage. When at its ordinary high water elevation, the lake holds about 977,000 acre feet of water. Assuming 620,000 cy of Phase IV materials and 100,000 cy of Phase V rip-rap (the maximum quantities) were disposed into the OILD site, the disposed materials combined would occupy a volume of approximately 466 acre feet and thereby reduce the lake's water storage capacity by less than 0.05%. This impact is considered *de minimis* as is the limited alteration to the lake's bathymetry.

In summary, disposal of rip-rap into the OILD site would result in temporary impacts to jurisdictional WOUS but there would be no long-term adverse impacts. Disposal of rip-rap would not result in a decrease in the existing acreage of WOUS encompassed by Folsom Lake and would not result in a net loss of aquatic functions and values. The rip-rap disposal would not appreciably reduce the lake's maximum water storage capacity. In consideration of these things and the CWA Section 404(b)(1) analysis provided in Appendix G, if rip-rap removed from the HRRA is disposed into the OILD site the effect to jurisdictional WOUOS would be less than significant. No mitigation for disposal of rip-rap into the OILD site is proposed, other than previously discussed BMPs/measures that would be employed to minimize short-term water quality impacts.

As discussed previously in this section, construction activities would result in the temporary degradation of water quality in Folsom Lake. These effects would include both direct and secondary (indirect) impacts to jurisdictional WOUS since the entire lake is a jurisdictional WOUS. Direct impacts would consist of temporary degradation of water quality resulting from the proposed excavation and fill activities within the lake addressed above. Secondary impacts would include temporary degradation of water quality in the lake due to disturbance of upland areas that drain into the lake (via stormwater runoff and erosion). Through the use of appropriate BMPs previously discussed and monitoring of water quality, the effects upon WOUS would be less than significant.

Mitigation

Since there would be no significant effects on water resources, water quality, or jurisdictional Waters of the United States, no compensatory mitigation would be required. However, the following standard BMPs would be implemented to avoid or minimize any effects of construction. Additional BMPs could be identified as part of the CGP permits and the Section 401 WQC discussed above. Implementation of these BMPs would help ensure that effects on water quality and WOUS would remain at less-than-significant levels. Standard BMPs include:

- Appropriate erosion control measures would be incorporated into the SWPPP by the construction contractor in order to prevent sediment from entering waterways and to minimize temporary turbidity impacts. Examples include, but are not limited to: straw bales/wattles, erosion blankets, silt fencing, silt curtains, mulching, revegetation, and temporary covers. Sediment and erosion control measures would be maintained by the contractor during construction at all times. Control measures would be inspected periodically by the construction contractor, particularly during and after significant rain events.
- The contractor would use a water truck or other appropriate measures to control fugitive dust on haul roads, construction areas, and stockpiles.
- A fuels spill management plan would be developed for the project by the construction contractor and would be implemented by the contractor.
- Construction equipment and vehicles would be fueled and maintained in specified staging areas only, which would be designed to capture potential spills. These areas cannot be

near any ditch, stream, or other body of water or feature that may convey water to a nearby body of water.
- Fuels and hazardous materials would not be stored on site. Any spills of hazardous material would be cleaned up immediately by the construction contractor.
- Construction vehicles and equipment would be inspected frequently and appropriately maintained by the construction contractor to help prevent dripping of oil, lubricants, or any other fluids.
- Construction activities would be scheduled by the contractor to avoid as much of the wet season as practicable. Construction personnel would be trained in storm water pollution prevention practices by the construction contractor.
- In areas proposed for revegetation, initiation and completion of revegetation work would be done by the contractor in a timely manner to control erosion.
- Excavation work in WOUS proposed as part of the HRRA construction activities would be performed when the water level in Folsom Lake is below the limits of the excavation areas if this is feasible without jeopardizing the project construction schedule. In other words, excavation would be performed "in the dry" if possible.
- Any disposal of rip-rap within the OILD site would be performed when the top of the disposal mound(s) created by Phase IV disposal activities is above water level in Folsom Lake, if this is feasible without jeopardizing the project construction schedule. This would allow terrestrial construction equipment to place the rip-rap.
- If barges and other support vessels must be used to dispose rip-rap within the OILD site, the construction contractor would be required to ensure these vessels are free of invasive aquatic species prior to placing them in Folsom Lake.
- Implementation and adherence to any additional requirements as mandated by the CGP and the Section 401 WQC. The construction contractor would obtain the CGP while the Corps would obtain the Section 401 WQC. The contractor would be responsible for implementing requirements set forth in these two permits.

4.0 CUMULATIVE AND GROWTH-INDUCING EFFECTS

4.1 Cumulative Effects

NEPA and CEQA require the consideration of cumulative effects of the proposed project combined with the effects of other projects in and around the project vicinity. The discussion identifies resource areas in which the impacts of the proposed action, when viewed together with other projects, could contribute to an impact that is "cumulatively considerable" within the meaning of NEPA and CEQA.

Regulatory Background

The NEPA regulations and CEQA Guidelines require that an EA/EIR discuss project effects that, when combined with the effects of other projects, result in significant cumulative effects. Cumulative effects are defined as "The effect on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, collectively significant actions taken over a period of time" (CFR 40 Part 1508.7).

Cumulative effects under the CEQA Guidelines are defined as "two or more individual impacts which, when considered together, compound or increase other environmental impacts" (Section 15355). The Guidelines require that an EIR discuss cumulative effects "when they are significant" (Section 15130). The CEQA Guidelines also state: "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to the other closely related past, present, and reasonable foreseeable probable future projects" (Section 15355).

Geographic Scope

The geographic area that could be affected by the project varies depending on the type of environmental resources being considered. When the effects of the project are considered in combination with those of other past, present, and future projects to identify cumulative impacts, the other projects that are considered may also vary depending on the type of environmental effects being assessed. The following are the general geographic areas associated with the different resources addressed in the analysis:

- Air Quality: regional (area under the jurisdiction of the SMAQMD, consisting of Sacramento County)
- Climate Change: regional (area under the jurisdiction of the SMAQMD, consisting of Sacramento County)
- Cultural Resources: local area (cultural resources sites are stationary and affects are typically limited to the borders of a project site).
- Traffic: regional (roadways in the project region where traffic generated by multiple projects might interact on a cumulative basis).
- Water Quality: local area (area under the jurisdiction of the State Water Control Board)

4.1.1 Past, Present, and Reasonably Foreseeable Future Projects

Related Projects

The identified projects in the vicinity of the project area are briefly described below. Each of the identified projects is required to evaluate the effects of the proposed actions on environmental resources in their respective areas. Accordingly, mitigation or mitigation measures must be developed to avoid or reduce any adverse effects to less than significant based on Federal and local agency criteria. Effects that cannot be avoided or reduced to less than significant are likely to contribute to cumulative effects in the area. Timing and sequencing of construction activities for each of the projects are not yet determined and would affect the findings of the cumulative effects analysis.

Folsom Dam Safety and Flood Damage Reduction

Due to the fact that the Folsom JFP is a multi-phased, accelerated effort, overlapping construction efforts would occur adjacent and in the vicinity of the project area throughout the course of construction of the approach channel. The 2007 FEIS/EIR evaluated cumulative effects from the Folsom JFP construction activities; the analysis in this SEA/EIR is supplementing the previous cumulative effects analysis.

Mormon Island Auxiliary Dam Modification Project. Construction was proposed for summer 2010 to summer 2014. Reclamation released the Final EIS/EIR for the MIAD Modification Project in May 2010. Four action alternatives were analyzed in the MIAD draft supplemental EIS/EIR. Each alternative involves methods to excavate and replace the MIAD foundation, place an overlay on the downstream side, construct drains and filters, and provide habitat mitigation at Mississippi Bar. Collectively, the alternatives differ in their use of structural walls during excavation, amount of construction water handling, excavated footprint exposure, and environmental impacts of the excavation. The MIAD modifications would occur in two phases: 1) foundation treatment on the downstream side of MIAD that would involve removal and replacement of the downstream foundation materials, and 2) placement of the overlay with filter and drain elements. The preferred alternative, Alternative 4 (Cellular Open Excavation and Overlay) involves the creation of "cells" to close off an area that could be excavated independently of other cells. This means only one small area of foundation at a time would be available for excavation rather than larger open cut areas such as in alternative 1. Although, the duration of excavation activity would increase in comparison to Alternatives 1 and 2, this alternative would greatly reduce construction risk with the limitations in size of open cut excavation. Under each alternative, the Mississippi Bar 80-acre site would be used to address mitigation for riparian woodland and wetland habitat for the Folsom DS/FDR Project in three phases: 1) riparian woodland mitigation, 2) culvert replacement, channel widening, mid-channel dredging, and 3) seasonal wetland mitigation.

Control Structure, Chute, and Stilling Basin. Construction started in 2011 and is anticipated to continue through fall 2017. Construction of the auxiliary spillway control structure is part of the Phase III portion of the Folsom JFP. This effort is currently under construction by the Corps and is expected to be completed soon. Concrete lining of the spillway chute and stilling basin will be conducted by the Corps as the final phase of the Folsom JFP, and is expected to be completed by fall 2017. Construction of the control structure and the concrete lining of the chute and stilling basin were addressed by the 2010 SEA/EIR (Corps, 2010).

Approach Channel. Construction was begun in spring 2013 and is proposed to continue through fall 2017. The approach channel is the final construction activity of Phase IV of the Folsom JFP. The primary and permanent structures consist of the 1,100 foot long excavated approach channel and spur dike. Additional existing sites and facilities to be used for the length of the project include the existing Reclamation Overlook. These sites and facilities are connected by an internal project haul road. Construction of the approach channel was covered under the 2012 SEIS/EIR (Corps, 2012).

Other Local Projects

Johnny Cash-Folsom Prison Blues (Folsom Lake) Trail: Historic Truss Bridge to Green Valley Road Segment

This project is planned to provide approximately 2.5 miles of Class I bike trail from the Historic Truss Bridge to Green Valley Road. A majority of the trail alignment will be within the Folsom Prison property. The project is broken into three major segments consisting of:

- Phase 1 - Folsom Lake Crossing bike/pedestrian overcrossing to the Hancock Drive intersection (currently under construction).
- Phase 2 - Folsom Prison entry road to Rodeo Park (existing trail end).
- Phase 3 - Hancock Drive intersection to the Folsom Prison entry road.
- Phase 4 - Folsom Lake Crossing bike/pedestrian overcrossing to the El Dorado County line.

Incorporation of a separated grade crossing at the new Folsom Lake Crossing/East Natoma Street re-alignment was included as part of the construction of the Folsom Bridge. Construction began in 2012 and was completed September 2014.

Folsom Dam Water Control Manual Update

The Folsom Dam Water Control Manual Update is being produced in conjunction with the Folsom JFP by the Corps, Reclamation, CVFPB, and SAFCA. The purpose of the Folsom Dam Water Control Manual Update is to develop, evaluate, and recommend changes to the flood control operations at Folsom Dam to further reduce flood risks to the Sacramento area. Operational changes may be necessary to fully realize the flood risk reduction benefits of the following:

- The additional operational capabilities created by the auxiliary spillway;
- The increased downstream conveyance capabilities anticipated to be provided by the American River Common Features Project (Common Features);
- The increased flood storage capacity anticipated to be provided by completion of the Folsom Dam Raise Project (Dam Raise); and
- The use of improved forecasts from the National Weather Service.

Further, the Folsom Dam Water Control Manual Update is in the process of evaluating options for the inclusion of creditable flood control transfer space in Folsom Reservoir in conjunction with Union Valley, Hell Hole, and French Meadows Reservoirs (also referred to as Variable Space Storage). The study will result in a Corps decision document, to be followed by a water control manual implementing the recommendations of the study. The initial water control manual will implement the recommendations of the study, but will not include the capabilities to be provided by the Dam Raise and additional Common Features project improvements until these projects have been completed.

Folsom Dam Raise

The Folsom Dam Raise project will commence upon completion of the Folsom JFP. The currently recommended plan for this project includes: raising the Folsom Dam, Mormon Island Auxiliary Dam, and the auxiliary dikes around Folsom Reservoir by 3.5 feet; constructing a six submerged tainter gate auxiliary spillway, and; replacing three emergency and service spillway gates. The 3.5-foot dam raise has an expected project length of four years, beginning in 2017 and ending in 2021. The work for the emergency spillway tainter gates has an expected project length of 3 years, starting in 2017 and ending in 2020. The recommended alternative would be broken up into three "work packages" separating construction on the dikes into various years. Work package 1 includes construction on Dikes 4, 5, and 6, beginning in 2017 and lasting 2 years. Work package 2 entails construction on Dikes 7, 8, MIAD, and the left and right wings of Folsom Dam beginning in 2019 and lasting 2 years. Work package 3 includes construction on Dikes 1, 2, and 3, which would begin in 2018 and last 2 years. All demobilization and restoration after construction activity is expected to require approximately 16 days.

Widening of Green Valley Road

Green Valley Road provides a direct connection between the City of Folsom and western El Dorado County. The City of Folsom and Eldorado County have proposed projects to widen Green Valley Road from two to four lanes. Construction would be comprised of an 80-foot easement, which provides room for a four lane road, in addition to bike lanes and a median. The City of Folsom plans to widen Green Valley Road; however, the ongoing construction of Reclamation's MIAD Modification project limits their ability to conduct the road widening project. There is currently no environmental compliance documentation and no construction schedule for the project within the City of Folsom. The project could take four years to construct. El Dorado County has completed a corridor analysis study for the Green Valley Road corridor, but there is no environmental analysis for this project and no construction schedule at this time.

Hazel Avenue Improvement Project

Sacramento Department of Transportation completed Phase 1 of the Hazel Avenue Improvement Project. The primary portion of Phase 1 involved the widening of Hazel Avenue from four to six lanes over the American River Bridge from U.S. 50 to Curragh Downs Drive. Construction was completed in 2010. Phase 2 of the Hazel Avenue Improvement Project includes widening Hazel Avenue from four to six lanes from Curragh Downs Drive to Sunset Avenue. This phase will also include traffic signal modifications at Curragh Downs Drive, Winding Way, La Serena Drive, and Sunset Avenue. Construction of Phase 2 is currently targeted to begin in 2015 with completion in 2017. Phase 3 of the Hazel Avenue Improvement Project includes widening Hazel Avenue from four to six lanes from Sunset Avenue to Madison Avenue. Phase 3 will include new traffic signals at Phoenix Avenue and the fire station at Roediger Lane, traffic signal modifications at Madison Avenue, and installation of a weigh-in motion device for truck traffic enforcement. Currently, there are no targeted dates for construction of Phase 3.

4.1.2 Cumulative Effects

Analysis of Potential Cumulative Effects

Chapter 3 of this EA/EIR identifies the affected environment and includes detailed impact analyses and mitigation measures of the proposed action. The results are assessed in the following cumulative effects analysis in terms of their potential to combine with environmental effects of the projects listed previously. The analysis focuses on the potential for the impacts identified in Chapter 3 to make a considerable contribution to significant adverse cumulative effects.

The extent of the geographic area that may be affected with implementation of the alternatives varies depending on the resource under consideration. Not all projects discussed above would contribute, along with the alternatives, to cumulative environmental effects for each environmental issue area. The discussion of cumulative impacts focuses on the cumulative impact to which these other projects contribute, rather than the attributes of other projects which do not contribute to the cumulative impact. For example, if another project contributes only to a cumulative effect on natural resources, its effects on public services need not be discussed as part of the cumulative impact analysis.

Air Quality

The geographic scope of potential cumulative air quality impacts encompasses the immediate project vicinity for particulates and the Sacramento Valley Air Basin (SVAB) for criteria pollutants. The proposed action could overlap with future Folsom Dam improvement projects and roadway improvement projects that are in and around the vicinity of the Folsom Facility.

As a result of past, present, and future development projects within the SMAQMD jurisdiction, and the current nonattainment status of the SVAB for ozone and particulate matter, a cumulative and thereby significant, air quality impact exists. The SMAQMD evaluates air quality emissions on a project by project basis and not cumulatively, when assessing threshold compliances. If a project’s emissions are less than project threshold levels, it is included under State-wide thresholds, and the individual project is not cumulatively responsible for cumulative impacts from other projects.

Emissions from the proposed project actions are considered short-term and temporary. The proposed project actions would not produce emissions that are greater than the GCR *de minimis* values for criteria pollutants. Although the proposed action would generate some temporary combustion and dust emissions, these emissions do not exceed the thresholds of significance for the individual project and therefore, are not to be a cumulatively considerable adverse contribution to SVAB.

The proposed action would not contribute significant emissions to the air basin. The project’s emissions would be temporary and not generate any long-term air pollutants, would not exceed applicable project level thresholds of significance, and would not substantially contribute to AAQS. In addition the proposed action would incorporate basic construction emissions control practices.

Climate Change

The geographic scope of potential cumulative climate change impacts encompasses the Sacramento Valley Air Basin (SVAB) for GHSs. The proposed action could overlap with future Folsom Dam improvement projects and roadway improvement projects that are in and around the vicinity of the Folsom Facility.

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 clearly 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 effect issue. While the emissions of one single project would 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.

With respect to global warming, CO_2 is tracked as a contributor to GHG emissions. The SMAQMD has emissions models for projects in the Sacramento Valley area. These models calculate air emissions based on construction phase, duration, type of equipment, project area, and other input criteria. The proposed action would generate GHG emissions predominantly in the form of CO_2. CO_2 emissions would be generated from combustion sources including operation of construction equipment, construction and worker vehicles, and haul trucks. Construction emissions of CO_2 would be short-term and temporary. In addition, the JFP's objective is to provide flood risk reduction and dam safety benefits, which will prevent release of CO_2 emissions by preventing the loss of infrastructure due to flooding. Furthermore, Reclamation construction activities consist of reducing dam safety, static, and seismic risks. When these construction activities are combined, the short-term, temporary emissions would be less than the large amount of CO_2 emissions potentially generated in the future by not having the JFP in place. All of the projects listed above would be subject to the same regional and statewide GHG regulations. Therefore, cumulative increases in GHG emissions and conflicts with state goals would be less than significant.

Cultural Resources

The geographic scope of potential cumulative cultural resources impacts encompasses the area around Folsom Lake. The proposed action could overlap with ongoing and future Folsom Dam improvement projects that are in and around the vicinity of the Folsom Facility. 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, as well as 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. These projects may include the other phases of the Folsom Dam Safety and Flood Damage Reduction Project, the Folsom Dam Water Control Manual Update, and the Folsom Dam Raise Project. However, individual projects would implement separate mitigation measures that would address the effects that may be caused by these projects.

There is one known cultural resource eligible for listing in the NRHP located within the APE for the current proposed project; the Folsom Lake Dikes (CA-SAC-1103H). However, it has been determined that the Folsom Lake Dikes would not be adversely affected by the proposed project due to the fact that they have undergone extensive alteration since their construction and the proposed project would result in only minor changes to the visual setting of the Dikes and would not affect their form or function in any way. If other potentially significant cultural resources were discovered as a result of project activities, mitigation measures could be implemented to reduce impacts to those resources. However, although mitigation would be implemented to reduce effects on potentially significant cultural resources, adverse effects, particularly on archaeological resources, may still occur. These effects would be addressed on a project-specific basis with the goal of reducing any significant adverse effects to less than significant.

Traffic

The geographic scope of potential cumulative traffic impacts encompasses the roadways in the project region where traffic generated by multiple projects would interact with the public on a cumulative basis. The proposed action could overlap with future Folsom Dam improvement projects and roadway improvement projects that are in and around the vicinity of the Folsom Facility. It is expected that traffic effects from the other projects would be similar to the proposed action in that effects are expected primarily from the hauling of equipment and material to and from the proposed project sites and the daily commutes of the workers on-site.

Continued construction activities and the requisite additional traffic demands due to labor force access and materials deliveries are expected to be ongoing; however, they are considered minor in nature and do not substantially affect the existing traffic patterns or operation. The proposed action construction activities would be sequenced, and concentrated traffic volumes would not be allowed for isolated durations. Additionally, local and state government roadway improvements and maintenance projects are anticipated to provide improvements to the network. Each of the related projects listed above would perform a similar analysis, and would reduce any cumulative effects to less than significant.

Water Quality

The geographic scope for the potential cumulative water quality impacts encompasses Folsom Lake. The proposed action could overlap with future Folsom Dam improvement projects which have the potential to create storm water runoff that could be discharged to the lake.

Clearing, grading, and excavation work could increase the potential for soil erosion and subsequent turbidity, which would affect water quality. During the rainy season, stormwater runoff from disturbed soils may contain high levels of suspended sediments. Together, these projects could potentially result in a cumulative effect on water quality.

The analysis results for potential impacts from the proposed action were less than significant; thus, these activities would not contribute to cumulative effects on water quality. Implementation of the appropriate mitigation measures (avoidance and minimization measures) for each of these identified projects and appropriate monitoring and testing, along with the mitigation measures for the proposed action, would ensure that the potential cumulative effects on water quality would be less-than-significant.

4.2 Growth-Inducing Effects

The proposed action would not directly remove obstacles to growth, result in population increases, or encourage and facilitate other activities that could significantly affect the environment. New development must be consistent with existing City and County general plan policies and zoning ordinances regarding land use, open space, conservation, flood protection, and public health and safety. Local population growth and development would be consistent with the most current Land Use Element of the County of Sacramento General Plan.

The Folsom JFP project area is zoned specifically for flood control activities and recreation. The Rossmoor Bar Park is zoned specifically for recreation. These land uses would not change due to the construction of the proposed project, or any of the related projects in the area. In addition, construction, operation, and maintenance of the improvements would not result in a substantial increase in the number of permanent workers or employees.

5.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

5.1 FEDERAL REQUIREMENTS

Clean Air Act of 1972, as amended, 42 U.S.C. 7401, et seq. *Full compliance*. The proposed action is not expected to violate any Federal or State air quality standards, exceed the U.S. EPA's general conformity *de minimis* threshold, or hinder the attainment of air quality objectives in the local air basin. Implementation of BMPs would reduce NO_x emissions to below local thresholds. Thus, the Corps has determined that the proposed project would have no significant effects on the future air quality in the area.

Clean Water Act of 1972, as amended, 33 U.S.C. 1251, et seq. *Partial Compliance*. Compliance with Clean Water Act Section 404(b)(1) is required since construction within the HRRA would temporarily impact Waters of the United States. As discussed in Appendix G, the Corps has determined that the proposed action would meet the requirements of CWA Section 404(b)(1). The Corps will obtain a CWA Section 401 Water Quality Certification for the proposed action and the construction contractor will be required to abide by technical conditions of this certification (permit). The construction contractor will obtain an NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities for the proposed action and will be required to comply with the applicable terms and conditions of this permit. This will include implementing BMPs to avoid and minimize any adverse effects of construction on surface waters.

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, et seq. *Full Compliance*. In accordance with Section 7(c), the Corps obtained a list of federally listed and proposed species likely to occur in the project area. The only listed species affected by the project would be the valley elderberry longhorn beetle. The Corps' biological assessment is that the project may affect, but is not likely to adversely affect this species. Consultation with USFWS was requested April 3, 2015. An amendment to the USFWS biological opinion was received April 22, 2015 (see Appendix E).

As the action agency, the Corps has determined that no effects would occur to any listed species under the jurisdiction of the National Marine Fisheries Service (NMFS). As a result, neither informal nor formal consultation is required with NMFS under Section 7 of the Endangered Species Act.

Executive Order 11988, Floodplain Management. *Full Compliance*. The objective of this Executive Order is the avoidance, to the extent possible, of long-and short-term adverse effects associated with the occupancy and modification of the base flood plain (1 in 100 annual flood event), and the avoidance of direct and indirect support of development in the base flood plain wherever there is a practicable alternative. The proposed project is a portion of the Folsom JFP, and it has been determined by the project partners and Congress that constructing the Folsom JFP is the only practicable way to reduce flood risk to the greater Sacramento area. The Folsom JFP, in combination with other area flood risk projects, protects the existing urban population while providing residual risk information to the appropriate agencies making land use decisions in the area. Therefore the proposed project does not contribute to increased development in the floodplain and is in compliance with the executive order.

Executive Order 11990, Protection of Wetlands. *Full Compliance*. This executive order directs Federal agencies in carrying out their responsibilities to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. The project sites are not located in or immediately adjacent to wetlands and therefore would have no adverse effects on wetlands.

Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. *Full Compliance*. This Executive Order states that Federal agencies are responsible to conduct their programs, policies, and activities that substantially affect human health of the environment in a manner that ensures that such programs, policies, and activities do not exclude persons from participation in, or deny persons the benefits of, or subject persons to discrimination under such programs, policies, and activities because of their race, color, or national origin. The benefits of the proposed action would extend to all areas of the greater Sacramento Area. The proposed project is on public land and is not located near any minority or low-income areas or communities.

Farmland Protection Policy Act, 7 U.S.C. 4201 et seq. *Full Compliance*. This act requires a Federal agency to consider the effects of its actions and programs on the Nations' farmland. There are no designated prime or unique farmlands within the project area, and therefore there would be no adverse effects to farmland.

Fish and Wildlife Coordination Act of 1958, as amended, 16 U.S.C. 661, et seq. *Full Compliance*. This act requires Federal agencies to consult with the USFWS and State fish and game agencies before undertaking or approving water projects that control of modify surface water. Federal agencies undertaking water projects are required to fully consider recommendations made by the USFWS. The USFWS and CDFW have participated in evaluating the proposed action, and USFWS has completed a draft CAR which accompanies this document (see Appendix F).

Magnuson-Stevens Fishery Conservation and Management Act. *Full Compliance*. This legislation requires that all Federal agencies consult with National Marine Fisheries Service regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect essential fish habitat. Essential fish habitat is defined as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." There is no essential fish habitat within or immediately adjacent to the components of the proposed action; therefore the Corps has determined the project would have no effect on essential fish habitat.

Migratory Bird Treaty Act of 1936, as amended, 16 U.S.C. 703 et seq. *Full Compliance*. This Act provides protection for migratory birds as defined in 16 USC 715. To ensure the project would not affect migratory birds, a biologist would conduct preconstruction surveys and follow-up surveys in the project site and areas adjacent to the project site. If breeding birds or active nests are found in the area, a protective buffer would be delineated, and the USFWS and CDFW would be consulted for further action prior to implementation of construction. As discussed in Section 2.3.1, existing bird nests under the Folsom Point Bridge would be removed during the non-nesting season and bird exclusion barriers would be installed to prevent birds from nesting beneath the bridge prior to its removal.

National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321, et seq. *Partial Compliance*. This Supplemental EA/EIR is in partial compliance with this act. Comments received during the public review period will be incorporated into the SEA/EIR as appropriate and a comments and responses appendix will be prepared The final SEA/EIR will be accompanied by a signed FONSI if determined to be appropriate by the District Engineer after consideration of public comments. These actions will provide full compliance with this act.

National Historic Preservation Act of 1966, as amended (54 U.S.C. 306101, et seq.). *Partial Compliance.* Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of a proposed undertaking on properties that have been determined to be eligible for, or included in, the NRHP. The implementing regulations for Section 106 are 36 CFR § 800.

In a letter dated October 29, 2015, the Corps initiated consultation with the SHPO, informing the SHPO of the proposed project, and asking for comments on the determination of the APE and on the proposed efforts to identify historic properties within the APE.

Letters were sent to potentially interested Native American Tribes on August 10, 2015 including the Shingle Springs Band of Miwok Indians, the United Auburn Indian Community of the Auburn Rancheria, Buena Vista Rancheria, Wilton Rancheria, the El Dorado Miwok Tribe, the Enterprise Rancheria of Maidu Indians, the Ione Band of Miwok Indians, the Nashville-El Dorado Miwok Tribe, the Colfax-Todds Valley Consolidated Tribe, the Strawberry Valley Rancheria, and the T'si-Akim Maidu to inquire if they have knowledge of locations of archaeological sites, or areas of traditional cultural value or concern in or near the APE.

The Corps has made a determination of "No Adverse Effects to Historic Properties" for the proposed project. CA-SAC-155/156, CA-SAC-308, and 08-FDR-01 are located outside of the project APE and CA-SAC-943-H, while located within the project APE, will be avoided by the proposed project. Additionally, although CA-SAC-1103-H (the Folsom dikes) may potentially be affected by the proposed project, any changes would be minor and would not affect the form or function of the Dikes in any way. The Corps will submit a letter to the SHPO documenting this determination and the Corps' inventory, identification, evaluation, and consultation efforts, and requesting concurrence with the Corps' determinations of eligibility and effect. Once these consultations are complete, the proposed project will be in compliance with Section 106 of the NHPA.

Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq. *Full Compliance*. This act was enacted to preserve selected rivers or sections of rivers in their free-flowing condition in order to protect the quality of river waters and to fulfill other National conservation purposes. The Lower American River, below Nimbus Dam, has been included in the Federal Wild and Scenic Rivers system since 1981. Most of the proposed action is located above this reach of the river and therefore, does not affect this portion of the Lower American River. The proposed Rossmoor 14-acre mitigation site is located near the Lower American River but would not result in any direct or indirect impacts to the river.

5.2 STATE OF CALIFORNIA REQUIREMENTS

California Environmental Quality Act. *Partial Compliance*. This joint NEPA/CEQA document is in partial compliance with CEQA requirements. Comments received during the public review period will be considered and incorporated into the final SEA/EIR, as appropriate. The CVFPB will consider certifying the EIR, and adopting the Statement of Findings and Mitigation Monitoring & Reporting Plan (MMRP) to obtain full compliance for CEQA.

California Endangered Species Act. *Full Compliance*. This act requires the non-Federal agency to consider the potential adverse effects on State-listed species. As a joint NEPA/CEQA document, this SEA/EIR has considered the potential effects and has determined that, due to the lack of suitable habitat for any State-listed species, the project would have no effect on those State special status species associated with the proposed action.

6.0 COORDINATION AND REVIEW OF THE EA/EIR

6.1 PUBLIC INVOLVEMENT

The public involvement for the Folsom JFP has included public attendance and meeting participation where potential design refinements have been discussed. These activities included a community outreach program with public workshops, notices, and media; and distribution of the draft documents for public review and comment. The public and other interested/affected parties have been encouraged to comment on all activities associated with the design and evaluation of the Folsom JFP.

6.2 REVIEW OF THE SEA/EIR

The draft SEA/EIR will be circulated for 45 days to agencies, organizations, and individuals who have an interest in the proposed project. All comments received will be considered and incorporated into the final SEA/EIR, as appropriate. This project is being coordinated with all relevant government resource agencies including Reclamation, CVFPB, Folsom State Prison, USFWS, and CVRWQCB.

7.0 FINDINGS

Based on the information in this Supplemental EA/EIR, the proposed action would have no new significant adverse effects on environmental resources beyond the significant effects identified in the 2007 FEIS/EIR. Mitigation consisting of BMPs and other measures proposed in this Supplemental EA/EIR are sufficient to reduce all direct, indirect, and cumulative effects to less than significant. Based on this evaluation, the proposed project meets the definition of a FONSI as described in 40 CFR 1508.13. A FONSI may be prepared as a determination document when an action would not have a significant effect on the human environment and for which an environmental impact statement would not be prepared. A draft FONSI will be prepared after the close of the public review period. The Corps District Commander will then determine whether a FONSI is appropriate, or if a supplemental EIS should be prepared. In addition, the CVFPB, as the project’s lead agency under CEQA, will consider staff recommendations and public comment in order to decide whether to certify the SEA/EIR, adopt the Statement of Findings and the MMRP, and approve the proposed action.

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10.0 FIGURES AND PHOTOGRAPHS

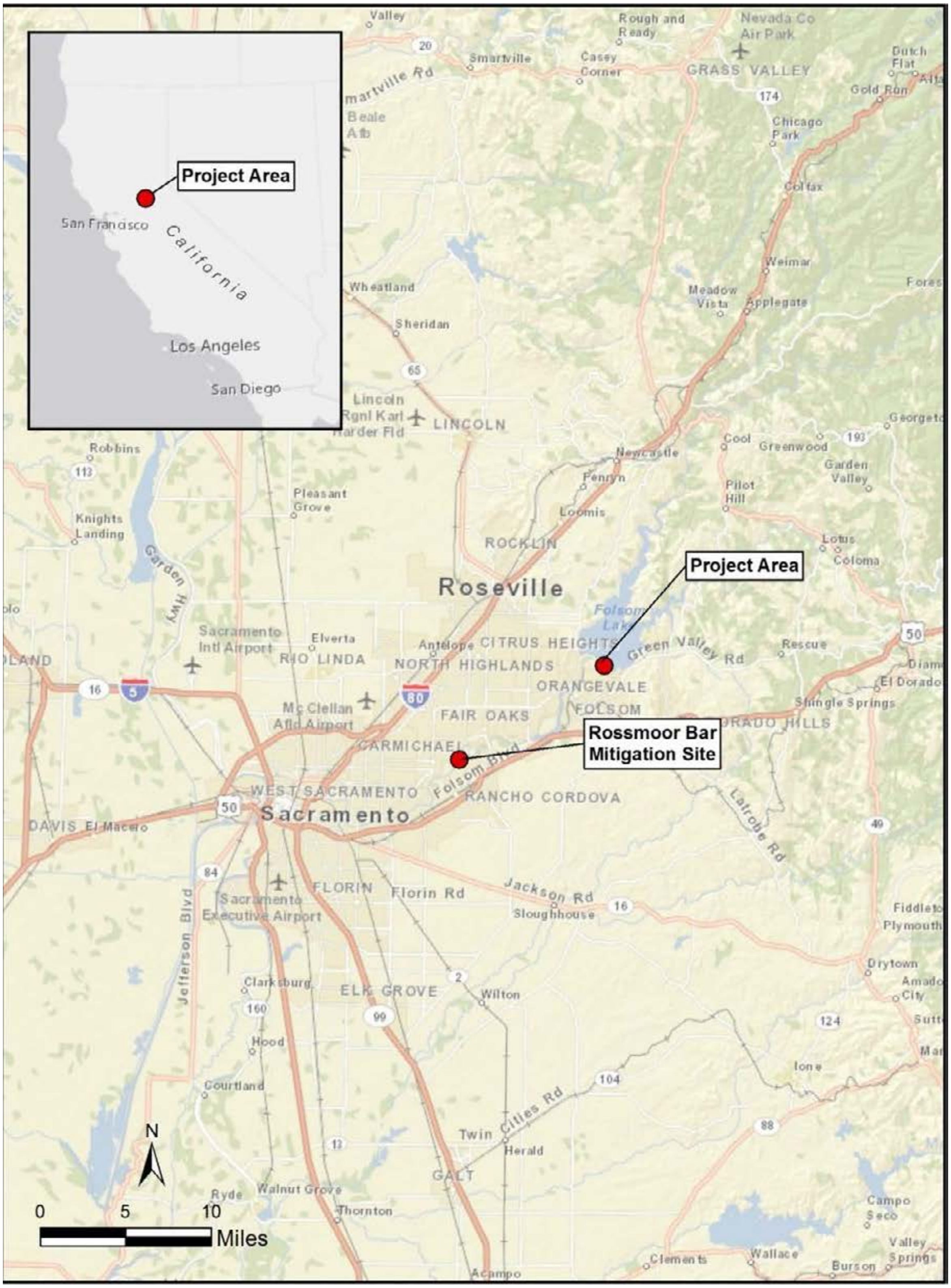

Figure 1. Project location map.

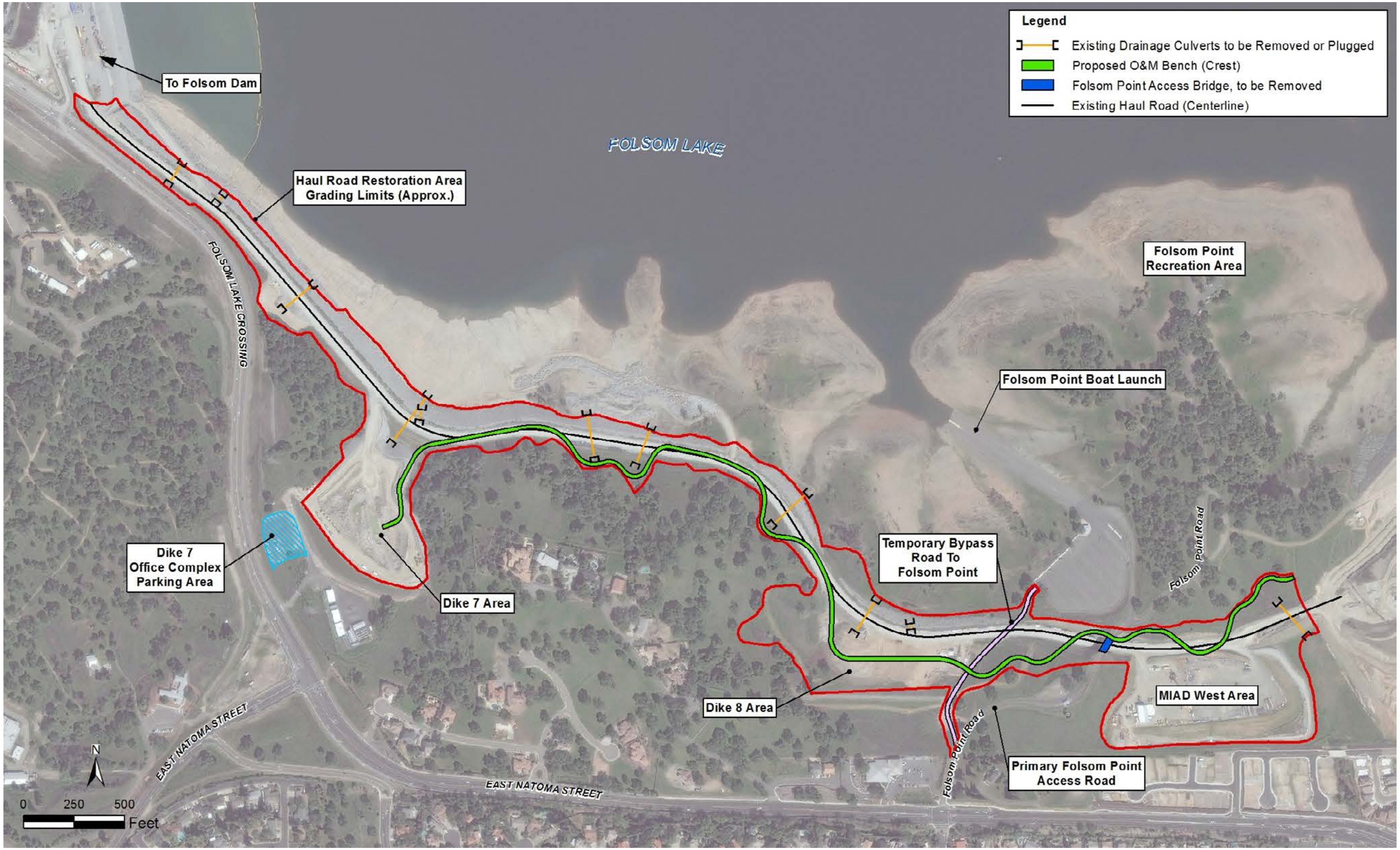

Figure 2. Haul Road Restoration Area (HRRA) features and the Dike 7 Office Complex Parking Area to be restored. HRRA boundaries (shown in red) are based on the 440 Design Option.

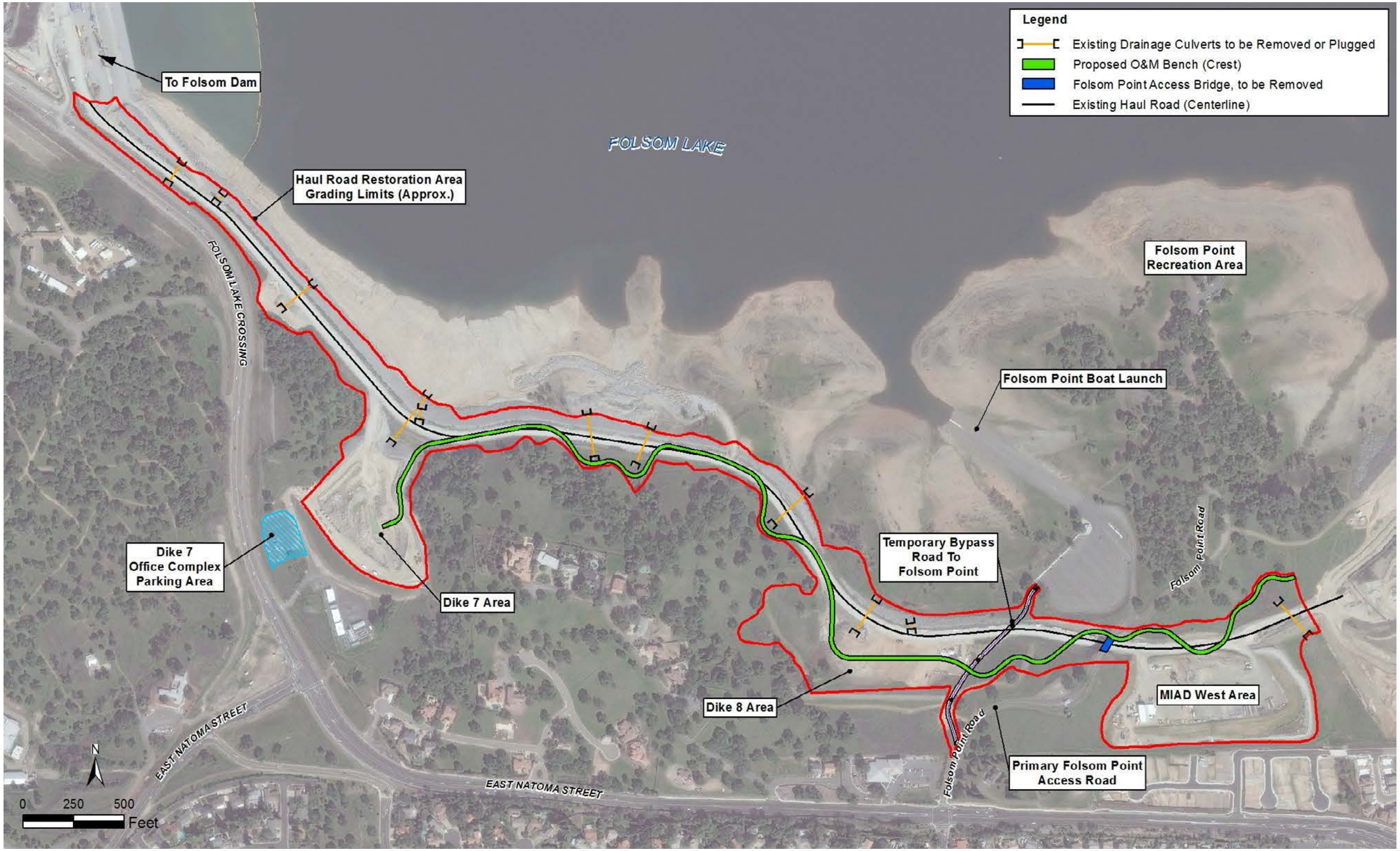

Figure 3. Haul Road Restoration Area (HRRA) features and the Dike 7 Office Complex Parking Area to be restored. HRRA boundaries (shown in red) are based on the 460 Design Option.

Figure 4. Proposed temporary bypass road to Folsom Point and the existing temporary Folsom Point access bridge to be removed within the Haul Road Restoration Area.

Figure 5. The Prison Staging Area to be partially restored and the proposed guardrails to be installed along Folsom Lake Crossing.

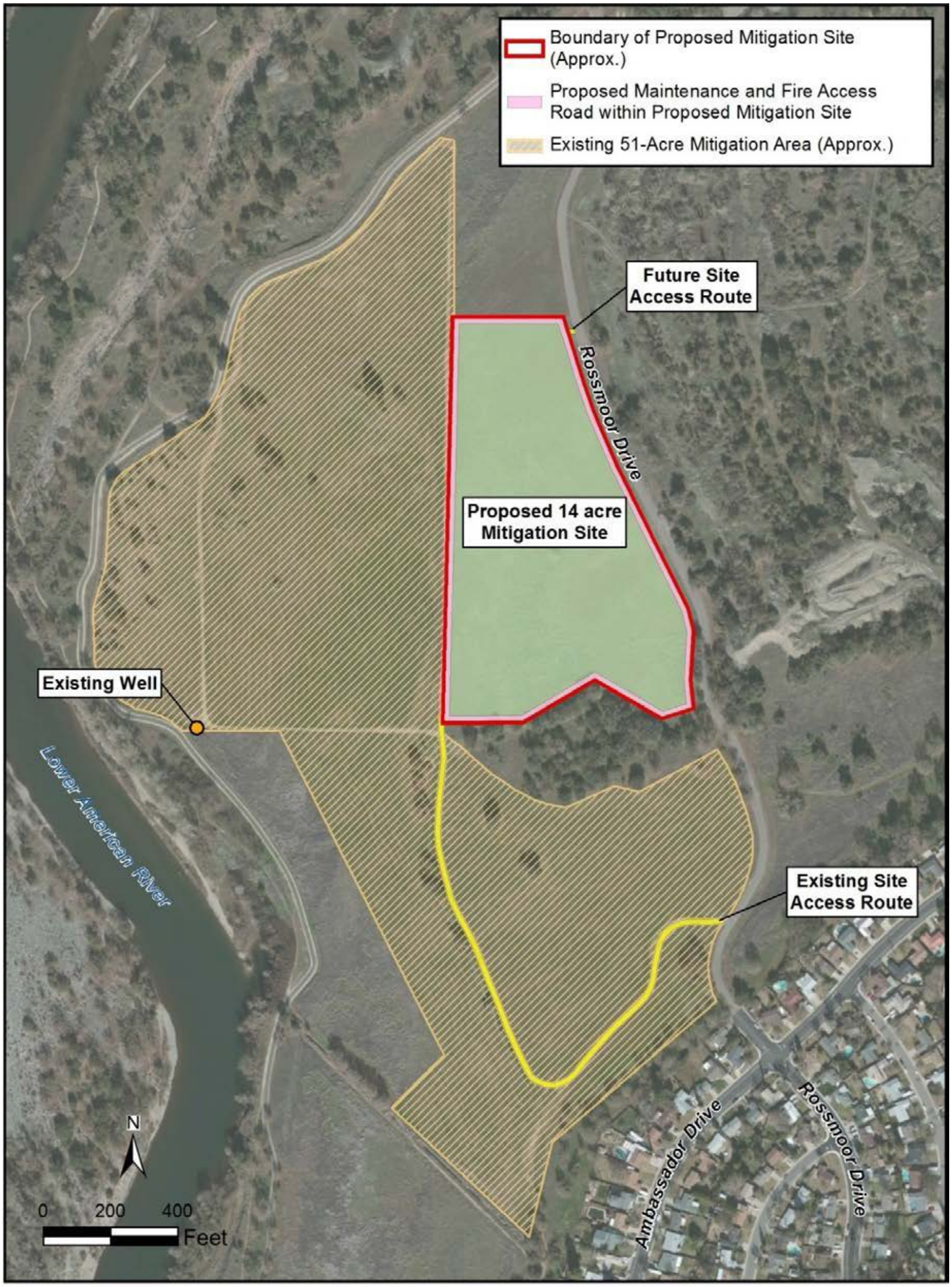

Figure 6. The proposed Rossmoor Bar 14-acre Mitigation Site and adjacent features.

Figure 7. MIAD East Area and the approximate limits of the potential disposal site within this area.

Figure 8. Overlook In-Lake Disposal Site (OILD site).

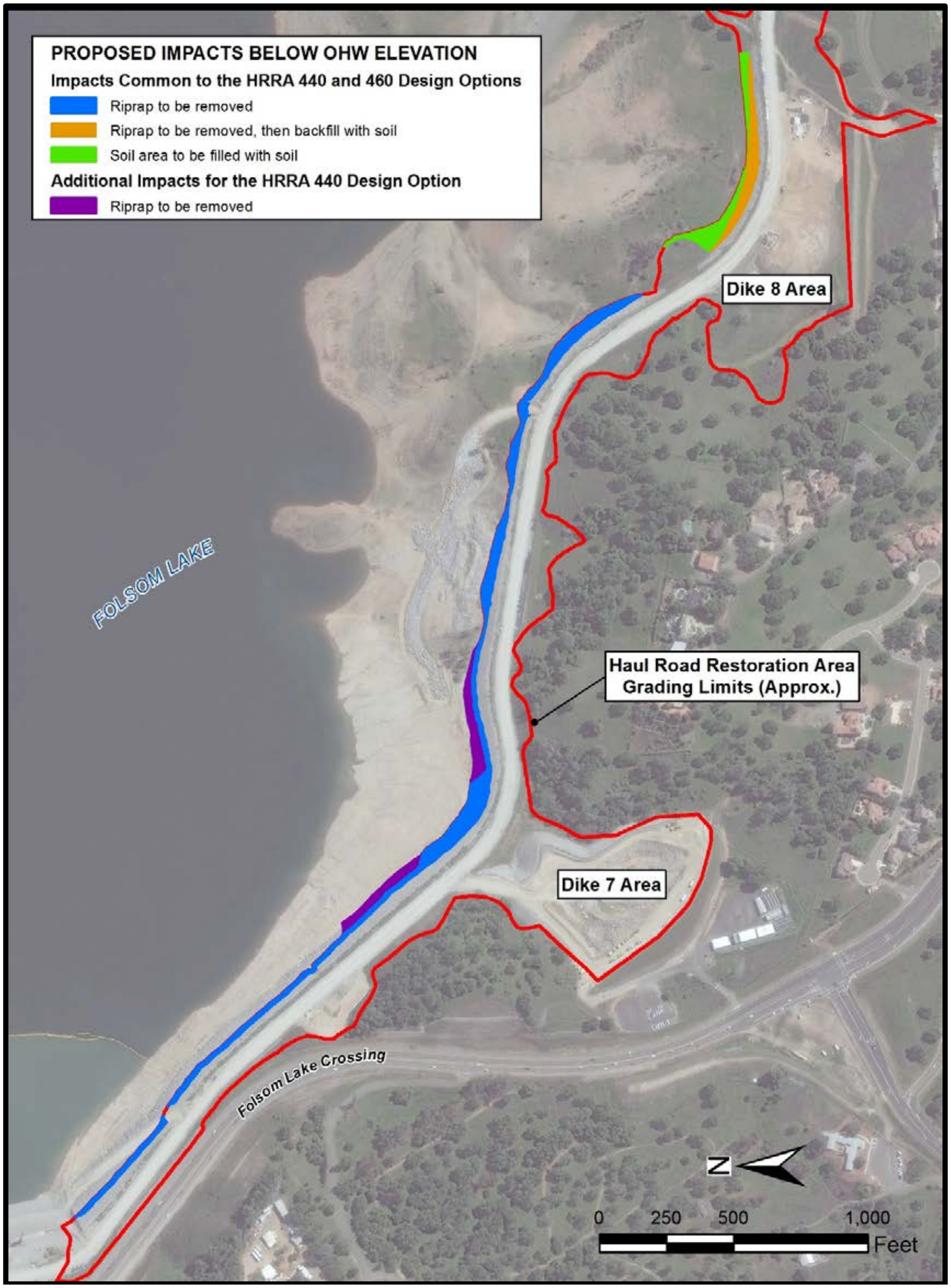

Figure 9. Areas below the ordinary high water (OHW) elevation of Folsom Lake that would be directly impacted by restoration activities within the Haul Road Restoration Area based on the 440 Design Option and the 460 Design Option (approximate impacts to Waters of the United States)..

Photo 1. Interior haul road along the shoreline of Folsom Lake. View looking west from a location between the Dike 7 Area (visible on far left) and the Dike 8 Area (not visible).

Photo 2. Interior haul road. View from ground level.

Photo 3. Dike 7 Area showing the Dike 7 stockpile area and the Dike 7 Office Complex parking area. View from south looking north.

Photo 4. Dike 8 Area showing Dike 8 disposal area and adjacent lands. View from southwest looking northeast. Temporary Folsom Point access bridge is visible in upper right corner.

Photo 5. Temporary Folsom Point access bridge crossing over the interior haul road. View from the east side of bridge looking west. Paved road is Folsom Point Road, the primary access road to the Folsom Point boat launch (parking lot visible) and the Folsom Point day use area.

Photo 6. MIAD West Area including the MIAD West staging area and adacent lands. View from the southwest looking northeast toward the Mormon Island Auxiliary Dam (MIAD).

Photo 7. MIAD East Area and adacent lands. View from the west looking east. MIAD East Area is in upper portion of photo, while some of the MIAD West Area is in lower portion.

Photo 8. Overlook In-Lake Disposal (OILD) site and adacent areas. View from the east looking west. Rip-rap area in lower left is a portion of the spur dike. Soil and equipment projecting into the lake from the spur dike are within the OILD site.

Photo 9. Rossmoor Bar 14-Acre Mitigation Site. View from near the northeast corner of the site looking southeast from adjacent Rossmoor Drive, partially visible on left side of photo.

Photo 10. Rossmoor Bar 14-Acre Mitigation Site. View from east boundary of site looking west.

APPENDIX A

NATIONAL & CALIFORNIA AMBIENT AIR QUALITY STANDARDS

National and California Ambient Air Quality Standards.

Pollutant	Averaging Time	National Primary Standard[a]	California Standard[b]	Violation Criteria	
				National	California
CO	8 Hour	9 ppm	9 ppm	Not to be exceeded more than once per year	If exceeded
	1 Hour	35 ppm	20 ppm	Not to be exceeded more than once per year	If exceeded
	8 Hour (Lake Tahoe)	NA	6 ppm	NA	If exceeded
NO_2	Annual	0.053 ppm	0.030 ppm	If exceeded	If exceeded
	1 Hour	0.100 ppm	0.18 ppm	The 3-year average of 98th percentile of the daily maximum 1-hour average must not exceed	If exceeded
O_3	8 Hour (2008 standard)	0.075 ppm	0.070 ppm	The 3-year average of 4th-highest daily maximum 8-hour average must not exceed	If exceeded
	1 Hour	NA	0.09 ppm	NA	If exceeded
PM_{10}	Annual	NA	20 µg/m3	NA	If exceeded
	24 Hour	150 µg/m3	50 µg/m3	Not to be exceeded more than once per year on average over 3 years	If exceeded
$PM_{2.5}$	Annual	15.0 µg/m3	12 µg/m3	The 3-year average of the weighted annual mean must not exceed	If exceeded
	24 Hour	35 µg/m3	NA	The 3-year average of 98th percentile of the 24-hour concentration must not exceed	NA
SO_2	Annual	0.03 ppm	NA	If exceeded	NA
	24 Hour	0.14 ppm	0.04 ppm	Not to be exceeded more than once per year	If exceeded
	3 Hour	NA[c]	NA	NA	NA
	1 Hour	NA	0.25 ppm	NA	If exceeded

[a] 40 CFR 50.4 through 50.13
[b] California Code of Regulations, Table of Standards, Section 70200 of Title 17
[c] No National Primary 3 hour Standard for SO2. National Secondary 3hour standard for SO2 is 0.5 ppm
µg/m3 micrograms per cubic meter
ppm parts per million

APPENDIX B

GENERAL CONFORMITY DETERMINATION

General Conformity Determination 2014
For the Folsom Dam Modification Project, Joint Federal Project

Introduction

The following general conformity assessment and determination is an update of emission projections for the Folsom Dam Modification Project, also known as the Joint Federal Project (JFP), due to construction and schedule changes that have occurred since a General Conformity Determination was prepared in May 2012. The Sacramento Metropolitan Air Quality Management District (SMAQMD) evaluated the project for compliance with the General Conformity requirements of SMAQMD Rule 104 – *General Conformity* in its May 15, 2012 *Conformity Determination Evaluation.* SMAQMD's evaluation relied on construction emission estimates prepared by the U.S. Army Corps of Engineers (USACE) in the report entitled, *Joint Federal Project (JFP) at Folsom Dam, Upstream and Downstream (for Cumulative Conformity Purposes), Air Quality Technical Report* (AQ Technical Report), which was dated October 2012. The 2014-2017 construction emission estimates contained in the AQ Technical Report are shown in Table 1.[1]

Table 1. Folsom JFP Approach Channel Project (Upstream+Downstream) Summary: Emissions After Mitigation (tons/year)

Activity Year	VOC	NOx	CO	PM_{10}	$PM_{2.5}$	SO_2
Alternative 2 (Approach Chanel Excavation With Cutoff Wall)						
2014	2	24	15	24	4	<1
2015	2	20	14	13	3	<1
2016	2	**28**	19	24	4	<1
2017	2	**25**	18	29	4	<1
General Conformity *De Minimis* Levels	25	25	100	100	100	100

Based on the above emission, SMAQMD concluded that:

> *"… [A]ll pollutant emissions except NOx would be below the General Conformity annual de minimis threshold during all construction years. Mitigated NOx emissions would be above the de minimis thresholds in 2016 and 2017 for Alternative 2…. Therefore, a conformity determination is required for NOx emissions."*

SMAQMD's evaluation concluded that:

[1] The corresponding table in SMAQMD's Conformity Determination Evaluation also contained emission estimates for Alternative 3 (Approach Channel Excavation with Cofferdam). Because Alternative 2 was selected, no further discussion of Alternative 3 is warranted.

A positive conformity determination can be made for the mitigated emissions from the Folsom Dam Modification project. This finding is based on:

- *Folsom Dam Modification project will be required to comply with all state and local regulations, thus it will meet all SIP control requirements. Folsom project will employ additional emission mitigation measures including electrification and use of cleaner construction equipment, trucks and marine vessels.*

- *The 2011 Attainment and RFP Plan provides 4 tpd NOx in margin of safety for achieving NOx emission attainment target; the emissions increase from Folsom Dam Modification project (maximum emissions of 0.08 tpd NOx) is a nominal portion (2%) of the margin of safety provided; therefore, this margin of safety ensures the project will not cause the nonattainment area to exceed the 2011 Attainment and RFP emissions budget.*

- *[C]ARB has committed to submit SIP revisions by December 2012 and will ensure that [C]ARB's technical revisions associated with state measures do not consume the excess emissions allocated to the Folsom Dam Project.*

Need for a Conformity Determination Update

Construction of the project is currently ahead of the schedule outlined in the *Folsom Dam Modification Project, Approach Channel, Final Supplemental Environmental Impact Statement/Environmental Impact Report, December 2012* (2012 Supplemental EIS/EIR*)*. The extreme drought conditions experienced in California in 2014 have resulted in record low water levels in Folsom Lake. These conditions have allowed some work on the project to be done "in the dry", which has accelerated the overall project scheduled and reduced emissions due to limited use of heavy marine engines. Some activities and emissions have been compressed and accelerated from the 2016/2017 timeframe to the 2014/2015 timeframe, resulting in higher air emissions during the 2014 construction season than was anticipated in the 2012 Supplemental EIS/EIR. However, these changes will result in an overall reduction in NOx emissions from the project.[2]

As required by the 2012 Supplemental EIS/EIR, the project is required to submit monthly emission reports to SMAQMD as a participant in SMAQMD's Construction Mitigation Fee Program.[3] Separate monthly reports are submitted by USACE (for certain contractors and sub-projects), and by Kiewit Corporation (for the majority of work performed on Phase IV of the project). A review of year-to-date construction mitigation fee reports for 2014, as well as construction activity projections for the remainder of 2014, indicates that the totals shown in Table 1 may be exceeded. Therefore, a new positive General Conformity determination is required prior to the conformity thresholds (shown

[2] Construction NOx emissions (during the 2014-2017 timeframe) were originally estimated in the 2012 Supplemental EIS/EIR to total 96.4 tons. As updated, construction NOx emissions during the same period are estimated to be 67.9 TPY tons resulting in approximately a 30% reduction.
[3] SMAQMD's construction mitigation fee program entails the payment of an offsite mitigation fee for any NOx emissions which exceed SMAQMD's significance threshold of 85 lbs/day, establish pursuant to the California Environmental Quality Act.

in Table 1) being exceeded. The new determination will be based on the updated construction emission calculations presented herein.

Project Description

The USACE, in conjunction with federal and state partners, is constructing an auxiliary spillway (in five phases) at Folsom Dam located in Folsom, California, on the American River. The new auxiliary spillway will address the need to safely pass probable maximum flood event inflows, and lesser flood event inflows (occurring less frequently than a 100-year event). Strutural modifications are proposed to address increasing the discharge capability and/or increasing storage during extreme flood events above the 200-year event level. Construction of phases 3 and 4 of the project is currently underway. These phases include a spillway, control structure, approach channel, chute and stilling basin, spur dike and a temporary cutoff wall. Construction activities include excavation, blasting, rock processing and concrete batching. Specifically, the following sources of direct and indirect emissions are expected:

- Engine exhaust from the onsite operation of off-road construction equipment
- Engine exhaust from the onsite operation of marine vessels
- Engine exhaust from the onsite and offsite operation of haul trucks
- Engine exhaust from onsite and offsite operation of worker vehicles
- Fugitive dust from haul trucks operating on paved and unpaved roadways.
- Fugitive dust from pickup trucks operating on paved and unpaved roadways.
- Fugitive dust from active stockpiles
- Fugitive dust from on-site excavation
- Fugitive dust from in-the-dry blasting
- Fugitive dust from onsite rock crushing, and
- Fugitive dust from onsite concrete batching

See the project description in the 2012 Supplemental EIS/EIR document for further details.

Scope of Construction Emission Calculations

Analysis Years

Construction emissions were updated for calendar years 2014, 2015, 2016, and 2017 (the final construction year). Emissions for 2014 were based on actual activity through June (as available), and projected activity thereafter. Projected construction activity was used to calculate 2015 through 2017 emissions.

Included Activities

Construction emissions within the scope of the Folsom Dam Modification Project were calculated for the following activities (and for the years in which they occur). Emissions were calculated for Kiewit activities and for the activities of other Contractors as overseen by the USACE, as summarized in Table 2 below.

Table 2. Folsom JFP Approach Channel Project Summary of Activities Included in the Request for an Updated Conformity Determination			
Construction Activity	**Project Years**	**Contractor**	**Included in 2012 SEIS/EIR or Additional Activity?**
Completion of Phase IV – Alternative 2 in AQ Technical Report	2004-2017	Kiewit	Included in 2012 SEIS/EIR
Lower Pipeline Staging Area	2014	Kiewit	Additional Activity
Erosion Control Project	2014	Kiewit	Additional Activity
Cheeseman Slope Removal	2016	Kiewit	Additional Activity
Phase IV Safety Bench	2016	Kiewit	Additional Activity
Phase V Miscellaneous Work	2016-2017	Kiewit	Additional Activity
Right Bank Stabilization Contract	2015	TBD	Additional Activity
Annual Reserve Troop Training	2017	U.S. Army	Additional Activity
Rossmoor Bar Mitigation	2015-2016	TBD	Additional Activity
Phase V Miscellaneous Work	2016-2017	TBD	Additional Activity
Phase III: Control Structure Work	2014-2015	Granite Construction	Included in 2012 SEIS/EIR

<u>*Included Pollutants*</u>

Construction emissions were calculated for ROG, NOx, CO, PM_{10}, $PM_{2.5}$ and SO_2.

<u>*Mitigation*</u>

The mitigation measures used in the emissions update calculations were identical, or more stringent (i.e. voluntary early implementation of the Tier 4 requirements) than those required by the *Folsom Dam Modification Project, Approach Channel, Final Supplemental Environmental Impact Statement/Environmental Impact Report (*2012 Supplemental EIS/EIR*)* or prior CEQA documents applicable to preceding project phases. The specific mitigation measures applicable to each source category are specified below.

One mitigation requirement in the 2012 Supplemental EIS/EIR is the use of Tier 3 or higher off-road equipment through calendar year 2014, and Tier 4 equipment thereafter.[4] However, it should be noted that equipment used for the Annual Reserve Troop Training project listed above, would not conform to this requirement. For national security reasons, the troop training must be conducted using equipment that is representative of the Army's fleet, which may or may not include higher tier engines. Emission impacts are expected to be small due to the short duration of the training exercises. The training exercises are also scheduled to occur at a time with minimal overlap with the higher

[4] The Phase III portion of the project, being performed by Granite Construction, is not subject to this requirement. Phase IV and all future projects, except as noted above, will be required to utilize Tier 4 engines.

emitting projects. It is further noted that certain ongoing projects were approved under prior NEPA/CEQA documents with less stringent mitigation than noted above. Because these projects overlap and create emissions concurrent with those estimated in the 2012 Supplemental EIS/EIR, they have been included in this update.

As shown in Table 3 below, even with onsite mitigation, NOx emissions are expected to exceed the General Conformity de minimis threshold in 2014, by 6.2 tons. The project is already subject to SMAQMD's Construction Mitigation Fee program. Under the program, projects that exceed the SMAQMD's short-term construction significance threshold of 85 pounds per day of NOx must apply enhanced exhaust control practices (i.e., onsite mitigation). If the threshold continues to be exceeded, an offsite mitigation fee is payable at a rate equivalent to $17,720 per ton of emissions. The project's participation in this program in 2014 to date has produced 10.6 tons of reductions, which do not require additional mitigation according to the SMAQMD.[5] To mitigate the remainder of projected 2014 emissions, the USACE will lease 21 tons of emission reduction credits (ERCs) from the SMAQMD Priority Reserve Bank. The USACE will submit an application for the ERCs, consistent with this analysis, no later than August 20, 2014.

Overall Calculation Methodology

The overall calculation methodology was the same as that used for the 2012 AQ Technical Report, except as noted below. This methodology was summarized in the AQ Technical Report and implemented in the Excel file: *Folsom Dam Modifications Calculations AQ Comparison Summary 5-3-12.xlsx* ("EIS/EIR Excel file"). Relevant sections of this file form the basis for the emission calculations. The updated worksheets have been renamed for clarity, and unused worksheets (e.g., for Project options not selected) have been deleted. An electronic version of the emission calculations is available to SMAQMD to allow for a detailed review of the calculations.

Source Specific Calculations

Emissions from the following sources were calculated as indicated.

Off-Road Construction Equipment

Emissions from off-road construction equipment (including off-road vehicles, portable engines and marine engines) were calculated from equipment lists provide by Kiewit and the USACE. The equipment lists contained the equipment type, horsepower rating, model year, and actual (or projected) hours of operation. These data were input into a tool similar to SMAQMD's Construction Mitigation Calculator, which has been developed to perform the emission calculations. The tool derives emission factors for ROG, NOx, PM_{10}, and $PM_{2.5}$ based on user inputs. For off-road vehicles and portable engines, emissions are calculated based on data contained in the California Air Resources Board's (CARB's) OFFROAD2011 model.

[5] August 18, 2014 email from Karen Huss of SMAQMD to Nancy Sandburg and Katie Huff of USACE.

The SMAQMD's calculator was modified to allow direct input and calculations for a large list of equipment on the 'Output' tab. The off-road data embedded in the SMAQMD calculator was updated and modified based on the current version of CARB's OFFROAD model in the following ways:

- The annual accrual rates contained in SMAQMD's model (See "Off-Road EFs 1" tab, Column "V") were substituted with update data from OFFROAD2011 (See "ActivityCmHrs" table, "Cumulative Hours Final" column). In general, this increased deterioration and emission factors.

- For portable engines (which are not included in OFFROAD), annual accrual rates were added at an assumed rate of 2,000 hours per year, capped at 12,000 hours.

- For portable engines, the following load factors were added from the California Emissions Estimator Model (CalEEMod): Air Compressors = 0.48, Generator Sets = 0.74, Pumps = 0.74, and Welders = 0.45.

- For all equipment types, a carbon monoxide (CO) emission factor was calculated based on the OFFROAD data contained in the calculator (See the "Off-Road EFs" tab, Columns "K" and "L").

- For all equipment types, a sulphur dioxide (SO_2) emission factor was calculated based on the fuel sulfur content of CARB diesel (15 ppmw), a generalized brake-specific fuel consumption of 7,000 hp-hr,[6] and diesel-fuel physical properties of 137,000 Btu/gal and 7.05 lbs/gal.[7]

The equipment lists provided by Kiewit and the USACE were derived in accordance with the 2012 Supplemental EIS/EIR mitigation requirement to use Tier 3 or higher off-road equipment through calendar year 2014, and Tier 4 equipment thereafter.

<u>Marine Engines</u>

Kiewit's activities include the usage of outboard marine engines and barges. Because marine engines are not included in SMAQMD's Construction Mitigation Calculator, they must be independently calculated. CARB has developed a separate inventory model for calculating marine engine emissions—The *California Barge and Dredge Emissions Inventory Database*. Data contained in this model were incorporated into the SMAQMD calculator to derive project emissions. The model uses the following generalized equation for calculating emissions.

$$E = EF_0 \times F \times (1 + D\frac{A}{UL}) \times HP \times LF \times HR$$

Where:

[6] From AP-42, Table 3.3-1, footnote "a."
[7] From AP-42, Appendix A, page A-5 data for "Diesel" and page A-7 data for "Distillate Oil"

E = is the amount of emissions of a pollutant emitted during one period;

EF_0 = is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);

F = is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;

D = is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;

A = is the age of the engine when the emissions are estimated;

UL = is the vessel type and engine use specific engine useful life;

HP = is rated horsepower of the engine;

LF = is the vessel type and engine use specific engine load factor;

HR = is the number of annual operating hours of the engine.

Due to the relatively small number of marine engines, the above equations were manually input onto the appropriate equipment lines on the modified "Output" tab of the SMAQMD calculator (renamed "Off-Road EFs 1). These emissions were independently calculated based on engine model year and type, based on the mitigation requirement to use Tier 2 or Tier 3 certified marine engines.

Haul Trucks

Emissions from haul trucks were calculated based on the model year, number of trips, and the round trip distance of each truck trip. Haul truck emission factors were derived from CARB's EMFAC2011 emissions model, using the heavy-heavy-duty diesel technology group applicable to construction trucks. Emission factors in units of grams per mile (g/mi) were determined based on the fleet operating in the Sacramento Valley Air Basin in each calendar year. The emission factors are weighted to include all operating speeds, which include both on-site and off-site operation. The model years were selected in accordance with the 2012 Supplemental EIS/EIR mitigation requirements to use 2010 model year (or newer) trucks in calendar year 2014 and beyond. This represents the highest level of control available for heavy-duty diesel trucks.

On-Site Trucks

Emissions from the onsite usage of pickup and mechanical trucks were calculated based on emission factors derived from EMFAC2011. Emission factors were derived based on the basin-wide fleet average model year of light-duty trucks operating in each calendar year. The number of each trucks operating was provided by Kiewit and USACE. There are no specific mitigation measures applicable to the on-site usage of light-duty trucks.

Worker Vehicles

Emissions from worker vehicles were calculated based on emission factors derived from EMFAC2011, and fleet composition as contained in the California Emissions Estimation Model (CalEEMod). CalEEMod also contains a default worker commute distance which was incorporated into the analysis. Emissions were calculated from the estimated number of worker vehicles. There are no specific mitigation measures applicable to worker vehicles.

Fugitive Dust

Fugitive dust emissions originate from a variety of sources, including blasting, excavation, rock crushing, stockpiling, wind erosion of disturbed areas, vehicle travel on unpaved roadways, vehicle travel on paved roadways, and concrete batching. As shown in Table 1, projected PM_{10} emissions were well below the de minimis threshold. Changes in activity related to fugitive dust have been recalculated based on updated activity data. Updated emissions have been included in the analysis, and are shown in Table 3. The overall effect of the activity updates indicates higher fugitive dust emissions in earlier project years, tapering off to very low emissions in the 2017 calendar year.

Updated Emissions

Construction emissions from the project for the 2014-2017 calendar years have been updated as described above. The updated emissions are shown in Table 3. Based on the updated emissions that are shown within this assessment, a positive General Conformity determination can be made for the mitigated emissions for the Folsom Dam Modification Project.

Table 3. Folsom JFP Approach Channel Project (Upstream+Downstream) Summary: Emissions After Mitigation (tons/year)

Activity Year	**VOC**	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**
Alternative 2 (Approach Chanel Excavation With Cutoff Wall)						
2014	3.8	**31.2**	21.4	49.6	6.9	0.1
2015	1.9	13.1	14.2	31.7	5.7	0.0
2016	2.1	17.7	15.3	19.0	2.9	0.1
2017	0.6	5.9	2.7	0.3	0.2	0.0
General Conformity *De Minimis* Levels	25	25	100	100	100	100

APPENDIX C

STATE HISTORIC PRESERVATION OFFICER COORDINATION

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

November 25, 2015 In reply refer to: COE_2014_0612_001

Ms. Stefanie Adams
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Re: Section 106 Consultation Phase V of the Folsom Dam Modifications Project (Folsom JFP), Folsom and Carmichael, Sacramento County, California

Dear Ms. Adams:

Thank you for your letter dated October 29, 2015, initiating consultation to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 300101), as amended, and its implementing regulation found at 36 CFR § 800. Along with your consultation letter, you also provided the *Memorandum for Record, Cultural Resources Assessment for the Proposed Site Restoration along 400 feet of the Right Bank of the American River Downstream of Folsom Dam for Phase V of the Folsom Joint Federal Project, Sacramento County, California* (cultural resources assessment). This document included attachments showing the Area of Potential Effect (APE) for the project and previous survey and evaluations.

Phase V of the Folsom Dam Modifications Project (Folsom JFP) includes the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site, the Rossmoor site, 10 miles downstream of the project site. As stated in the Army Corps of Engineers (COE) consultation letter, the goal of Phase V is environmental restoration.

As described in your letter, the cultural resources inventory included a records search, pedestrian survey, and Native American coordination. The APE was also previously surveyed in 2007 as part of the overall Folsom JFP APE. Two known cultural resources were identified through the records search, the Folsom Dikes (CA-SAC-1130H) and a possible prospecting pit (CA-SAC-943H). The Folsom Dikes were previously determined eligible for the National Register of Historic Places (NRHP) under Criterion A as contributing features to Folsom Dam and important structural components in the formation of Folsom Lake. My office concurred with this determination on November 2, 2007. CA-SAC-943H was evaluated as not eligible, which my office concurred with, and will be avoided by the undertaking. No additional resources were identified within the APE.

The mitigation site, the Rossmoor Mitigation Site, was surveyed in April, 2015. Two known resources are within a one-half mile radius of the APE, CA-SAC-155/156H and CA-SAC-308H. Both are outside the APE and will be avoided by the undertaking. No cultural resources were identified within the APE.

The COE has determined that the undertaking would have no adverse effect on historic properties, and is requesting my concurrence on this finding. After reviewing your submission I have the following comments:

- While APE maps are provided in Attachment 1 of the cultural resources assessment, the consultation package does not include a written description of the APE. Please provide a detailed narrative description of the APE. Include the horizontal and vertical extents of the proposed work and a justification of the APE boundaries chosen. The APE should also take into account any indirect effects, which should be clearly described.
- The APE maps should clearly identify the location of all work items and the location of historic properties.
- Please clarify the age and potential NRHP eligibility of the interior haul road and Folsom Point Bridge, and whether they may contribute to the eligibility of the Folsom Dam or are individually eligible. If they have not been previously evaluated and are 50 years old or older, please provide an evaluation addressing each of the National Register criteria.
- Please provide an analysis of the effects of this undertaking on the NRHP-eligible Folsom Dam.
- Please provide color photographs of the project site and all of the elements that may be affected by the undertaking, including the road, bridge, storage and staging areas, in order to meet the documentation standards described in 36 CFR § 800.11(e).
- Please provide color copies of the Department of Parks and Recreation (DPR) 523 forms for CA-SAC-943H and CA-SAC-1103H included in Attachment 2 of the cultural resources assessment, or update sheets with color photographs of these resources.
- Please describe any comments received by the COE from Indian tribes or groups regarding this project, and how those comments will be or have been addressed by the COE.
- In light of the above comments, I am unable to concur that the historic property identification efforts are sufficient for this undertaking pursuant to 36 CFR § 800.4(b) until the requested information is submitted and reviewed. I cannot agree that the COE has made a good-faith effort to identify properties that may be significant to Indian tribes or those groups or individuals that wish to participate in the Section 106 process for this undertaking.
- Pursuant to 36 CFR 800.5(b), I am unable to concur with the COE's finding of no adverse effect to historic properties affected for this undertaking at this time, as the identification efforts are not complete.

Thank you for seeking my comments and considering historic properties as part of your project planning, and I look forward to continuing this consultation with you. If you have any questions, please contact Kathleen Forrest of my staff at (916) 445-7022 or Kathleen.Forrest@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

Environmental Resources Branch

OCT 29 2015

Carol Roland-Nawi, PhD
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Dear Dr. Roland-Nawi:

In accordance with Section 106 of the National Historic Preservation Act, as amended, we are writing to inform you of the proposed undertaking for Phase V of the Folsom Dam Modifications Project (Folsom JFP). Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with the Corps' Post Authorization Change Report, American River Watershed Project.

The Corps and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP, as analyzed in the Folsom Dam Safety and Flood Damage Reduction, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. These design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Pursuant to 36 CFR Part 800.3 we are initiating the Section 106 process for Phase V of the Folsom JFP and we are asking for your comments on our proposed efforts to identify historic properties under 36 CFR Part 800.4. We are also asking for your concurrence with our determination of the area of potential effects (APE) for the proposed project in accordance with 36 CFR Part 800.4(a)(1) and your concurrence with our determination that the Project qualifies for a finding of *no adverse effects* to historic properties pursuant to 36 CFR 800.5(b).

Enclosed is a memorandum in which we define and describe the APE and discuss our efforts to locate and evaluate any potential historic properties. The APE is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

The proposed Project would consist of the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

During construction of the interior haul road, a layer of rip-rap armor was placed along the north side (lake side) of the road. The rip-rap consists of solid rock boulders up to 3 feet in diameter. Similar boulders are also present at the Dike 7, Dike 8, and MIAD staging areas. A limited quantity of rip-rap would be retained at the Dike 7 area to construct a drainage feature as part of the Phase V Project. Rip-rap not retained at the Dike 7 area would be removed and either transported off-site to a different project; disposed of in the MIAD East Area; or disposed of in the Overlook In-Lake Disposal Area. Both disposal areas are shown on the maps provided as Attachment 1 to the Enclosure.

Existing fill material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. Additionally, new guardrails would be constructed along the north side of Folsom Lake Crossing (roadway) for safety purposes. Staging and stock pile areas for Phase V of the Project would consist of areas that have been used for previous project phases and have therefore been the subject of previous consultations. Possible locations where temporary staging and stock pile areas could be located include the Dike 7 Area, the Dike 8 area, the MIAD West Area, Folsom Overlook, the Prison Staging Area and along the interior haul road. We have consulted with you in the past on these previously used staging, stock pile and disposal areas as part of the consultation for Phase III of the Folsom Dam Joint Federal Project and you concurred with our findings in a letter dated January 10, 2013.

A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

In May 2007, Pacific Legacy, Inc. (Pacific Legacy) was contracted by Reclamation to complete an archaeological survey of the overall Folsom JFP APE. Reclamation found the Folsom Dikes (CA-SAC-1103H) eligible for listing on the National Register of Historic Places (NRHP) under Criterion A as contributing features to Folsom Dam and important structural components in the formation of Folsom Lake. The dikes, along with Folsom Dam and the left and right wing dams were determined by Reclamation to "constitute an integrated whole that impounds Folsom Lake to provide flood protection to the greater Sacramento region." The SHPO agreed with Reclamation's findings in a letter dated November 2, 2007. The correspondence between Reclamation and the SHPO documenting these findings and determinations is included as Attachment 3 to the Enclosure.

Other than the Folsom Dikes, there was one other potential historic property located within the Phase V APE for the proposed design refinements. CA-SAC-943H (PLI-FDEIS-1) was identified slightly east of Dike 8 near the MIAD borrow disposal and storage area. It was described by Pacific Legacy as a possible prospecting pit with associated spoil piles and drainage. Pacific Legacy evaluated CA-SAC-943H as having very limited data potential on the DPR form due to a lack of associated occupation or artifacts. Reclamation determined that the site would be avoided by the JFP and did not evaluate the site beyond field recordation. The Corps has consulted with the SHPO on previous phases of the Folsom JFP where we have mentioned CA-SAC-943H (PLI-FDEIS-1) and our efforts to avoid the site and the SHPO has concurred with our efforts. Your Project number for the Folsom JFP is COE081120C. The Phase V Project will also avoid CA-SAC-943H. There are no previously recorded prehistoric archaeological sites within the APE for the proposed design refinement work.

The records search also indicated that the mitigation site has been surveyed numerous times in the past and is the subject of the 2009 Memorandum for Record titled, "Archaeological Survey of Approximately 60 Acres for Proposed Rossmoor Mitigation Site for the American River, Folsom Bridge Project, in the American River Parkway, Sacramento County" (Attachment 4 to the Enclosure), which describes the site as having, "undergone repeated and significant disturbance from agricultural activities, grading for access roads and construction of the bike trail through the American River Parkway. Historically, the site is known to have been plowed and used as an orchard and for grazing."

There are two known resources within a ½-mile radius of the APE for the mitigation site. Those resources include CA-SAC-155/156/H and CA-SAC 308H. CA-SAC-155/156/H is a multi-component site consisting of a prehistoric occupation area with shell, fire-affected rock, and debitage, and overlain with historic Japanese and Euro-American material. CA-SAC-308H is a multi-component mining district that covers approximately 70 square miles. Both of these sites are outside the APE and would be avoided by the proposed project.

Corps archaeology staff conducted an archaeological survey of the APE for the area around Folsom Dam on April 8, 2015. The two known cultural resources near the APE, CA-SAC-1103H and CA-SAC-943H, were both relocated and verified during the April survey. No other cultural resources were observed during the survey.

Corps archaeologists also resurveyed the Rossmoor Mitigation Site on April 22, 2015 and other than the two known sites which are outside of the APE for the proposed project, the survey was negative for cultural resources. Therefore, the only resource that would potentially be affected by the proposed project is CA-SAC-1103H (Folsom Dikes).

The Folsom Dikes are eligible for the National Register for the role that they play in the broad pattern of the history of the Central Valley region of Northern California. The Folsom Dikes have undergone extensive modifications and alterations since their construction. These modifications are designed to support and enhance the important function these structures play for the purposes of flood control, hydropower, and irrigation. The proposed project would result in the Dikes being physically modified, however, this would cause only minor changes to the visual setting of the Dikes in that they will be regraded, contoured and revegetated to give them a more natural looking appearance similar to the surrounding hillside. The Dikes would retain their original form and function which are the characteristics that make them eligible for listing in the National Register. In light of this, the Corps has determined that the Project will result in a finding of *no adverse effects* to historic properties (36 CFR 800.5(b). However, if archaeological deposits are found during project activities, work would be stopped pursuant to 36 CFR 800.13(b), Discoveries without Prior Planning, to determine the significance of the find and, if necessary, complete appropriate discovery procedures.

A copy of the enclosed memorandum was also sent to all the potentially interested Native American groups and individuals identified by the Native American Heritage Commission on August 10, 2015. In addition to sending the enclosed memorandum, the Corps has also requested any comments that the tribes might have regarding the APE and the proposed project. The Corps is sensitive to the interests of Native groups and is continuing consultation with individual tribes on the Folsom JFP as a whole.

We request that you concur with our determinations of the APE and our finding of *no adverse effects* to historic properties for the proposed work. Please review the enclosed information and provide your comments if any, and concurrence with our determinations. We are looking forward to your reply within 30 days of receipt of this letter.

Correspondence may be sent to Ms. Stefanie Adams, U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions or would like additional information, please contact Ms. Adams at (916) 557-7283 or by email at: Stefanie.L.Adams@usace.army.mil. Please contact Ms. Katie Huff, Project Manager at (916) 420-1067 or by email at Katie.J.Huff@usace.army.mil with any project specific questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

CF (w/o enclosure):
Rhonda Morningstar Pope, Chairperson, Buena Vista Rancheria, 1418 20th Street, Suite 200, Sacramento, California 95811
Roselynn Lwenya, Tribal Historic Preservation Officer, Buena Vista Rancheria, 1418 20th Street, Suite 200, Sacramento, California 95811
El Dorado Miwok Tribe, P.O. Box 711, El Dorado, California 95623
Glenda Nelson, Chairperson, Enterprise Rancheria of Maidu Indians, 2133 Monte Vista Avenue, Oroville, California 95966
Reno Franklin, Tribal Historic Preservation Officer, Enterprise Rancheria of Maidu Indians, 2133 Monte Vista Avenue, Oroville, California 95966
Yvonne Miller, Chairperson, Ione Band of Miwok Indians, P.O. Box 699, Plymouth, California 95669
Anthony Burris, Ione Band of Miwok Indians, P.O. Box 699, Plymouth, California 95669
Cosme Valdez, Interim Chief Executive Officer, Nashville-El Dorado Miwok, P.O. Box 580986, Elk Grove, California 95758
Nicholas Fonseca, Chairperson, Shingle Springs Band of Miwok Indians, P.O. Box 1340, Shingle Springs, California 95682
Daniel Fonseca, Cultural Resources Director, Shingle Springs Band of Miwok Indians, P.O. Box 1340, Shingle Springs, California 95682
Andrew Godsey, Assistant Director, Cultural Resources Department, Shingle Springs Band of Miwok Indians, P.O. Box 1340, Shingle Springs, California 95682
Kara Perry, Administrative Assistant, Cultural Resources Department, Shingle Springs Band of Miwok Indians, P.O. Box 1340, Shingle Springs, California 95682
Sam Daniels, Shingle Springs Band of Miwok Indians, P.O. Box 1340, Shingle Springs, California 95682
Don Ryberg, Chairperson, Tsi-Akim Maidu, 1239 East Main Street, Grass Valley, California 95945
Eileen Moon, Vice Chairperson, Tsi-Akim Maidu, 1239 East Main Street, Grass Valley, California 95945
Grayson Coney, Cultural Director, Tsi-Akim Maidu, P.O. Box 1316, Colfax, California 95713
Marcos Guerrero, Cultural Resources Specialist, United Auburn Indian Community of the Auburn Rancheria, 10720 Indian Hill Road, Auburn, California 95603
Jason Camp, Tribal Historic Preservation Officer, United Auburn Indian Community of the Auburn Rancheria, 10720 Indian Hill Road, Auburn, California 95603
Gene Whitehouse, Chairperson, United Auburn Indian Community of the Auburn Rancheria, 10720 Indian Hill Road, Auburn, California 95603
Raymond Hitchcock, Chairperson, Wilton Rancheria, 9728 Kent Street, Elk Grove, California 95642
Steven Hutchason, Executive Director of Environmental Resources, Wilton Rancheria, 9728 Kent Street, Elk Grove, California 95642

Judith Marks, Colfax-Todds Valley Consolidated Tribe, 1068 Silverton Circle, Lincoln, California 95648
Pamela Cubbler, Colfax-Todds Valley Consolidated Tribe, P.O. Box 734, Foresthill, California 95631
Cathy Bishop, Chairperson, Strawberry Valley Rancheria, 1540 Strader Avenue, Sacramento, California 95815
Charlie Wright, Chairperson, Cortina Wintun Environmental Protection Agency, P.O. Box 1630, Williams, California, 95987
Kesner Flores, P.O. Box 1047, Wheatland, California 95692
Rose Enos, 15310 Bancroft Road, Auburn, California 95603
Randy Yonemura, 4305 39th Avenue, Sacramento, California 95824
April Wallace Moore, 19630 Placer Hills Road, Colfax, California 95713

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Nicholas Fonseca
Chairperson
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

Dear Mr. Fonseca:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project.

The area of potential effects (APE) for the design refinements for the proposed project is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N, Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

Design refinements include the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. Existing material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

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Other than the Folsom Dikes, there is one other known potential historic property located within the Phase V APE for the proposed design refinements. CA-SAC-943H (PLI-FDEIS-1) was identified slightly east of Dike 8 near the MIAD borrow disposal and storage area. It was described by Pacific Legacy as a possible prospecting pit with associated spoil piles and drainage. Pacific Legacy evaluated CA-SAC-943H as having very limited data potential on the DPR form due to a lack of associated occupation or artifacts. Reclamation determined that the site would be avoided by the JFP and did not evaluate the site beyond field recordation. The Corps has consulted with you on previous phases of the Folsom JFP where we have mentioned CA-SAC-943H (PLI-FDEIS-1) and our efforts to avoid the site. The Phase V Project will also avoid CA-SAC-943H. There are no previously recorded prehistoric archaeological sites within the APE for the proposed design refinement work.

The records search also indicated that the mitigation site has been surveyed numerous times in the past and is the subject of the 2009 Memorandum for Record titled, "Archaeological Survey of Approximately 60 Acres for Proposed Rossmoor Mitigation Site for the American River, Folsom Bridge Project, in the American River Parkway, Sacramento County" (Attachment 4 to the Enclosure), which describes the site as having, "undergone repeated and significant disturbance from agricultural activities, grading for access roads and construction of the bike trail through the American River Parkway. Historically, the site is known to have been plowed and used as an orchard and for grazing."

There are two known resources within a ½-mile radius of the APE for the mitigation site. Those resources include CA-SAC-155/156/H and CA-SAC 308H. CA-SAC-155/156/H is a multi-component site consisting of a prehistoric occupation area with shell, fire-affected rock, and debitage, and overlain with historic Japanese and Euro-American material. CA-SAC-308H is a multi-component mining district that covers approximately 70 square miles. Both of these sites would be avoided by the proposed project.

Corps archaeology staff conducted an archaeological survey of the APE for the area around Folsom Dam on April 8, 2015. The two known cultural resources near the APE, CA-SAC-1103H and CA-SAC-943H, were both relocated and verified during the April survey. Also observed during the survey was a sparse lithic scatter (08-FDR-01) at the base of the embankment on the south side of Dike 8 (Attachment 5 to the Enclosure). The cultural material observed consisted of 4 basalt flakes, a basalt unifacial tool, a granite core, and a decortification cobble flake. While a menial amount of cultural material was documented during subsurface testing, a deposit with any degree of integrity was not encountered at the site. 08-FDR-01 is just outside of the APE and will not be impacted by the proposed project.

Corps archaeologists also resurveyed the Rossmoor Mitigation Site on April 22, 2015 and other than the two known sites which are outside of the APE for the proposed project, the survey was negative for cultural resources. Therefore, the only resource that would potentially be affected by the proposed project is CA-SAC-1103H. However, the Folsom Dikes have undergone extensive alteration since their construction and the proposed project would result in only minor changes to the visual setting of the Dikes in that they will be regraded, contoured and revegetated to give them a more natural looking appearance similar to the surrounding hillside. These changes would not affect the form or function of the Dikes in any way.

We take our tribal responsibilities seriously and we are interested in understanding any information you can provide us. We are sensitive toward the protection of traditional cultural properties and sacred sites, and make every effort to avoid them. If you have any comments on the APE, or can add information to our efforts to identify historic properties, or if you have knowledge of locations of archeological sites, sacred sites, TCPs or areas of traditional cultural value or concern in or near the APE, we would request that you provide that information to us within 30 days of receipt of this letter. Additionally we have enclosed for your review the Memorandum for Record titled, "Cultural Resources Assessment for the Proposed Site Restoration along 400 feet of the Right Bank of the American River Downstream of Folsom Dam for Phase V of the Folsom Joint Federal Project, Sacramento County, California." Correspondence may be sent to: Ms. Stefanie Adams (CESPK-PD-RC), U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions or would like additional information, please contact Ms. Adams at (916) 557-7283 or by email at: Stefanie.L.Adams@usace.army.mil. Please contact Ms. Katie Huff, Project Manager at (916) 420-1067 or by email at: Katie.J.Huff@usace.army.mil with any project specific questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure
CC:
Mr. Daniel Fonseca, Director, Cultural Resources Department, Shingle Springs Band of Miwok Indians, P.O. Box 1340, Shingle Springs, CA, 95682

Mr. Andrew Godsey, Assistant Director, Cultural Resources Department, Shingle Springs Band of Miwok Indians, P.O. Box 1340, Shingle Springs, CA, 95682

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Randy Yonemura
4305 39th Avenue
Sacramento, CA 95824

Dear Mr. Yonemura:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project.

The area of potential effects (APE) for the design refinements for the proposed project is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N, Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

Design refinements include the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. Existing material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

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We take our tribal responsibilities seriously and we are interested in understanding any information you can provide us. We are sensitive toward the protection of traditional cultural properties and sacred sites, and make every effort to avoid them. If you have any comments on the APE, or can add information to our efforts to identify historic properties, or if you have knowledge of locations of archeological sites, sacred sites, TCPs or areas of traditional cultural value or concern in or near the APE, we would request that you provide that information to us within 30 days of receipt of this letter. Additionally we have enclosed for your review the Memorandum for Record titled, "Cultural Resources Assessment for the Proposed Site Restoration along 400 feet of the Right Bank of the American River Downstream of Folsom Dam for Phase V of the Folsom Joint Federal Project, Sacramento County, California." Correspondence may be sent to: Ms. Stefanie Adams (CESPK-PD-RC), U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions or would like additional information, please contact Ms. Adams at (916) 557-7283 or by email at: Stefanie.L.Adams@usace.army.mil. Please contact Ms. Katie Huff, Project Manager at (916) 420-1067 or by email at: Katie.J.Huff@usace.army.mil with any project specific questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Charlie Wright
Chairperson
Cortina Wintun Environmental Protection Agency
P.O. Box 1630
Williams, CA 95987

Dear Mr. Wright:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

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A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

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Other than the Folsom Dikes, there is one other known potential historic property located within the Phase V APE for the proposed design refinements. CA-SAC-943H (PLI-FDEIS-1) was identified slightly east of Dike 8 near the MIAD borrow disposal and storage area. It was described by Pacific Legacy as a possible prospecting pit with associated spoil piles and drainage. Pacific Legacy evaluated CA-SAC-943H as having very limited data potential on the DPR form due to a lack of associated occupation or artifacts. Reclamation determined that the site would be avoided by the JFP and did not evaluate the site beyond field recordation. The Corps has consulted with you on previous phases of the Folsom JFP where we have mentioned CA-SAC-943H (PLI-FDEIS-1) and our efforts to avoid the site. The Phase V Project will also avoid CA-SAC-943H. There are no previously recorded prehistoric archaeological sites within the APE for the proposed design refinement work.

The records search also indicated that the mitigation site has been surveyed numerous times in the past and is the subject of the 2009 Memorandum for Record titled, "Archaeological Survey of Approximately 60 Acres for Proposed Rossmoor Mitigation Site for the American River, Folsom Bridge Project, in the American River Parkway, Sacramento County" (Attachment 4 to the Enclosure), which describes the site as having, "undergone repeated and significant disturbance from agricultural activities, grading for access roads and construction of the bike trail through the American River Parkway. Historically, the site is known to have been plowed and used as an orchard and for grazing."

There are two known resources within a ½-mile radius of the APE for the mitigation site. Those resources include CA-SAC-155/156/H and CA-SAC 308H. CA-SAC-155/156/H is a multi-component site consisting of a prehistoric occupation area with shell, fire-affected rock, and debitage, and overlain with historic Japanese and Euro-American material. CA-SAC-308H is a multi-component mining district that covers approximately 70 square miles. Both of these sites would be avoided by the proposed project.

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Corps archaeologists also resurveyed the Rossmoor Mitigation Site on April 22, 2015 and other than the two known sites which are outside of the APE for the proposed project, the survey was negative for cultural resources. Therefore, the only resource that would potentially be affected by the proposed project is CA-SAC-1103H. However, the Folsom Dikes have undergone extensive alteration since their construction and the proposed project would result in only minor changes to the visual setting of the Dikes in that they will be regraded, contoured and revegetated to give them a more natural looking appearance similar to the surrounding hillside. These changes would not affect the form or function of the Dikes in any way.

We take our tribal responsibilities seriously and we are interested in understanding any information you can provide us. We are sensitive toward the protection of traditional cultural properties and sacred sites, and make every effort to avoid them. If you have any comments on the APE, or can add information to our efforts to identify historic properties, or if you have knowledge of locations of archeological sites, sacred sites, TCPs or areas of traditional cultural value or concern in or near the APE, we would request that you provide that information to us within 30 days of receipt of this letter. Additionally we have enclosed for your review the Memorandum for Record titled, "Cultural Resources Assessment for the Proposed Site Restoration along 400 feet of the Right Bank of the American River Downstream of Folsom Dam for Phase V of the Folsom Joint Federal Project, Sacramento County, California." Correspondence may be sent to: Ms. Stefanie Adams (CESPK-PD-RC), U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions or would like additional information, please contact Ms. Adams at (916) 557-7283 or by email at: Stefanie.L.Adams@usace.army.mil. Please contact Ms. Katie Huff, Project Manager at (916) 420-1067 or by email at: Katie.J.Huff@usace.army.mil with any project specific questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Gene Whitehouse
Chairperson
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

Dear Mr. Whitehouse:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure
CC:
Mr. Marcos Guerrero, Cultural Resource Specialist, United Auburn Indian Community of the Auburn Rancheria, 10720 Indian Hill Road, Auburn, CA, 95603

Mr. Jason Camp, United Auburn Indian Community of the Auburn Rancheria, Tribal Historic Preservation Officer, 10720 Indian Hill Road, Auburn, CA, 95603

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO ATTENTION OF

AUG 10 2015

Environmental Resources Branch

April Wallace Moore
19630 Placer Hills Road
Colfax, CA 95713

Dear Ms. Wallace Moore:

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Cosme Valdez
Interim Chief Executive Officer
Nashville-El Dorado Miwok
P.O. Box 580986
Elk Grove, CA 95758

Dear Mr. Valdez:

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There are two known resources within a ½-mile radius of the APE for the mitigation site. Those resources include CA-SAC-155/156/H and CA-SAC 308H. CA-SAC-155/156/H is a multi-component site consisting of a prehistoric occupation area with shell, fire-affected rock, and debitage, and overlain with historic Japanese and Euro-American material. CA-SAC-308H is a multi-component mining district that covers approximately 70 square miles. Both of these sites would be avoided by the proposed project.

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We take our tribal responsibilities seriously and we are interested in understanding any information you can provide us. We are sensitive toward the protection of traditional cultural properties and sacred sites, and make every effort to avoid them. If you have any comments on the APE, or can add information to our efforts to identify historic properties, or if you have knowledge of locations of archeological sites, sacred sites, TCPs or areas of traditional cultural value or concern in or near the APE, we would request that you provide that information to us within 30 days of receipt of this letter. Additionally we have enclosed for your review the Memorandum for Record titled, "Cultural Resources Assessment for the Proposed Site Restoration along 400 feet of the Right Bank of the American River Downstream of Folsom Dam for Phase V of the Folsom Joint Federal Project, Sacramento County, California." Correspondence may be sent to: Ms. Stefanie Adams (CESPK-PD-RC), U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions or would like additional information, please contact Ms. Adams at (916) 557-7283 or by email at: Stefanie.L.Adams@usace.army.mil. Please contact Ms. Katie Huff, Project Manager at (916) 420-1067 or by email at: Katie.J.Huff@usace.army.mil with any project specific questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Don Ryberg
Chairperson
T'si-Akim Maidu
1239 East Main Street
Grass Valley, CA 95945

Dear Mr. Ryberg:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project.

The area of potential effects (APE) for the design refinements for the proposed project is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N, Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

Design refinements include the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. Existing material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure
CC:
Mr. Grayson Coney, Cultural Director, T'si-Akim Maidu, P.O. Box 1316, Colfax, CA, 95713

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Rhonda Morningstar Pope
Chairperson
Buena Vista Rancheria
1418 20th Street, Suite 200
Sacramento, CA 95811

Dear Ms. Morningstar Pope:

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure
CC:
Ms. Roselynn Lwenya, Tribal Historic Preservation Officer, Buena Vista Rancheria, 1418 20th Street, Suite 200, Sacramento, CA, 95811

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Kara Perry
Administrative Assistant, Cultural Resources Department
Shingle Springs Band of Miwok Indians
P.O. Box 1340
CA, CA 95682

Dear Ms. Perry:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

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We take our tribal responsibilities seriously and we are interested in understanding any information you can provide us. We are sensitive toward the protection of traditional cultural properties and sacred sites, and make every effort to avoid them. If you have any comments on the APE, or can add information to our efforts to identify historic properties, or if you have knowledge of locations of archeological sites, sacred sites, TCPs or areas of traditional cultural value or concern in or near the APE, we would request that you provide that information to us within 30 days of receipt of this letter. Additionally we have enclosed for your review the Memorandum for Record titled, "Cultural Resources Assessment for the Proposed Site Restoration along 400 feet of the Right Bank of the American River Downstream of Folsom Dam for Phase V of the Folsom Joint Federal Project, Sacramento County, California." Correspondence may be sent to: Ms. Stefanie Adams (CESPK-PD-RC), U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions or would like additional information, please contact Ms. Adams at (916) 557-7283 or by email at: Stefanie.L.Adams@usace.army.mil. Please contact Ms. Katie Huff, Project Manager at (916) 420-1067 or by email at: Katie.J.Huff@usace.army.mil with any project specific questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Glenda Nelson
Chairperson
Enterprise Rancheria of Maidu Indians
2133 Monte Vista Avenue
Oroville, CA 95966

Dear Ms. Nelson:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project.

The area of potential effects (APE) for the design refinements for the proposed project is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N, Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

Design refinements include the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. Existing material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

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Other than the Folsom Dikes, there is one other known potential historic property located within the Phase V APE for the proposed design refinements. CA-SAC-943H (PLI-FDEIS-1) was identified slightly east of Dike 8 near the MIAD borrow disposal and storage area. It was described by Pacific Legacy as a possible prospecting pit with associated spoil piles and drainage. Pacific Legacy evaluated CA-SAC-943H as having very limited data potential on the DPR form due to a lack of associated occupation or artifacts. Reclamation determined that the site would be avoided by the JFP and did not evaluate the site beyond field recordation. The Corps has consulted with you on previous phases of the Folsom JFP where we have mentioned CA-SAC-943H (PLI-FDEIS-1) and our efforts to avoid the site. The Phase V Project will also avoid CA-SAC-943H. There are no previously recorded prehistoric archaeological sites within the APE for the proposed design refinement work.

The records search also indicated that the mitigation site has been surveyed numerous times in the past and is the subject of the 2009 Memorandum for Record titled, "Archaeological Survey of Approximately 60 Acres for Proposed Rossmoor Mitigation Site for the American River, Folsom Bridge Project, in the American River Parkway, Sacramento County" (Attachment 4 to the Enclosure), which describes the site as having, "undergone repeated and significant disturbance from agricultural activities, grading for access roads and construction of the bike trail through the American River Parkway. Historically, the site is known to have been plowed and used as an orchard and for grazing."

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure
CC:
Mr. Reno Franklin, Tribal Historic Preservation Office, Enterprise Rancheria of Maidu Indians, 2133 Monte Vista Ave, Oroville, CA, 95669

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Eileen Moon
Vice Chairperson
T'si-Akim Maidu
1239 East Main Street
Grass Valley, CA 95945

Dear Ms. Moon:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Yvonne Miller
Chairperson
Ione Band of Miwok Indians
P.O. Box 699
Plymouth, CA 95669

Dear Ms. Miller:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Judith Marks
Colfax-Todds Valley Consolidated Tribe
1068 Silverton Circle
Lincoln, CA 95648

Dear Ms. Marks:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

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The area of potential effects (APE) for the design refinements for the proposed project is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N, Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

Design refinements include the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. Existing material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

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Other than the Folsom Dikes, there is one other known potential historic property located within the Phase V APE for the proposed design refinements. CA-SAC-943H (PLI-FDEIS-1) was identified slightly east of Dike 8 near the MIAD borrow disposal and storage area. It was described by Pacific Legacy as a possible prospecting pit with associated spoil piles and drainage. Pacific Legacy evaluated CA-SAC-943H as having very limited data potential on the DPR form due to a lack of associated occupation or artifacts. Reclamation determined that the site would be avoided by the JFP and did not evaluate the site beyond field recordation. The Corps has consulted with you on previous phases of the Folsom JFP where we have mentioned CA-SAC-943H (PLI-FDEIS-1) and our efforts to avoid the site. The Phase V Project will also avoid CA-SAC-943H. There are no previously recorded prehistoric archaeological sites within the APE for the proposed design refinement work.

The records search also indicated that the mitigation site has been surveyed numerous times in the past and is the subject of the 2009 Memorandum for Record titled, "Archaeological Survey of Approximately 60 Acres for Proposed Rossmoor Mitigation Site for the American River, Folsom Bridge Project, in the American River Parkway, Sacramento County" (Attachment 4 to the Enclosure), which describes the site as having, "undergone repeated and significant disturbance from agricultural activities, grading for access roads and construction of the bike trail through the American River Parkway. Historically, the site is known to have been plowed and used as an orchard and for grazing."

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Kesner Flores
P.O. Box 1047
Wheatland, CA 95692

Dear Mr. Flores:

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO ATTENTION OF

AUG 1 0 2015

Environmental Resources Branch

Rose Enos
15310 Bancroft Road
Auburn, CA 95603

Dear Ms. Enos:

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Sam Daniels
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

Dear Mr. Daniels:

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Other than the Folsom Dikes, there is one other known potential historic property located within the Phase V APE for the proposed design refinements. CA-SAC-943H (PLI-FDEIS-1) was identified slightly east of Dike 8 near the MIAD borrow disposal and storage area. It was described by Pacific Legacy as a possible prospecting pit with associated spoil piles and drainage. Pacific Legacy evaluated CA-SAC-943H as having very limited data potential on the DPR form due to a lack of associated occupation or artifacts. Reclamation determined that the site would be avoided by the JFP and did not evaluate the site beyond field recordation. The Corps has consulted with you on previous phases of the Folsom JFP where we have mentioned CA-SAC-943H (PLI-FDEIS-1) and our efforts to avoid the site. The Phase V Project will also avoid CA-SAC-943H. There are no previously recorded prehistoric archaeological sites within the APE for the proposed design refinement work.

The records search also indicated that the mitigation site has been surveyed numerous times in the past and is the subject of the 2009 Memorandum for Record titled, "Archaeological Survey of Approximately 60 Acres for Proposed Rossmoor Mitigation Site for the American River, Folsom Bridge Project, in the American River Parkway, Sacramento County" (Attachment 4 to the Enclosure), which describes the site as having, "undergone repeated and significant disturbance from agricultural activities, grading for access roads and construction of the bike trail through the American River Parkway. Historically, the site is known to have been plowed and used as an orchard and for grazing."

There are two known resources within a ½-mile radius of the APE for the mitigation site. Those resources include CA-SAC-155/156/H and CA-SAC 308H. CA-SAC-155/156/H is a multi-component site consisting of a prehistoric occupation area with shell, fire-affected rock, and debitage, and overlain with historic Japanese and Euro-American material. CA-SAC-308H is a multi-component mining district that covers approximately 70 square miles. Both of these sites would be avoided by the proposed project.

Corps archaeology staff conducted an archaeological survey of the APE for the area around Folsom Dam on April 8, 2015. The two known cultural resources near the APE, CA-SAC-1103H and CA-SAC-943H, were both relocated and verified during the April survey. Also observed during the survey was a sparse lithic scatter (08-FDR-01) at the base of the embankment on the south side of Dike 8 (Attachment 5 to the Enclosure). The cultural material observed consisted of 4 basalt flakes, a basalt unifacial tool, a granite core, and a decortification cobble flake. While a menial amount of cultural material was documented during subsurface testing, a deposit with any degree of integrity was not encountered at the site. 08-FDR-01 is just outside of the APE and will not be impacted by the proposed project.

Corps archaeologists also resurveyed the Rossmoor Mitigation Site on April 22, 2015 and other than the two known sites which are outside of the APE for the proposed project, the survey was negative for cultural resources. Therefore, the only resource that would potentially be affected by the proposed project is CA-SAC-1103H. However, the Folsom Dikes have undergone extensive alteration since their construction and the proposed project would result in only minor changes to the visual setting of the Dikes in that they will be regraded, contoured and revegetated to give them a more natural looking appearance similar to the surrounding hillside. These changes would not affect the form or function of the Dikes in any way.

We take our tribal responsibilities seriously and we are interested in understanding any information you can provide us. We are sensitive toward the protection of traditional cultural properties and sacred sites, and make every effort to avoid them. If you have any comments on the APE, or can add information to our efforts to identify historic properties, or if you have knowledge of locations of archeological sites, sacred sites, TCPs or areas of traditional cultural value or concern in or near the APE, we would request that you provide that information to us within 30 days of receipt of this letter. Additionally we have enclosed for your review the Memorandum for Record titled, "Cultural Resources Assessment for the Proposed Site Restoration along 400 feet of the Right Bank of the American River Downstream of Folsom Dam for Phase V of the Folsom Joint Federal Project, Sacramento County, California." Correspondence may be sent to: Ms. Stefanie Adams (CESPK-PD-RC), U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions or would like additional information, please contact Ms. Adams at (916) 557-7283 or by email at: Stefanie.L.Adams@usace.army.mil. Please contact Ms. Katie Huff, Project Manager at (916) 420-1067 or by email at: Katie.J.Huff@usace.army.mil with any project specific questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Pamela Cubbler
Colfax-Todds Valley Consolidated Tribe
P.O. Box 734
Foresthill, CA 95631

Dear Ms. Cubbler:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project.

The area of potential effects (APE) for the design refinements for the proposed project is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N, Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

Design refinements include the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. Existing material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Anthony Burris
Ione Band of Miwok Indians
P.O. Box 699
Plymouth, CA 95669

Dear Mr. Burris:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

Cathy Bishop
Chairperson
Strawberry Valley Rancheria
1540 Strader Avenue
Sacramento, CA 95815

Dear Ms. Bishop:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 1 0 2015

Environmental Resources Branch

Raymond Hitchcock
Chairperson
Wilton Rancheria
9728 Kent St
Elk Grove, CA 95642

Dear Mr. Hitchcock:

We are writing to continue staff level consultation and communication on the Folsom Dam Modifications Project, Phase V (Folsom JFP). The U.S. Army Corps of Engineers, Sacramento District (Corps) and the State of California Central Valley Flood Protection Board propose to implement design refinements to the Folsom JFP. The JFP was described and analyzed in the Folsom Dam Safety and Flood Damage Reduction Project, Final Environmental Impact Statement/Environmental Impact Report, issued by the U.S. Bureau of Reclamation (Reclamation) in 2007. The design refinements described in the current action are limited to Phase V of the Project (Project) and would restore the area affected by previous project phases to a natural state consistent with the shoreline of Folsom Lake.

Construction of the auxiliary spillway was authorized by Section 101(a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 274) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project.

The area of potential effects (APE) for the design refinements for the proposed project is located in Township 10N, Range 7E and 8E on the Folsom, CA (1980) 7.5" U.S.G.S. quadrangle with the mitigation site for the Project located in Township 9N, Range 6E on the Carmichael and Citrus Heights, CA (1992) 7.5" U.S.G.S. quadrangles (Attachment 1 to the Enclosure).

Design refinements include the removal of the interior haul road and Folsom Point Bridge; the construction of a safety bench; site restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) staging areas; and the establishment of an oak woodland mitigation site. The goal in removing the interior haul road is to produce a more natural looking landscape. This would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The removal of the interior haul road will be done in three segments. Segment 1 includes the interior haul road to Dike 7, segment 2 includes the interior haul road from Dike 7 to Dike 8, and segment 3 includes the interior haul road from Dike 8 to MIAD West. Existing material from the interior haul road would be redistributed to restore the site to a natural condition; fill materials would not be imported or exported. Folsom Point Bridge would be demolished and removed and the area would be in-filled to near pre-project conditions with fill material coming from the adjacent Dike 8 area and MIAD West area. A safety bench would be constructed to allow for emergency access and maintenance activities. The safety bench would be approximately one mile long and 20 feet wide beginning at Dike 7 and ending near the crest of a hill at the fence line near the MIAD staging area. The oak woodland mitigation site for the project is located approximately 10 miles downstream along the American River at Rossmoor Bar consisting of 14 acres with 235 plants per acre.

A records search conducted at the North Central Information Center located at California State University, Sacramento on February 24, 2015 indicated that several areas near the APE for the proposed design refinements have previously been surveyed for cultural resources. The records search revealed two known cultural resources within the APE of the proposed design refinements including the Folsom Dikes (CA-SAC-1103H) and a possible prospecting pit (CA-SAC-943H). The primary record forms for these two sites are included as Attachment 2 to the Enclosure.

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure
CC:
Mr. Steven Hutchason, Executive Director of Environmental Resources, Wilton Rancheria, 9728 Kent St, Elk Grove, CA, 95642

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

AUG 10 2015

Environmental Resources Branch

El Dorado Miwok Tribe
P.O. Box 711
El Dorado, CA 95623

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Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

APPENDIX D

NOISE ANALYSIS

Joint Federal Project (JFP) at Folsom Dam, Approach Channel Excavation

Noise Technical Memorandum

Sacramento, CA

Draft

February 2012

U.S Army Corps of Engineers, Sacramento District

U.S. Army Corps of Engineers
Sacramento District

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List of Tables

Appendices

List of Abbreviations and Acronyms

ADT	Average Daily Traffic
ANSI	American National Standards Institute
Bio-x	Bio measurement site x (x = site number)
BNoise	Blast Noise
CadnaA	Computer-Aided Noise Abatement
CEQA	California Environmental Quality Act
Cfm	Cubic Feet per Minute
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
cy	Cubic yard
dB	decibels
dB(A)	decibel – A-Weighted
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
ISO	International Standard of Organization
Hz	hertz
JFP	Joint Federal Project
kHz	kilohertz
Ldn	day-night sound level
Leq	equivalent sound level
Lmax	maximum sound level
Lmin	minimum sound level
LORS	laws, ordinances, regulations and standards
Lxx	percentile-exceeded sound level
LT-x	long term measurement site x (x = site number)
MIAD	Mormon Island Auxiliary Dam
µPa	micro-Pascals
mph	miles per hour
MR-x	Modeled Receiver x (x = site number)
NAC	noise abatement criteria
NOAA	National Oceanic and Atmospheric Administration

List of Abbreviations and Acronyms (Con't)

NSR	Noise Study Report
OSHA	Occupational Safety and Health Administration
PWL	Sound Power Level
RCNM	Road Construction Noise Model
RMS	root-mean-square
ROD	Record of Decision
SEL	Sound exposure level
SPL	sound pressure level
ST-x	short term measurement site x (x = site number)
NAVD	North American Vertical Datum
TNM	Traffic Noise Model
USBR	United States Bureau of Reclamation
USDOT	US Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

1.0 SETTINGS/AFFECTED ENVIRONMENT

1.1 Background

As part of the Folsom Dam Safety and Flood Damage Reduction Project, also referred to as the Joint Federal Project (JFP), an auxiliary spillway is under construction jointly by the U.S. Bureau of Reclamation (USBR) and the U.S. Army Corps of Engineers (USACE). The JFP is intended to provide increased flood damage reduction and mitigate dam safety issues related to a Probable Maximum Flood event. The new auxiliary spillway would be operated in concert with the existing spillway gates and river outlets on Folsom Dam to manage flood flows from Folsom Reservoir.

The final phase of the proposed project is the completion of the approach channel and spur dike. A trans-load facility and concrete batch plant are necessary for construction to be completed. The project would be phased such that maximum excavation of the approach channel, and construction of the spur dike, can be completed during low lake levels in the dry, to minimize both project costs and water quality and biological impacts. There are currently three potential alternatives for the proposed project: Alternative 1, Alternative 2 and Alternative 3. Alternative 1 is the no project Alternative. Alternative 2 includes approach channel excavation with the utilization of a cutoff wall while Alternative 3 includes approach channel excavation with the utilization of a cofferdam.

1.2 Purpose and Scope

This section presents the results of a noise impact analysis for the Folsom Dam JFP and includes relevant noise laws, ordinances, and regulations, the results of a noise survey, and a quantitative analysis of noise environmental impacts during project activities. The analysis includes:

- Discussion of source terrestrial noise emissions from construction schedules and activities such as excavation, blasting, construction of the spur dike, material delivery, batch plant utilization and utilization of the on-site haul road
- Descriptions of the affected environment including identification of human and wildlife sensitive receptors
- Development and use of appropriate air and noise quantification models
- Potential noise impacts
- Qualitative discussion on impacts due to underwater excavation and blasting activities
- Mitigation measures
- Cumulative effects

1.3 Project Components Analyzed for Noise Impacts

The project involves the following aspects depending on whether Alternative 2 or 3 is chosen: approach channel excavation, spur dike construction, transload facility construction, batch plant operations, cutoff wall construction and cofferdam construction.

Approach Channel Excavation

The approach channel for the auxiliary spillway extends approximately 1,100 feet upstream of the concrete control structure. The approach channel converges as it approaches the control structure. The approach slab is a 5-foot thick, reinforced concrete slab that extends approximately 150 feet upstream of the control structure. The approach channel excavation includes excavation of rock material within the envelope of the approach channel, shaping and scaling of the channel surfaces, excavation of any rock trap recesses in the floor of the channel, placement of the approach slab, armoring of any side slopes susceptible to erosion. Excavation would occur both in-the-dry and in-the-wet.

An estimated volume of 932,500cy of material would be excavated for the approach channel. A portion of the approach channel excavation would be executed using land based techniques above the seasonal low water pool. The remainder of the approach channel would be excavated from barge mounted equipment.

Land based rock excavation would be accomplished with conventional drilling and blasting methods and rock excavation underwater would be accomplished by drill and blast methods (URS, 2009). In dry holes, ANFO (ammonium nitrate-fuel oil) would be utilized and primed with cast boosters. Blasting would typically consist of approximately 15,000 cubic yards rock shots. Rock excavation under water would be accomplished by drill and blast methods (URS, 2009). Each blast would produce approximately 2,000 cubic yards of rock. Water-resistant emulsified slurry would be required since water intrusion is anticipated. Explosives would be stored off-site. The explosives storage facility is assumed to be located in Jamestown, California, approximately 80 miles from the site. Explosives would be trucked to the site on a daily basis.

To limit the blast over-pressures, all charges would be confined by rock burden and crushed stone stemming in amounts that are at least 20-charge diameters. A bubble curtain would reduce the blast-induced dynamic water pressure that could be transmitted to the lake.

Spur Dike Construction

A spur dike is an embankment designed to direct water into an opening; in this case the opening would be the approach channel. The proposed elliptical-shaped spur dike would be located directly to the northwest of the approach channel. The core of the spur dike would be constructed of a decomposed quartz diorite core, commonly known as decomposed granite. This would be followed by a compacted random rock fill followed by a stone riprap cap. The quantity of material estimated to complete the spur dike is 395,000 cy. Material for the spur dike construction would come from the excavation of the approach channel excavation, or Mormon Island Auxiliary Dam (MIAD) disposal area. The construction equipment needed to build the spur dike consists of normal scrapers, bulldozers, and sheep-foot rollers for the body of the spur dike, and backhoes, bulldozers, and smooth rollers for the bedding, riprap, and surfacing materials. The construction would take place over 9 months in 2016 and 2017.

Transload Facility Construction

A transload facility would be needed for mobilization/demobilization of marine equipment (e.g., sectional barges and heavy cranes), dredge spoil off-loading from barges to trucks, marine equipment fuel and explosives transfer to support barges, equipment maintenance, and marine crew deployment. The proposed trans-load facility would be comprised of a ramp, crane and crane pad, and a fuel transfer station. The transload facility would be located adjacent to Dike 7. The transload facility is temporary and would be removed after the completion of the approach channel project in 2017. Ramp material would be removed with excavators and hauled for disposal at the MIAD disposal area.

Batch Plant and Staging Area Operations

Definitive uses of each staging area have not been determined. The four locations for the staging areas are the Folsom Prison staging area, MIAD staging area, Overlook staging area and Dike 7 staging area. The construction of the approach channel and cutoff wall would require large quantities of temperature controlled concrete. This would necessitate the use of a contractor-provided, on-site concrete batch plant and deliveries of large quantities of concrete aggregate, concrete sand, and cement. The batch plant would be powered by electricity from overhead Sacramento Municipal Utility District lines.

Cutoff Wall Construction

A cutoff wall is proposed for Alternative 2. The proposed cutoff wall would be located adjacent to Folsom Lake southeast of the Left Wing Dam and east of the Auxiliary Spillway chute excavation. The cutoff wall would consist of a reinforced concrete secant pile wall installed across the width of the future approach channel. The total length of the wall would be approximately 1,000 feet. The wall would be socketed into the underlying highly weathered granitic rock.

The secant wall would be constructed by initially drilling 3-foot diameter holes for the primary piles on 4-foot centers. After the drilling, the hole would be filled with concrete and a reinforcing cage. The top section of the piles would be drilled with a steel casting used to support the layers of cobbles and boulders. The bottom section of the pile that penetrates the decomposed and highly weathered granite would not require casing. The casing would be removed as concrete is placed in the hole. The average pile length is estimated to be 85 ft.

Three-foot diameter holes for the secondary piles would then be drilled on 4-foot centers between the primary piles. The secondary piles would be reinforced and constructed with concrete and a reinforcing cage. Both primary and secondary piles would be filled with concrete. No impact or vibratory pile driving is anticipated under this alternative (Mike Forrest, pers com to R. Verity, Jan 3 2012).

Cofferdam Construction

A cofferdam is proposed for Alternative 3. The cofferdam consists of a series of 84-foot diameter circular sheet pile cells constructed using 85-foot-long flat sheet piles.

The construction of the cells requires sheet piles to be installed using a template. The template consists of two to three horizontally mounted ring wales provide support for the vertical flat sheets. The sheet piles are installed using a vibratory hammer, working progressively around the ring. Once erected, the cells would be filled with well-graded crushed rock. The same plan dimension is maintained throughout the cofferdam, allowing for one sheet pile installation template to be utilized for construction of all of the circular cells. A layer of riprap would be placed along the upstream toe of the cells for scour protection. The cells are founded directly on the decomposed granite. The cofferdam accommodates a high design lake level of elevation 468 feet.

The cofferdam would have a provision for controlled but rapid flooding of the approach channel area to allow for quick equalization of hydraulic loads on both sides of the cofferdam. Rapid flooding of the approach channel excavation would be achieved by two or more flood gates installed in the connector cells. Each gate would consist of an approximately 100-foot-long, 4-foot diameter pipe mounted with a slide gate on the upstream side of the cofferdam. Accounting for energy losses at the inlet, outlet, and friction along the pipe walls and at the slide gate, two pipes would allow for infilling of the approach channel excavation area up to the high lake level at elevation 468.34 feet within about 6 hours.

Prior to cofferdam construction, lake sediments and other soils would be dredged to expose decomposed granite. A silt curtain placed around the perimeter of the excavation will be required to control turbidity in the lake. The total estimated volume of cofferdam fill materials would be 149,600 cy, almost all of which is cell fill.

Potential noise impacts were assessed at noise-sensitive human and wildlife receptors within the vicinity of the proposed project. Project activities that were assessed include: approach channel excavation and spur dike construction activities, blasting and traffic. A qualitative discussion of potential negative effects on fish species residing in Folsom Lake in the vicinity of underwater approach channel excavation and blasting activities will be developed. Potential noise-sensitive human receptors within the City of Folsom, Sacramento County, Placer County and El Dorado County were considered. Potential noise-sensitive wildlife is assessed within a five-mile radius of the proposed approach channel excavation and spur dike construction area.

1.4 Fundamentals of Acoustics

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to typical environmental noise exposure levels is annoyance. The responses of individuals to similar noise events are diverse and influenced by many factors including the type of noise, the perceived importance of the noise, its appropriateness to the setting, the time of day and the type of activity during which the noise occurs, and noise sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, which are sensed by the human ear. Sound is generally characterized by several variables, including frequency and amplitude. Frequency describes the sound's pitch (tone) and is measured in cycles per second (Hertz [Hz]), while amplitude describes the sound's pressure (loudness). Because the range of sound pressures that occur in the environment is extremely large, it is convenient to express these pressures on a logarithmic scale that compresses the wide range of pressures into a more useful range of numbers. The standard unit of sound measurement is the decibel (dB).

Hz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. When the drum skin vibrates 100 times per second it generates a sound pressure wave that is oscillating at 100 Hz, and is perceived by the ear/brain as a tonal pitch of 100 Hz. Sound frequencies between 20 and 20,000 Hz are within the range of sensitivity of the healthy human ear.

Sound level is expressed by reference to a specified national/international standard. The Sound Pressure Level (SPL) is used to describe sound at a specified distance or specific receptor location. In expressing sound pressure level on a logarithmic scale, sound pressure is compared to a reference value of 20 micropascals (μPa). SPL depends not only on the power of the source, but also on the distance from the source and on the acoustical characteristics of the space surrounding the source (absorption, reflection, etc.).

Outdoor sound levels decrease logarithmically as the distance from the source increases. This is due to wave divergence, atmospheric absorption, and ground attenuation. Sound radiating from a source in a homogeneous and undisturbed manner travels in spherical waves. As the sound waves travel away from the source, the sound energy is dispersed over a greater area decreasing the sound pressure of the wave. Spherical spreading of the sound wave from a point source reduces the noise level at a rate of 6 dB per doubling of distance.

Atmospheric absorption also influences the sound levels received by an observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances greater than 1,000 feet. The degree of absorption varies depending on the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest (i.e., sound carries further) at high humidity and high temperatures and lower frequencies are less readily absorbed (i.e., sound carries further) than higher frequencies. Over long distances, lower frequencies become dominant as the higher frequencies are more rapidly attenuated. Turbulence, gradients of wind and other atmospheric phenomena also play a significant role in determining the degree of attenuation. For example, certain conditions, such as temperature inversions can channel or focus the sound waves resulting in higher noise levels than would result from simple spherical spreading.

Most sounds one hears consist of a broad band of many frequencies differing in sound level. Because of the broad range of audible frequencies, methods have been developed to quantify these values into a single number. The most common method used to quantify environmental sounds uses a weighting system that is reflective of human hearing. Human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This process is termed “A weighting”, and the resulting dB level is termed the “A weighted” decibel (dBA). “A weighting" is widely used in local noise ordinances and state and federal guidelines. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve. Unless specifically noted, the use of A weighting is always assumed with respect to environmental sound and community noise even if the notation does not show the “A”. Sound levels underwater are not weighted and measure the entire frequency range of interest.

A sound level of 0 dBA is approximately the threshold of human hearing and is barely audible by a healthy ear under extremely quiet listening conditions. This threshold is the reference level against which the amplitude of other sounds is compared. Normal speech has a sound level of approximately 60 dBA. Sound levels above about 120 dBA begin to be felt inside the human ear as discomfort, progressing to pain at higher levels. An increase (or decrease) in sound level of about 10 dBA is usually perceived by the average person as a doubling (or halving) of the sound’s loudness.

Because of the logarithmic nature of the dB unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules are useful in dealing with sound levels. First, if a sound’s intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example: 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB. Remember however, that it requires about a 10 dB increase to double the perceived intensity of a sound and it is interesting to note that a doubling of the acoustical energy (a 3 dB increase) is at the lower limit of readily perceived change.

Although dBA may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most ambient environmental noise includes a mixture of noise from nearby and distant sources that creates an ebb and flow of sound including some identifiable sources plus a relatively steady background noise in which no particular source is identifiable. A single descriptor called the equivalent sound level (L_{eq}) is used to describe sound that is constant or changing in level. L_{eq} is the energy-mean dBA during a measured time interval. It is the “equivalent” constant sound level that would have to be produced by a given constant source to equal the acoustic energy contained in the fluctuating sound level measured during the interval. In addition to the energy-average level, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum L_{eq} (L_{max}) and minimum L_{eq} (L_{min}) indicators that represent the root-mean-square (RMS) maximum and minimum noise levels measured during the monitoring interval. The L_{min} value obtained for a particular monitoring location is often called the acoustic floor for that location.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{10}, L_{50}, and L_{90} may be used. These are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of the measured time interval. Sound levels associated with L_{10} typically describe transient or short-term events. L_{50} represents the median sound level during the measurement interval, while L_{90} levels are typically used to describe background noise conditions.

The Day-Night Average Sound Level (L_{dn} or DNL) represents the average sound level for a 24-hour day and is calculated by adding a 10 dB penalty only to sound levels during the night period (10:00 p.m. to 7:00 a.m.). The L_{dn} is the descriptor of choice used by nearly all federal, state, and local agencies throughout the United States to define acceptable land use compatibility with respect to noise. Within the State of California, the Community Noise Equivalent Level (CNEL) is sometimes used. CNEL is very similar to L_{dn}, except that an additional 5 dB penalty is applied to the evening hours (7:00 p.m. to 10:00 p.m.). Because of the time-of-day penalties associated with the L_{dn} and CNEL descriptors, the L_{dn} or CNEL dBA value for a continuously operating sound source during a 24-hour period will be numerically greater than the dBA value of the 24-hour L_{eq}. Thus, for a continuously operating noise source producing a constant noise level operating for periods of 24 hours or more, the L_{dn} will be 6 dB higher than the 24-hour L_{eq} value. To provide a frame of reference, common sound levels are presented in Table 1, "Sound Levels of Typical Noise Sources and Noise Environments".

Table 1: Sound Levels of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels)

Noise Source (at Given Distance)	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Military Jet Take-off with After-burner (50 ft)	140	Carrier Flight Deck	–
Civil Defense Siren (100 ft)	130	–	–
Commercial Jet Take-off (200 ft)	120	–	**Threshold of Pain** *32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Power Lawn Mower (3 ft)	100		**Very Loud** *8 times as loud
Propeller Plane Flyover (1,000 ft) Diesel Truck, 40 mph (50 ft) Motorcycle (25 ft)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 ft)	80	High Urban Ambient Sound	*2 times as loud

Table 1: Sound Levels of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels)

Noise Source (at Given Distance)	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (3 ft)	70	–	**Moderately Loud** *70 decibels (Reference Loudness)
Air Conditioning Unit (100 ft) Normal Conversation (5 ft)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	**Quiet** *1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	**Very Quiet**
	20	Recording Studio	
	10	–	**Extremely Quiet**
	0	–	**Threshold of Hearing**

Source: Compiled by URS Corporation from various published sources and widely-used references such as The Handbook of Acoustical Measurements and Noise Control, Third Edition, edited by C.M. Harris, 1991; Federal Agency Review of Selected Airport Noise Analysis Issues, 1992, Modified by The Louis Berger Group, Inc., 2004 and Noise and Vibration Control, Second Edition, edited by L.L. Beranek, 1988 Institute of Noise Control Engineering.

1.5 Applicable Noise Criteria

Federal and state governments do not provide any specific guidelines for construction noise other than OSHA guidelines for worker protection. The proposed project is located in the vicinity of four convergent jurisdictions: the City of Folsom, Sacramento County, Placer County, and El Dorado County. Construction noise from the project may impact noise sensitive receptors in each of these four jurisdictions. These noise sensitive receptors consist of both human receptors and wildlife receptors. The applicable noise ordinances for each of the four jurisdictions are discussed and summarized in this section.

Each jurisdiction has its own unique standards regarding noise and nuisance. These standards are set out in county or municipal codes and general plans. Each noise ordinance and/or noise element within a municipal/county code or general plan will address noise levels that create a nuisance on surrounding communities. Noise ordinances occasionally classify different districts within these communities based on zoning standards. Such zones can include residential areas (analyzed further based on the density of the population), industrial areas, commercial areas, agricultural areas and rural areas, among many more. The possible adverse effects of construction noise are included in municipal noise ordinances.

Noise sound levels, the ambient noise, the distance to the noise source, the time of day, the length of the noise and the zoning of the areas in question are all considered when considering the adverse effects of noise. All municipal codes categorize noise by decibel levels that are A-weighted (dBA). Most standards use a baseline originating from an L_{50}, which states that the 50th percentile of measured one-second noise levels throughout a given timeframe cannot be exceeded. This 50th percentile means that half of the measured one-second noise levels within the given timeframe will fall below this number and half of the measured one-second noise levels will be above this number. Therefore, if a noise source is generating noise levels over a given timeframe, the 50th percentile of the one-second noise levels that are being generated cannot exceed the L_{50} metric found in the noise standard. Some standards will use an hourly continuous noise equivalent level (L_{eq}) in order to express the sound levels over a given timeframe, which is an hour in this case, as a measurement that would equal the same energy of the fluctuating sound level over the entire time that a measurement was taken. An hourly L_{eq} will be a higher level than an L_{50} because it is taking the top 50th percentile into account while the L_{50} does not.

Noise generated by off-site traffic is related to construction and there are no applicable noise assessment criteria because this type of traffic is temporary in nature and has no operational noise impacts.

1.5.1 City of Folsom

The City of Folsom uses L_{50} as the baseline criterion level. Construction noise is exempt from these regulations during the periods of 7:00 a.m. to 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on weekends. If construction were to occur outside of these periods, activities would be required to comply with exterior and interior noise limits at residential receptors, as summarized in Table 2. In the event the measured ambient noise level exceeds the applicable noise level standard in Table 2, the applicable standard shall be adjusted so as to equal the ambient noise level. For impulse noise (such as impact pile driving or blasting), the limits are reduced by 5 dBA.

Table 2: Noise Ordinance Standards (City of Folsom)*

	Noise Levels Not To

			Be Exceeded In Residential Zone (dBA)**	
Exterior Noise Standards	**Maximum Time of Exposure**	**Noise Metric**	**7 a.m. to 10 p.m. (daytime)**	**10 p.m. to 7 a.m. (nighttime)**
	30 Minutes/Hour	L_{50}	50	45
	15 Minutes/Hour	L_{25}	55	50
	5 Minutes/Hour	$L_{8.3}$	60	55
	1 Minute/Hour	$L_{1.7}$	65	60
	Any period of time	L_{max}	70	65
Interior Noise Standards				
	5 Minutes/Hour	$L_{8.3}$	45	35
	1 Minute/Hour	$L_{1.7}$	50	40
	Any period of time	L_{max}	55	45

*Construction Noise Exemption Times: 7:00 a.m. - 6:00 p.m. Weekdays
8:00 a.m. - 5:00 p.m. Weekends
**5 dBA reduction for impact noise during non-exempt times
SOURCE: City of Folsom, CA Municipal Code. Chapter 8.42, Table 8.42.040

1.5.2 Sacramento County

Like the City of Folsom, the Sacramento County Noise Ordinance specifies noise levels in terms of L_{50}. Construction noise levels are exempt from 6:00 a.m. to 8:00 p.m. on weekdays and 7:00 a.m. to 8:00 p.m. on weekends. If construction were to occur outside of these periods, activities would be required to comply with exterior and interior noise limits at residential receptors, as summarized in Table 3. For impulse noise (such as impact pile driving or blasting), the limits are reduced by 5 dBA.

Table 3: Noise Ordinance Standards (Sacramento County)*

			Noise Levels Not To Be Exceeded In Residential Zone (dBA)**	
Exterior Noise Standards	**Maximum Time of Exposure**	**Noise Metric**	**7 a.m. to 10 p.m. (daytime)**	**10 p.m. to 7 a.m. (nighttime)**
	30 Minutes/Hour	L_{50}	55	50
	15 Minutes/Hour	L_{25}	60	55
	5 Minutes/Hour	$L_{8.3}$	65	60
	1 Minute/Hour	$L_{1.7}$	70	65

	Any period of time	L_{max}	75	70
Interior Noise Standards				
	5 Minutes/Hour	$L_{8.3}$	-	-
	1 Minute/Hour	$L_{1.7}$	-	-
	Any period of time	L_{max}	-	-

*Construction Noise Exemption Times: 6:00 a.m. - 8:00 p.m. Weekdays
7:00 a.m. - 8:00 p.m. Weekends
**5 dBA reduction for impact noise during non-exempt times
SOURCE: Sacramento County Municipal Code, Chapter 6.68.070.

1.5.3 Placer County

Placer County, unlike Sacramento County and the City of Folsom, prescribes an hourly L_{eq} instead of an L_{50} standard and specifies that noise levels should be measured at the property line. Similar to Sacramento County and Folsom, construction noise is exempt from 6:00 a.m. to 8:00 p.m. on weekdays and 8:00 a.m. to 8:00 p.m. on weekends. If construction were to occur outside of these periods, activities would be required to comply with exterior and interior noise limits at residential receptors, as summarized in Table 4. For impulse noise (such as impact pile driving or blasting), the limits are reduced by 5 dBA. A variance may be applied for if noise levels are expected to exceed these limits.

Table 4: Noise Ordinance Standards (Placer County)*

Sound Level Descriptor	Noise Levels Not To Be Exceeded in Residential Zone (dBA)**	
	7 a.m. to 10 p.m. (daytime)	10 p.m. to 7 a.m. (nighttime)
Hourly L_{eq}	55	45
Any Period of Time (L_{max})	70	65

*Construction Noise Exemption Times: 6:00 a.m. – 8:00 p.m. Weekdays
8:00 a.m. – 8:00 p.m. Weekends
**5 dBA reduction for impact noise during non-exempt times
SOURCE: Placer County Code, Chapter 9.36.

1.5.4 El Dorado County

The County of El Dorado Noise Element is contained within Chapter 6.5 of the El Dorado County General Plan. El Dorado County uses hourly L_{eq} in order to categorize noise disturbance, but further regulates noise according to land use zone, and applies different noise standards to each zone. construction noise exempt times include 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on weekends and holidays. If construction were to occur outside of these periods, activities would be required to comply with exterior noise limits at residential receptors, as summarized in Table 5. For impulse noise (such as impact pile driving or blasting), the limits are reduced by 5 dBA. A variance may be applied for of noise levels are expected to exceed these limits, and would require noise monitoring. El Dorado County adds an hourly evening L_{eq} between 7:00 p.m. to 10:00 p.m. As shown in Table 5, the evening L_{eq} takes the last 3 hours from a daytime L_{eq} and applies a different criterion to it. In addition to adding an evening standard, community and rural districts are split and given distinct criteria. A 5 dBA reduction in all noise level limits will be applied for impulse noise.

Tables 6, 7 and 8 categorize separate zones and the construction noise standards that apply to each of the regions and the planned land use in each region. Table 6 refers to areas that are community regions or adopted plan areas. Table 7 refers to areas that are designated as rural centers. Table 8 refers to areas that are rural regions. According to Policy 6.5.1.12 of the El Dorado County General Plan, at outdoor activity areas of residential use, if the existing or projected future traffic levels are less than 60 dBA L_{dn} and there is going to be more than a 5 dBA L_{dn} increase in level from new traffic, this is considered significant. If the levels are or will be between 60 and 65 dBA L_{dn}, a 3 dBA L_{dn} increase or more is considered significant, and, finally, if the levels are or will be greater than 65 dBA L_{dn}, an increase of 1.5 dBA L_{dn} or more is considered significant. Increases in the L_{dn} that are greater than this will pose a problem and construction will need to be reassessed. Ambient noise level increases of more than 5 dBA will be deemed a nuisance if the ambient noise level is in accordance to Table 5. If the ambient noise level is not in accordance with Table 6, then only a 3 dBA increase is allowed.

Table 5. Noise Level Performance Protection Standards For Noise Sensitive Land Uses Affected by Non-Transportation Sources (El Dorado County)*

Noise Level Descriptor	Noise Levels Not To Be Exceeded in Residential Zones (dBA)**					
	7 a.m. - 7 p.m. (daytime)		7 p.m. - 10 p.m. (evening)		10 p.m. - 7 a.m. (nighttime)	
	Commu-nity	Rural	Commu-nity	Rural	Commu-nity	Rural
Hourly L_{eq}	55	50	50	45	45	40
Any Period of Time (L_{max})	70	60	60	55	55	50

*Construction Noise Exemption Times: 7:00 a.m. – 7:00 p.m. Weekdays
8:00 a.m. – 5:00 p.m. Weekends/Holidays

**5 dBA reduction for impact noise during non-exempt times

SOURCE: El Dorado County General Plan, Chapter 6.5.

Table 6. Maximum Allowable Noise Exposure For Non-Transportation Noise Sources In Community Regions and Adopted Plan Areas - Construction Noise (El Dorado County)**

Land Use Designation	Time Period	Noise Level (dBA)** L_{eq}	L_{max}
Higher-Density Residential	7 a.m. - 7 p.m.	55	75
	7 p.m. - 10 p.m.	50	65
	10 p.m. - 7 a.m.	45	60
Commercial and Public Facilities	7 a.m. - 7 p.m.	70	90
	7 p.m. - 7 a.m.	65	75
Industrial	Any Time	80	90

Table 7. Maximum Allowable Noise Exposure For Non-Transportation Noise Sources In Rural Centers - Construction Noise (El Dorado County)*

Land Use Designation	Time Period	Noise Level (dBA)** L_{eq}	L_{max}
All Residential	7 a.m. - 7 p.m.	55	75
	7 p.m. - 10 p.m.	50	65
	10 p.m. - 7 a.m.	40	55
Commercial, Recreation, and Public Facilities	7 a.m. - 7 p.m.	65	75
	7 p.m. - 7 a.m.	60	70
Industrial	Any Time	70	80
Open Space	7 a.m. - 7 p.m.	55	75
	7 p.m. - 7 a.m.	50	65

Table 8. Maximum Allowable Noise Exposure For Non-Transportation Noise Sources In Rural Regions - Construction Noise (El Dorado County)*

Land Use Designation	Time Period	Noise Level (dBA)** L_{eq}	L_{max}
All Residential	7 a.m. - 7 p.m.	55	75
	7 p.m. - 10 p.m.	50	6
	10 p.m. - 7 a.m.	40	55
Commercial, Recreation, and Public	7 a.m. - 7 p.m.	65	75

Facilities	7 p.m. - 7 a.m.	60	70
Rural Land, Natural Resources, Open Space and Agricultural Land	7 a.m. - 7 p.m.	70	80
	7 p.m. - 7 a.m.	55	75

1.5.5 Wildlife Noise Criteria

Potential noise-sensitive biological receptors were identified by project biologists within a five-mile radius of the project site. Eight potential sites were identified: all are nesting or rookery habitat for four bird species. These include the tri-colored blackbird (*Agelaius tricolor*), great egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), and white-tailed kite (*Elanus leucurus*).

Noise criteria for these species have not been designated. The Draft Comprehensive Species Management Plan for the least Bell's vireo evaluated the potential for masking of least Bell's vireo (*Vireo bellii pusillus*) song by traffic noise and recommended that continuous noise levels above 60 dBA L_{eq} within habitat areas may affect the suitability of habitat use by least Bell's vireo (SANDAG 1988). Since then, many regulatory agencies recommend the use of 60 dBA L_{eq} hourly levels to be considered a significant impact for sensitive bird species at the edge of suitable habitat.

In the absence of species specific criteria, the 60 dBA L_{eq} will be used to determine noise impacts on wildlife.

The National Oceanic and Atmospheric Administration (NOAA) Fisheries and U.S. Fish and Wildlife Service (USFWS) have agreed upon the use of interim criteria for injury to fish from pile driving or blasting. The current thresholds for injury are 206 dB peak, 187 dB cumulative SEL for fish greater than 2 grams, and 183 dB cumulative SEL for fish less than 2 grams. The current threshold for disturbance is 150 dB RMS.

1.5.6 Assessment Criteria

In order to determine the noise effects of the project, the closest jurisdiction with the most restrictive noise level guidelines will be used as the construction noise level criterion threshold for most project-related activities on human sensitive receptors. For the purpose of this project, the City of Folsom's noise standards will be followed because it is the closest jurisdiction with the most restrictive noise ordinance. Project compliance with City of Folsom standards will guarantee project compliance with all relevant ordinances.

Where construction activities would be conducted outside of the City of Folsom construction noise exempt times, then the exterior noise standards limits are used to determine level of effect. In the event the measured ambient noise level exceeds the applicable noise level standard in Table 2, the applicable standard shall be adjusted so as to equal the ambient noise level. If the ambient noise level is above 50 dBA, then this becomes the new standard at each individual noise-sensitive receptor.

The 60 dBA L_{eq} will be used to determine noise impacts on birds and the noise impacts on fish will be addressed qualitatively.

1.6 Existing Noise Environment

The proposed project would be located in City of Folsom on the south side of Folsom Lake. The proposed project area would be located southeast of the Folsom Dam, east of American River and northwest of Folsom Point. There are four proposed staging areas:

- the MIAD disposal area
- the Dike 7 staging area northeast of the intersection of Folsom Lake Crossing and East Natoma Street
- the Overlook Staging Area located directly west of the proposed spur dike
- The Prison Staging Area located southeast of Folsom Lake Crossing and north of Folsom Prison Road and just east of the American River.

Folsom State Prison is located south of the proposed project area. The haul road, which would be used to transport material from the approach channel to disposal areas, runs east from the proposed project area along the edge of Folsom Lake to the MIAD disposal site. The haul road comes within less than 1,000 feet of houses located along Mountain View Drive and Elvie Lane and runs just south of Folsom Point. Several residential areas within the project vicinity may be affected by noise from approach channel excavation, spur dike construction, transload facility construction and removal, staging area operations, blasting and traffic.

1.6.1 Noise-Sensitive Receptors

Noise-sensitive receptors are defined as areas where there is a reasonable degree of sensitivity to noise. These areas include human dwellings, hospitals, schools, churches or libraries. Wildlife may also be sensitive to noise, and certain types of habitat, such as nesting areas for migratory or special status birds, may be considered noise-sensitive receptors.

There are several areas within the City of Folsom that are classified as noise-sensitive receptors. These include:

- Folsom State Prison. The prison is located approximately 2,700 feet south of proposed approach channel excavation activities, 2,300 feet west of the proposed Dike 7 staging area, and is considered a residential area.
- A residential neighborhood located approximately 5,700 feet west of proposed approach channel excavation activities and the Overlook staging area. The residential community is an apartment complex located west of American River and east of the Folsom Auburn Road and Pierpoint Circle intersection.
- A large neighborhood that stretches from the western intersection of Briggs Ranch Drive and East Natoma Street to the intersection of Green Valley Road and East Natoma Street. Residences in this neighborhood are located approximately 3,700 feet south of proposed approach channel excavation activities, 1,000 feet south of the Dike 7 staging area, and approximately 600 feet south of the MIAD disposal and staging areas.

- Several residences scattered throughout the area located immediately west of Folsom Point and Folsom Lake Crossing. These single-family residences are located within 500 feet of the haul road and 400 feet of the Dike 7 Staging Area. The closest residences to the proposed approach channel excavation activities are located at the western end of Mountain View Drive and the western end of Lorena Lane. These residences are located approximately 3,300 feet southeast of proposed approach channel excavation activities.
- Recreationists using Folsom Point. The park is located approximately 4,800 feet southeast of proposed approach channel excavation activities and within 500 feet of the proposed Dike 7 staging area and MIAD disposal area. Folsom Point is a day-use facility that closes at sunset.
- A residential community located approximately 8,000 feet southeast of proposed approach channel excavation activities and across the street from the MIAD disposal and staging areas. This community is located at the northeast corner of Green Valley Road and East Natoma Street.
- Two residences located directly southwest of the boundary of the proposed MIAD staging area. These homes are located at the northeast corner of Briggs Ranch Drive and East Natoma Street. The nearest residence is located approximately 300 feet southwest of the MIAD staging area.

Within Placer County, the Beals Point campground is located about 8,600 feet northwest of proposed approach channel excavation activities. This park is located east of where State Rec Area Road and Beals Point intersect.

The only sensitive receptors in El Dorado County that could be affected by construction noise are located in a community along Agora Way, Shadowfax Lane and Shadowfax Court. This community is approximately 2,500 feet east from the MIAD disposal area and 10,500 feet from proposed approach channel excavation activities.

Wildlife Receptors. As discussed in section 1.5.5, eight potential sensitive sites for wildlife were identified within five miles of proposed approach channel excavation activities; all are protected habitat for nesting birds. Habitats for the tri-colored blackbird are found at three locations, that are over 2 miles from proposed approach channel excavation activities to the south, southeast, and northwest, respectively. The great egret habitat is located over 4 miles southwest of proposed approach channel excavation activities. Habitat for the great blue heron is found approximately 5,000 feet west of proposed approach channel excavation activities and approximately 1,500 feet west of the proposed Prison Staging Area. This is the closest sensitive bio-receptor. White-tailed kite habitats are located over 1.8 miles to the southwest and southeast from proposed approach channel excavation activities.

1.6.2 Construction Noise Levels

Construction noise levels have the ability to affect surrounding communities and residences if proper mitigation procedures are not taken. Table 9 displays the equipment levels found in the Roadway Construction Noise Model's (RCNM) User Guide (FHWA RCNM, Version 1.0 User's Guide). The noise sources descend from highest sound level, which is an impact pile driver, to a refrigerator unit. The column on the right shows the distance at which the piece of equipment will fall to the criterion level. The "Actual Measured L_{max} at 50 feet" is used to calculate this distance unless it reads "N/A". If the table reads "N/A", then the specifications (Spec. 721.560) taken from the "Big Dig" in Boston are used. The "Big Dig" was a large Central Artery/Tunnel Project that utilized many types of construction equipment. During the construction of the project, noise measurements were conducted to see how much noise many of the project components were generating.

Table 9. RCNM Default Noise Emission Reference Levels and Usage Factors

Equipment Description	Acoustical Usage Factor	Spec. 721.560 Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow) samples avg.	Number of Actual Data Samples (Count)	Distance At Which Level = 50 dBA (45 dBA impact) (in feet)	Distance At Which Level = 45 dBA (40 dBA impact) (in feet)
Impact Pile Driver**	20	95	101	11	31,548	56,101
Vibratory Pile Driver	20	95	101	44	17,741	31,548
Sand Blasting (single nozzle)	20	85	96	9	9,976	17,741
Sheers (on backhoe)	40	85	96	5	9,976	17,741
Hydra Break Ram**	10	90	N/A	0	8,891	15,811
Mounted Impact Hammer (hoe ram)**	20	90	90	212	8,891	15,811
Jackhammer**	20	85	89	133	7,924	14,092
Clam Shovel (dropping)**	20	93	87	4	6,295	11,194
Blasting**	50	85	N/A	0	5,000	8,891
Concrete Saw	20	90	90	55	5,000	8,891
Pavement Scarifier	20	85	90	2	5,000	8,891
Vibrating Hopper	50	85	87	1	3,540	6,295
All Other Equipment > 5 HP	50	85	N/A	0	2,812	5,000
Compressor (air)	50	85	N/A	0	2,812	5,000
Generator(<25KVA, VMS Signs)	50	85	N/A	0	2,812	5,000
Grader	40	85	N/A	0	2,812	5,000
Horizontal Boring Hydraulic Jack	50	85	N/A	0	2,812	5,000
Pneumatic Tools	50	85	85	90	2,812	5,000

Table 9. RCNM Default Noise Emission Reference Levels and Usage Factors

Equipment Description	Acoustical Usage Factor	Spec. 721.560 Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow) samples avg.	Number of Actual Data Samples (Count)	Distance At Which Level = 50 dBA (45 dBA impact) (in feet)	Distance At Which Level = 45 dBA (40 dBA impact) (in feet)
Vacuum Excavator (Vac-Truck)	40	85	85	149	2,812	5,000
Auger Drill Rig	20	85	84	36	2,506	4,456
Chain Saw	20	85	84	46	2,506	4,456
Flat Bed Truck	40	84	N/A	0	2,506	4,456
Rivet Buster/Chipping Gun**	20	85	79	19	2,506	4,456
Scraper	40	85	84	12	2,506	4,456
Tractor	40	84	N/A	0	2,506	4,456
Boring Jack Power Unit	50	80	83	1	2,233	3,972
Concrete Batch Plant	15	83	N/A	0	2,233	3,972
Gradall	40	85	83	70	2,233	3,972
Warning Horn	5	85	83	12	2,233	3,972
Dozer	40	85	82	55	1,991	3,540
Grapple (on backhoe)	25	80	82	6	1,991	3,540
Vacuum Street Sweeper	10	80	82	19	1,991	3,540
Concrete Pump Truck	20	82	81	30	1,774	3,155
Crane	16	85	81	405	1,774	3,155
Excavator	40	85	81	170	1,774	3,155
Generator	50	82	81	19	1,774	3,155
Pumps	50	77	81	17	1,774	3,155
Rock Drill	20	85	81	3	1,774	3,155
Bar Bender	20	80	N/A	0	1,581	2,812
Drum Mixer	50	80	80	1	1,581	2,812
Roller	20	85	80	16	1,581	2,812
Slurry Trenching Machine	50	82	80	75	1,581	2,812
Soil Mix Drill Rig	50	80	N/A	0	1,581	2,812

Table 9. RCNM Default Noise Emission Reference Levels and Usage Factors

Equipment Description	Acoustical Usage Factor	Spec. 721.560 Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow) samples avg.	Number of Actual Data Samples (Count)	Distance At Which Level = 50 dBA (45 dBA impact) (in feet)	Distance At Which Level = 45 dBA (40 dBA impact) (in feet)
Vibratory Concrete Mixer	20	80	80	1	1,581	2,812
Concrete Mixer Truck	40	85	79	40	1,409	2,506
Drill Rig Truck	20	84	79	22	1,409	2,506
Front End Loader	40	80	79	96	1,409	2,506
Ventilation Fan	100	85	79	13	1,409	2,506
Backhoe	40	80	78	372	1,256	2,233
Compactor (ground)	40	80	78	18	1,256	2,233
Slurry Plant	100	78	78	1	1,256	2,233
Paver	50	85	77	9	1,119	1,991
Dump Truck	40	84	76	31	998	1,774
Man Lift	20	85	75	23	889	1,581
Pickup Truck	40	55	75	1	889	1,581
Welder/Torch	40	73	74	5	792	1,409
Refrigerator Unit	100	82	73	3	706	1,256

1.6.3 Ambient Noise Survey

An ambient noise level survey was conducted between March 24 and March 26, 2009 in the project area to characterize existing noise conditions. The survey consisted of short-term (l0 minutes) and long-term measurements (24-hours) at noise-sensitive receptors and wildlife habitats. Weather conditions were consistent over the three days of noise monitoring. The temperature ranged from 55 degrees Fahrenheit at night to 75 degrees Fahrenheit during the day. Winds were mild to 6 or 7 miles per hour during noise monitoring. Long-term measurements were conducted using three Larson Davis Model 820 ANSI (American National Standards Institute) Type 1 Integrating Sound Level Meters (Serial Numbers 1527, 1528 and 1598). The sound level meters were bolted to trees, telephone poles or fences approximately five feet above the ground in order to approximate the height of the human ear. Short-term monitoring was conducted using a Bruel and Kjaer Model 2250 ANSI Type 1 Integrating Sound Level Meter (Serial Number 2672071). All sound level meters were calibrated before and after the measurement periods with a Larson Davis Model CAL200 calibrator (Serial Number

2794). All sound level measurements conducted by URS were in accordance with ISO 1996a, b, c.

The long-term and short-term measurement sites for human noise-sensitive receptors are summarized in Table 10 and Table 11, respectively. All long-term and short-term measurement sites are representative of single-family homes or communities near the project site. Table 12 shows measurement sites for wildlife receptors. These modeling locations were necessary for noise modeling purposes due to the residences being near proposed construction activities.

Table 10. Long-Term Measurement Sites

Site ID	Location
LT-2	Tacana Drive and East Natoma Street
LT-3	Mountain View Drive
LT-4	East Natoma Street and Green Valley Road
LT-5	Shadowfax Court
LT-6	East of Folsom Auburn Road and Pierpoint Circle

Table 11. Short-Term Measurement Sites

Site ID	Location
ST-2	Tacana Drive and East Natoma Street
ST-3	Mountain View Drive
ST-4	East Natoma Street and Green Valley Road
ST-5	Shadowfax Court
ST-6	East of Folsom Auburn Road and Pierpoint Circle
ST-7	Beals Point
ST-8	Folsom Point

Table 12. Noise Sensitive Wildlife Receptor Sites

Site ID	Location	Relevant Specie
Bio-1	Main Avenue and Sunset Avenue	Great Egret
Bio-2	5,000 Feet West of Proposed Excavation Site (near American River)	Great Blue Heron
Bio-3	Erwin Avenue and Snipes Boulevard (Snipes-Pershing Park)	White-Tailed Kite
Bio-4	South Lexington Drive and Oak Avenue Parkway	Tri-Colored Blackbird
Bio-5	Willow Bend Road and Grey Fox Court	White-Tailed Kite
Bio-6	Haddington Drive and East Natoma Street	Tri-Colored Blackbird
Bio-7	Sturbridge Drive and Stonemill Drive	White-Tailed Kite
Bio-8	Wellington Way and Grizzly Way	Tri-Colored Blackbird

1.6.4 Long-Term Site Monitoring

Five long-term measurements were conducted. Long-term data was not collected at the Folsom State Prison (LT-1) as prison security did not allow access to Prison property. In place of monitoring data for LT-1, construction noise levels were modeled at the prison on both the north and east sides of the prison in order to account for noise levels due to construction. Table 13 summarizes the long-term measurement site data for all other LT sites. The raw data for each long-term measurement site is provided in Appendix A-Noise.

Table 13. Long-Term Measurement Site Data

Site ID	Location	Start Date	Start Time	Hourly L_{eq} Range (dBA)	CNEL (dBA)
LT-2	Tacana Drive and E. Natoma St.	3/25/2009	17:00:00	51.5 - 69.4	71
LT-3	Mountain View Dr.	3/25/2009	15:00:00	32.8 - 50.9	50
LT-4	E. Natoma St. and Green Valley Rd.	3/24/2009	14:00:00	58.0 - 75.2	76
LT-5	Shadowfax Court	3/24/2009	13:00:00	34.1 - 57.5	51
LT-6	East of Folsom Auburn Rd. and Pierpoint Circle	3/24/2009	15:00:00	31.7 - 56.8	50

Hourly L_{eq}s ranged from 31.7 to 75.2 dBA and from 50 to 76 dBA CNEL depending on the location of the long-term measurement location.

1.6.5 Short-Term Site Monitoring

Eight short-term measurements were conducted during the day, evening and night for all of the corresponding long-term measurement sites except for LT-1, or Folsom State Prison, where no measurements were completed for security reasons. Each measurement lasted a total of 10 minutes. Short-term measurement Site 7 (ST-7) is located at Beals Point Campground. Beals Point Campground is located 8,600 feet northwest of the proposed Project area. Only daytime measurements could be completed here due to campground times. The campground is located on the west side of Lake Folsom. ST-8 is the measurement site located at Folsom Point. The haul road runs just south of Folsom Point. The proposed Dike 7 staging and MIAD disposal areas are located west and south of Folsom Point, respectively. The park is located approximately 4,800 feet southeast of proposed approach channel excavation activities. Daytime and evening measurements could only be completed due to the park being closed after 10:00 p.m. The data for all short-term measurements can be found in Appendix B.

1.6.6 Sensitive Wildlife Receptor Monitoring

Short-term day, evening, and night ambient noise level measurements were completed at eight noise-sensitive wildlife locations. Table 12 identifies the species as well as the location of each wildlife receptor site. The data for these locations can be found in Appendix C.

2.0 IMPACTS

2.1 Noise Prediction Model

Noise impacts for the proposed project are predicted using CadnaA for approach channel excavation, spur dike construction, transload facility construction and removal, and staging area activities. BNoise2 is used to model noise impacts from blasting. CadnaA is a Windows-based computer software modeling program that allows for the input of sound sources and their corresponding noise source output levels. CadnaA takes both topography and attenuation due to sound wave divergence into account in order to produce accurate results. BNoise2 is a computer software program that allows for the user to model blast noise sound levels over a specified range. BNoise2 generates results by taking both the type and amount of charge used when blasting is taking place.

Noise impacts due to proposed construction activities from Alternatives 2 and 3 are analyzed separately. The Microsoft Excel spreadsheet titled “Equipment Estimate Summary” provided by the USACE, dated October 24, 2011, is used in order to estimate the worst-case noise impact scenarios at human and wildlife noise-sensitive receivers during the year in which the noisiest construction activities would presumably occur for both Alternatives 2 and 3. A condensed version of the Equipment Estimate Summary for both Alternatives 2 and 3 can be found in Appendix D. Due to the vast amount of construction equipment and an indefinite construction phasing schedule listed on the Equipment Estimate Summary spreadsheet, if any individual construction activity that is listed to occur at all during any particular year, it is assumed that that particular construction activity could possibly occur at the same time as all other construction activities that may be conducted during that year. This helps provide the annual worst-case noise impact scenario that would occur sometime in between the years 2013 and 2017. Most construction activity is proposed to occur during construction noise exempt times, but since some individual construction activities may occur during nighttime hours, those nighttime activities are analyzed separately for both Alternatives 2 and 3. The noisiest activities for Alternative 2 would occur in 2017 and the noisiest construction activities for Alternative 3 would occur in 2013. The noisiest nighttime construction activities would occur in 2016 for both Alternatives 2 and 3.

Several assumptions are made regarding construction activities, not including blasting, and they include:

- Normal staging area construction operations include 2 dozers, 2 dump trucks and a batch plant at all four proposed staging areas for both Alternatives 2 and 3
- For both Alternatives 2 and 3, rock crushing activities would occur at either the MIAD staging area or at the overlook staging area and would not occur during non-exempt construction noise activities
- Potential non-exempt construction activities for both Alternatives 2 and 3 include the use of the batch plant; use of four 1500 cfm air compressors during “set up and operation of the bubble curtain and/or silt curtain”

construction activities; “dredging activities common to rock”; and “drill and shoot and dredging in-the-wet” activities

- Additional non-exempt construction activities for Alternative 3 only include ”common dredging below cofferdam” activities; and “dewatering behind cofferdam” activities
- For Alternative 2, the worst case annual noise construction level year is 2017, and there would be approximately 13,167 annual truck round-trips along the on-site haul road going to and from the MIAD and Dike 7 areas and spur dike construction area
- For Alternative 3, the worst case annual noise construction level year is 2013, and there would be approximately 8,960 annual truck round-trips along the on-site haul road going to and from the MIAD and the approach channel excavation area; 900 annual truck round-trips going to and from the transload facility and MIAD and Dike 7 areas, and 3,740 annual truck round-trips to move cofferdam cell fill material that would be assumed to be coming from the MIAD. The total annual truck round-trips along the on-site haul road in 2013 is 13,600
- Using the total number of annual truck round-trips along the on-site haul road for both Alternatives 2 and 3, there would be approximately 4.5 truck round-trips per day that will be used for modeling purposes

2.1.1 Construction Schedules and Durations for Alternatives 2 and 3

Construction of both Alternatives 2 and 3 would begin in mid-2013 and end in late 2017. Tables 14 and 15 provide a schedule for all construction activities listed in the Equipment Estimate Summary for Alternatives 2 and 3, respectively. The tables list construction activities and the years in which they may occur. Additional construction activities listed in the table, but not listed on the original provided Equipment Estimate Summary, include all four staging area construction activities; and on-site haul road usage going to and from the MIAD and Project site during approach channel excavation and spur dike construction; and on-site haul road usage going to and from the MIAD and transload facility during construction of the transload facility. There would only be one batch plant located at one of the four proposed staging areas. Batch plant operations have the potential to be conducted during non-exempt construction noise hours. All potential non-exempt construction noise activities are marked with an “asterisk”. Rock crushing activities would be conducted at either the MIAD staging area or Overlook staging area. In Tables 14 and 15, for each year, every construction activity is marked if it would occur at some time during that year.

For both Alternatives 2 and 3, blasting would take place in between February 2014 and August 2017. Blasting activities are not listed in Tables 14 and 15 because blast noise impacts are analyzed separately.

Table 14. Alternative 2 Proposed Construction Activities by Year

Construction Activity	2013	2014	2015	2016	2017
Site Prep / Haul Road Prep	X	X			
Construct Transload Facility	X				
Concrete Secant Pile Wall	X	X	X	X	
Cutoff Wall Concrete Placement	X	X	X	X	
Common Excavation to Waste	X				
MIAD Staging Area w/ Rock Crusher	X	X	X	X	X
MIAD Staging Area Batch Plant*	X	X	X	X	X
Dike 7 Staging Area	X	X	X	X	X
Dike 7 Staging Area Batch Plant*	X	X	X	X	X
Overlook Staging Area w/ Rock Crusher	X	X	X	X	X
Overlook Staging Area Batch Plant*	X	X	X	X	X
Prison Staging Area	X	X	X	X	X
Prison Staging Area Batch Plant*	X	X	X	X	X
On-Site Haul Road Usage to and From Excavation Site and MIAD***	X	X	X	X	X
On-Site Haul Road Usage for Construction of Transload Facility***	X				
Rock Excavation Dry		X			
Site Restoration Teardown		X			
Mobilization for Approach Walls			X		
Intake Approach Walls and Slab			X	X	X
Set up and Operate Bubble Curtain / Silt Curtain**			X		
Dredge Common to Rock*			X	X	
Drill and Shoot / Dredge Rock Wet*				X	X
Haul Road Prep and Spur Dike Stripping				X	
Import Material from Quarry to D1/D2 MIAD				X	X
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Emb Core and Rock Fill					X
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Rip Rap Bedding and Rip Rap					X

Table 14. Alternative 2 Proposed Construction Activities by Year

Construction Activity	2013	2014	2015	2016	2017
Foundation Clean Up					X
Remove Transload Facility					X

*potential nighttime construction activity
**potential nighttime construction activity (four 1500 CFM compressors only)
***total SPL at a distance of 50 feet is 52.6 dBA L_{eq} from 4.5 haul truck round-trips along haul road

Table 15. Alternative 3 Proposed Construction Activities by Year

Construction Activity	2013	2014	2015	2016	2017
Mobilization for Cofferdam	X	X			
Construct Transload Facility	X				
Common Excavation Below Cofferdam	X				
Common Dredge Below Cofferdam*	X				
Construction of Sheet Pile Cells	X	X			
Fill Cells	X	X			
Set up and Operate Bubble Curtain / Silt Curtain**	X				
MIAD Staging Area w/ Rock Crusher	X	X	X	X	X
MIAD Staging Area Batch Plant*	X	X	X	X	X
Dike 7 Staging Area	X	X	X	X	X
Dike 7 Staging Area Batch Plant*	X	X	X	X	X
Overlook Staging Area w/ Rock Crusher	X	X	X	X	X
Overlook Staging Area Batch Plant*	X	X	X	X	X
Prison Staging Area	X	X	X	X	X
Prison Staging Area Batch Plant*	X	X	X	X	X
On-Site Haul Road Usage to and From Excavation Site and MIAD	X	X	X	X	X
On-Site Haul Road Usage for Construction of Transload Facility	X				
Dewater Behind Cofferdam*		X			
Site Restoration / Teardown		X			
Mobilization for Approach Walls			X		
Intake Approach Walls and Slab			X	X	X
Common Excavation to Waste			X	X	X
Rock Excavation Dry			X	X	X
Haul Road Prep and Spur Dike Stripping				X	

Table 15. Alternative 3 Proposed Construction Activities by Year

Construction Activity	2013	2014	2015	2016	2017
Import Material from Quarry to D1/D2 MIAD				X	X
Remove Cell Rubble Fill					X
Remove Sheets					X
Dredge Common to Rock*					X
Drill and Shoot / Dredge Rock Wet*					X
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Emb Core and Rock Fill					X
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Rip Rap Bedding and Rip Rap					X
Foundation Clean Up					X
Remove Transload Facility					X

*potential nighttime construction activity
**potential nighttime construction activity (four 1500 CFM compressors only)

2.1.2 Areas of Construction Activity and Associated Noise Source Levels for Alternatives 2 and 3

Tables 14 and 15 list all of the construction activities that can be found on the Equipment Estimate Summary provided by the USACE for Alternatives 2 and 3. Appendix D provides a detailed breakdown of the equipment required for each activity. In Appendix D, under each construction activity, the quantity; horsepower; hours per day; duty cycle; total sound pressure levels (SPL) at 50 feet and sound power levels (PWL) for the quantity of individual types of equipment; and total SPLs at 50 feet and PWLs for all of the equipment combined for each construction activity are listed. Tables 16 and 17, below, present areas where the individual construction activities occur, along with the total combined SPL (at 50 feet) and PWL for all of the required construction equipment. The areas of designation for the construction activities are significant because these designated areas are where each individual construction activity are modeled. On-site haul road truck usage for both approach channel excavation/spur dike construction activities and transload facility construction activities have been combined into one activity in order to generate a worst case annual haul road round-trip SPL at 50 feet for all trips.

Table 16. Alternative 2 Areas of Construction Activity and Associated Noise Source Levels

Construction Activity	Area of Construction							Total SPL @ 50 Feet per Construction Activity (dBA L_{eq})	Total PWL per Construction Activity (dBA L_{eq})
	Approach Channel / Spur Dike	Transload Facility	MIAD Staging Area	Dike 7 Staging Area	Overlook Staging Area	Prison Staging Area	Haul Road		
Site Prep / Haul Road Prep	X							93.0	127.6
Construct Transload Facility		X						91.6	126.2
Concrete Secant Pile Wall	X							89.1	123.7
Cutoff Wall Concrete Placement	X							82.1	116.7
Common Excavation to Waste	X							90.5	125.1
MIAD Staging Area w/ Rock Crusher			X					88.0	122.6
MIAD Staging Area Batch Plant*			X					83.0	117.6
Dike 7 Staging Area				X				86.4	121.0
Dike 7 Staging Area Batch Plant*				X				83.0	117.6
Overlook Staging Area w/ Rock Crusher					X			88.0	122.6
Overlook Staging Area Batch Plant*					X			83.0	117.6
Prison Staging Area						X		86.4	121.0
Prison Staging Area Batch Plant*						X		83.0	117.6
All On-Site Haul Road Usage***							X	52.6	n/a
Rock Excavation Dry	X							91.2	125.8

Table 16. Alternative 2 Areas of Construction Activity and Associated Noise Source Levels

Construction Activity	Area of Construction							Total SPL @ 50 Feet per Construction Activity (dBA L_{eq})	Total PWL per Construction Activity (dBA L_{eq})
	Approach Channel / Spur Dike	Transload Facility	MIAD Staging Area	Dike 7 Staging Area	Overlook Staging Area	Prison Staging Area	Haul Road		
Site Restoration Teardown	X							92.5	127.0
Mobilization for Approach Walls	X							89.7	124.3
Intake Approach Walls and Slab	X							84.9	119.5
Set up and Operate Bubble Curtain / Silt Curtain**	X							93.1	127.7
Dredge Common to Rock*	X							96.0	130.6
Drill and Shoot / Dredge Rock Wet*	X							96.4	131.0
Haul Road Prep and Spur Dike Stripping	X							89.3	123.9
Import Material from Quarry to D1/D2 MIAD	X							90.6	125.2
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Emb Core and Rock Fill	X							88.7	123.3
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Rip Rap Bedding and Rip Rap	X							84.1	118.7

Table 16. Alternative 2 Areas of Construction Activity and Associated Noise Source Levels

Construction Activity	Area of Construction							Total SPL @ 50 Feet per Construction Activity (dBA L_{eq})	Total PWL per Construction Activity (dBA L_{eq})
	Approach Channel / Spur Dike	Transload Facility	MIAD Staging Area	Dike 7 Staging Area	Overlook Staging Area	Prison Staging Area	Haul Road		
Foundation Clean Up	X							96.0	130.6
Remove Transload Facility		X						91.6	126.2

*potential nighttime activity
**potential nighttime activity (four 1500 CFM compressors only)
***total SPL @ 50 feet is 52.6 dBA Leq from 4.5 haul truck round-trips along haul road (calculated using FHWA model)

Table 17. Alternative 3 Areas of Construction Activity and Associated Noise Source Levels

Construction Activity	Area of Construction							Total SPL @ 50 Feet per Construction Activity (dBA L_{eq})	Total PWL per Construction Activity (dBA L_{eq})
	Approach Channel / Spur Dike	Transload Facility	MIAD Staging Area	Dike 7 Staging Area	Overlook Staging Area	Prison Staging Area	Haul Road		
Mobilization for Cofferdam	X							93.2	127.8
Construct Transload Facility		X						91.6	126.2
Common Excavation Below Cofferdam	X							90.4	124.9
Common Dredge Below Cofferdam*	X							96.8	131.4
Construction of Sheet Pile Cells	X							101.7	136.3
Fill Cells	X							102.2	136.8

Table 17. Alternative 3 Areas of Construction Activity and Associated Noise Source Levels

Construction Activity	Area of Construction							Total SPL @ 50 Feet per Construction Activity (dBA L_{eq})	Total PWL per Construction Activity (dBA L_{eq})
	Approach Channel / Spur Dike	Transload Facility	MIAD Staging Area	Dike 7 Staging Area	Overlook Staging Area	Prison Staging Area	Haul Road		
Set up and Operate Bubble Curtain / Silt Curtain**	X							92.8	127.4
MIAD Staging Area w/ Rock Crusher			X					88.0	122.6
MIAD Staging Area Batch Plant*			X					83.0	117.6
Dike 7 Staging Area				X				86.4	121.0
Dike 7 Staging Area Batch Plant*				X				83.0	117.6
Overlook Staging Area w/ Rock Crusher					X			88.0	122.6
Overlook Staging Area Batch Plant*					X			83.0	117.6
Prison Staging Area						X		86.4	121.0
Prison Staging Area Batch Plant*						X		83.0	117.6
All On-Site Haul Road Usage***							X	52.6	n/a
Dewater Behind Cofferdam*	X							95.9	130.4
Site Restoration / Teardown	X							92.5	127.0
Mobilization for Approach Walls	X							89.7	124.3
Intake Approach Walls and Slab	X							84.9	119.5

Table 17. Alternative 3 Areas of Construction Activity and Associated Noise Source Levels

Construction Activity	Area of Construction							Total SPL @ 50 Feet per Construction Activity (dBA L_{eq})	Total PWL per Construction Activity (dBA L_{eq})
	Approach Channel / Spur Dike	Transload Facility	MIAD Staging Area	Dike 7 Staging Area	Overlook Staging Area	Prison Staging Area	Haul Road		
Common Excavation to Waste	X							92.7	127.3
Rock Excavation Dry	X							91.1	125.7
Haul Road Prep and Spur Dike Stripping	X							89.3	123.9
Import Material from Quarry to D1/D2 MIAD	X							90.6	125.2
Remove Cell Rubble Fill	X							87.7	122.3
Remove Sheets	X							94.4	128.9
Dredge Common to Rock*	X							96.0	130.6
Drill and Shoot / Dredge Rock Wet*	X							96.3	130.9
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Emb Core and Rock Fill	X							89.0	123.6
Rehandle All Imported Material to Spur Dike from D1/D2 MIAD, Rip Rap Bedding and Rip Rap	X							84.1	118.7

Table 17. Alternative 3 Areas of Construction Activity and Associated Noise Source Levels

Construction Activity	Area of Construction							Total SPL @ 50 Feet per Construction Activity (dBA L_{eq})	Total PWL per Construction Activity (dBA L_{eq})
	Approach Channel / Spur Dike	Transload Facility	MIAD Staging Area	Dike 7 Staging Area	Overlook Staging Area	Prison Staging Area	Haul Road		
Foundation Clean Up	X							96.0	130.6
Remove Transload Facility		X						91.2	125.8

*potential nighttime construction activity
**potential nighttime construction activity (four 1500 CFM compressors only)
***total SPL @ 50 feet is 52.6 dBA L_{eq} from 4.5 haul truck round-trips along haul road (calculated using FHWA model)

For both alternatives, the most, and noisiest, construction activities are being conducted at the approach channel excavation and spur dike construction areas. Noise generated by haul road trips is the construction activity that generates the least amount of noise because the trucks are going at a relatively low speed and they only briefly pass by noise-sensitive receptors.

2.2 Noise Prediction model Method for construction activities

Tables 14 through 17 are used to calculate total combined sound power levels for all of the construction activities that are taking place in distinct areas of the overall proposed Project area. These total combined sound power levels for distinct areas are used for the CadnaA model as a worst case year construction noise level scenario. For example, Table 14 identifies the years in which all construction activities would be conducted for Alternative 2. Table 15 identifies the specific areas where the construction activities for Alternative 2 would be conducted along with the combined total sound pressure levels (SPLs) at 50 feet and sound power levels (PWLs) for each construction activity. Referring to Table 14, there are a total of 16 total construction activities that would be conducted during 2017. By cross-referencing Tables 14 and 16, it is found that six of those construction activities would be conducted near the approach channel excavation and spur dike construction area in 2017. The PWLs found in Table 16 for those six construction activities are then summed up to generate a total PWL for the approach channel excavation and spur dike construction area. In 2017, and for Alternative 2, the acoustic power level for all construction activities being conducted at the approach channel excavation and spur dike construction area is 134.9 dBA PWL. This process is carried out for both Alternatives 2 and 3 for the following designated construction areas in order find the year with the worst-case noise generating scenario due to construction:

- Approach Channel Excavation and Spur Dike Construction Area
- Transload Facility Construction and Removal Area
- MIAD Staging Area
- Dike 7 Staging Area
- Overlook Staging Area
- Prison Staging Area
- Haul Road

Blast noise and off-site traffic noise due to construction is analyzed separately from the rest of on-site construction activities listed in Tables 14 through 17.

2.2.1 Noise Prediction Model Inputs for Construction Activities Conducted During Construction Noise Exempt Hours for Alternatives 2 and 3

Tables 18 and 19 list the combined PWLs for all of the construction equipment for activities being conducted during daytime hours at each respective construction area by year. Construction activities would be conducted from year 2013 through 2017 at the approach channel excavation and spur dike construction area. Transload facility construction occurs in 2013 and removal of the transload facility occurs in 2017. Rock crushing would only occur at either the MIAD or overlook staging area, but not at both.

Haul road round-trips cannot be assigned a PWL because traffic noise is measured by the sound pressure level (SPL) at 50 feet.

Table 18. Alternative 2 Total Combined PWL for Each Area of Construction by Year (dBA)

Area of Construction	2013	2014	2015	2016	2017
Approach Channel / Spur Dike	130.7	132.4	133.7	134.8	134.9
Transload Facility	126.2	0.0	0.0	0.0	126.2
MIAD Staging Area w/ Rock Crusher	122.6	122.6	122.6	122.6	122.6
Dike 7 Staging Area	121.0	121.0	121.0	121.0	121.0
Overlook Staging Area w/ Rock Crusher	122.6	122.6	122.6	122.6	122.6
Prison Staging Area	121.0	121.0	121.0	121.0	121.0
Haul Road*	n/a	n/a	n/a	n/a	n/a

*noise due to on-site haul road round-trips is analyzed using FHWA Model that generated SPLs

Table 19. Alternative 3 Total Combined PWL for Each Area of Construction by Year (dBA)

Area of Construction	2013	2014	2015	2016	2017
Approach Channel / Spur Dike	140.7	140.3	131.0	132.0	137.9
Transload Facility	126.2	0.0	0.0	0.0	126.2
MIAD Staging Area w/ Rock Crusher	122.6	122.6	122.6	122.6	122.6
Dike 7 Staging Area	121.0	121.0	121.0	121.0	121.0
Overlook Staging Area w/ Rock Crusher	122.6	122.6	122.6	122.6	122.6
Prison Staging Area	121.0	121.0	121.0	121.0	121.0
Haul Road*	n/a	n/a	n/a	n/a	n/a

*noise due to on-site haul road round-trips is analyzed using FHWA Model that generated SPLs

Table 18 confirms that construction activities during year 2017 would generate the highest levels of noise associated with Alternative 2, and Table 19 confirms that construction activities during year 2013 would generate the highest levels of noise associated with Alternative 3. Construction activities conducted outside of construction noise exempt hours are analyzed and modeled separately from the rest of construction activities because most of them will be limited in scope and size compared to the rest of the construction activities.

In the CadnaA model, “area sources” are input near the general vicinity of where the proposed area of construction would be conducted. The area sources are input into the CadnaA model with the overall PWL found under the year 2017 column for each respective construction activity in order to generate a worst-case scenario from noise due to construction. Using Alternative 2, for example, in the vicinity of the approach channel excavation and spur dike construction area, an area source is input into the CadnaA model that has a PWL of 134.9 dBA and an area source with a PWL of 126.2 dBA is input into the model where the transload facility would be located. The same goes for the four staging areas and their respective PWLs. Table 20 displays the general octave band spectrum for diesel engines that is used to input area sources in the CadnaA model. This octave band spectrum originates from the octave band spectrum for an articulated 40 ton truck found in the 2009 Early Approach Channel Excavation EA/IS (Corps, 2009). Each octave band level is increased in order to reflect the overall PWL for each area of construction in the CadnaA model. For example, each octave band level is increased 29.9 dBA for approach channel excavation and spur dike construction (134.9 – 105 = 29.9) using the numbers in Table 19 in order to make up for the difference in overall PWLs. Then, those respective octave band levels are input into the CadnaA model for each respective area source.

Table 20. PWL for Area Sources Input into the CadnaA Model (dBA)

Noise Source	Sound Power Levels (dB)								
	63 Hz	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**Overall Level (dBA)**
40 TN Articulated Trucks*	102	108	106	101	100	97	91	82	105

*octave band levels are increased for area sources in order to make up for differences in overall PWLs

There is also a haul road that runs from the approach channel excavation and spur dike construction area to the MIAD staging and disposal areas. Inputs for roadways into the CadnaA model are different than area sources. A road source is input into the CadnaA model using nine trucks going at a speed of 10 mph; and then the road source is calibrated to match the output of the FHWA which calculated out to an SPL of 52.6 dBA L_{eq} at a distance of 50 feet.

2.2.2 Noise Prediction Model Inputs for Construction Activities Conducted During Non-Exempt Hours for Alternative 2

There are several construction activities that have the potential to be conducted during non-exempt hours. Batch plant operations; “dredging activities common to rock”; “drill and shoot and dredging in-the-wet” activities, and the operation of four 1500 cfm compressors during set up and operation of the bubble curtain or silt curtain are all potential activities that may be conducted during non-exempt construction noise hours. Table 21 lists the calculated area source PWLs for all potential nighttime activities for Alternative 2. As stated in the previously mentioned assumptions, there would be only one batch plant used during construction of the Project, but the location of the batch plant has not been determined. For the purpose of analysis of noise impacts for the noise model, the batch plant was modeled at each individual staging area during non-exempt hours in order to see which locations provided the lowest and highest levels of noise exposure during non-exempt construction noise hours. For Alternative 2, a worst-case scenario for activity during non-exempt hours would occur in year 2016 when nighttime batch plant operations and “drill and shoot and dredging of rock in-the-wet” activities are being conducted. “Dredging activities common to rock” could also occur in 2016, but according to the dates listed in the Equipment Estimate Summary that was provided by the USACE, “dredging activities common to rock” and “drill and shoot and dredging rock in-the-wet” activities would occur consecutively; and the noise models assumed that they would not occur simultaneously during non-exempt construction hours.

Table 21. Alternative 2 Proposed Construction Areas and PWLs for Potential Non-Exempt Construction Hour Activities by Year (dBA)

Construction Activity	Area of Construction	2013	2014	2015	2016	2017
Batch Plant	MIAD Staging Area	117.6	117.6	117.6	117.6	117.6
Batch Plant	Dike 7 Staging Area	117.6	117.6	117.6	117.6	117.6
Batch Plant	Overlook Staging Area	117.6	117.6	117.6	117.6	117.6
Batch Plant	Prison Staging Area	117.6	117.6	117.6	117.6	117.6
Dredge Common to Rock	Approach Channel / Spur Dike	n/a	n/a	130.6	130.6	n/a
Drill and Shoot / Dredge Rock Wet	Approach Channel / Spur Dike	n/a	n/a	n/a	131.0	131.0
Set up and Operate Bubble Curtain / Silt Curtain (four 1500 CFM Compressors Only)	Approach Channel / Spur Dike	n/a	n/a	110.4	n/a	n/a

For Alternative 2, in reference to Table 21, the noisiest construction activity that would be conducted outside of construction noise exempt hours would be “drill and shoot and dredging rock in-the-wet” activities in 2016.

2.2.3 Noise Prediction Model Inputs for Construction Activities Conducted During Non-Exempt Hours for Alternatives 3

Table 22 lists the calculated area source PWLs for all potential non-exempt construction hour activities for Alternative 3. For Alternative 3, a worst-case scenario for noise generated by construction activities conducted outside of construction noise exempt hours occurs in year 2013 when batch plant operations and “common dredging below cofferdam" activities are being conducted. This is the highest noise generating construction activity for Alternative 3. Both "dredging common to rock" and "drill and shoot/dredging rock in-the-wet" activities occur in 2017, but it is assumed that these two activities would occur consecutively. Therefore, for Alternative 3, the worst-case year for non-exempt construction noise levels generated by construction activities would occur when batch plant operations and "common dredging below cofferdam" activities are conducted simultaneously in year 2013.

Table 22. Alternative 3 Proposed Construction Areas and PWLs for Potential Non-Exempt Construction Hour Activities by Year (dBA)

Construction Activity	Area of Construction	2013	2014	2015	2016	2017
Batch Plant	MIAD Staging Area	117.6	117.6	117.6	117.6	117.6
Batch Plant	Dike 7 Staging Area	117.6	117.6	117.6	117.6	117.6
Batch Plant	Overlook Staging Area	117.6	117.6	117.6	117.6	117.6
Batch Plant	Prison Staging Area	117.6	117.6	117.6	117.6	117.6
Dewater Behind Cofferdam	Approach Channel / Spur Dike	n/a	130.4	n/a	n/a	n/a
Dredge Common to Rock	Approach Channel / Spur Dike	n/a	n/a	n/a	n/a	130.6
Drill and Shoot / Dredge Rock Wet	Approach Channel / Spur Dike	n/a	n/a	n/a	n/a	130.9
Common Dredge Below Cofferdam	Approach Channel / Spur Dike	131.4	n/a	n/a	n/a	n/a
Set up and Operate Bubble Curtain / Silt Curtain (four 1500 CFM Compressors Only)	Approach Channel / Spur Dike	110.4	n/a	n/a	n/a	n/a

For Alternative 3, in reference to Table 22, the noisiest construction activity that would be conducted outside of construction noise exempt hours would be "common dredging below the cofferdam" activities in 2013. This is the worst-case scenario for construction activities conducted during non-exempt construction noise hours.

2.3 Noise Prediction Model Results

For both Alternatives 2 and 3, worst-case scenarios due to construction activities during construction noise exempt hours were input into the noise model in order to obtain noise levels at long-term (LT-X), short-term (ST-X), modeled (MR-X), and wildlife receivers (Bio-X). MR-1a, MR1b, MR-9 and MR-10 are modeled noise-sensitive receivers. MR-1a is a modeled noise-sensitive receiver located on the north end of Folsom Prison and MR-1b is a modeled noise-sensitive receiver located on the east end of Folsom Prison. MR-9 is located at the eastern-most single-family residence that is located immediately southwest of the MIAD staging area and north of the intersection of Briggs Ranch Drive and East Natoma Street. MR-10 is located at the western end of Lorena Lane and immediately southeast of the Dike 7 staging area. These noise modeling locations are utilized because ambient noise level measurements were not conducted at these locations and, due to the activities at the Dike 7 and MIAD staging areas, it is important to know what type of noise would be generated by construction equipment at the noise modeling locations. The noise levels at the noise-sensitive receivers have been compared to the measured ambient noise levels to see if there would be noise impacts. The same process was also conducted for blasting and construction activities conducted outside of construction noise exempt hours for both Alternatives 2 and 3.

2.3.1 Noise Prediction Model Results for Alternative 2 during Construction Noise Exempt Hours

Under Alternative 2, the worst-case scenario is 2017 as the result of noise levels generated by construction activities during exempt hours. The area sources, and their respective PWLs, found in Table 18, are input into the CadnaA model to generate noise levels at ST, LT, MR, and Bio noise-sensitive sites. The noise contours generated by CadnaA for construction activities conducted during 2017 for Alternative 2 can be found in the DEIS/EIR. Table 23 displays the resulting L_{eq} values at each noise-sensitive receiver. The City of Folsom uses the L_{50} metric as its baseline noise criterion, but comparing the L_{eq} with the L_{50} results is a conservative model because L_{eq} values are always higher than L_{50} values.

Table 23. Measured Ambient Noise Levels and Noise Levels Due to Construction Activities for Alternative 2 in 2017

Site ID	Modeled Noise Level Due to Construction Activities (dBA L_{eq})	L_{50} (ambient noise level in dBA from 7:00 to 18:00 for LTs and daytime L_{50} for Bio and ST)
MR-1a	49	n/a
MR-1b	47	n/a
LT-2	55	66

Table 23. Measured Ambient Noise Levels and Noise Levels Due to Construction Activities for Alternative 2 in 2017

Site ID	Modeled Noise Level Due to Construction Activities (dBA	L_{50} (ambient noise level in dBA from 7:00 to 18:00 for LTs and daytime L_{50} for Bio
LT-3	64	46
LT-4	52	73
LT-5	45	45
LT-6	48	47
ST-7	49	43
ST-8	58	40
MR-9	57	n/a
MR-10	61	n/a
Bio-1	30	42
Bio-2	46	49
Bio-3	34	42
Bio-4	40	51
Bio-5	44	49
Bio-6	46	51
Bio-7	36	41
Bio-8	31	57

2.3.2 Noise Prediction Model Analysis for Alternative 2 during Construction Noise Exempt Hours

Construction activities that would be conducted during construction noise exempt hours in the year 2017 for Alternative 2 of the Project will generate exterior noise levels which exceed significance criteria established by the City of Folsom at several noise-sensitive receivers. The 50 dBA daytime L_{50} noise standard is exceeded at LT-2, LT-3, LT-4, ST-8, MR-9 and MR-10. At LT-2 and LT-4, the modeled L_{eq} is below the measured daytime L_{50} and therefore, there would be no noise impacts at these noise-sensitive receivers. Although the modeled noise levels due to daytime construction activities for Alternative 2 would exceed the L_{50} noise standard and existing ambient daytime L_{50}s at LT-3, ST-8, MR-9, and MR-10, construction noise is exempt from local standards from 7:00 a.m. to 6:00 p.m. during weekdays and from 8:00 a.m. to 5:00 p.m. on weekends. The will be no significant noise impacts if construction activities are conducted within these construction noise exempt times.

If construction activities are conducted in between 6:00 p.m. and 10:00 p.m., then mitigation would be necessary in order to meet the daytime noise standard of 50 dBA L_{50} at all respective noise-sensitive receivers where the modeled L_{eq} is above 50 dBA L_{eq}. If construction activities are conducted in between 10:00 p.m. and 7:00 a.m., then mitigation would be necessary in order to meet the nighttime noise standard of 45 dBA L_{50} at all respective noise-sensitive receivers where the modeled L_{eq} is above 45 dBA L_{eq}.

Noise levels would not exceed 60 dBA L_{eq} at any wildlife receptor site, therefore there are no expected impacts to wildlife habitat.

2.3.3 Noise Prediction Model Results for Alternative 3 during Construction Noise Exempt Hours

Under Alternative 3, the worst-case scenario is 2013 as the result of noise levels generated by construction activities during exempt hours. The area sources, and their respective PWLs, found in Table 19, are input into the CadnaA model to generate noise levels at ST, LT, MR, and Bio noise-sensitive sites. The noise contours generated by CadnaA for construction activities conducted during 2013 for Alternative 3 can be found in the DEIS/EIR. Table 24 displays the resulting L_{eq} values at each noise-sensitive receiver.

Table 24. Measured Ambient Noise Levels and Noise Levels Due to Construction Activities for Alternative 3 in 2013

Site ID	Modeled Noise Level Due to Construction Activities (dBA L_{eq})	L_{50} (ambient noise level in dBA from 7:00 to 18:00 for LTs and daytime L_{50} for Bio and ST)
MR-1a	54	n/a
MR-1b	52	n/a
LT-2	58	66
LT-3	67	46
LT-4	54	73
LT-5	48	45
LT-6	53	47
ST-7	55	43
ST-8	62	40
MR-9	58	n/a
MR-10	63	n/a
Bio-1	35	42
Bio-2	51	49
Bio-3	38	42

Site ID	Modeled Noise Level Due to Construction Activities (dBA	L_{50} (ambient noise level in dBA from 7:00 to 18:00 for LTs and daytime L_{50} for Bio
Bio-4	44	51
Bio-5	48	49
Bio-6	48	51
Bio-7	41	41
Bio-8	36	57

2.3.4 Noise Prediction Model Analysis for Alternative 3 Activities during Construction Noise Exempt Hours

Construction activities that are proposed to be conducted during construction noise exempt hours in the year 2013 for Alternative 3 of the Project would generate exterior noise levels which exceed significance criteria established by the City of Folsom at several noise-sensitive receivers. The 50 dBA daytime L_{50} noise standard is exceeded at MR-1, LT-2, LT-3, LT-4, LT-6, ST-7, ST-8, MR-9, and MR-10. At LT-2 and LT-4, the modeled L_{eq} is below the measured daytime L_{50} and therefore, there would be no noise impacts at these noise-sensitive receivers. Although the modeled noise levels due to daytime construction activities for Alternative 3 would exceed the L_{50} noise standard and existing ambient daytime L_{50}s at MR-1, LT-3, LT-6, ST-7, ST-8, MR-9, and MR-10, construction noise is exempt from local standards from 7:00 a.m. to 6:00 p.m. during weekdays and from 8:00 a.m. to 5:00 p.m. on weekends. There would be no significant noise impacts if construction activities are conducted within these construction noise exempt times.

If construction activities are conducted in between 6:00 p.m. and 10:00 p.m., then mitigation will be necessary in order to meet the daytime noise standard of 50 dBA L_{50} at all respective noise-sensitive receivers where the modeled L_{eq} is above 50 dBA L_{eq}. If construction activities are conducted in between 10:00 p.m. and 7:00 a.m., then mitigation would be necessary in order to meet the nighttime noise standard of 45 dBA L_{50} at all respective noise-sensitive receivers where the modeled L_{eq} is above 45 dBA L_{eq}.

Noise levels would not exceed 60 dBA L_{eq} at any wildlife receptor site, therefore there are no expected impacts to wildlife habitat.

2.3.5 Noise Prediction Model Results and Analysis for Alternative 2 during Non-Exempt Construction Noise Hours

There are several potential construction activities planned for Alternative 2 that may be conducted outside of construction noise exempt times. Batch plant activities would be conducted during non-exempt hours at one of the staging areas, but the location of the batch plant has yet to be determined. Non-exempt batch plant activities may be conducted at any time throughout the construction of the project. For Alternative

2, a worst-case scenario for construction activities conducted outside of construction noise exempt hours occurs in year 2016 when nighttime batch plant operations and “drill and shoot and dredging of rock in-the-wet” activities are conducted simultaneously. Table 25 displays the modeled noise levels at each noise-sensitive receiver due to only batch plant activities being conducted at each individual staging area, “drill and shoot and dredging of rock in-the-wet” activities, and batch plant activities being conducted simultaneously with “drill and shoot and dredging of rock in-the-wet” activities as a worst-case scenario for non-exempt generated construction noise in 2016.

At Folsom Prison (MR-1a and MR-1b), LT-5, and LT-6, the 50 or 45 dBA L_{50} exterior noise standards would not be exceeded due to any of the potential construction activities that may be conducted during non-exempt construction noise hours.

At LT-2, if the batch plant is located at the Dike 7 staging area, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded if “drill and shoot and dredging in-the-wet” activities are conducted outside of construction noise exempt hours simultaneously with batch plant activities. Batch plant activities alone, at the Dike 7 staging area, would generate noise levels that exceed the 45 dBA L_{50} nighttime exterior noise standard. The 45 dBA L_{50} nighttime exterior noise standard would also be exceeded during non-exempt hours if “drill and shoot and dredging in-the-wet” activities are conducted without any batch plant activities being conducted simultaneously. For all of these potential noise impacts, mitigation would be necessary in order to prevent noise impacts at LT-2 as the result of construction activities being conducted outside of construction noise exempt hours.

At LT-3, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours if “drill and shoot and dredging in-the-wet” activities are conducted. If batch plant activities are conducted during non-exempt hours at the Dike 7 staging area without any other construction activities taking place, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded. For all of these potential noise impacts, mitigation would be necessary in order to prevent noise impacts at LT-3 as the result of construction activities being conducted outside of construction noise exempt hours.

At LT-4, the 45 dBA L_{50} nighttime exterior noise standard would be exceeded during non-exempt construction hours if batch plant activities are being conducted at the MIAD staging area. Mitigation would be necessary in order to prevent noise impacts at LT-4 if batch plant activities are conducted outside of construction noise exempt hours and occur from 10:00 p.m. and 7:00 a.m.

Table 25. Alternative 2 Modeled Noise Levels Due to Construction Activities Being Conducted during Non-Exempt Construction Noise Hours (dBA L_{eq})

Site ID	MIAD Batch Plant	Dike 7 Batch Plant	Overlook Batch Plant	Prison Batch Plant	Drill and Shoot and Dredging In-the-Wet	MIAD Batch Plant w/ Drill and Shoot / Dredging In-the-Wet	Dike 7 Batch Plant w/ Drill and Shoot / Dredging In-the-Wet	Overlook Batch Plant w/ Drill and Shoot / Dredging In-the-Wet	Prison Batch Plant w/ Drill and Shoot / Dredging In-the-Wet
MR-1a	22	33	34	33	44	44	44	44	44
MR-1b	17	31	32	28	41	41	42	42	42
LT-2	31	48	30	26	47	47	50	47	47
LT-3	33	59	40	29	55	55	60	55	55
LT-4	46	21	26	16	41	47	41	41	41
LT-5	36	24	23	17	37	39	37	37	37
LT-6	21	26	32	37	43	43	43	43	44
ST-7	19	22	35	27	45	45	45	45	45
ST-8	42	33	36	24	51	51	51	51	51
MR-9	51	32	29	22	44	52	44	44	44
MR-10	25	57	34	27	49	49	58	49	49
Bio-1	10	12	13	13	25	25	25	25	25
Bio-2	11	22	29	35	41	41	41	41	42
Bio-3	13	15	16	15	28	29	29	29	29
Bio-4	24	24	20	17	34	34	34	34	34
Bio-5	32	27	23	17	37	38	37	37	37
Bio-6	38	26	23	18	37	40	37	37	37
Bio-7	24	19	16	14	30	31	30	30	30
Bio-8	9	11	14	13	27	27	27	27	27

At ST-7, the 45 dBA L_{50} nighttime exterior noise standard would be exceeded during non-exempt construction hours if “drill and shoot and dredging in-the-wet” activities are conducted. Mitigation would be necessary in order to prevent noise impacts at ST-7 as the result of construction activities being conducted outside of construction noise exempt hours.

At ST-8 (Folsom Point), the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours if “drill and shoot and dredging in-the-wet” activities are conducted. ST-8 is modeled near the north end of the parking lot and, although Table 25 indicates a modeled 42 dBA L_{eq} from batch plant activities at the MIAD staging area, there may be higher levels of noise at other areas of the Folsom Point that may exceed the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards if batch plant activities are conducted outside of construction noise exempt times. However, since Folsom Point is a day-use facility, it is assumed that recreationists would not be present during non-exempt hours, and this effect is consisted less than significant.

At MR-9, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours if batch plant activities are conducted at the MIAD staging area. Mitigation would be necessary in order to prevent noise impacts at MR-9 as the result of batch plant activities being conducted outside of construction noise exempt hours.

At MR-10, if the batch plant is located at the Dike 7 staging area, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours. If “drill and shoot and dredging in-the-wet” activities are conducted outside of construction noise exempt hours, the 45 dBA L_{50} nighttime noise standard would be exceeded. For all of these potential noise impacts, mitigation would be necessary in order to prevent noise impacts at MR-10 as the result of construction activities being conducted outside of construction noise exempt hours.

Noise levels would not exceed 60 dBA L_{eq} at any wildlife receptor site, therefore there are no expected impacts to wildlife habitat during non-exempt construction noise hours.

2.3.6 Noise Prediction Model Results and Analysis for Alternative 3 Non-Exempt Construction Noise Hours Activities

There are several potential construction activities planned for Alternative 3 that may be conducted outside of construction noise exempt times. Batch plant activities would be conducted during non-exempt hours at one of the staging areas, but the location of the batch plant has yet to be determined. Non-exempt batch plant activities may potentially be conducted at any time throughout the construction of the project. For Alternative 3, a worst-case scenario for construction activities being conducted outside of construction noise exempt hours would occur in year 2013 when nighttime batch plant operations and common dredging below cofferdam activities are conducted simultaneously. Table 26 displays the modeled noise levels at each noise-sensitive receiver due to only batch plant activities being conducted at each individual staging area, “common dredging below cofferdam” activities, and batch plant activities being conducted simultaneously with “common dredging below cofferdam” activities as a worst-case scenario for non-exempt generated construction noise in 2013.

At Folsom Prison (MR-1a and MR-1b), LT-5, and LT-6, the 50 or 45 dBA L_{50} exterior noise standards would not be exceeded due to any of the potential construction activities that may be conducted during non-exempt construction noise hours.

Table 26. Alternative 3 Modeled Noise Levels Due to Construction Activities Being Conducted during Non-Exempt Construction Noise Hours (dBA L_{eq})

Site ID	MIAD Batch Plant	Dike 7 Batch Plant	Overlook Batch Plant	Prison Batch Plant	Common Dredge Below Cofferdam	MIAD Batch Plant w/ Common Dredge Below Cofferdam	Dike 7 Batch Plant w/ Common Dredge Below Cofferdam	Overlook Batch Plant w/ Common Dredge Below Cofferdam	Prison Batch Plant w/ Common Dredge Below Cofferdam
MR-1a	22	33	34	33	44	44	44	44	44
MR-1b	17	31	32	28	42	42	42	42	42
LT-2	31	48	30	26	47	47	50	47	47
LT-3	33	59	40	29	56	56	60	56	56
LT-4	46	21	26	16	41	47	41	41	41
LT-5	36	24	23	17	37	40	38	37	37
LT-6	21	26	32	37	43	43	43	44	44
ST-7	19	22	35	27	45	45	45	45	45
ST-8	42	33	36	24	51	52	51	51	51
MR-9	51	32	29	22	44	52	45	44	44
MR-10	25	57	34	27	49	49	58	49	49
Bio-1	10	12	13	13	26	26	26	26	26
Bio-2	11	22	29	35	41	41	41	41	42
Bio-3	13	15	16	15	29	29	29	29	29
Bio-4	24	24	20	17	34	35	35	34	34
Bio-5	32	27	23	17	37	38	38	37	37
Bio-6	38	26	23	18	37	41	37	37	37
Bio-7	24	19	16	14	31	31	31	31	31
io-8	9	11	14	13	27	27	27	27	27

At LT-2, if the batch plant is located at the Dike 7 staging area, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded if "common dredging below cofferdam" activities are conducted outside of construction noise exempt hours simultaneously with batch plant activities. Batch plant activities alone, at the Dike 7 staging area, will generate noise levels that exceed the 45 dBA L_{50} nighttime exterior noise standard. The 45 dBA L_{50} nighttime exterior noise standard would also be exceeded during non-exempt hours if "common dredging below cofferdam" activities are conducted without any batch plant activities being conducted simultaneously. For all of these potential noise impacts, mitigation would be necessary in order to prevent noise impacts at LT-2 as the result of construction activities being conducted outside of construction noise exempt hours.

At LT-3, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours if "common dredging below cofferdam" activities are conducted. If batch plant activities are conducted during non-exempt hours at the Dike 7 staging area without any other construction activities taking place, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded. For all of these potential noise impacts, mitigation would be necessary in order to prevent noise impacts at LT-3 as the result of construction activities being conducted outside of construction noise exempt hours.

At LT-4, the 45 dBA L_{50} nighttime exterior noise standard would be exceeded during non-exempt construction hours if batch plant activities are conducted at the MIAD staging area. Mitigation would be necessary in order to prevent noise impacts at LT-4 if batch plant activities are conducted outside of construction noise exempt hours and occur from 10:00 p.m. and 7:00 a.m.

At ST-7, the 45 dBA L_{50} nighttime exterior noise standard would be exceeded during non-exempt construction hours if "common dredging below cofferdam" activities are conducted. Mitigation would be necessary in order to prevent noise impacts at ST-7 as the result of construction activities being conducted outside of construction noise exempt hours.

At ST-8 (Folsom Point), the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours if "common dredging below cofferdam" activities are conducted. ST-8 is modeled near the north end of the parking lot and, although Table 26 indicates a modeled 42 dBA L_{eq} generated by batch plant activities at the MIAD staging area, there may be higher levels of noise at other areas of the Folsom Point that may exceed the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards if batch plant activities are conducted outside of construction noise exempt times. However, since Folsom Point is a day-use facility, it is assumed that recreationists would not be present during non-exempt hours. As a result, this effect is considered less than significant.

At MR-9, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours if batch plant activities are conducted at the MIAD staging area and if "common dredging below cofferdam" activities are conducted simultaneously with batch plant activities at the

MIAD staging area, then the 45 dBA L_{50} nighttime exterior noise standard will be exceeded. For all of these potential noise impacts, mitigation would be necessary in order to prevent noise impacts at MR-9 as the result of construction activities being conducted outside of construction noise exempt hours.

At MR-10, if the batch plant is located at the Dike 7 staging area, the 50 dBA L_{50} daytime and 45 dBA L_{50} nighttime exterior noise standards would be exceeded during non-exempt construction noise hours. If "common dredging below cofferdam" activities are conducted outside of construction noise exempt hours, the 45 dBA L_{50} nighttime noise standard would be exceeded. For all of these potential noise impacts, mitigation would be necessary in order to prevent noise impacts at MR-10 as the result of construction activities being conducted outside of construction noise exempt hours.

Noise levels would not exceed 60 dBA L_{eq} at any wildlife receptor site, therefore there are no expected impacts to wildlife habitat during non-exempt construction noise hours.

2.3.7 Noise Prediction Model Results and Analysis for Blasting Activities

A noise modeling program known as BNoise2 is used in order to determine the sound power level of an individual blast. Assumptions are made based on data provided by the USACE and information in Appendix E (Technical Noise Report) of the 2010 EA/IS for the Joint Federal Project for the Construction of the Control Structure and Lining of the Spillway Chute and Stilling Basin. The following assumptions are:

- There would be approximately 400 blasts in-the-wet and 200 blasts in-the-dry from February 2014 to August 2017 (approximately 1,100 days of work) for Alternative 2. This results in an approximately one blast every other day
- There would be approximately 200 blasts in-the-wet and 280 blasts in-the-dry from February 2014 to August 2017 (approximately 1,100 days of work) for Alternative 3. This results in approximately one blast every other day
- Ammonium nitrate and fuel oil (ANFO) charges would be used
- A charge weight of 44 pounds would be packed in 20-foot deep borings
- The borings would be spaced 5 feet apart in a 20-foot-wide bench
- The most charges that would be used during any blast is 75 charges

Using the assumptions above, BNoise2 calculated a SPL of 84.5 dBC SEL at 328 feet for one charge. If 75 charges are used, the PWL would be 141.2 dBA at 328 feet. This PWL is input into the CadnaA model at the approach channel excavation area in order to account for changes in topography. Table 27 shows the resulting SELs at each noise-sensitive receiver.

Table 27. Noise Levels at Noise-Sensitive Receivers due to Individual Blasts

Site ID	Noise Level due to Individual Blast (dBA SEL)
MR-1a	54
MR-1b	50
LT-2	48
LT-3	60
LT-4	45
LT-5	51
LT-6	57
ST-7	60
ST-8	59
MR-9	54
MR-10	51
Bio-1	40
Bio-2	55
Bio-3	43
Bio-4	41
Bio-5	45
Bio-6	50
Bio-7	44
Bio-8	44

Blasting would be conducted during construction noise exempt hours and would only be at the noise levels listed in Table 27 for no more than a few seconds. This would not significantly increase any of the modeled L_{eq}s for other construction noise exempt hour activities. There would be no noise impacts at human or wildlife noise-sensitive receivers due to blasting.

2.3.8 Noise Impacts on Fish

Potential Impacts on Fish. As identified previously, underwater sound from blasting and pile driving has the potential to impact fish inhabiting Folsom Lake. Noise potentially causes both auditory and non-auditory effects on fish. The non-auditory effects of noise may be obvious, for instance when an underwater detonation of explosives results in floating dead fish. Other injuries, such as swim bladder rupture in fish, may be shown only by dissection of exposed individuals. These adverse impacts only occur at high levels of sound, typically within tens, or at most a few hundred meters of underwater blasts, and hence affect relatively small areas and numbers of individuals (Nedwell and Edwards 2004).

The auditory effects of sound include temporary or permanent noise-induced deafness. Behavioral effects elicited by underwater noise can include a startle reaction or a species avoiding an area of high noise. Such responses are poorly understood or documented, yet behavioral effects may have an influence over great ranges, often kilometers, reaching much larger numbers of individuals. Fish response to sound can also be varied, ranging from the classic fright response that results in a startle behavior and sudden burst of short duration and distance swimming, to other responses such as packing or balling, polarizing, increasing swimming speed, diving, or avoidance (Olsen 1969).

Extremely loud sound levels can have very negative effects on fish including temporary or permanent deafness, tissue damage, and even acute mortality. The most severe instances, often associated with explosive sources, result from a high amplitude shock wave caused by the initial impulse and the negative pressure wave reflected by the water surface (Turnpenny and Nedwell 1994; Houghton and Munday 1987). Tissue damage arises when the wave passes through tissues of different densities. A wave passed through the tissues at different speeds can result in a shear environment, and in extreme cases the tissues can be torn apart. This is most severe where tissue density differences are the greatest, which in the case of demersal fish, is at the muscle - swim bladder interface (Turnpenny and Nedwell 1994).

This physical trauma, often termed barotrauma, has a direct impact on the fish and health of the fish. The degree of this impact has been characterized as a numerical scale (O'Keefe and Young 1984; based on an earlier scale developed by Hubbs et al. 1960). These numerical explosion damage criteria for fish cover the range of gross visible effects from exposure to large high amplitude shockwaves:

1. No damage (fish survives)
2. Light hemorrhaging (fish survives)
3. Light hemorrhaging and some kidney damage (impaired escape response and possible increased vulnerability to predation)
4. Swimbladder bursts and gross kidney damage (fish killed)
5. Incomplete body wall break and gross internal damage (fish killed)
6. Complete rupture of body cavity and organ destruction (fish killed)

While this range is diagnostic for direct trauma due to high amplitude shockwaves, it also applies for high intensity sound waves generated by other sources such as impact pile driving.

This definition of direct effects also implies indirect effects to fish due to noise impacts. These indirect effects usually manifest themselves as a reduction in the ability to evade predation (stunning, or reduced swimming ability), a change in behavior that leads to increased exposure to predation (inability to access a refuge habitat), or an inability to detect predators or prey effectively (temporary or permanent deafness).

The underwater sound levels associated with blasting depends on the size of the charge.

Blasting In-the-Wet. Wet blasting will generate very little airborne noise, but has the potential to kill fish in Folsom Lake. It is likely that some fish will be killed during wet blasting. Recommended mitigation procedures are described in the mitigation section.

Drilling In-the-Wet. Drilling generates noise from both the drill bit striking the rock near the collar of the holes, as well as from mechanical equipment and compressors used on the drills. If the drilling occurs with three or more feet of water, noise made from drill bit striking the rock will be almost immeasurable in air. Drilling from platforms will not occur in less than 35 feet of water, and thus is not expected to generate measurable noise in air. It is likely that some fish will be disturbed during drilling, but underwater sound levels are not expected to result in injury or death to fish.

2.4 Mitigation

The following measures would be implemented in order to reduce noise effects in the vicinity of construction for the project and in order to attempt to meet the respective daytime and nighttime exterior noise standards of 50 and 45 dBA L_{50}. Mitigation measures would be implemented to reduce noise from the following activities outside of noise exempt hours: batch plant operations, “dredging activities common to rock”, “drill and shoot and dredging in-the-wet” activities, activities relating to four 1,500 cfm compressors running during “set up and operation of the bubble and/or silt curtain”, “common dredging below cofferdam” activities, and “dewatering” activities behind the cofferdam. , Mitigation measures would include:

- Conduct construction activities during construction noise exempt hours
- For construction activities being conducted outside of construction noise exempt hours, the Contractor will obtain a permit from the City and County
- Contractor will be responsible for maintaining equipment in best possible working condition
- Each piece of construction equipment should be fitted with efficient, well-maintained mufflers that reduce equipment noise emissions in order to reduce noise emission levels from equipment and vehicles at the project site
- Schedule truck loading, unloading, and hauling operations so as to reduce noise levels due to construction during non-exempt construction hours
- Locate construction equipment as far as possible from nearby noise-sensitive receptors
- Situate construction equipment so that natural berms or aggregate stockpiles are located in between the equipment and noise-sensitive receptors
- Enclose pumps that are not submerged and enclose above-ground conveyor systems in acoustically treated enclosures

- Lining or covering hoppers, conveyor transfer points, storage bins and chutes with sound-deadening material
- Acoustically attenuating shielding (barriers) and shrouds should be used when possible
- Using blast mats to cover blasts in order to minimize the possibility of fly rock
- Use of bubble curtains around under water blasting activities

If all of these mitigation procedures are put into practice for Alternatives 2 and 3, there is still the potential for construction activities that are conducted during non-exempt hours to exceed the daytime and nighttime noise standards at noise-sensitive receptors.

Specific mitigation measures should be utilized in order to reduce noise levels from blasting. The BMPs listed below assume use of the standard practice of linear (rather than spherical) charges, and standard timing separation of 8 milliseconds to reduce cumulative effects between adjacent charges. BMPs include:

- Designing efficient detonations ("blast design") that fracture the rock with minimal energy released to surrounding water.[1] Efficient detonations are achieved by:
    - o Establishing a not-to-exceed peak pressure-change (over-pressure) limit of 100kPa (14.5 psi).
    - o Controlling maximum pressure thresholds by establishing cautious charge confinement rules regarding the type and amount of stemming[2] (material placed in the upper portions of blast holes), and the amount of confining rock burden between charges and the free or open face to which they break.
    - o Monitoring peak blast-induced pressure and impulse;
    - o Requiring the use of multiple time-sequenced charges that will reduce the cumulative impacts on the water environment;
    - o Timing blasting when fish tend to be in streams in northern tributaries far from the blast site, e.g., February through June for rainbow trout; the timing of spawning of Chinook salmon in Folsom Lake is not well characterized.
    - o Setting off small charges ("scare charges") or firing air-cannons into the water before blasting to chase fish from the blast area;

[1] The use of stemming to confine blasts, results in several typically listed BMPs becoming less necessary to minimize the impact of the underwater blast on fish. Stemming is used to control extreme peak pressures spikes released in the water. Another method of removing steep peak pressure spikes is to specify the burn rate of the exploding charge or Velocity of Detonation (VOD) which impacts the relative amounts of gas versus shock energy. Specifying the explosive properties, therefore, is not necessary as a BMP when proper stemming is utilized.

[2] Stemming is the practice of placing inert material on the top of the charge to help confine the energy released by the charge to the material to be demolished, and reduce the energy released to the water or air.

  - Grouping continuous periods of noisy work or simultaneous noisy work (e.g., multiple drill barges) to prevent the fish from re-entering the area during short quiet periods);
  - Using air curtains or bubble curtains to attenuate pressure waves. Air supply to bubble pipes would be provided by clean-air compressors that contain no oil or other contaminants.
  - Not using ammonium nitrate-fuel oil mixtures (ANFO) in or near water because they will not function as desired and if released into water they will dissolve and release toxic by-products (ammonia and nitrates)
- For drilling activities in the water, BMP's include the use of down-the-hole-hammers, which produce much less noise than top-hammer drills from the striking bar.

2.5 Cumulative

There is the potential for future construction activities that are conducted concurrently throughout the life of the Folsom Dam JFP and involved with other projects in the vicinity of the Project to temporarily increase noise levels in the surrounding areas. The projects include:

- Johnny Cash Folsom Prison Blues Trail: Historic Truss Bridge to Green Valley Road Segment
- Raw Water Bypass Pipeline Project
- Central California Area Office Building Replacement Project
- Lower American River Salmonid Spawning Gravel Augmentation and Side-channel Habitat Establishment Program
- Folsom Dam Safety and Flood Damage Reduction Project Ongoing Construction Activities
- Widening of Green Valley Road
- Folsom Dam Raise

Simultaneous construction of these projects would increase noise levels, from onsite construction and transport of materials. The worst case assumption indicates that simultaneous construction could potentially increase source noise emissions by 3 dBA. If these construction projects are implemented concurrently, the combined cumulative effects could be above significance thresholds. If this were the case, each project would need to mitigate individual noise effects which could decrease overall cumulative effects. However, without consideration of scheduling and sequence of activities, determination of whether concurrent construction projects within and adjacent to Folsom Lake could have significant cumulative noise effects is not possible. Construction involved with both the Folsom Dam JFP and the projects listed above are temporary in nature and, therefore, there would be no cumulative noise effects other than increases in noise levels during simultaneous construction activities.

2.6 Summary/Conclusion

The largest noise impacts from the proposed Project are due to construction activities being conducted outside of construction noise exempt hours. The only construction activities that would potentially be conducted during non-exempt construction noise hours that would not exceed noise significance criteria would be if batch plants activities were conducted at either the Overlook or Prison staging areas with no other construction taking place at the approach channel excavation and spur dike construction areas. Most construction activities that would potentially be conducted during non-exempt construction noise hours for Alternatives 2 and 3 would exceed the City of Folsom's daytime and nighttime exterior noise standards of 50 and 45 dBA L_{50} at some of the noise-sensitive receivers. If the batch plant is located at the MIAD or Dike 7 staging areas and they are the only activities being conducted outside of construction noise exempt hours, then there would still be noise impacts at noise-sensitive receivers. Other activities conducted outside of construction noise exempt hours at the approach channel excavation and spur dike construction areas would generate noise impacts at some noise-sensitive receivers with or without batch plant activities being conducted simultaneously. Mitigation would be necessary in order to reduce noise impacts, but even with mitigation, there is the potential for noise impacts outside of construction noise exempt hours.

Noise levels would not exceed the 60 dBA L_{eq} at wildlife receptor sites. There are no expected noise impacts.

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LT-2 (Tacana Drive and E. Natoma St.)

Date	Start Time	End Time	Hourly L_{eq} (dBA)
3/25/2009	17:00:00	18:00:00	68.9
3/25/2009	18:00:00	19:00:00	68.4
3/25/2009	19:00:00	20:00:00	67.8
3/25/2009	20:00:00	21:00:00	65.9
3/25/2009	21:00:00	22:00:00	65.7
3/25/2009	22:00:00	23:00:00	62.9
3/25/2009	23:00:00	0:00:00	60.0
3/26/2009	0:00:00	1:00:00	56.6
3/26/2009	1:00:00	2:00:00	56.9
3/26/2009	2:00:00	3:00:00	51.5
3/26/2009	3:00:00	4:00:00	58.8
3/26/2009	4:00:00	5:00:00	57.1
3/26/2009	5:00:00	6:00:00	63.8
3/26/2009	6:00:00	7:00:00	67.6
3/26/2009	7:00:00	8:00:00	68.3
3/26/2009	8:00:00	9:00:00	69.4
3/26/2009	9:00:00	10:00:00	68.4
3/26/2009	10:00:00	11:00:00	67.8
3/26/2009	11:00:00	12:00:00	69.0
3/26/2009	12:00:00	13:00:00	68.1
3/26/2009	13:00:00	14:00:00	68.6
3/26/2009	14:00:00	15:00:00	69.1
3/26/2009	15:00:00	16:00:00	68.8
3/26/2009	16:00:00	17:00:00	69.4

LT-3 (Mountain View Dr.)

Date	Start Time	End Time	Hourly L_{eq} (dBA)
3/24/2009	15:00:00	16:00:00	47.5
3/24/2009	16:00:00	17:00:00	46.3
3/24/2009	17:00:00	18:00:00	48.7
3/24/2009	18:00:00	19:00:00	45.7
3/24/2009	19:00:00	20:00:00	43.1
3/24/2009	20:00:00	21:00:00	42.2
3/24/2009	21:00:00	22:00:00	42.1
3/24/2009	22:00:00	23:00:00	41.1
3/24/2009	23:00:00	0:00:00	40.7
3/25/2009	0:00:00	1:00:00	35.9
3/25/2009	1:00:00	2:00:00	34.7
3/25/2009	2:00:00	3:00:00	32.8
3/25/2009	3:00:00	4:00:00	34.3
3/25/2009	4:00:00	5:00:00	37.6
3/25/2009	5:00:00	6:00:00	42.0
3/25/2009	6:00:00	7:00:00	46.4
3/25/2009	7:00:00	8:00:00	49.9
3/25/2009	8:00:00	9:00:00	50.6
3/25/2009	9:00:00	10:00:00	47.6
3/25/2009	10:00:00	11:00:00	47.9
3/25/2009	11:00:00	12:00:00	49.5
3/25/2009	12:00:00	13:00:00	50.5
3/25/2009	13:00:00	14:00:00	50.9
3/25/2009	14:00:00	15:00:00	50.7

LT-4 (E. Natoma St. and Green Valley Rd.)

Date	Start Time	End Time	Hourly L_{eq} (dBA)
3/24/2009	14:00:00	15:00:00	73.8
3/24/2009	15:00:00	16:00:00	73.9
3/24/2009	16:00:00	17:00:00	74.1
3/24/2009	17:00:00	18:00:00	74.1
3/24/2009	18:00:00	19:00:00	73.8
3/24/2009	19:00:00	20:00:00	72.2
3/24/2009	20:00:00	21:00:00	71.2
3/24/2009	21:00:00	22:00:00	71.2
3/24/2009	22:00:00	23:00:00	68.1
3/24/2009	23:00:00	0:00:00	65.4
3/25/2009	0:00:00	1:00:00	62.5
3/25/2009	1:00:00	2:00:00	61.0
3/25/2009	2:00:00	3:00:00	58.0
3/25/2009	3:00:00	4:00:00	60.1
3/25/2009	4:00:00	5:00:00	65.1
3/25/2009	5:00:00	6:00:00	70.1
3/25/2009	6:00:00	7:00:00	73.2
3/25/2009	7:00:00	8:00:00	75.2
3/25/2009	8:00:00	9:00:00	75.0
3/25/2009	9:00:00	10:00:00	73.3
3/25/2009	10:00:00	11:00:00	73.5
3/25/2009	11:00:00	12:00:00	73.1
3/25/2009	12:00:00	13:00:00	72.9
3/25/2009	13:00:00	14:00:00	74.1

LT-5 (Shadowfax Court)

Date	Start Time	End Time	Hourly L_{eq} (dBA)
3/24/2009	13:00:00	14:00:00	50.9
3/24/2009	14:00:00	15:00:00	46.0
3/24/2009	15:00:00	16:00:00	49.0
3/24/2009	16:00:00	17:00:00	48.9
3/24/2009	17:00:00	18:00:00	50.8
3/24/2009	18:00:00	19:00:00	57.5
3/24/2009	19:00:00	20:00:00	48.5
3/24/2009	20:00:00	21:00:00	47.9
3/24/2009	21:00:00	22:00:00	49.0
3/24/2009	22:00:00	23:00:00	41.4
3/24/2009	23:00:00	0:00:00	39.8
3/25/2009	0:00:00	1:00:00	39.5
3/25/2009	1:00:00	2:00:00	34.1
3/25/2009	2:00:00	3:00:00	36.4
3/25/2009	3:00:00	4:00:00	33.1
3/25/2009	4:00:00	5:00:00	37.1
3/25/2009	5:00:00	6:00:00	44.1
3/25/2009	6:00:00	7:00:00	50.2
3/25/2009	7:00:00	8:00:00	50.1
3/25/2009	8:00:00	9:00:00	49.3
3/25/2009	9:00:00	10:00:00	44.9
3/25/2009	10:00:00	11:00:00	44.0
3/25/2009	11:00:00	12:00:00	43.3
3/25/2009	12:00:00	13:00:00	45.7

LT-6 (East of Folsom Auburn Rd. and Pierpoint Circle)

Date	Start Time	End Time	Hourly L_{eq} (dBA)
3/24/2009	15:00:00	16:00:00	56.8
3/24/2009	16:00:00	17:00:00	54.5
3/24/2009	17:00:00	18:00:00	49.6
3/24/2009	18:00:00	19:00:00	40.8
3/24/2009	19:00:00	20:00:00	47.1
3/24/2009	20:00:00	21:00:00	45.9
3/24/2009	21:00:00	22:00:00	41.6
3/24/2009	22:00:00	23:00:00	38.2
3/24/2009	23:00:00	0:00:00	35.7
3/25/2009	0:00:00	1:00:00	34.4
3/25/2009	1:00:00	2:00:00	35.4
3/25/2009	2:00:00	3:00:00	31.7
3/25/2009	3:00:00	4:00:00	36.4
3/25/2009	4:00:00	5:00:00	33.5
3/25/2009	5:00:00	6:00:00	38.2
3/25/2009	6:00:00	7:00:00	41.5
3/25/2009	7:00:00	8:00:00	45.9
3/25/2009	8:00:00	9:00:00	49.0
3/25/2009	9:00:00	10:00:00	45.4
3/25/2009	10:00:00	11:00:00	51.1
3/25/2009	11:00:00	12:00:00	49.1
3/25/2009	12:00:00	13:00:00	48.8
3/25/2009	13:00:00	14:00:00	51.0
3/25/2009	14:00:00	15:00:00	52.7

Site ID	Location	Start Date	Start Time (10 min. Meas.)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	L90 (dBA)	L50 (dBA)	L10 (dBA)
ST-2	Tacana Dr. and E. Natoma St.	3/25/2009	16:40:00	66.2	79.5	39.6	47.4	63.8	69.9
ST-2	Tacana Dr. and E. Natoma St.	3/25/2009	16:50:00	67.7	86.8	40.7	52.2	64.7	71.1
ST-2	Tacana Dr. and E. Natoma St.	3/25/2009	20:28:00	63.0	79.7	39.2	45.3	53.3	67.2
ST-2	Tacana Dr. and E. Natoma St.	3/25/2009	20:39:00	62.4	78.5	41.9	45.5	55.1	66.7
ST-2	Tacana Dr. and E. Natoma St.	3/26/2009	0:11:00	53.0	71.3	31.9	34.7	38.3	53.0
ST-2	Tacana Dr. and E. Natoma St.	3/26/2009	0:21:00	53.6	72.4	32.6	35.1	38.7	53.0
ST-3	Mountain View Dr.	3/24/2009	17:25:00	45.1	61.0	36.1	39.6	42.9	47.6
ST-3	Mountain View Dr.	3/24/2009	17:35:00	46.1	60.7	39.2	41.7	44.5	48.7
ST-3	Mountain View Dr.	3/24/2009	20:40:00	41.1	53.7	35.5	37.9	40.5	43.3
ST-3	Mountain View Dr.	3/24/2009	20:51:00	40.1	57.6	34.5	36.6	39.3	42.1
ST-3	Mountain View Dr.	3/24/2009	22:49:00	40.7	55.8	33.3	35.9	39.5	43.7
ST-3	Mountain View Dr.	3/24/2009	22:59:00	39.0	54.3	33.2	35.4	37.5	41.4
ST-4	E. Natoma St. and Green Valley Rd.	3/24/2009	17:52:00	70.5	87.3	44.9	55.6	69.2	73.8
ST-4	E. Natoma St. and Green Valley Rd.	3/24/2009	18:02:00	70.8	79.8	51.6	60.1	69.6	74.1
ST-4	E. Natoma St. and Green Valley Rd.	3/24/2009	21:08:00	69.4	83.4	47.2	57.8	67.2	73.0

Site ID	Location	Start Date	Start Time (10 min. Meas.)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	L90 (dBA)	L50 (dBA)	L10 (dBA)
ST-4	E. Natoma St. and Green Valley Rd.	3/24/2009	21:18:00	69.6	84.4	46.7	57.2	67.0	73.6
ST-4	E. Natoma St. and Green Valley Rd.	3/24/2009	23:46:00	60.4	75.2	31.8	36.0	46.5	65.4
ST-4	E. Natoma St. and Green Valley Rd.	3/24/2009	23:56:00	62.8	81.4	31.4	36.3	47.6	66.5
ST-5	Shadowfax Ct.	3/24/2009	18:18:00	60.9	78.4	43.3	47.3	50.9	59.8
ST-5	Shadowfax Ct.	3/24/2009	18:28:00	52.4	71.3	43.2	45.6	48.4	51.3
ST-5	Shadowfax Ct.	3/24/2009	21:34:00	47.4	62.7	40.9	44.2	46.9	49.4
ST-5	Shadowfax Ct.	3/24/2009	21:45:00	50.7	62.8	40.7	44.0	46.8	53.0
ST-5	Shadowfax Ct.	3/24/2009	23:18:00	41.7	70.6	30.7	34.9	38.7	42.7
ST-5	Shadowfax Ct.	3/24/2009	23:29:00	41.3	60.5	31.5	35.8	39.6	44.2
ST-6	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	15:19:00	50.2	64.8	36.6	40.1	44.3	55.0
ST-6	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	15:29:00	50.9	72.9	41.1	45.4	48.8	53.6
ST-6	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	19:52:00	40.6	60.6	32.3	34.7	36.9	42.1
ST-6	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	20:02:00	42.6	59.9	35.0	38.3	40.7	45.4
ST-6	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	23:31:00	35.4	51.7	31.2	32.6	34.2	37.1
ST-6	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	23:41:00	34.9	47.6	29.6	31.1	32.8	36.1
ST-7	Beals Point (Campground)	3/24/2009	15:11:00	48.9	71.1	38.0	40.8	43.2	51.1
ST-7	Beals Point (Campground)	3/24/2009	15:22:00	49.0	79.2	35.9	39.1	42.2	46.4
ST-8	Folsom Point	3/24/2009	16:57:00	43.7	57.7	34.8	37.1	39.6	47.7
ST-8	Folsom Point	3/24/2009	17:07:00	41.3	52.8	35.6	37.5	39.1	44.7
ST-8	Folsom Point	3/24/2009	20:12:00	41.3	61.8	31.3	35.5	37.6	40.1

Site ID	Location	Start Date	Start Time (10 min. Meas.)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	L90 (dBA)	L50 (dBA)	L10 (dBA)
ST-8	Folsom Point	3/24/2009	20:22:00	40.9	54.1	31.7	34.0	36.7	45.7

Site ID	Location	Start Date	Start Time (10 min. Meas.)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	L90 (dBA)	L50 (dBA)	L10 (dBA)
BIO-1	Main St.	3/25/2009	10:51:00	44.1	62.6	35.4	38.3	41.6	46.8
BIO-1	Main St.	3/25/2009	19:26:00	48.8	65.4	31.9	37.8	44.3	52.3
BIO-1	Main St.	3/25/2009	22:53:00	44.2	59.6	34.0	36.9	40.4	48.2
BIO-2	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	15:19:00	50.2	64.8	36.6	40.1	44.3	55.0
BIO-2	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	15:29:00	50.9	72.9	41.1	45.4	48.8	53.6
BIO-2	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	19:52:00	40.6	60.6	32.3	34.7	36.9	42.1
BIO-2	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	20:02:00	42.6	59.9	35.0	38.3	40.7	45.4
BIO-2	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	23:31:00	35.4	51.7	31.2	32.6	34.2	37.1
BIO-2	East of Folsom Auburn Rd. and Robin Ln.	3/25/2009	23:41:00	34.9	47.6	29.6	31.1	32.8	36.1
BIO-3	Erwin Ave. and Snipes Blvd.	3/25/2009	10:30:00	43.4	59.5	36.8	39.1	42.2	45.8
BIO-3	Erwin Ave. and Snipes Blvd.	3/25/2009	19:08:00	44.8	65.4	34.0	36.1	37.9	45.1
BIO-3	Erwin Ave. and Snipes Blvd.	3/25/2009	23:09:00	36.9	47.9	32.1	34.2	35.8	39.1
BIO-4	S. Lexington Dr. and Oak Avenue Parkway	3/26/2009	15:57:00	51.0	68.4	45.0	47.2	50.4	53.2

Site ID	Location	Start Date	Start Time (10 min. Meas.)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	L90 (dBA)	L50 (dBA)	L10 (dBA)
BIO-4	S. Lexington Dr. and Oak Avenue Parkway	3/26/2009	20:58:00	49.6	61.0	44.0	46.4	48.5	51.3
BIO-4	S. Lexington Dr. and Oak Avenue Parkway	3/26/2009	23:48:00	43.1	63.1	34.4	36.4	40.1	45.1
BIO-5	Willow Bend Rd. and Grey Fox Ct.	3/26/2009	14:21:00	49.8	60.5	43.2	45.8	49.0	52.0
BIO-5	Willow Bend Rd. and Grey Fox Ct.	3/26/2009	20:13:00	46.4	56.8	37.7	40.6	43.8	50.1
BIO-5	Willow Bend Rd. and Grey Fox Ct.	3/26/2009	23:07:00	37.1	51.1	27.5	30.5	34.6	40.2
BIO-6	Haddington Dr. and E. Natoma St.	3/26/2009	13:45:00	51.9	63.5	45.3	48.1	50.9	54.1
BIO-6	Haddington Dr. and E. Natoma St.	3/26/2009	19:53:00	52.0	64.7	40.9	45.5	49.4	55.8
BIO-6	Haddington Dr. and E. Natoma St.	3/26/2009	22:49:00	47.9	66.5	31.4	36.0	42.3	48.5
BIO-7	Sturbridge Dr. and Stonemill Dr.	3/26/2009	14:54:00	42.7	59.5	34.5	36.8	40.6	45.5
BIO-7	Sturbridge Dr. and Stonemill Dr.	3/26/2009	20:34:00	38.5	52.6	32.6	35.5	37.6	40.5
BIO-7	Sturbridge Dr. and Stonemill Dr.	3/26/2009	23:27:00	31.4	43.8	26.7	29.1	30.6	32.8
BIO-8	Wellington Way and Grizzly Way	3/24/2009	15:53:00	58.0	67.5	42.9	48.3	56.5	61.7

Site ID	Location	Start Date	Start Time (10 min. Meas.)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	L90 (dBA)	L50 (dBA)	L10 (dBA)
BIO-8	Wellington Way and Grizzly Way	3/24/2009	19:38:00	59.9	71.4	44.5	49.9	56.7	63.7
BIO-8	Wellington Way and Grizzly Way	3/24/2009	22:18:00	51.2	68.7	39.5	42.9	45.0	53.6

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Site Prep / Haul Rd Prep						
Large Dozer	1	570	10	80%	81.0	115.6
Small Dozer	1	185	10	80%	81.0	115.6
Large Motor Grader	1	275	10	80%	84.0	118.6
Large Roller	1	250	10	80%	79.0	113.6
80 Ton Crane	1	200	10	80%	80.0	114.6
4 Mgal Water Truck	1	350	10	80%	75.0	109.6
Generator	2	200	10	65%	82.1	116.7
Welding Machines	4	30	10	50%	77.0	111.6
Outboard powered workskiffs	2	40	10	40%	78.2	112.8
Rock Import Trucks	10	350	10	90%	85.5	120.1
Small Tug	1	250	10	80%	86.2	120.7
Super 30 carrylift	1	350	10	70%	83.5	118.0
Construct Transload Facility						
Large Dozer	1	570	10	80%	81.0	115.6
Small Dozer	1	185	10	80%	81.0	115.6
Large Motor Grader	1	275	10	80%	84.0	118.6
Large Roller	1	250	10	30%	74.8	109.4
225T Crane	1	400	10	80%	80.0	114.6
80 Ton Crane	1	200	10	80%	80.0	114.6
4 Mgal Water Truck	1	350	10	80%	75.0	109.6
8 Mgal Water WAGON	1	450	10	80%	75.0	109.6

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Off HWY 50 TN Trucks	2	650	10	80%	78.0	112.6
Rock Import Trucks	3	350	10	70%	79.2	113.8
Large Excavator	1	550	10	90%	80.5	115.1
Rub Tire Backhoe	1	125	10	70%	76.5	111.0
Loader 980 size	1	350	10	70%	77.5	112.0
Super 30 carrylift	1	350	10	70%	83.5	118.0
Loader 966 size	1	300	10	80%	78.0	112.6
Concrete Secant Pile Wall						
Large Dozer	1	570	10	80%	81.0	115.6
1200 CFM Compressor	4	575	10	15%	75.8	110.4
Large Roller	1	250	10	10%	70.0	104.6
Drill Rig	2	670	10	30%	81.8	116.4
100 Ton Crane	2	643	10	30%	78.8	113.4
8 Mgal Water WAGON	1	450	10	20%	69.0	103.6
20 CY Dump Trucks	4	350	10	30%	76.8	111.4
Rub Tire Backhoe	2	125	10	80%	80.0	114.6
Loader 360 Wheel Loader	2	100	10	80%	81.0	115.6
Loader 966 size	2	300	10	80%	81.0	115.6
Cutoff Wall Concrete Placement						
Cement Mixer	1	25	10	80%	77.0	111.6
Large Excavator	1	700	10	90%	80.5	115.1

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Common Excavation to Waste						
Large Dozer-Ripper	2	570	10	90%	84.6	119.1
Large Excavator	1	428	10	90%	80.5	115.1
Off HWY 50 TN Trucks	7	650	10	80%	83.5	118.1
8 MG Water Pull	1	450	10	90%	75.5	110.1
Large Motor Grader	1	400	10	90%	84.5	119.1
Dozer	1	185	10	90%	81.5	116.1
Roller	1	250	10	50%	77.0	111.6
Rock Excavation Dry						
Rock Drills	4	250	12	100%	87.0	121.6
Large Excavator	1	428	12	90%	80.5	115.1
Off HWY 50 TN Trucks	6	650	12	80%	82.8	117.4
8 MG Water Pull	1	450	12	90%	75.5	110.1
Large Dozer-Ripper	1	550	12	90%	81.5	116.1
Large Motor Grader	1	400	12	40%	81.0	115.6
8 MG Water Pull	1	450	12	90%	75.5	110.1
Dozer	1	185	12	90%	81.5	116.1
Powder Truck	1	350	12	90%	75.5	110.1
Mobilization for Approach Walls (Road, Crane Pads)						
Cat D-8 Dozer -Ripper	1	305	10	80%	81.0	115.6
Cat 980 Loader	1	318	10	80%	78.0	112.6
Cat 730 Articulated trucks	3	317	10	80%	79.8	114.4

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Highway 10-wheeler dump truck	1	330	10	80%	75.0	109.6
Graders 140H	1	165	10	80%	84.0	118.6
Water Truck 4000gal	1	330	10	80%	75.0	109.6
Highway tractor - trailer	1	330	10	60%	73.8	108.4
Electric - Line Man Truck	1	200	10	70%	74.5	109.0
Mech trucks	2	200	10	70%	77.5	112.0
Fuel trucks	2	250	10	70%	77.5	112.0
Pipe Fitters Truck	1	200	10	70%	74.5	109.0
Flatbed trucks	2	200	10	60%	75.8	110.4
Pickup's standard F-150 (gas)	5	380	10	50%	79.0	113.6
Pickup's Ford 150 4X4 (gas)	2	411	10	50%	75.0	109.6
Intake Approach Walls & Slab						
Manitowoc 555 - 150 ton Crawler	1	340	9	70%	79.5	114.0
50 ton Hydraulic Crane	1	174	9	70%	79.5	114.0
Concrete Boom Pump	1	330	10	70%	79.5	114.0
Highway tractor - trailer	1	330	9	70%	74.5	109.0
Pickup's Ford 150 4X4 (gas)	1	411	9	50%	72.0	106.6
Set up/Operate Bubble Curtain/Silt Curtain*						
Tendors	2	200	10	70%	87.6	122.2
Dozer	1	250	10	80%	81.0	115.6

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Mid size Excavator	1	200	10	80%	80.0	114.6
Small Tug	1	250	10	80%	86.2	120.7
Large Tug	1	400	10	60%	86.9	121.5
1500 CFM Compressors	4	600	24	15%	75.8	110.4
80 TN crane	1	250	10	80%	80.0	114.6
Super 20 Carrylift	1	200	10	60%	82.8	117.4
Dredge Common to Rock*						
Large long reach Excavator/cutter	1	1100	20	90%	93.1	127.7
250 Ton Clam Derrick Barge	2	450	20	50%	81.0	115.6
Large Tug	2	500	20	50%	90.1	124.7
85 TN Rock Trucks	3	650	20	70%	79.2	113.8
Light plants	3	40	20	100%	83.9	118.5
Dozer	1	450	20	70%	80.5	115.0
Large Loader	1	500	20	10%	69.0	103.6
Barge Winches	1	400	20	40%	85.2	119.8
Drill and Shoot/Dredge Rock Wet*						
Rock Drills	3	350	20	80%	84.8	119.4
Large long reach Excavator/cutter	1	1100	20	80%	92.6	127.2
250 Ton Clam Derrick Barge	2	450	20	50%	81.0	115.6
Small Tug	1	250	20	40%	83.1	117.7

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Large Tug	1	500	20	60%	87.9	122.5
50 TN Rock Trucks	5	600	20	75%	81.7	116.3
Light plants	4	40	20	60%	83.0	117.5
Large Dozer	1	450	20	50%	79.0	113.6
Large Loader	1	500	20	20%	72.0	106.6
Barge Winches	8	250	20	20%	89.2	123.7
Powder Truck	1	350	12	80%	75.0	109.6
Haul Road Prep, Spur Dike Stripping						
Large Dozer	1	570	10.43	80%	81.0	115.6
Large Motor Grader	1	275	10.43	80%	84.0	118.6
Large Excavator	1	532	10.43	60%	78.8	113.4
8 Mgal water truck	1	490	10.43	90%	75.5	110.1
40 TN Articulated Trucks	2	405	10.43	90%	78.6	113.1
80 Ton Crane	1	350	10.43	80%	80.0	114.6
Super 20 Carrylift	1	225	10.43	60%	82.8	117.4
Import Material from Quarry to D1/D2 MIAD						
On Hwy Transport Truck and Trailers	25	350	10.43	100%	90.0	124.6
Large Dozer	1	570	10.43	100%	82.0	116.6
Rehandle all imported material to Spur Dike from D1/D2 MIAD, Emb Core and Rock Fill						
Large Dozer-Ripper	1	570	10.43	90%	81.5	116.1
Large Excavator	1	532	10.43	90%	80.5	115.1

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
40 TN articulated Trucks	6	405	10.43	95%	83.6	118.1
8 Mgal Water Truck	1	490	10.43	90%	75.5	110.1
Large Motor Grader	1	275	10.43	20%	78.0	112.6
Dozer	1	305	10.43	90%	81.5	116.1
Self Propelled Vibratory Roller	1	153	10.43	25%	74.0	108.6
Rehandle all imported material to Spur Dike from D1/D2 MIAD, Rip Rap Bedding and Rip Rap						
Large Excavator	1	532	10.43	80%	80.0	114.6
Large Dozer	1	570	10.43	50%	79.0	113.6
Large Front End Loader	1	490	10.43	100%	79.0	113.6
Foundation Clean up						
Large Tug	1	500	10	60%	87.9	122.5
Large long reach Excavator/cutter	1	1100	10	60%	91.3	125.9
1500 CFM Compressors	2	600	10	90%	80.6	115.1
Small Tug	1	250	10	80%	86.2	120.7
250 Ton Clam Derrick Barge	2	450	10	80%	83.0	117.6
Large Loader	1	500	10	40%	75.0	109.6
Barge Winches	4	250	10	40%	89.2	123.7
50 TN Rock Trucks	2	600	10	50%	76.0	110.6
Large Dozer	1	450	10	50%	79.0	113.6
Tendors	1	200	10	70%	84.6	119.2

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Remove Transload Facility						
Large Dozer	1	570	10	80%	81.0	115.6
Small Dozer	1	185	10	80%	81.0	115.6
Large Motor Grader	1	275	10	80%	84.0	118.6
Large Roller	1	250	10	30%	74.8	109.4
225T Crane	1	400	10	80%	80.0	114.6
80 Ton Crane	1	200	10	80%	80.0	114.6
4 Mgal Water Truck	1	350	10	80%	75.0	109.6
8 Mgal Water WAGON	1	450	10	80%	75.0	109.6
Off HWY 50 TN Trucks	2	650	10	80%	78.0	112.6
Rock Import Trucks	3	350	10	70%	79.2	113.8
Large Excavator	1	550	10	90%	80.5	115.1
Rub Tire Backhoe	1	125	10	70%	76.5	111.0
Loader 980 size	1	350	10	70%	77.5	112.0
Super 30 carrylift	1	350	10	70%	83.5	118.0
Loader 966 size	1	300	10	80%	78.0	112.6
Site Restoration/Teardown						
Pick up Trucks	6	200	10	30%	77.6	112.1
Large Motor Grader	1	400	10	80%	84.0	118.6
Generator	2	200	10	65%	82.1	116.7
Outboard powered workskiffs	2	40	10	65%	80.3	114.9
Shop Trucks	2	250	10	40%	75.0	109.6

Alternative 2 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Large Tug	1	400	10	70%	87.6	122.2
Small Tug	1	250	10	70%	85.6	120.2
Dozer	1	185	10	60%	79.8	114.4
Medium Size Excavator	1	200	8	90%	80.5	115.1
Staging Area w/ Rock Crusher						
Rock Crusher	1	n/a	12	100%**	83.0	117.6
Batch Plant	1	n/a	12/24	100%**	83.0	117.6
Large Dozer	2	570	12	100%**	82.0	116.6
Belly dump truck	2	300	12	100%**	79.0	113.6
Staging Area w/out Rock Crusher						
Batch Plant	1	n/a	12/24	100%**	83.0	117.6
Large Dozer	2	570	12	100%**	82.0	116.6
Belly dump truck	2	300	12	100%**	79.0	113.6
Batch Plant Activities at Staging Area*						
Batch Plant	1	n/a	12/24	100%**	83.0	117.6

*potential nighttime activity
**assumed 100% duty cycle

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Mobilization for Cofferdam (Haul Road)						
Large Dozer	1	570	10	80%	81.0	115.6
Small Dozer	1	185	10	80%	81.0	115.6
Large Motor Grader	1	275	10	80%	84.0	118.6
Large Roller	1	250	10	80%	79.0	113.6
80 Ton Crane	1	200	10	80%	80.0	114.6
4 Mgal Water Truck	1	350	10	80%	75.0	109.6
Generator	2	200	10	65%	82.1	116.7
Welding Machines	4	30	10	50%	77.0	111.6
Outboard powered workskiffs	2	40	10	40%	78.2	112.8
Rock Import Trucks	10	350	10	90%	85.5	120.1
Small Tug	1	250	10	80%	86.2	120.7
Super 30 carrylift	1	350	10	70%	79.5	114.0
Mid size Excavator	1	200	10	80%	84.0	118.6
Construct Transload Facility						
Large Dozer	1	570	10	80%	81.0	115.6
Small Dozer	1	185	10	80%	81.0	115.6
Large Motor Grader	1	275	10	80%	84.0	118.6
Large Roller	1	250	10	30%	74.8	109.4
225T Crane	1	400	10	80%	80.0	114.6

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
80 Ton Crane	1	200	10	80%	80.0	114.6
4 Mgal Water Truck	1	350	10	80%	75.0	109.6
8 Mgal Water WAGON	1	450	10	80%	75.0	109.6
Off HWY 50 TN Trucks	2	650	10	80%	78.0	112.6
Rock Import Trucks	3	350	10	70%	79.2	113.8
Large Excavator	1	550	10	90%	80.5	115.1
Rub Tire Backhoe	1	125	10	70%	76.5	111.0
Loader 980 size	1	350	10	70%	77.5	112.0
Super 30 carrylift	1	350	10	70%	83.5	118.0
Loader 966 size	1	300	10	80%	78.0	112.6
Common Excavation Below Cofferdam						
Large Dozer-Ripper	2	570	10	90%	84.6	119.1
Large Excavator	1	428	10	90%	80.5	115.1
Off HWY 50 TN Trucks	7	650	10	80%	83.5	118.1
8 MG Water Pull	1	450	10	90%	75.5	110.1
Large Motor Grader	1	400	10	90%	84.5	119.1
Dozer	1	250	10	90%	81.5	116.1
Common Dredge Below Cofferdam*						
Large Long Reach Excavator/ Cutter	1	1100	20	90%	93.1	127.7
250 Ton Clam Derrick Barge	2	450	20	50%	89.7	124.3
Large Tug	2	500	20	50%	90.1	124.7
85 TN Rock Trucks	3	650	20	70%	79.2	113.8

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Light Plants	3	40	20	100%	83.9	118.5
Dozer	1	450	20	70%	80.5	115.0
Large Loader	1	500	20	10%	69.0	103.6
Barge Winches	1	400	20	40%	85.2	119.8
Construction of Sheet Pile Cells						
4100 Manitowoc Crane	1	364	10	100%	81.0	115.6
Barge Winches	2	400	10	50%	89.2	123.7
Vibro Hammer	1	250	10	80%	100.0	134.6
Pile Hammer	1	250	10	20%	94.0	128.6
Generator	1	250	10	50%	78.0	112.6
250 CFM Compressor	1	150	10	50%	75.0	109.6
Welding Machine	1	30	10	20%	67.0	101.6
Pump	1	200	10	5%	68.0	102.6
Yard crane	1	350	10	20%	74.0	108.6
Outboard powered workskiffs	1	40	10	25%	73.1	107.7
Material Transport Tugboat	1	500	10	100%	90.1	124.7
Fill Cells						
20 CY bottom dump trucks	6	300	10	75%	82.5	117.1
Front end loader	1	200	10	75%	77.8	112.3
4100 Manitowoc Crane	1	364	10	100%	81.0	115.6
Barge Winches	2	800	10	50%	92.2	126.8
Vibro Hammer	1	250	10	80%	100.0	134.6

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Pile Hammer	1	250	10	20%	94.0	128.6
Generator	1	250	10	50%	78.0	112.6
250 CFM Compressor	1	150	10	50%	75.0	109.6
Welding Machine	1	30	10	20%	67.0	101.6
Pump	1	200	10	5%	68.0	102.6
Fill Processing Plant	1	1100	10	90%	93.1	127.7
Mobilization for Approach Walls (Roads, Crane Pads)						
Cat D-8 Dozer -Ripper	1	305	10	80%	81.0	115.6
Cat 980 Loader	1	318	10	80%	78.0	112.6
Cat 730 Articulated trucks	3	317	10	80%	79.8	114.4
Highway 10-wheeler dump truck	1	330	10	80%	75.0	109.6
Graders 140H	1	165	10	80%	84.0	118.6
Water Truck 4000gal	1	330	10	80%	75.0	109.6
Highway tractor - trailer	1	330	10	60%	73.8	108.4
Electric - Line Man Truck	1	200	10	70%	74.5	109.0
Mech trucks	2	200	10	70%	77.5	112.0
Fuel trucks	2	250	10	70%	77.5	112.0
Pipe Fitters Truck	1	200	10	70%	74.5	109.0
Flatbed trucks	2	200	10	60%	74.8	109.4
Pickup's standard F-150 (gas)	5	380	10	50%	79.0	113.6
Pickup's Ford 150 4X4 (gas)	2	411	10	50%	75.0	109.6

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Intake Approach Walls & Slab						
Manitowoc 555 - 150 ton Crawler	1	340	9	70%	79.5	114.0
50 ton Hydraulic Crane	1	174	9	70%	79.5	114.0
Concrete Boom Pump	1	330	10	70%	79.5	114.0
Highway tractor - trailer	1	330	9	70%	74.5	109.0
Pickup's Ford 150 4X4 (gas)	1	411	9	50%	72.0	106.6
Remove cell rubble fill						
3900 Manitowoc Crane	1	300	10	80%	80.0	114.6
20 CY bottom dump trucks	6	300	10	100%	83.8	118.4
Dozer	2	180	10	80%	84.0	118.6
Remove sheets						
4100 Manitowoc Crane	1	364	10	100%	81.0	115.6
Barge Winches	2	400	10	50%	89.2	123.7
Vibro Hammer	1	250	10	80%	86.2	120.7
Pile Hammer	1	250	10	20%	80.1	114.7
Generator	1	250	10	50%	78.0	112.6
250 CFM Compressor	1	150	10	50%	75.0	109.6
Welding Machine	1	30	10	20%	67.0	101.6
Pump	1	200	10	5%	68.0	102.6
Material Transport Tugboat	1	500	10	100%	90.1	124.7
Yard crane	1	350	10	100%	81.0	115.6

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Common Excavation						
Large Dozer-Ripper	2	570	10	90%	84.6	119.1
Large Excavator	1	428	10	90%	80.5	115.1
Off HWY 50 TN Trucks	7	650	10	80%	83.5	118.1
8 MG Water Pull	1	450	10	90%	75.5	110.1
Large Motor Grader	1	400	10	90%	84.5	119.1
Dozer	1	250	10	90%	81.5	116.1
Rock Excavation Dry						
Rock Drills	4	250	12	100%	87.0	121.6
Large Excavator	1	428	12	90%	80.5	115.1
Off HWY 50 TN Trucks	5	650	12	80%	82.0	116.6
8 MG Water Pull	1	450	12	90%	75.5	110.1
Large Dozer-Ripper	1	550	12	90%	81.5	116.1
Large Motor Grader	1	400	12	40%	81.0	115.6
8 MG Water Pull	1	450	12	90%	75.5	110.1
Dozer	1	185	12	90%	81.5	116.1
Powder Truck	1	350	12	90%	75.5	110.1
Dewater Behind Cofferdam*						
Pump	1	2200	24	85%	95.9	130.4
Set up/operate Bubble Curtain/Silt Curtain						
Tendors	2	200	10	70%	87.6	122.2
Dozer	1	250	10	80%	81.0	115.6

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Mid size Excavator	1	200	10	80%	80.0	114.6
Small Tug	1	250	10	80%	86.2	120.7
Large Tug	1	400	10	60%	86.9	121.5
1500 CFM Compressors	4	600	24	15%	75.8	110.4
80 TN crane	1	250	10	80%	80.0	114.6
Super 20 Carrylift	1	200	10	60%	78.8	113.4
Dredge Common to Rock*						
Large long reach Excavator/cutter	1	1100	20	90%	93.1	127.7
250 Ton Clam Derrick Barge	2	450	20	50%	81.0	115.6
Large Tug	2	500	20	50%	90.1	124.7
85 TN Rock Trucks	3	650	20	70%	79.2	113.8
Light plants	3	40	20	100%	83.9	118.5
Dozer	1	450	20	70%	80.5	115.0
Large Loader	1	500	20	10%	69.0	103.6
Barge Winches	1	400	20	40%	85.2	119.8
Drill and Shoot/Dredge Rock Wet*						
Rock Drills	3	350	20	80%	84.8	119.4
Large long reach Excavator/cutter	1	1100	20	80%	92.6	127.2
250 Ton Crane/Derrick	2	450	20	50%	81.0	115.6
Small Tug	1	250	20	40%	83.1	117.7
Large Tug	1	500	20	60%	87.9	122.5

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
50 TN Rock Trucks	3	600	20	60%	78.6	113.1
Light plants	4	40	20	60%	83.0	117.5
Large Dozer	1	450	20	50%	79.0	113.6
Large Loader	1	500	20	20%	72.0	106.6
Barge Winches	8	250	20	20%	89.2	123.7
Powder Truck	1	350	12	80%	75.0	109.6
Haul Road Prep, Spur Dike Stripping						
Large Dozer	1	570	10.43	80%	81.0	115.6
Large Motor Grader	1	275	10.43	80%	84.0	118.6
Large Excavator	1	532	10.43	60%	78.8	113.4
8 Mgal water truck	1	490	10.43	90%	75.5	110.1
40 TN Articulated Trucks	2	405	10.43	90%	78.6	113.1
80 Ton Crane	1	350	10.43	80%	80.0	114.6
Super 20 Carrylift	1	225	10.43	60%	82.8	117.4
Import Material from Quarry to D1/D2 MIAD						
On Hwy Transport Truck and Trailers	25	350	10.43	100%	90.0	124.6
Large Dozer	1	570	10.43	100%	82.0	116.6
Rehandle all imported material to Spur Dike from D1/D2 MIAD, Emb Core and Rock Fill						
Large Dozer-Ripper	1	570	10.43	90%	81.5	116.1
Large Excavator	1	532	10.43	90%	80.5	115.1
40 TN articulated Trucks	6	405	10.43	95%	83.6	118.1
8 Mgal Water Truck	1	490	10.43	90%	75.5	110.1

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Large Motor Grader	1	275	10.43	20%	78.0	112.6
Dozer	1	305	10.43	90%	81.5	116.1
Self Propelled Vibratory Roller	1	153	10.43	25%	79.0	113.6
Rehandle all imported material to Spur Dike from D1/D2 MIAD, Rip Rap Bedding and Rip Rap						
Large Excavator	1	532	10.43	80%	80.0	114.6
Large Dozer	1	570	10.43	50%	79.0	113.6
Large Front End Loader	1	490	10.43	100%	79.0	113.6
Foundation Clean Up						
Large Tug	1	500	10	60%	87.9	122.5
Large long reach Excavator/cutter	1	1100	10	60%	91.3	125.9
1500 CFM Compressors	2	600	10	90%	80.6	115.1
Small Tug	1	250	10	80%	86.2	120.7
250 Ton Clam Derrick Barge	2	450	10	80%	83.0	117.6
Large Loader	1	500	10	40%	75.0	109.6
Barge Winches	4	250	10	40%	89.2	123.7
50 TN Rock Trucks	2	600	10	50%	76.0	110.6
Large Dozer	1	450	10	50%	79.0	113.6
Tendors	1	200	10	70%	84.6	119.2
Remove Transload Facility						
Large Dozer	1	570	10	80%	81.0	115.6
Small Dozer	1	185	10	80%	81.0	115.6

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
Large Motor Grader	1	275	10	80%	84.0	118.6
Large Roller	1	250	10	30%	74.8	109.4
225T Crane	1	400	10	80%	80.0	114.6
80 Ton Crane	1	200	10	80%	80.0	114.6
4 Mgal Water Truck	1	350	10	80%	75.0	109.6
8 Mgal Water WAGON	1	450	10	80%	75.0	109.6
Off HWY 50 TN Trucks	2	650	10	80%	78.0	112.6
Rock Import Trucks	3	350	10	70%	79.2	113.8
Large Excavator	1	550	10	90%	80.5	115.1
Rub Tire Backhoe	1	125	10	70%	76.5	111.0
Loader 980 size	1	350	10	70%	77.5	112.0
Super 30 carrylift	1	350	10	70%	79.5	114.0
Loader 966 size	1	300	10	80%	78.0	112.6
Site Restoration/Teardown						
Pick up Trucks	6	200	10	30%	77.6	112.1
Large Motor Grader	1	400	10	80%	84.0	118.6
Generator	2	200	10	65%	82.1	116.7
Outboard powered workskiffs	2	40	10	65%	80.3	114.9
Shop Trucks	2	250	10	40%	75.0	109.6
Large Tug	1	400	10	70%	87.6	122.2
Small Tug	1	250	10	70%	85.6	120.2
dozer	1	185	10	60%	79.8	114.4

Alternative 3 Equipment Estimate Summary

Equipment	Quantity	Horsepower (HP)	Hours per Day	Duty Cycle	Total SPL of Equipment at 50 Feet (dBA L_{eq})	Total PWL of Equipment (dBA)
medium size excavator	1	200	8	90%	80.5	115.1
Staging Area w/ Rock Crusher						
Rock Crusher	1	n/a	12	100%**	83.0	117.6
Batch Plant	1	n/a	12/24	100%**	83.0	117.6
Large Dozer	2	570	12	100%**	82.0	116.6
Belly dump truck	2	300	12	100%**	79.0	113.6
Staging Area w/out Rock Crusher						
Batch Plant	1	n/a	12/24	100%**	83.0	117.6
Large Dozer	2	570	12	100%**	82.0	116.6
Belly dump truck	2	300	12	100%**	79.0	113.6
Batch Plant Activities at Staging Area*						
Batch Plant	1	n/a	12/24	100%**	83.0	117.6

*potential nighttime activity
**assumed 100% duty cycle

APPENDIX E

ENDANGERED SPECIES COORDINATION

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

Environmental Resources Branch

APR 03 2015

Ms. Jennifer Norris, Field Supervisor
U.S. Fish and Wildlife Service
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846

Dear Ms. Norris:

We are writing to reinitiate consultation for the Federally listed valley elderberry longhorn beetle (*Desmocerus californicus*) (VELB) under Section 7(a) of the Endangered Species Act, as amended (16 U.S.C. 1531 et seq.), for the Folsom Dam Modification Project, also referred to as the Folsom Joint Federal Project (Folsom JFP), Sacramento County, California. The Folsom JFP was authorized by Section 101 (a)(6)(A) of the Water Resources Development Act (WRDA) of 1999 (1113 Stat. 27 4) and modified by Section 128 of the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007. A Biological Opinion (BO), on the Folsom JFP, was provided by your office on November 1, 2012 (Service File No. 08ESMF00-2013-F-0044) and amended September 23, 2013, December 24, 2013, March 31, 2014, June 10, 2014 and October 9, 2014. This reinitiation is due to changes from the project description that was originally analyzed in earlier consultation.

The U.S. Army Corps of Engineers (Corps) is proposing to restore the area affected by the Folsom JFP to a natural state in order to meet commitments made in the 2012 Supplemental Folsom Dam Modification Project Approach Channel Environmental Impact Statement/Environmental Impact Report and in the land use agreement the Corps has with the Bureau of Reclamation. These actions include the removal of the interior haul road and Folsom Point Bridge, the construction of a safety bench, and restoration of the Dike 7, Dike 8, and Mormon Island Auxiliary Dam (MIAD) disposal areas.

The removal of the interior haul road would be accomplished by a combination of burying the interior haul road and grading slopes to blend into surrounding topography. The existing pocket area near Dike 7 would be in-filled to allow natural drainage to the reservoir. During a survey on February 27, 2015, nine elderberry shrubs were identified in the pocket area (Enclosure 1).

The elderberry shrubs were measured with 5 stems between 3 and 5 inches, and 4 stems greater than 5 inches at ground level. No exit holes were observed and the area is considered non-riparian.

The disposal areas at Dike 7 and Dike 8 would be re-graded and contoured to allow natural drainage back to Folsom Reservoir. Grading would have an overarching objective of minimizing or eliminating nuisance drainage that could lead to erosion, slope instability, or ponding. Elderberry shrubs were identified at Dike 7 and Dike 8 (Enclosure 2 and 3). The elderberry shrub at Dike 7 was measured to have two stems; one stem at 1 to 3 inches at ground level and one stem at 3 to 5 inches. The elderberry shrub at Dike 8 was measured at one stem greater than 5 inches at ground level. No exit holes were observed and the area is considered non-riparian. The elderberry shrubs located in the pocket area and at Dike 8 were previously consulted on in a letter dated September 18, 2013 regarding avoidance and minimization measures. The elderberry shrub at Dike 7 was consulted on in a letter dated June 5, 2014.

After further review with U.S. Fish and Wildlife Service (USFWS), the Corps determined that all eleven of these shrubs will be impacted by the proposed actions and need to be transplanted. Since the work may begin in Spring 2016, the Corps proposes to transplant the elderberry shrubs to a USFWS-approved mitigation bank within the approved transplant window to minimize adverse effects to the VELB. In addition, the Corps proposes to implement the following conservation measures to minimize the effect on the VELB.

a. Dust suppression measures would be used.

b. Construction representatives and contractor personnel would be given awareness training relating to the beetle and its habitat.

c. The Corps would purchase 6 credits at a USFWS-approved mitigation bank.

d. Disturbed areas would be reseeded with native grasses.

The Corps has determined that the removal of the interior haul road, and regrading and contouring of Dike 7 and Dike 8 disposal areas may affect, and is likely to adversely affect the VELB or its habitat. No VELB critical habitat exists in the project area, therefore none will be adversely modified by the proposed project. We request that your agency revise the BO to include the transplanting of the eleven shrubs, and provide us with a revised BO for this project.

If you need additional information or have questions regarding this project, please contact Ms. Jamie LeFevre, Environmental Resources Branch, at (916) 557-6693 or e-mail: Jamie.M.LeFevre@usace.army.mil. Thank you for your coordination on this project.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

Copy furnished (without enclosure):
Mr. Doug Weinrich, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-1846


Dike 7 Pocket Area
Elderberry Shrub 9
Elderberry Shrub 7
Elderberry Shrub 8
Elderberry Shrub 4
Elderberry Shrub 3
Elderberry Shrub 6
Elderberry Shrub 2
Elderberry Shrub 1
Elderberry Shrub 5
Elderberry Shrub
Project Boundary
N
Enclosure 1
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Dike 7 Disposal Area
Elderberry Shrub 10
Elderberry Shrub
Project Boundary
N
Enclosure 2
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Dike 8 Disposal Area
Elderberry Shrub 11
Elderberry Shrub
Project Boundary
Enclosure 3
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

In Reply Refer to:
08ESMF00-2013-
F-0044-R006

APR 22 2015

Alicia E. Kirchner
Chief, Planning Division
Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814-2922

Subject: Reinitiation of Formal Consultation on the Folsom Dam Safety/Flood Damage Reduction Project, Sacramento County, California

Dear Ms. Kirchner:

This letter is in response to your April 3, 2015, letter requesting reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Folsom Dam Modification Project (project) in Sacramento County, California. At issue are effects of the project on the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle). Your reinitiation request was received by the Service on April 6, 2015. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

The Service appended this project to the *Programmatic Formal Consultation Permitting Projects with Relatively Small Effects on the Valley Elderberry Longhorn Beetle Within the Jurisdiction of the Sacramento Field Office, California* (programmatic consultation) (Service File 1-1-96-F-66) on November 1, 2012, and was subsequently amended in reinitiation on September 23, 2013, December 24, 2013, March 31, 2014, June 10, 2014, and October 9, 2014. This reinitiation is for an addition to the project description.

The Folsom Dam Modification Project, also referred to as the Folsom Dam Safety/Flood Damage Reduction Project or the Folsom Joint Federal Project (Folsom JFP), is a cooperative effort between the U.S. Army Corps of Engineers (Corps), Bureau of Reclamation (Reclamation), the State of California Central Valley Flood Protection Board, and the Sacramento Area Flood Control Agency. The Folsom JFP is designed to improve the dam safety, security, and flood damage reduction features at Folsom Dam and associated facilities, including construction of a gated auxiliary spillway southeast of the main dam.

The Corps is proposing to restore the area affected by Folsom JFP construction activities to a more natural state in order to meet commitments made in the 2012 Supplemental Folsom Dam Modification Project Approach Channel Environmental Impact Statement/ Environmental Impact Report and in the land use agreement the Corps has with Reclamation. The actions to restore the Folsom JFP are referred to as Phase V, and include the removal of the interior haul road and

Folsom Point Bridge, the construction of a safety bench, and the restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam disposal areas.

The removal of the interior haul road will be accomplished by a combination of burying the road and grading the slopes to blend into the surrounding topography. The existing depressed area between the interior haul road and Dike 7 will be in-filled to allow natural drainage into the reservoir. The disposal area at Dike 7 and Dike 8 will be re-graded and contoured to also allow natural drainage into the reservoir. Grading will have an overarching objective of minimizing or eliminating nuisance drainage that could lead to erosion, slope instability, or ponding.

During a vegetation survey with representatives from the Corps and the Service on February 27, 2015, a total of 11 elderberry shrubs were identified within the Phase V project area. Five elderberry shrubs with one stem between 3 and 5 inches and four elderberry shrubs with one stem greater than 5 inches were found within the pocket area of Dike 7 (see Attachment A, Enclosure 1). There is one shrub located within the Dike 7 disposal area that has two stems; one between 1 and 3 inches and the other between 3 and 5 inches (see Attachment A, Enclosure 2). The one shrub at the Dike 8 disposal area has one stem greater than 5 inches (see Attachment A, Enclosure 3). All of the shrubs are in non-riparian habitat and no exit holes were identified on any of the shrubs. The shrubs located within the Dike 7 pocket area were previously avoided during construction activities and the affects to those shrubs were analyzed in the Service's September 23, 2013, amended biological opinion. In addition, the shrub located at Dike 7 was also avoided during previous construction activities and the affects to those shrubs were analyzed in the Service's June 10, 2014, amended biological opinion.

The Corps has determined that the changes to the proposed project description for the activities scheduled under Phase V will directly impact the 11 elderberry shrubs identified during the February 27, 2015, site visit. While the proposed project will result in additional impacts to the beetle, the Service has analyzed the take associated with the project modification and determined that this project, as amended, will not jeopardize the continued existence of the beetle.

Entire sections of the text from the original, November 1, 2012, biological opinion are being replaced or added, and minor changes in the text (i.e., individual numbers or sentences) are shown in bold to aid in their identification. The November 1, 2012, biological opinion is hereby amended as follows:

On Page 2 - In the first paragraph, the following should be changed from:

The findings and recommendations in this formal consultation are based on: 1) your October 31, 2012, letter requesting formal consultation; 2) phone and email conversations between Corps and Service staff; 3) site visits on June 6, 2012, June 11, 2012, August 8, 2012, December 4, 2013, and February 11, 2014; 4) the Corps' September 18, 2013, request for reinitiation of formal consultation; 5) the Corps December 18, 2013, request for reinitiation of formal consultation; 6) the Corps March 19, 2014, request for reinitiation of formal consultation; 7) the Corps June 5, 2014, request for reinitiation of formal consultation; 8) the Corps October 6, 2014, request for reintiation; and 9) other information available to the Service.

To:

The findings and recommendations in this formal consultation are based on: 1) your October 31, 2012, letter requesting formal consultation; 2) phone and email conversations between Corps and Service staff; 3) site visits on June 6, 2012, June 11, 2012, August 8, 2012, December 4, 2013, February 11, 2014, **and February 27, 2015**; 4) the Corps' September 18, 2013, request for reinitiation of formal consultation; 5) the Corps' December 18, 2013, request for reinitiation of formal consultation; 6) the Corps' March 19, 2014, request for reinitiation of formal consultation; 7) the Corps' June 5, 2014, request for reinitiation of formal consultation; 8) the Corps' October 6, 2014, request for reintiation; **9) the Corps' April 3, 2015 request for reinitiation of formal consultation; and 10)** other information available to the Service.

On Page 3 – After the second paragraph in the Description of the Proposed Project section, add the following:

The Corps is proposing to restore the area affected by Folsom JFP construction activities to a more natural state in order to meet commitments made in the 2012 Supplemental Folsom Dam Modification Project Approach Channel Environmental Impact Statement/ Environmental Impact Report and in the land use agreement the Corps has with Reclamation. The actions to restore the Folsom JFP are referred to as Phase V, and include the removal of the interior haul road and Folsom Point Bridge, the construction of a safety bench, and the restoration of Dike 7, Dike 8, and Mormon Island Auxiliary Dam disposal areas.

The removal of the interior haul road will be accomplished by a combination of burying the road and grading the slopes to blend into the surrounding topography. The existing depressed area between the interior haul road and Dike 7 will be in-filled to allow natural drainage into the reservoir. The disposal area at Dike 7 and Dike 8 will be re-graded and contoured to also allow natural drainage into the reservoir. Grading will have an overarching objective of minimizing or eliminating nuisance drainage that could lead to erosion, slope instability, or ponding.

On Page 3 – In the Description of the Proposed Project section, the third and fourth paragraph should be changed from:

A total of 16 elderberry shrubs have been recorded at the ATS site and proposed Dike 7 and 8 disposal areas near Folsom Dam. The Corps has determined that seven shrubs, the obligate host plant of the beetle, will be disturbed by construction activity and will result in adverse effects to individual beetles, pupae, or larvae, as well as loss of habitat.

The elderberry plants that cannot be avoided will be transplanted to a Service-approved conservation area in accordance with the Service's conservation guidelines for the beetle. Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) will be replaced in the conservation area with elderberry seedlings or cuttings as shown in Table 1. If the Service determines that the elderberry plants on the proposed project site are unsuitable candidates for transplanting, additional plantings will be made to offset the additional habitat loss.

To:

A total of 16 elderberry shrubs have been recorded at the ATS site and proposed Dike 8 disposal area near Folsom Dam **and a total of 11 elderberry shrubs have been recorded at the locations**

associated with the site restoration activities when the Folsom JFP construction activities are complete. The Corps has determined that **18** shrubs, the obligate host plant of the beetle, will be disturbed by construction activity and will result in adverse effects to individual beetles, pupae, or larvae, as well as loss of habitat.

The elderberry plants that cannot be avoided will be transplanted to a Service-approved conservation area in accordance with the Service's conservation guidelines for the beetle. Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) will be replaced in the conservation area with elderberry seedlings or cuttings as shown in Table 1 **and Table 1a**. If the Service determines that the elderberry plants on the proposed project site are unsuitable candidates for transplanting, additional plantings will be made to offset the additional habitat loss.

On Page 3 – After Table 1, add the following:

Table 1a. Elderberry shrubs affected by Phase V of the Folsom JFP

Location	Stem Diameter	Number of Stems Impacted	Exit Holes Present on Shrub (Y/N)	Elderberry Seedling Ratio	Elderberry Seedling Plantings	Associated Native Plant Ratio	Associated Native Plantings
Non Riparian	1"-3"	1	No	1:1	1	1:1	1
	3"-5"	6	No	2:1	12	1:1	12
	>5"	5	No	3:1	15	1:1	15
Total		12			28		28
56/10=5.6 basins * 1800 = .23 acre							

On Pages 3 and 4 - In the Conservation Measures section, the following should be changed from:

The Corps will implement the following conservation measures proposed in the October 31, 2012, September 18, 2013, December 18, 2013, March 19, 2014, June 5, 2014, and October 6, 2014, letters in addition to those listed in the programmatic consultation.

1. A minimum setback of 100 feet from the dripline of all elderberry shrubs will be established, if possible. If the 100 foot minimum buffer zone is not possible, the next maximum distance allowable will be established. Due to the limited space within the project area, it would be difficult to observe the 100-foot radius buffer zone for the protection of elderberry shrubs. The Corps is proposing a minimum 25-foot radius buffer zone, using k-rails for protection. These areas would be fenced, flagged, and maintained during construction.

2. Signs would be placed every 50 feet along the edge of the elderberry buffer zones. The signs would include: "This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the

Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be readable from a distance of 20 feet and would be maintained during construction.

3. Dust suppression measures would be used.

4. Construction representatives and contractor personnel would be given awareness training relating to the beetle and its habitat.

5. The Corps would purchase 2.4 credits at a Service-approved conservation bank.

6. Disturbed areas would be restored to the pre-project condition and reseeded with native grasses.

To:

The Corps will implement the following conservation measures proposed in the October 31, 2012, September 18, 2013, December 18, 2013, March 19, 2014, June 5, 2014, **October 6, 2014, and April 3, 2015,** letters in addition to those listed in the programmatic consultation.

1. A minimum setback of 100 feet from the dripline of all elderberry shrubs will be established, if possible. If the 100 foot minimum buffer zone is not possible, the next maximum distance allowable will be established. Due to the limited space within the project area, it **will** be difficult to observe the 100-foot radius buffer zone for the protection of elderberry shrubs. The Corps is proposing a minimum 25-foot radius buffer zone, using k-rails for protection. These areas **will** be fenced, flagged, and maintained during construction.

2. Signs **will** be placed every 50 feet along the edge of the elderberry buffer zones. The signs **will** include: "This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be readable from a distance of 20 feet and **will** be maintained during construction.

3. Dust suppression measures **will** be used.

4. Construction representatives and contractor personnel **will** be given awareness training relating to the beetle and its habitat.

5. The Corps **will** purchase **a total of 8.4 credits** at a Service-approved conservation bank. **The Corps has already purchased 2.4 credits for the relocation of the ATS and the creation of the Dike 8 disposal area and will purchase an additional 6 credits for the Phase V site restoration.**

6. Disturbed areas **will** be restored to the pre-project condition and reseeded with native grasses.

On Page 4 - In the Effects of the Proposed Action section, the first paragraph should be changed from:

The proposed action will affect all valley elderberry longhorn beetles inhabiting seven elderberry plants with at least one stem measuring 1.0 inch or greater in diameter at ground level. All seven elderberry plants will be transplanted to a conservation area. Removing these elderberry shrubs will adversely affect the valley elderberry longhorn beetle. Any beetle larvae occupying these plants are likely to be killed when the plants are removed.

To:

The proposed action will affect all valley elderberry longhorn beetles inhabiting **18** elderberry plants with at least one stem measuring 1.0 inch or greater in diameter at ground level. All **18** elderberry plants will be transplanted to a conservation area. Removing these elderberry shrubs will adversely affect the valley elderberry longhorn beetle. Any beetle larvae occupying these plants are likely to be killed when the plants are removed.

On Page 6 – In the Amount or Extent of Take section, the following should be changed from:

The Service has determined that implementation of the programmatic process authorized by this biological opinion will result in the loss of all valley elderberry longhorn beetle inhabiting as many as, but no more that, four stems between 1 and 3 inches in diameter at ground level, one stem between 3 and 5 inches in diameter at ground level, and two stems greater than 5 inches in diameter at ground level.

To:

The Service has determined that implementation of the programmatic process authorized by this biological opinion will result in the loss of all valley elderberry longhorn beetle inhabiting as many as, but no more that, **five** stems between 1 and 3 inches in diameter at ground level, **seven** stems between 3 and 5 inches in diameter at ground level, and **seven** stems greater than 5 inches in diameter at ground level.

All other sections of the November 1, 2012, biological opinion and subsequent amendments for the Folsom Dam Modification Project remain the same. If you have any questions regarding this reinitiation, please contact Amber Aguilera, Fish and Wildlife Biologist, or Doug Weinrich, Assistant Field Supervisor, at (916) 414-6600.

Sincerely,

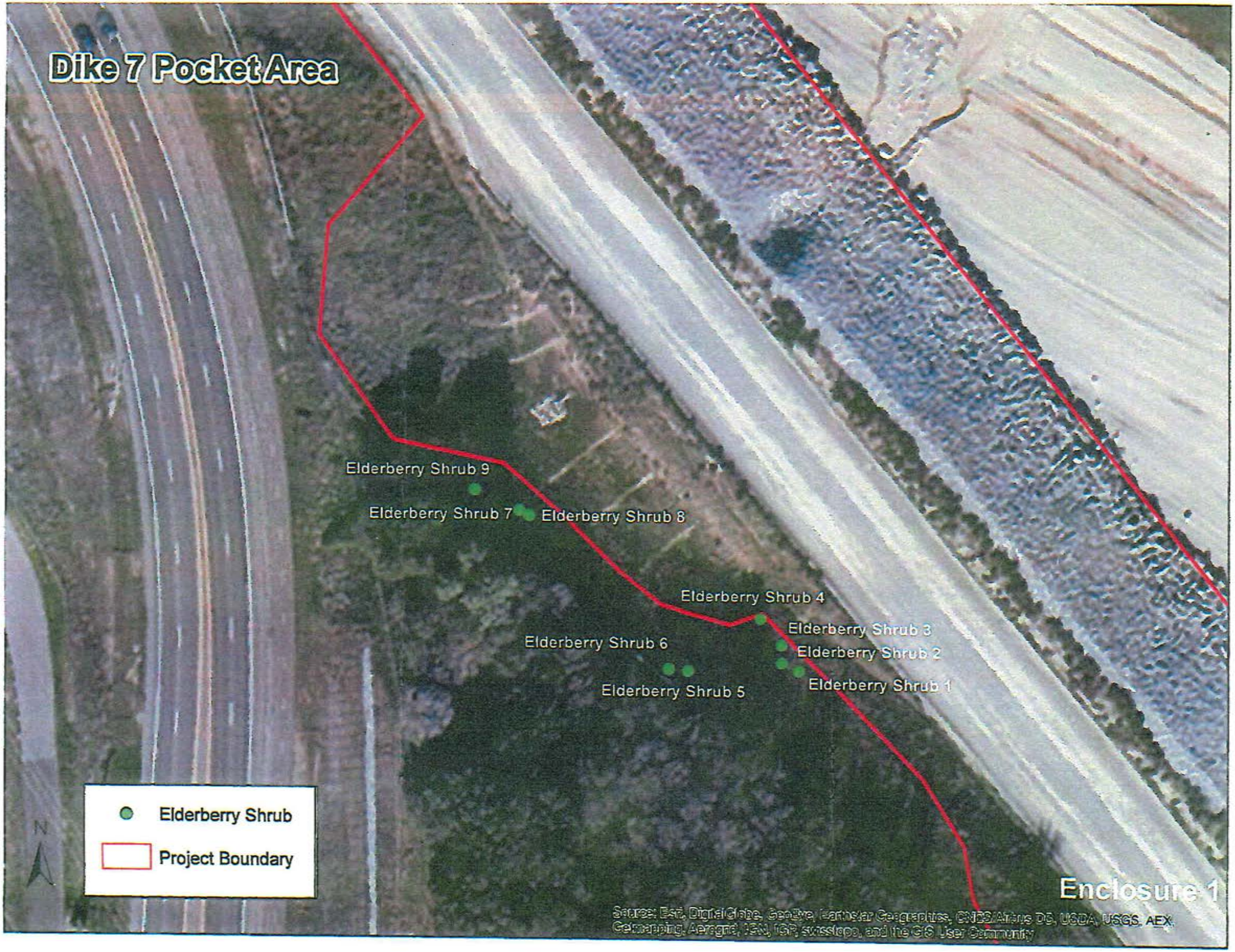
Doug Weinrich

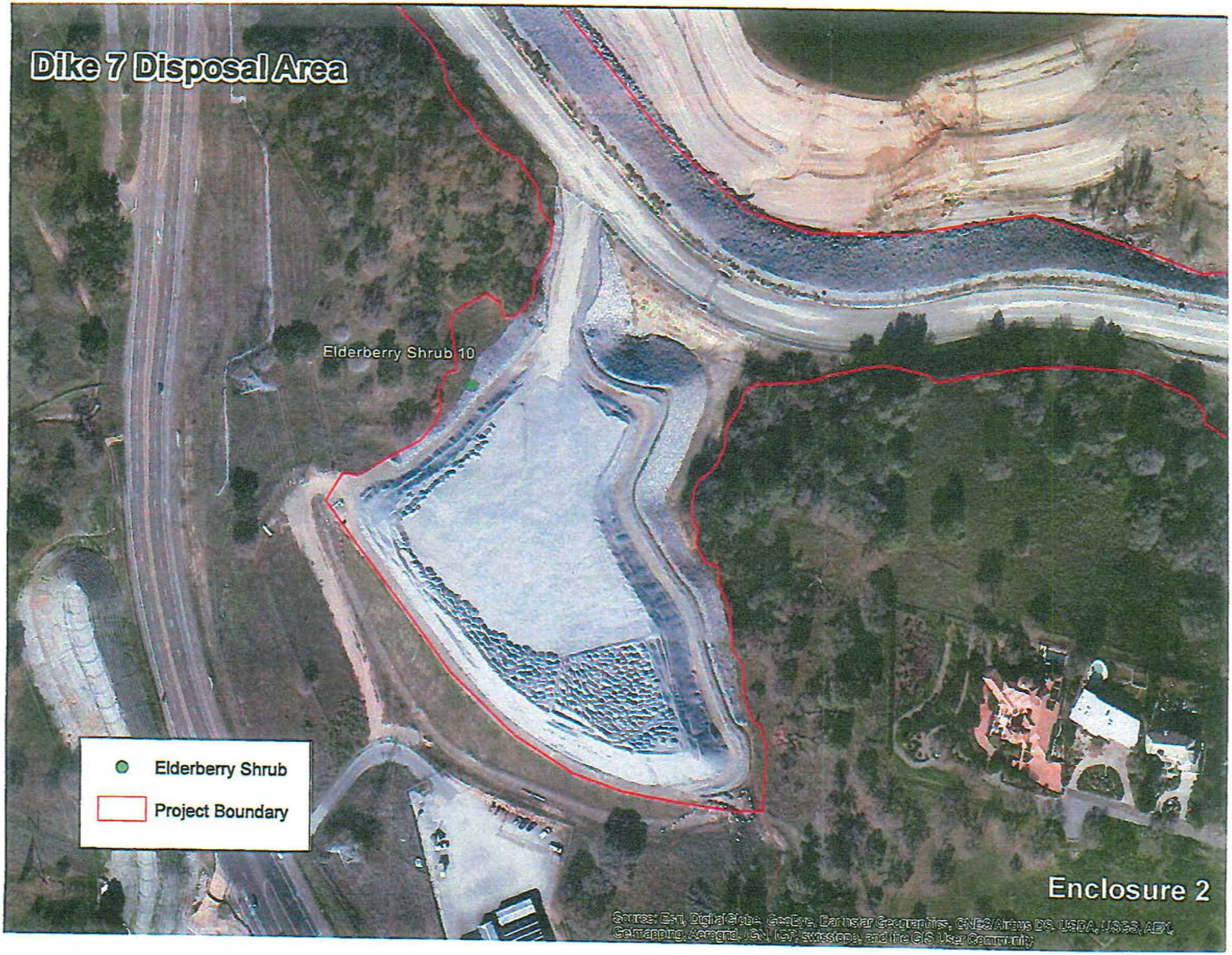
Doug Weinrich
Acting Field Supervisor

cc:
Jamie LeFevre, Army Corps of Engineers, Sacramento, California

Attachment A

(Maps of elderberry shrub locations were provided by the Corps)


Dike 7 Pocket Area
Elderberry Shrub 9
Elderberry Shrub 7
Elderberry Shrub 8
Elderberry Shrub 4
Elderberry Shrub 3
Elderberry Shrub 2
Elderberry Shrub 1
Elderberry Shrub 6
Elderberry Shrub 5
Elderberry Shrub
Project Boundary
N
Enclosure 1
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Dike 7 Disposal Area
Elderberry Shrub 10
Elderberry Shrub
Project Boundary
Enclosure 2
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Dike 8 Disposal Area
Elderberry Shrub 11
Elderberry Shrub
Project Boundary
Enclosure 3
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX F

U.S. FISH & WILDLIFE SERVICE COORDINATION ACT REPORT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

In Reply Refer to:
08ESMF00-
2015-CPA-0010

APR 28 2015

Alicia E. Kirchner
Chief, Planning Division
Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814

Dear Ms. Kirchner:

The U.S. Army Corps of Engineers (Corps) has requested supplemental coordination under the Fish and Wildlife Coordination Act (FWCA) for design refinements to the project description under the Folsom Dam Safety/Flood Damage Reduction Project (Folsom JFP). The design refinements include restoring the area impacted by the previous project phases to a natural state consistent with the shoreline of Folsom Lake and the planting of an oak mitigation site at Rossmoor Bar along the American River in Sacramento County, California. This letter transmits the U.S. Fish and Wildlife Service's (Service) supplemental FWCA report for the proposed project (enclosed).

If you have any questions regarding this report on the proposed project, please contact Amber Aguilera, Fish and Wildlife Biologist, or Doug Weinrich, Assistant Field Supervisor, at (916) 414-6600.

Sincerely,

Jennifer M Norris
Field Supervisor

Enclosure

cc: w/ enclosure
Jamie LeFevre, Corps, Sacramento, CA
Howard Brown, NOAA Fisheries, Sacramento, CA
Tina Bartlett, CDFW, Rancho Cordova, CA

SUPPLEMENTAL FISH AND WILDLIFE COORDINATION ACT REPORT
FOLSOM DAM SAFETY/FLOOD DAMAGE REDUCTION PROJECT
PHASE V
April 2015

BACKGROUND

The Folsom Dam Safety/Flood Damage Reduction Project, also referred to as the Folsom Dam Modification Project or the Folsom Joint Federal Project (Folsom JFP), is a cooperative effort among the U.S. Army Corps of Engineers (Corps), the U.S. Bureau of Reclamation (Reclamation), the State of California Central Valley Flood Protection Board (CVFPB), and the Sacramento Area Flood Protection Agency. The Folsom JFP is designed to improve the dam safety, security, and flood damage reduction features at Folsom Dam and associated facilities, including construction of a gated auxiliary spillway southeast of the main dam. Operation of this spillway would increase water discharge capability from the reservoir and help to provide a 200 year level of flood protection to the Sacramento area.

The Folsom JFP auxiliary spillway is being constructed by both the Corps and Reclamation in five construction phases:

- Phases I and II included spillway excavation and the work is complete;
- Phase III includes construction of the gated spillway control structure which began in late 2010 and is scheduled to be completed in spring 2015;
- Phase IV includes the excavation and concrete lining of the upper downstream chute, the stepped section, and stilling basin downstream of the control structure. This work began in 2013 and is scheduled to be completed in fall 2017;
- Phase V includes the final site studies and necessary remedial actions, facility testing, site demobilization and restoration, oak woodland mitigation, minor construction of necessary improvements not included in earlier phases, and project transfer.

Phases I and II of the Folsom JFP included the construction of a 7,000 foot long haul road from the auxiliary spillway excavation site to the Mormon Island Auxiliary Dam (MIAD) staging area. Cut and fill material from the Phase I and II excavation was reused to construct the interior haul road. In order to facilitate a continuous interior haul road to the MIAD staging area, a large cut was excavated through a hill at the entrance to Folsom Point Recreation Area. A pre-manufactured bridge was built and installed to carry public traffic to the recreation area and boat launch. The interior haul road and Folsom Point Bridge created a separation between construction activities and public access.

Stockpile, staging, and disposal areas were developed during the earlier phases of the Folsom JFP. Dike 7 was used as a permanent disposal site for waste rock and soil from Phases I and II. The Dike 8 disposal site is a permanent disposal site for waste rock and soil from Phase IV excavation. Approximately 700,000 cubic yards of material was placed as permanent disposal at these sites. The MIAD West disposal site is both a temporary and permanent disposal location for waste rock and soil generated in Phases I, II and III.

The potential effects of the Folsom JFP on environmental resources were evaluated by Reclamation in the Folsom Dam Safety and Flood Damage Reduction, Final Environmental Impact

Statement/Environmental Impact Report (2007 FEIS/EIR)(Reclamation 2007), which was a general analysis of the proposed design features available at that time. The Folsom JFP site restoration was included in the 2007 FEIS/EIR; however, design and construction changes have occurred that were not previously evaluated. In order to incorporate new information and consider the alternatives for the removal of the interior haul road and Folsom Point Bridge, construction of a safety bench, restoration of the overall project area, and the creation of an oak woodland mitigation site, the Corps is completing a supplemental EA/EIS to the 2007 FEIS/EIR. The U.S. Fish and Wildlife Service (Service) previously coordinated with the Corps on the various aspects of the Folsom JFP. This supplemental Fish and Wildlife Coordination Act (FWCA) report only addresses Phase V of the Folsom JFP, which includes site restoration measures associated with construction of the auxiliary spillway for the Folsom JFP and the creation of an oak woodland mitigation site at Rossmoor Bar.

DESCRIPTION OF ALTERNATIVES

There are two alternatives for the project: the No Action Alternative and the Proposed Action. The No Action Alternative reflects the current conditions without the project and serves as a basis of comparison for determining any potential effects.

PROJECT DESCRIPTION

The Corps and the CVFPB propose to implement design refinements to the Folsom JFP that were previously addressed in the 2007 FEIS/EIR. Phase V project activities are based on commitments made in the 2007 FEIS/EIR, the 2012 Folsom Dam Modification Project Approach Channel Supplemental Environmental Impact Statement/Environmental Impact Report (2012 SEIS/EIR), and a land use agreement the Corps has with Reclamation. These design refinements include the removal of the interior haul road and Folsom Point Bridge, the construction of a safety bench, site restoration at Dike 7, Dike 8, and MIAD disposal areas and the establishment of an oak woodland mitigation site.

Mobilization and Staging

The City of Folsom has specified haul routes for the Folsom JFP. The specified route via I-80 would exit Sierra College Boulevard south to Douglas to Auburn-Folsom Lake Crossing Road. Trucks would not be allowed to use Auburn-Folsom Road north of Douglas. The route via Highway 50 would exit on East Bidwell Street, would follow Oak Avenue to Blue Ravine Road, and would then follow East Natoma Street.

General construction access to the site would come from the southeast by way of Folsom Lake Crossing Road. A turnoff at the main project site entrance area, at the Dike 7 office complex, and/or at Dike 8, would allow connection to the internal haul road and other construction access roads. The contractor would also have the option to construct and use a second site access off Green Valley Road. The area required for access from Green Valley Road to the project site was included as part of the project in the 2012 SEIS/EIR.

The contractor would require staging areas for stockpiling of materials, a contractor's lay-down area, and an area for equipment. Staging and stockpile areas would be located at Dike 7, Dike 8, MIAD West, Folsom Overlook, Folsom Prison staging area, and along the interior haul road. The interior haul road runs between the control structure and the MIAD West disposal site.

Interior Haul Road Restoration

The goal in restoring the interior haul road is to produce a natural looking landscape without extensive import or export materials. This would be accomplished by a combination of burying the interior haul road and grading the slopes to blend into the surrounding topography. There are three different segments of the interior haul road (see Enclosure 1, Figure 1):

- Segment 1 includes the beginning of the haul road alignment near Folsom Dam Road to Dike 7;
- Segment 2 includes the section of haul road from Dike 7 to Dike 8;
- Segment 3 includes the section of haul road from Dike 8 to MIAD West.

Each segment would be treated according to those segment characteristics. Existing culverts for drainage beneath the road would be removed and/or plugged, then filled with grout. Of the 11 existing culverts, 6 would be plugged and 5 would be removed.

Existing material from the interior haul road would be redistributed to restore the site to a more natural condition. Fill materials would not be imported or exported. Typical heavy grading equipment would be used during the interior haul road removal. Construction is estimated to take 6 months. Construction details for each segment are as follows:

Segment 1: This segment of the interior haul road would be minimally cut along the waterside slope, buried, and filled up to the rear embankment to mimic a natural shoreline. Cuts would extend to the outside of the haul road by about 15 feet and 5-10 feet down the shoreline to obtain material to backfill and facilitate natural drainage to the reservoir. Material would then be placed to bury the roadway up the hillside and graded to a slope no greater than 1V:3H. About 15,000 CY of material would be cut and 41,000 CY of fill material would be placed in this segment. Fill material would be reused from on-site sources. To enhance the natural appearance, indentations and scalloping along the shoreline would be incorporated to break up the long expanses of grading. In areas with natural draws, the grading would require substantial fill to facilitate natural drainage. Exterior rock armor that was previously placed along the shoreline from earlier project phases would be removed, as needed.

Segment 2: This segment of the interior haul road would be cut and filled in a similar manner as described for Segment 1. About 26,000 CY of material would be cut and 56,000 CY of fill material would be placed. Fill material would be reused from on-site sources. The existing depressed area between the interior haul road and Dike 7 would be in-filled to allow drainage into the reservoir.

Segment 3: The section of the interior haul road in front of the Dike 8 disposal site would be minimally graded to allow for natural drainage and to create a landscape that ties into the surrounding topography. Dike 8 has been designated as a soils disposal site for Phase IV of the Folsom JFP and about 120,000 CY of soil and fill material has been placed. Some of this material may be excavated and used for topsoil. The interior haul road would be minimally cut along the waterside to a 2-5% slope that meets the corresponding elevation and the Dike 8 disposal site would be graded to match the haul road elevation.

The hillside at Folsom Point Recreational Area was cut deeply when the interior haul road was originally built and Folsom Point Bridge was installed over the interior haul road to carry traffic to the Folsom Point Recreation Area. This bridge would be removed and the area would be in-filled to resemble pre-project conditions. The fill material would come from the Dike 8 and MIAD West disposal sites. A temporary bypass road would be established to detour recreational traffic and to allow for continuous access to Folsom Point.

Folsom Point Bridge

Folsom Point Bridge would be demolished and removed from the project area while the abutments, shotcrete, and anchors beneath the bridge would be abandoned in place. The bridge removal would be scheduled to minimize impacts to the public and a temporary bypass access road to the Folsom Point Recreation Area would be provided during construction. The alignment of the temporary bypass access road would be similar to the temporary road created when the bridge was originally installed (see Enclosure 1, Figure 2). After the bridge is removed, a permanent access road to the Folsom Point Recreation Area would be created following the existing alignment and the hill cut below the bridge would be filled. Typical heaving grading equipment would be used during construction. Construction would be concurrent with the interior haul road restoration and is estimated to be completed within 6 months.

Safety Bench

A safety bench would be constructed for project access to the area and for future access for other scheduled activities. The safety bench could also provide emergency and security access to parts of the project that otherwise would not be drivable. The safety bench would be about 1 mile long and 20 feet wide. The safety bench would begin at Dike 7 and would end near the crest of the hill at the fence line near the MIAD disposal site (see Enclosure 1, Figure 2). The alignment of the safety bench would generally follow the same alignment of the interior haul road, conforming to the hillside contours to minimize elevation changes and to allow for natural drainage. Typical heavy grading equipment would be used during construction. Construction would be concurrent with the interior haul road restoration and is estimated to be completed within 6 months.

Disposal Site Restoration

The permanent stockpile at Dike 7 would be re-graded and contoured for natural drainage back to Folsom Lake and to have a more natural appearance. The existing riprap on the waterside of the Dike 7 disposal site would be removed prior to the placement of fill and fill material would be graded to allow natural drainage. Fill materials would also be placed to connect the safety bench to the interior haul road and a culvert would be installed to allow for drainage. The area at the landside toe of Dike 7 would be revegetated as described below (see Revegetation Section below). The Dike 7 disposal site restoration would not include removal of crushed rock and this area would not be revegetated.

The permanent disposal site at Dike 8 would be re-graded and contoured to allow natural drainage into Folsom Lake and to have a more natural looking appearance similar to the surrounding hillsides. Grading would have an overarching objective of minimizing or eliminating nuisance drainage that could lead to erosion, slope instability, or ponding. Revegetation of the sites would occur after grading is complete and the existing chain link fence surrounding Dike 8 would be removed upon project completion.

MIAD West is an existing disposal site and pad that was constructed as part of Phase IV. About 200,000 CY of material was placed by the previous project phases. This material would be removed from the MIAD West pad and used to bury the interior haul road sections. The remaining material at MIAD West would be graded and contoured into a more natural looking topography that blends into the surrounding area. Grading would have an overarching objective of minimizing or eliminating nuisance drainage that could lead to erosion, slope instability, or ponding.

Typical heavy grading equipment would be used during construction at each disposal site. Restoration of disposal sites would be concurrent with the interior haul road restoration and is estimated to be completed within 6 months.

Demobilization and Clean-up

Once the site restoration measures are completed, the contractor would remove all construction equipment, temporary fencing, and unused materials from the project area. All work areas would be cleaned of work-related debris and rubbish, and would be left in a neat and presentable condition. Any roadway pavement or parking area gravel damages due to construction equipment or haul trucks would be repaired to pre-project conditions.

Revegetation

The revegetation component of Phase V includes work within the Folsom JFP project area and at the Rossmoor Bar oak woodland mitigation site. Revegetation at the Folsom JFP site, which includes areas along the interior haul road, Dikes 7 and 8, and the MIAD West disposal area, entails restoring the aesthetic values similar to the surrounding habitat. The surrounding vegetation consists predominantly of grasslands with occasional oaks scattered along the slopes.

The creation of the Dike 8 disposal site required the removal of numerous trees (see Enclosure 1, Figure 3) and the Corps is proposing to compensate for this loss by creating a 14 acre oak woodland mitigation site, protected in perpetuity, as recommend in the Service's November 1, 2012, FWCA Report for the American River Watershed Investigation: Folsom Dam Modification Project, Approach Channel (Service 2012). The 14 acre mitigation site is located roughly 10 miles downstream from Folsom Dam along the American River at Rossmoor Bar. Based on planting densities used for oak woodland on other Corps projects (235 plants per acre), the 14 acre site was chosen because it can accommodate the number of seedlings required to mitigate for impacts from the creation of the Dike 8 disposal area. Work at the Rossmoor Bar mitigation site involves planting native woody plants and grasses to establish oak woodland habitat and to control invasive species. The site would be monitored for 5 years or until the oak seedlings are established and self-sustaining.

Interior Haul Road, Dikes 7 and 8, and MIAD West: Restoration activities along the interior haul road, at Dikes 7and 8, and at the MIAD West site would require planting of permanent native grass. The establishment goal for native grasses is to achieve 80% relative cover. This plant density has been determined to provide sufficient erosion control. The native grass seeds would be procured from California native seed growers and would be applied to all disturbed soil via the following methods: hydro seeding, imprinting, broadcast seeding, or drill seeding.

Soil along the interior haul road is relatively poor and may be inadequate to support grass. Prior to planting, topsoil would either be imported or the existing soil would be amended with a compost material. The compost would be placed on the surface and incorporated into the top 6 inches of soil. The ratio would be 1/3 compost to 2/3 existing soil.

Soil contouring would restore natural slope aesthetic values that previously existed at Folsom Lake. To further hide the remnants of the interior haul road, valley and blue oak acorns would be selectively placed to break up the visual sight lines of the area. The acorns would be planted at a density of 300 acorns per acre. The minimum survival goal would be set at 25 plants per acre. Individual 3 foot diameter wire deer cages would be installed to discourage browsing.

Rossmoor Bar Mitigation Site: To mitigate impacts from previous phases of the Folsom JFP, the Corps is proposing to establish 14 acres of oak woodland habitat within the American River Parkway. Acceptable land, owned by the Sacramento County Parks and Recreation Department, has been identified at Rossmoor Bar as suitable for the potential conversion to oak woodland habitat. An environmental easement has secured sufficient rights to operate and maintain the mitigation area, so after the plants have been established and turned over to the non-Federal sponsor, the mitigation site would be protected and preserved in accordance with the goals of the project.

Native woody plant species consistent with oak woodland habitat would be planted at the Rossmoor Bar site. Seedlings would be installed in a pre-dug planting pit and fertilizer of 10-20-5 controlled-release tablets and wire gopher cages would be installed below ground. An 18-inch-high browse guard would surround the plant above the ground and a water basin covered by geotextile fabric mulch would be installed. In addition to native woody plant species, permanent native grass would also be planted. The native grass seeds would be procured from California native seed growers and would be applied to all disturbed soil by hydro seeding, imprinting, broadcast seeding, or drill seeding. An 8 foot high deer fence would surround and protect the entire site.

The seedlings would be maintained until their roots have "plugged-in" sufficiently to sustain the plant for anchorage, nutrient uptake, and photosynthesis. The objective is to enable the roots to reach ground water. When their roots reach ground water, the plants would be considered "self-sufficient or established," without the need for artificial watering or maintenance activities and should eventually produce the expected top growth over a sustained period of time. The woody plants would be installed at a planting density of 235 plants for acre. The goal is to have 60% of the woody plants (141 plants per acre) to achieve self-sufficiency.

Operation and Maintenance

Maintenance of the Folsom JFP project area would pertain to the revegetated areas and would continue for 3 years after project completion. It is expected that establishing the large volume of woody plants at the Rossmoor Bar mitigation site would require an additional year of watering, therefore, maintenance at the mitigation site would continue for 4 years after installation. The Rossmoor Bar mitigation site has an existing water well that can be used to supply irrigation water.

<u>Grass Establishment</u>
Grass seeding would occur in the fall to take advantage of natural winter rains. Native grasses are naturally adapted for seasonal rains that occur in the California Central Valley, with long droughts during the summer months. During the establishment periods, the grass would be mowed and sprayed four times a year to control and minimize weed seed development. Reseeding would be required in all areas where grass does not take hold and the performance standards are not met.

<u>Woody Plant Establishment at Rossmoor Bar</u>
After the native woody plants are installed at the Rossmoor Bar site, they would be watered and weeded during the establishment period. Water and weeding would occur weekly from April

through October of each year. Any plants that die during the first 2 years of establishment would be replaced with a newly grown seedling. The species of the replacement plant would be determined based on the cause of death. During the establishment period, the irrigation lines would be checked regularly and repaired as needed.

Construction Schedule

The removal of the interior haul road and Folsom Point Bridge, and the recontouring of the Dike 7, Dike 8, and MIAD West disposal sites would be conducted over a 6 month period starting in the spring of 2016. After the project area has been graded and returned to a more natural topography, seeding would occur in the fall. The Rossmoor Bar oak woodland mitigation site fencing and irrigation lines would be installed during the summer of 2015 and the plants would be installed the fall of 2015.

BIOLOGICAL RESOURCES

Existing Conditions

Existing conditions are those conditions which exist in the project area at the time of the impact analysis.

Vegetation

Surrounding Folsom Lake and Upstream
The area surrounding Folsom Lake supports a mix of habitat types, dominated by blue oak-grey pine woodland. The lower foothill area near Folsom Dam contains large areas of oak woodland, with scattered blue and interior live oaks. Small areas of chaparral extend to the reservoir's upper edge, particularly along the south fork of the American River. Annual grassland areas are interspersed throughout the area, and human-disturbed habitats occur around recreation facilities. Relatively small areas of riparian habitats can be found along tributaries to the reservoir and within seep areas. Willow stands and individual trees have become established within some areas of the reservoir pool.

Vegetation at MIAD consists mainly of annual grasses with a small portion of oak woodland and occasional freshwater marsh wetlands at the base of MIAD along Green Valley Road. MIAD was constructed to dam water within an historic river channel, creating several perennial wetlands on the landside, in addition to a wetland preserve (Mormon Island Preserve) that is run by the California Department of Parks and Recreation. The major vegetation communities identified in this area in 2008 were cattail emergent wetland and cottonwood/willow riparian woodland.

Rossmoor Bar and Lower American River
The lower American River, although highly modified from conditions of 150 years ago, supports a diverse and highly valuable area for biological resources. The 23-mile-long reach of the American River Parkway downstream of Folsom Dam encompasses about 4,000 acres, the majority of which are in a State designated floodway and contains large areas of annual grasslands, riparian forest and scrub-shrub, oak-woodlands, bare sand and gravel, and surface waters of the river and its associated sloughs and dredge ponds (Service 2003).

The Rossmoor Bar oak woodland mitigation site is a previously disturbed fallowed farm field that supports non-native annual grasses that are growing over large areas of gravel/rock. The surrounding vegetation consists predominantly of grasslands with occasional oaks scattered along the slopes and is adjacent to an existing 57 acre oak woodland mitigation site.

Fish

Folsom Lake and Upstream

When full, Folsom Lake encompasses about 10,000 surface acres of water and 75 miles of shoreline, extending about 15 miles up the north fork and 10.5 miles up the south fork of the American River. It supports a "two stage" fishery; warm water species such as bass (largemouth, smallmouth, spotted), sunfish (redear, bluegill) and crappie (white, black) in the upper portion of the water column, and trout and landlocked salmon (kokanee and Chinook) in deeper portions of the water column. Various catfish and bullhead species can also be found near the bottom of the lake in shallower waters. Fish habitat is present within the inundation zone in the form of young willow dominated riparian habitat which grows during extended periods of drought. Both warm and cold water fisheries tend to benefit from increased peak spring water storage since it results in better cold water reserves for the salmonids and increased spawning and rearing habitat for warm water fish (Service 2001). Sport fishing is an economically important and popular recreational activity at Folsom Lake.

Sediment associated with Folsom Dam may contain mercury from historic mining operations and metals from historic activities or geology in the American River drainage (Reclamation 2006). Most of the mercury in water, soil, sediments, or plants and animals is in the form of inorganic mercury salts and organic forms of mercury (e.g., methylmercury). Mercury cycles in the environment as a result of natural and human activities and can accumulate most efficiently in the aquatic food web. Predatory species at the top of the food web generally have higher mercury concentrations. Nearly all of the mercury that accumulates in fish tissue is methylmercury (EPA 2006).

Lower American River

The lower American River supports a diverse and abundant fish community; altogether, at least 41 species of fish are known to inhabit the river (Service 1986). In recognition of its "outstanding and remarkable" fishery resources, the entire lower American River was included in the Wild and Scenic Rivers System in 1981, which provides some protection for these resources (Service 1991). Four anadromous species are important from a commercial and recreational perspective. The lower river supports a large run of fall-run Chinook salmon, a species with both commercial and recreational values. The salmon run is sustained by natural reproduction in the river, and by hatchery production at the Nimbus Salmon and Steelhead Hatchery, operated by the California Department of Fish and Wildlife (CDFW). The average annual production of fall-run Chinook salmon in the American River from 1992-2009 is 109,574 (Service 2013).

Steelhead, a popular sport fish, are largely sustained in the river by production from the Nimbus Hatchery, because summer water temperatures often exceed the tolerances of juvenile steelhead, which typically spend about 1 year in the river. The anadromous fish trap count for steelhead at the Nimbus Hatchery was 3,371 adults during the 2012/2013 season (CDFW 2015). American shad and striped bass enter the river to spawn; these two species, introduced into the Sacramento River system in the late 1800s, now support popular sport fisheries. In addition to species of economic interest, the lower American River supports many nongame species, including Sacramento pikeminnow, Sacramento sucker, tule perch, and hardhead (Service 1994).

Wildlife

Surrounding Folsom Lake and Upstream

The area surrounding Folsom Lake supports an animal community characteristic of the lower Sierra Nevada western slope. Although the range of elevation is small, habitats are diverse, in part because the reservoir extends about 20 miles into the Sierra Nevada foothills, from gentle hills near the dam to steep-walled canyons along the forks of the American River. More than 50 species of mammals live in these areas (Service 1986). Common species include mule deer, striped skunk, black-tailed jackrabbit, brush rabbit, raccoon, California ground squirrel, and a diverse assemblage of small mammals, including mice, voles, and pocket gophers. Less common mammals include river otters, mountain lions, badgers, and bobcats.

Birds typical of oak-dominated habitats include acorn woodpeckers, scrub jays, ash-throated flycatchers, and California quail. Oaks provide acorns, a nutrient-rich and important food source for mule deer, acorn woodpecker, northern flicker, Nuttall's woodpecker, white-breasted nuthatch, and scrub jay. In addition to a diverse community of small passerine birds, other birds such as woodpeckers, California quail, introduced wild turkeys, Canada geese, and various birds of prey are fairly common near the reservoir. The presence of year-round water provides habitat for many water-associated species such as wood duck, common merganser, mallard, black phoebe, greater yellowlegs, and belted kingfisher. The Mormon Island Preserve also provides a perennial wetland for many species including pond turtles.

Areas dominated by annual grassland provide foraging habitat and cover for California ground squirrel, pocket gopher, turkey vulture, coyote, western fence lizard, western rattlesnake, western kingbird, and western meadowlark. Grassland areas are important to many foraging raptors. Red-tailed hawk, golden eagle, ferruginous hawk, rough-legged hawk, American kestrel, and prairie falcon all spend time in the area for wintering and/or breeding.

Rossmoor Bar and Lower American River

The lower American River corridor provides a mosaic of riparian, riverine, grassland, and oak woodland habitat. These diverse habitats support a corresponding diversity of wildlife.

The lower American River provides feeding, resting, and/or nesting habitat for many bird species, many of which require the aquatic areas of the river and backwaters, or the riparian vegetation of the ecosystem. Riparian areas are known to support a species-rich songbird community (Gaines 1977), and the lower American River also provides habitat for many raptors, including Swainson's hawks, red-shouldered hawks, Cooper's hawks, and great-horned owls, all of which require or are closely associated with riparian vegetation. Bald eagles, which are more common around Folsom Lake, occasionally use the lower river, which provides roosting and foraging habitat. Waterfowl, particularly mallards and Canada geese, also use the area extensively.

More than 50 species of mammals have been recorded for the area (Service 1986). Common species include beaver, black-tailed jackrabbit, striped skunk, Virginia opossum, raccoon, California ground squirrel, gophers, and many small rodents and insectivores including voles, moles, shrews, deer mice, and pocket gophers. Uncommon species include mule deer, and several carnivores, such as badger, long-tailed weasel, river otter, gray fox, coyote, bobcat, and mink.

Reptile species of the lower American River include common kingsnake, Gilbert and western skinks, southern alligator lizard, western fence lizard, gopher snake, and several garter snakes. Common amphibians include Pacific treefrog, California newt, California slender salamander, western toad, and the introduced bullfrog.

Relatively little is known about invertebrates of the lower American River, but elderberry plants are fairly common in areas, and provide habitat for the endangered valley elderberry longhorn beetle.

FUTURE CONDITIONS WITHOUT THE PROJECT
(No Action Alternative)

Future without-project conditions are those conditions expected to occur over the life of the project if the project were not implemented.

Under the without-project condition, the Corps would not implement the site restoration activities at the locations impacted by the Folsom JFP or the creation of an oak woodland mitigation site at Rossmoor Bar. Consequently, the interior haul road and the disposal sites at Dike 7, Dike 8, and MIAD West would remain, leaving the area to look like an active construction site after the completion of construction. In addition, there would be a net loss of oak woodland habitat without the project since the Rossmoor Bar mitigation site would remain as a previously disturbed fallowed farm field.

Vegetation

Surrounding Folsom Lake and Upstream
Without-project conditions for the project area are not expected to change significantly from the existing conditions over the life of the project.

Rossmoor Bar and Lower American River
Without-project conditions for the Rossmoor Bar site are not expected to change significantly from the existing conditions over the life of the project; however, vegetation in and along the lower American River would continue to undergo changes typically associated with a riparian system, but constrained and limited by the adjacent levee system, upstream dams, and regulated flow releases. Regeneration of riparian species, particularly cottonwood and willows, would slowly decline, as continued lateral erosion, net downstream sediment movement, and increased amount of higher terrace areas, exposed to less frequent flooding, develop as a result of increased channel stability. These processes have resulted from the construction of Folsom Dam and channel modifications along the lower American River (Service 1991).

Sediment deposition needed for the establishment of these riparian species would continue to be limited by upstream impoundments. Forest complexes would be dominated by species adapted to relatively low water needs. Riparian species would gradually mature then die out, giving way to more drought-tolerant plant species such as ash, box elder, and valley and live oaks. Vegetation would continue to be affected by its location in a major metropolitan area. Associated impacts include vandalism, burning, and mowing for firebreaks, among the more common human disturbances. Some younger riparian vegetation that currently exists would continue to develop over time into mature riparian woodland habitat.

Fish

Folsom Lake and Upstream
Without-project conditions for the project area are not expected to change significantly from the existing condition over the life of the project.

Lower American River
Conditions for fish in the lower American River are likely to change in the future without the project. However, the way in which conditions change is difficult to predict. With continued implementation of the Anadromous Fish Restoration Program of the Central Valley Project Improvement Act (Service 1995), conditions in the lower American River are expected to improve for fishery resources.

Other variables would determine the way in which flows are managed on the lower American River; including meeting the needs of downstream water quality standards, existing and renewed water contracts, and any additional new water contract quantities.

Wildlife

Surrounding Folsom Lake and Upstream
Without-project conditions for the project area are not expected to change significantly from the existing condition over the life of the project.

Rossmoor Bar and Lower American River
The types of wildlife species found within the Rossmoor Bar site are not expected to change significantly from the existing condition over the life of the project; however, wildlife along the lower American River would likely change somewhat under without-project conditions, due primarily to the changes in vegetation described above and overall habitat abundance and diversity. Species which would decrease in number are those that prefer tree species such as cottonwood and willow for perching, foraging, and/or nesting (Service 1991a), as these plant species would likely decrease over time. Such wildlife species include birds such as woodpeckers, flickers, wrens, and raptors, and other avian species that use these riparian areas to meet their life requirements. Alternatively, species that prefer more arid habitat, such as oak woodland, would increase over time.

FUTURE CONDITIONS WITH THE PROJECT

Future with-project conditions are those conditions expected to occur over the life of the project if the project were implemented.

Construction Impacts

Vegetation

Surrounding Folsom Lake and Upstream
Two cover-types: annual grassland and "other" would be directly impacted by the restoration activities associated with Phase V of the Folsom JFP.

Construction impacts include a re-grading, burying, re-contouring, and re-seeding the project area to tie into the surrounding topography. Impacts to annual grassland would be minimized by seeding all impacted areas with native grasses as soon as construction activities are complete in that specific area. In addition, the impacts to other disturbed lands can be minimized by replanting with native annual grasses, when possible.

Rossmoor Bar and Lower American River
The vegetation at the Rossmoor Bar site would change from a previously disturbed fallow field with non-native annual grassland to an oak woodland mitigation site. This site would tie into the existing 57 acre oak woodland mitigation site west of the project area and the scattered oak grassland surrounding the project area.

<u>Fish</u>

Lower American River
No change in fish species numbers or species composition in the lower American River is anticipated to occur from construction of the project. However, the lower American River has been designated as impaired under the Clean Water Act, section 303(d) for methylmercury and Lake Natoma has health advisories for mercury in fish. Efforts should be made to minimize suspension of sediments, if any, during project construction.

<u>Wildlife</u>

Surrounding Folsom Lake and Upstream
No change in wildlife species numbers or composition surrounding Folsom Lake or upstream is anticipated to occur from construction of the project; however, the number and composition of wildlife species within the Phase V project area is expected to change. The project area would be restored to grassland habitat with scattered oaks from a highly disturbed, active construction site that has little to no habitat value to wildlife species. After completion of the project, the project area would tie into the surrounding grassland and oak woodland habitat, allowing wildlife species that are currently found surrounding Folsom Lake or upstream to disperse into the project area. This would result in an increase in the number and composition of wildlife species then what is currently present in the project area.

Rossmoor Bar and Lower American River
No change in wildlife species numbers or composition is expected to occur along the lower American River as a result of construction of the project, but the numbers and composition of species at the Rossmoor Bar site is expected to change due to the change in habitat type from annual grassland to oak woodland.

<u>Endangered Species</u>
Based on an Information, Planning, and Conservation System (IPaC) (Service 2015) query for the project area, there are several listed species which could occur within or near the project area. The species under the jurisdiction of the Service which may be affected by the project includes the valley elderberry longhorn beetle. The other species (anadromous fish) are under the jurisdiction of National Marine Fisheries Service (NOAA Fisheries). The complete list is included in Enclosure 2, as well as a summary of Federal agencies responsibilities under the Endangered Species Act of 1973, as amended.

At the proposed construction site, elderberry survey counts were conducted most recently on February 27, 2015. Nine of the elderberry shrubs were found within the pocket area of Dike 7, one elderberry shrub was found at the Dike 7 disposal area, and one shrub was found within the Dike 8 disposal area. The Corps has completed consultation with the Service on the project effects to these shrubs, which are the sole host plant for the federally-listed as threatened valley elderberry longhorn beetle, and the Service concurred that the project would directly impact the species and/or its habitat, but would not jeopardize the continued existence of the species (see Enclosure 3).

DISCUSSION

Service Mitigation Policy

The recommendations provided herein for the protection of fish and wildlife resources are in accordance with the Service's Mitigation Policy as published in the Federal Register (46:15; January 23, 1981).

The Mitigation Policy provides Service personnel with guidance in making recommendations to protect or conserve fish and wildlife resources. The policy helps ensure consistent and effective Service recommendations, while allowing agencies and developers to anticipate Service recommendations and plan early for mitigation needs. The intent of the policy is to ensure protection and conservation of the most important and valuable fish and wildlife resources, while allowing reasonable and balanced use of the Nation's natural resources.

Under the Mitigation Policy, resources are assigned to one of four distinct Resource Categories, each having a mitigation planning goal which is consistent with the fish and wildlife values involved. The Resource Categories cover a range of habitat values from those considered to be unique and irreplaceable to those believed to be much more common and of relatively lesser value to fish and wildlife. However, the Mitigation Policy does not apply to threatened and endangered species, Service recommendations for completed Federal projects or projects permitted or licensed prior to enactment of Service authorities, or Service recommendations related to the enhancement of fish and wildlife resources.

In applying the Mitigation Policy during an impact assessment, the Service first identifies each specific habitat or cover-type that may be impacted by the project. Evaluation species[1] which utilize each habitat or cover-type are then selected for Resource Category analysis. Selection of evaluation species can be based on several criteria, as follows: (1) species known to be sensitive to specific land- and water-use actions; (2) species that play a key role in nutrient cycling or energy flow; (3) species that utilize a common environmental resource; or (4) species that are associated with Important Resource Problems, such as anadromous fish and migratory birds, as designated by the Director or Regional Directors of the Fish and Wildlife Service. Based on the relative importance of each specific habitat to its selected evaluation species, and the habitat's relative abundance, the appropriate Resource Category and associated mitigation planning goal are determined.

Mitigation planning goals range from "no loss of existing habitat value" (i.e., Resource Category 1) to "minimize loss of habitat value" (i.e., Resource Category 4). The planning goal of Resource Category 2 is "no net loss of in-kind habitat value." To achieve this goal, any unavoidable losses would need to be replaced in-kind. "In-kind replacement" means providing or managing substitute

1 Note: Evaluation species used for Resource Category determinations may or may not be the same evaluation species used in a HEP application, if one is conducted.

resources to replace the habitat value of the resources lost, where such substitute resources are physically and biologically the same or closely approximate those lost. The planning goal of Resource Category 3 is "no net loss of habitat while minimizing loss of in-kind value." To achieve this goal any unavoidable losses will be replaced in-kind or if it is not desirable or possible out-of-kind mitigation would be allowed. The planning goal of Resource Category 4 is "minimize loss of habitat value." To achieve this goal the Service will recommend ways to rectify, reduce, or minimize loss of habitat value.

In addition to mitigation planning goals based on habitat values, Region 8 of the Service, which includes California, has a mitigation planning goal of no net loss of acreage and value for wetland habitat. This goal is applied in all impact analyses.

In recommending mitigation for adverse impacts to fish and wildlife habitat, the Service uses the same sequential mitigation steps recommended in the Council on Environmental Quality's regulations. These mitigation steps (in order of preference) are: avoidance, minimization, rectifying, reducing or eliminating impacts over time, and compensation.

Three fish and/or wildlife habitats were identified in the project area which had potential for impacts from the project: annual grasslands, oak/grey pine woodland, and "other". The resource categories, evaluation species, and mitigation planning goal for the habitats impacted by the project are summarized in Table 1.

Annual Grassland

Annual grasslands differ from woodland by lacking dominant tree cover and it appears that much of the treeless grassland found at both project locations is a result of tree loss due to human activities. Perennial grass species once dominated native grasslands, but introduced annual species have largely displaced native perennial and annual grasses. Typical annual grass species are foxtail, brome, wild oats, and Italian ryegrass; native perennial grasses include needlegrasses, California onion grass, and fescue. Grassland areas provide habitat for granivorous birds such as the western meadowlark, California quail, sparrows, and finches, and for small mammals such as voles and pocket gophers. These areas provide important foraging habitat for breeding raptors, including red-tailed hawks, American kestrels, and great horned owls. It also provides habitat for wintering raptors. Lastly, waterfowl, notably Canada geese, graze or green vegetation in the grasslands adjacent to Folsom Lake and the American River.

The evaluation species selected for the annual grassland cover-type are the raptor guild and passerine ground-foraging birds. The raptor guild was chosen because as a predator, raptors play a key role in the community ecology at both project areas. Both evaluation species were selected because of the Service's responsibility for their protection and management under the Migratory Bird Treaty Act, and their overall high non-consumptive value to humans (e.g., birdwatching). While the values of this habitat vary according with season and grazing intensity, much of the grassland habitat at the project areas provide medium to high value foraging habitat for diverse assemblages of birds of prey and ground-foraging passerine birds. Furthermore, the value of these habitats is often enhanced by their continuity with other adjacent habitats, such as wooded areas, cliffs, and ponds which provide nest and shelter sites. Grassland habitats within the project areas are relatively abundant. Therefore, the Service designates the annual grassland cover-type at each project area as Resource Category 3. Our associated mitigation planning goal for these areas is "no net loss of habitat value while minimizing loss of in-kind habitat value."

Oak/grey pine woodland

Oak/grey pine woodland is usually dominated by a blue oak overstory, with grey pines interspersed at low density among the oaks. Other trees associated with this habitat type are California buckeye, which occurs as scattered individuals or small clumps, and interior live oak. On more mesic sites, such as north-facing slopes along the South Fork near Salmon Falls, live oaks and California black oaks replace blue oaks as the dominant oak. Understory shrubs such as manzanita, toyon, and shrubby oaks are often present, though typically at low densities, relative to tree cover.

Oak woodland occurs widely surrounding both project areas, particularly along the lower American River, and at lower foothill elevations, near Folsom Dam. Typical oak woodland is characterized by a fairly open canopy layer with 20-70% cover of blue and live oaks, and a grassy ground cover. A woody understory may be present, but is typically sparse where present.

The canopy of blue oaks is typically 30 to 50 feet tall, and varies from about 30-80% canopy closure (Barbour 1988), with open areas containing shrubs and grasses. The understory is primarily annual grasses and forbs. Most existing stands of this type are in mature stages, with oaks to heights of up to 50 feet. Mature grey pines typically rise above the oaks, to heights of up to 75 to 100 feet. The long-term survival of this habitat type has been an issue of concern, because oak regeneration has been minimal for over 100 years (Holland 1976). Many factors have been implicated as causes for low recruitment of oaks, including browsing of seedlings, consumption of acorn crops by livestock and native wildlife, changes in fire dynamics, and possibly climatic changes and competition with introduced annual grasses (Barbour 1988; Verner 1988). Blue oak woodland provides high-quality wildlife habitat for a rich assemblage of species. In the western Sierra Nevada, 29 species of amphibians and reptiles, 79 species of birds, and 22 species of mammals find mature stages of this habitat suitable or optimum for breeding, where other, special habitat requirements are met (Verner and Boss 1980).

Non-native annual grasses form an understory in most of both project areas, and the transition from woodland to savanna is not clearly demarcated, but rather part of a continuum from closed canopy woodland to open, treeless grasslands. As a result, habitat types can grade imperceptibly from one to another. Where trees are absent, the habitat is designated as annual grassland. Because scattered oaks provide food, cover, and nesting habitat unavailable in grasslands, we treated oak savanna as a component of oak woodland.

The evaluation species selected for the oak/grey pine woodland are acorn woodpecker, turkey, and breeding birds. Acorn woodpeckers utilize oak woodlands for nearly all their life requisites; 50-60 percent of the acorn woodpecker's annual diet consists of acorns. Acorn woodpeckers can also represent impacts to other canopy-dwelling species. Turkeys forage and breed in oak woodlands and are abundant at both project areas. Mule deer also heavily depend on acorns as a dietary item in the fall and spring; the abundance of acorns and other browse influence the seasonal pattern of habitat use by deer. These latter species represent species which utilize the ground component of the habitat and both have important consumptive and non-consumptive human uses (i.e., hunting and bird watching). Based on the high value of oak woodlands to the evaluation species, and their declining abundance, the Service has determined oak/grey pine woodlands which would be affected by the project should be placed in Resource Category 2, with an associated mitigation planning goal of "no net loss of in-kind habitat value."

Other

No evaluation species were identified for the "other" cover-type. The "other" cover-type encompasses those areas which do not fall within the typical cover-types, and includes areas that are currently or previously disturbed such as gravel and paved roads, parking areas, buildings, bare ground, riprap, etc. Generally these cover-types would not provide any significant habitat value for wildlife species. Therefore, the Service designates the "other" cover-type in the project area as Resource Category 4. Our associated mitigation planning goal for these areas is "minimize loss of habitat value."

Table 1. Resource categories, evaluation species, and mitigation planning goal for the habitats possibly impacted by the proposed Phase V activities of the Folsom JFP, Sacramento County, California.

COVER-TYPE	EVALUATION SPECIES	RESOURCE CATEGORY	MITIGATION GOAL
Annual Grassland	Raptor guild, ground foraging birds	3	No net loss of habitat value while minimizing loss of in-kind habitat value.
Oak/Grey Pine Woodland	Acorn woodpecker, turkey, Mule deer	2	No net loss of in-kind habitat value or acreage.
Other	None	4	Minimize loss of habitat value

Based on our review of the proposed project, most of the impacts would be temporary losses of habitat value for species utilizing annual grasslands during the earth moving activities associated with restoring the Folsom JFP site. Wildlife species utilizing this area are already highly disturbed due to the previous actions from the construction of the Folsom JFP. Wildlife species utilizing these areas would continue to be displaced and there would be a continuing temporary loss of habitat values during restoration activities.

The Rossmoor Bar site is a disturbed, non-native annual grassland area with relatively low value for wildlife. Creation of oak woodland habitat at the site would provide higher values for wildlife species and would support greater species diversity. Development of the site would also complement the adjacent 57 acre oak woodland mitigation site and would provide greater connectivity between wildlife habitat features in the area.

Project construction would take place at Folsom Lake and at Rossmoor Bar, which is near, but not immediately adjacent to the American River. There are no planned impacts to Folsom Lake or to the American River, and therefore no planned impacts to fish species, due to construction.

RECOMMENDATIONS

The Service recommends:

1. Avoid impacts to native trees and shrubs. Any native trees or shrubs removed with a diameter at breast height of 2 inches or greater should be replaced on-site, in-kind with container plantings so that the combined diameter of the container plantings is equal to the

combined diameter of the trees removed. These replacement plantings should be monitored for at least 5 years or until they are determined to be established and self-sustaining. The planting site(s) should be protected in perpetuity.

2. Avoid future impacts to the site by ensuring any fill material is free of contaminants.

3. Avoid impacts to migratory birds nesting in trees along the access route and adjacent to the proposed bank protection site by conducting pre-construction surveys for active nests along the proposed haul road, staging area, platform, and construction site. This would especially apply if construction begins in the spring or early summer of 2016. Work activity around active nests should be avoided until the young have fledged. The following protocol from the CDFW for Swainson's hawk would suffice for the pre-construction survey for raptors.

   A focused survey for Swainson's hawk nests will be conducted by a qualified biologist during the nesting season (February 1 to August 31) to identify active nests within 0.25 mile of the project area. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 mile of the project area, no construction will occur during the active nesting season of February 1 to August 31, or until the young have fledged (as determined by a qualified biologist), unless otherwise negotiated with the California Department of Fish and Wildlife. If work is begun and completed between September 1 and February 28, a survey is not required.

4. Minimize the impact of removal and trimming of all trees and shrubs by having these activities supervised and/or completed by a certified arborist.

5. Contact the NOAA Fisheries for possible effects of the project on federally-listed species under their jurisdiction.

6. Contact the CDFW regarding possible effects of the project on State listed species.

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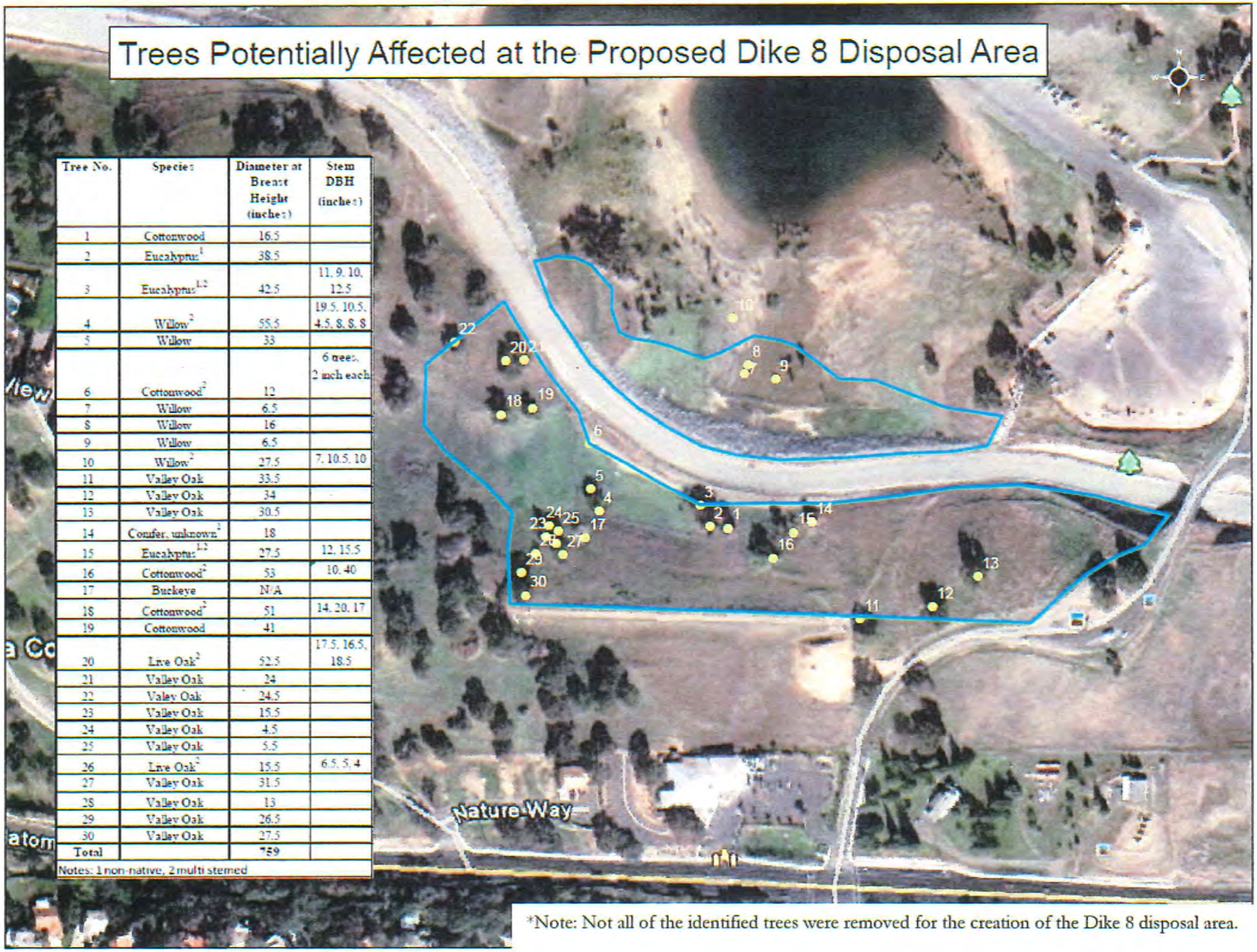
ENCLOSURE 1

FIGURES 1-3
(Figures provided by the Corps)

Figure 3. Potential trees removed due to the creation of the Dike 8 disposal area*



Tree No.	Species	Diameter at Breast Height (inches)	Stem DBH (inches)
1	Cottonwood	16.5	
2	Eucalyptus[1]	38.5	
3	Eucalyptus[1,2]	42.5	11, 9, 10, 12.5
4	Willow[2]	55.5	19.5, 10.5, 4.5, 8, 8, 8
5	Willow	33	
6	Cottonwood[2]	12	6 trees, 2 inch each
7	Willow	6.5	
8	Willow	16	
9	Willow	6.5	
10	Willow[2]	27.5	7, 10.5, 10
11	Valley Oak	33.5	
12	Valley Oak	34	
13	Valley Oak	30.5	
14	Conifer, unknown[1]	18	
15	Eucalyptus[1,2]	27.5	12, 15.5
16	Cottonwood[2]	53	10, 40
17	Buckeye	N/A	
18	Cottonwood[2]	51	14, 20, 17
19	Cottonwood	41	
20	Live Oak[2]	52.5	17.5, 16.5, 18.5
21	Valley Oak	24	
22	Valey Oak	24.5	
23	Valley Oak	15.5	
24	Valley Oak	4.5	
25	Valley Oak	5.5	
26	Live Oak[2]	15.5	6.5, 5, 4
27	Valley Oak	31.5	
28	Valley Oak	13	
29	Valley Oak	26.5	
30	Valley Oak	27.5	
Total		759	

Notes: 1 non-native, 2 multi stemed

*Note: Not all of the identified trees were removed for the creation of the Dike 8 disposal area.

Figure 1. Folsom JFP Phase V project features

Figure 2. Folsom JFP Phase V temporary bypass road and safety bench alignment

ENCLOSURE 2

FEDERAL ENDANGERED AND THREATENED SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
PHONE: (916)414-6600 FAX: (916)414-6713

Consultation Code: 08ESMF00-2015-SLI-0365

April 21, 2015

Event Code: 08ESMF00-2015-E-01766

Project Name: Folsom JFP Phase V

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead. Please visit our office's website (http://www.fws.gov/sacramento) to view a map of office jurisdictions.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO

El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO

San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO

Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)
Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
	Shasta Trinity National Forest		

Tehama	except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO
***Office Leads:**			
AFWO=Arcata Fish and Wildlife Office			
BDFWO=Bay Delta Fish and Wildlife Office			
KFWO=Klamath Falls Fish and Wildlife Office			
RFWO=Reno Fish and Wildlife Office			
YFWO=Yreka Fish and Wildlife Office			

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Folsom JFP Phase V

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

Non-participating U.S. Fish and Wildlife Service office(s):

The following office(s) have jurisdictions that overlap your project area, but do not provide automatically generated Species list documents. Please contact them directly to request a Species list document. Do this by visiting their website, if it is provided below. If a website is not provided, contact the office(s) by mail or phone.

San Francisco Bay-Delta Fish and Wildlife
650 CAPITOL MALL
SUITE 8-300
SACRAMENTO, CA 95814
(916) 930-5603

Consultation Code: 08ESMF00-2015-SLI-0365
Event Code: 08ESMF00-2015-E-01766

Project Type: Land - Restoration / Enhancement

Project Name: Folsom JFP Phase V
Project Description: Site restoration for previous phases of the Folsom JFP and for oak mitigation plantings at Rossmoor Bar

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Counties: Sacramento, CA

United States Department of Interior
Fish and Wildlife Service

Project name: Folsom JFP Phase V

Endangered Species Act Species List

There are a total of 25 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
California Tiger Salamander *(Ambystoma californiense)* Population: U.S.A. (CA - Sonoma County)	Endangered	Final designated	
California red-legged frog *(Rana draytonii)* Population: Entire	Threatened	Final designated	
Birds			
western snowy plover *(Charadrius nivosus ssp. nivosus)* Population: Pacific coastal pop.	Threatened	Final designated	
Yellow-Billed Cuckoo *(Coccyzus americanus)* Population: Western U.S. DPS	Threatened	Proposed	
Crustaceans			
Conservancy fairy shrimp *(Branchinecta conservatio)* Population: Entire	Endangered	Final designated	
Vernal Pool fairy shrimp	Threatened	Final designated	

(Branchinecta lynchi) Population: Entire			
Vernal Pool tadpole shrimp *(Lepidurus packardi)* Population: Entire	Endangered	Final designated	
Fishes			
Delta smelt *(Hypomesus transpacificus)* Population: Entire	Threatened	Final designated	
steelhead *(Oncorhynchus (=salmo) mykiss)* Population: Northern California DPS	Threatened	Final designated	
Flowering Plants			
El Dorado bedstraw *(Galium californicum ssp. sierrae)*	Endangered		
Fleshy owl's-clover *(Castilleja campestris ssp. succulenta)*	Threatened	Final designated	
Ione buckwheat *(Eriogonum apricum)*	Endangered		
Ione manzanita *(Arctostaphylos myrtifolia)*	Threatened		
Large-Flowered fiddleneck *(Amsinckia grandiflora)*	Endangered	Final designated	
Layne's butterweed *(Senecio layneae)*	Threatened		
Palmate-Bracted bird's beak *(Cordylanthus palmatus)*	Endangered		
Pine Hill ceanothus *(Ceanothus roderickii)*	Endangered		

Pine Hill flannelbush *(Fremontodendron californicum ssp. decumbens)*	Endangered		
Sacramento Orcutt grass *(Orcuttia viscida)*	Endangered	Final designated	
Slender Orcutt grass *(Orcuttia tenuis)*	Threatened	Final designated	
Stebbins' morning-glory *(Calystegia stebbinsii)*	Endangered		
Insects			
Valley Elderberry Longhorn beetle *(Desmocerus californicus dimorphus)* Population: Entire	Threatened	Final designated	
Mammals			
Riparian Brush rabbit *(Sylvilagus bachmani riparius)* Population: (CA)	Endangered		
Reptiles			
Alameda whipsnake *(Masticophis lateralis euryxanthus)* Population: Entire	Threatened	Final designated	
Giant Garter snake *(Thamnophis gigas)* Population: Entire	Threatened		

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Crustaceans	**Critical Habitat Type**
Vernal Pool fairy shrimp *(Branchinecta lynchi)* Population: Entire	Final designated
Vernal Pool tadpole shrimp *(Lepidurus packardi)* Population: Entire	Final designated
Flowering Plants	
Fleshy owl's-clover *(Castilleja campestris ssp. succulenta)*	Final designated
Sacramento Orcutt grass *(Orcuttia viscida)*	Final designated
Slender Orcutt grass *(Orcuttia tenuis)*	Final designated
Insects	
Valley Elderberry Longhorn beetle *(Desmocerus californicus dimorphus)* Population: Entire	Final designated

APPENDIX G

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION
FOLSOM DAM SAFETY AND FLOOD DAMAGE REDUCTION
PHASE V SITE RESTORATION AND RELATED MITIGATION ACTIVITIES

SACRAMENTO COUNTY, CALIFORNIA

Appendix G
Clean Water Act Section 404(b)(1) Evaluation

This document constitutes the Statement of Findings, and review and compliance determination according to the Section 404(b)(1) guidelines for the proposed work (preferred alternative) described in the Draft 2015 SEA/EIR issued by the Sacramento District. This analysis has been prepared in accordance with 40 CFR Part 230- Section 404(b)(1) guidelines and USACE Planning Guidance Notebook, ER 1105-2-100.

I. PROJECT DESCRIPTION

a. Proposed Project

The Folsom Joint Federal Project (Folsom JFP) project is a cooperative effort by the U.S. Bureau of Reclamation (Reclamation), the U.S. Army Corps of Engineers (Corps) and the Corps' non-federal sponsors. The proposed project would include restoration activities within an area referred to as the Haul Road Restoration Area or HRRA (see Figures 2 and 3 in Section 10). This element of the overall project would impact to jurisdictional Waters of the United States (WOUS). These impacts would consist of rip-rap removal and a lesser amount of soil excavation below the ordinary high water (OHW) elevation of Folsom Lake, which is 466 feet NAVD 88.

Two potential design options are presently being considered for the HRRA. These options are referred to as the "440 Option" or "440 Design Option", and the "460 Option" or "460 Design Option". The northern HRRA boundary is situated on the northern side of the existing internal haul road. The 440 Option would take the proposed grading and rip-rap removal activities in the HRRA down to as low as elevation 440 feet NAVD88 along portions of the northern HRRA boundary, hence the name for this design option. Unlike the 440 Option, the 460 Option would typically only take the proposed grading and rip-rap removal activities down as low as elevation 460 feet NAVD88 along portions of the northern HRRA boundary; hence the name for this design option. The exact elevation marking the limits of the northern HRRA boundary would vary based on the grading plans and would be lower than elevation 460 feet in some locations. In general, however, the lowest elevation along the HRRA's north boundary using the 460 Option would be approximately elevation 460 feet.

It is probable that the ultimate northern HRRA boundary would fall somewhere in between the two extremes represented by the 440 Option and the 460 Option, as discussed in Section 2.3.1. This boundary would be closer to that represented by the 440 Option if Folsom Lake's water level is very low when HRRA construction activities are initiated. If the lake's water level is relatively high at the start of construction, the boundary would be closer to that represented by the 460 Option.

Three options as to the disposal of the rip-rap removed from the HRRA are being considered. One option is that a state or other non-federal agency would pick up the removed rip-rap and transport it off-site to a non-federal project site. This option would not result in direct impacts to jurisdictional WOUS at the JFP site. Another option is disposing the rip-rap in the MIAD East disposal site, and this option would also not result in direct impacts to WOUS. Under the third option, the rip-rap would be disposed in the Overlook In-Lake Disposal (OILD) site depicted in Figure 3. Disposal of rip-rap in the OILD site would impact jurisdictional WOUS since this area is within the jurisdictional boundaries of Folsom Lake.

The proposed project would also include site restoration activities within other portions of the Folsom JFP (the Dike 7 Office Complex Parking Area and the Prison Staging Area), construction of guardrails along a portion of Folsom Lake Crossing, and the establishment of an oak woodland mitigation site referred to as the Rossmoor 14-acre mitigation site. These other sites are previously disturbed uplands and there are no jurisdictional WOUS within or immediately adjacent to these sites. Since project activities proposed at these other sites would not directly impact WOUS, they are not addressed in this document. Instead, this document focuses strictly on proposed activities within the HRRA and potential activities within the OILD site.

b. Location

The project area is located in the city of Folsom near Folsom Dam, approximately 20 miles northeast of Sacramento. Folsom Dam and Reservoir (e.g. Folsom Lake) are located downstream from the confluence of the north and south forks of the American River, and extend into Sacramento, Placer and El Dorado counties. The proposed HRRA is situated within the "project area" identified in Figure 1 below, which also shows the location of the proposed Rossmoor 14-Acre mitigation site (Rossmoor Bar mitigation site) mentioned above.

The jurisdictional WOUS that would be impacted during construction activities within the HRRA using the 440 Option are shown in Figure 2 below. The jurisdictional WOUS that would be impacted by HRRA construction activities under the 460 Option are also depicted in Figure 2 below. The jurisdictional WOUS that would be impacted if rip-rap removed from the HRRA is disposed at the OILD site are contained within the overall boundary of the OILD site shown in Figure 3 below.

c. Purpose and need

A major flood in 1986 severely strained Sacramento area flood protection systems including Folsom Dam. Hollowing that flood, work was conducted to determine means to increase the levels of downstream flood protection and insure dam safety. The current spillway and outlets at the Folsom facility do not have sufficient discharge capacity for managing the predicted probable maximum flood (PMF) and lesser flood event inflows above a 100-year event (an event that has a 1% chance of occurring in any given year). Structural modifications associated with the Folsom JFP are proposed to address increasing discharge capability and/or increasing storage during extreme flood events above the 200-year event level.

An auxiliary spillway adjacent to Folsom Dam was selected in 2007 as the plan to safely pass part or the entire PMF event. The auxiliary spillway consists of a 1,000 foot long approach channel into Folsom reservoir, a grated control structure including six submerged retainer gates, a 3,000 foot long spillway chute, and a stilling basin. Construction of the auxiliary spillway began in 2008.

Phase V of the project addresses final site studies and necessary remedial actions, facility testing, site demobilization and restoration, oak woodland mitigation, and minor construction of necessary improvements not included in earlier phases and project transfer. The majority of the actions proposed as part of JFP Phase V would be provided to comply with commitments made in the 2007 FEIS/EIR, the 2012 Supplemental Folsom Dam Modification Project, Approach Channel SEIS/EIR, and the Land Use Agreement between USACE and the Bureau of Reclamation.

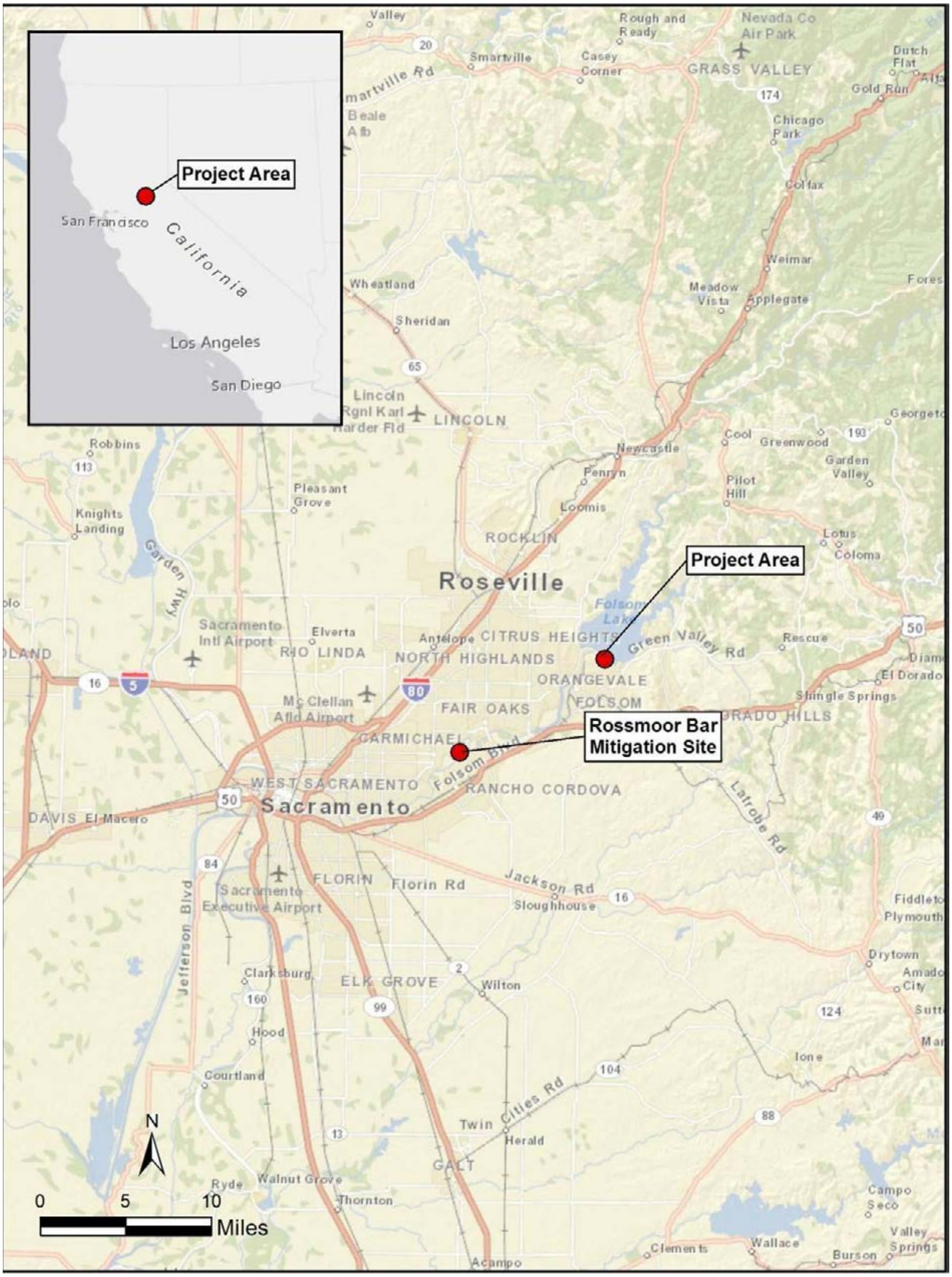


Figure 1. Project location map.

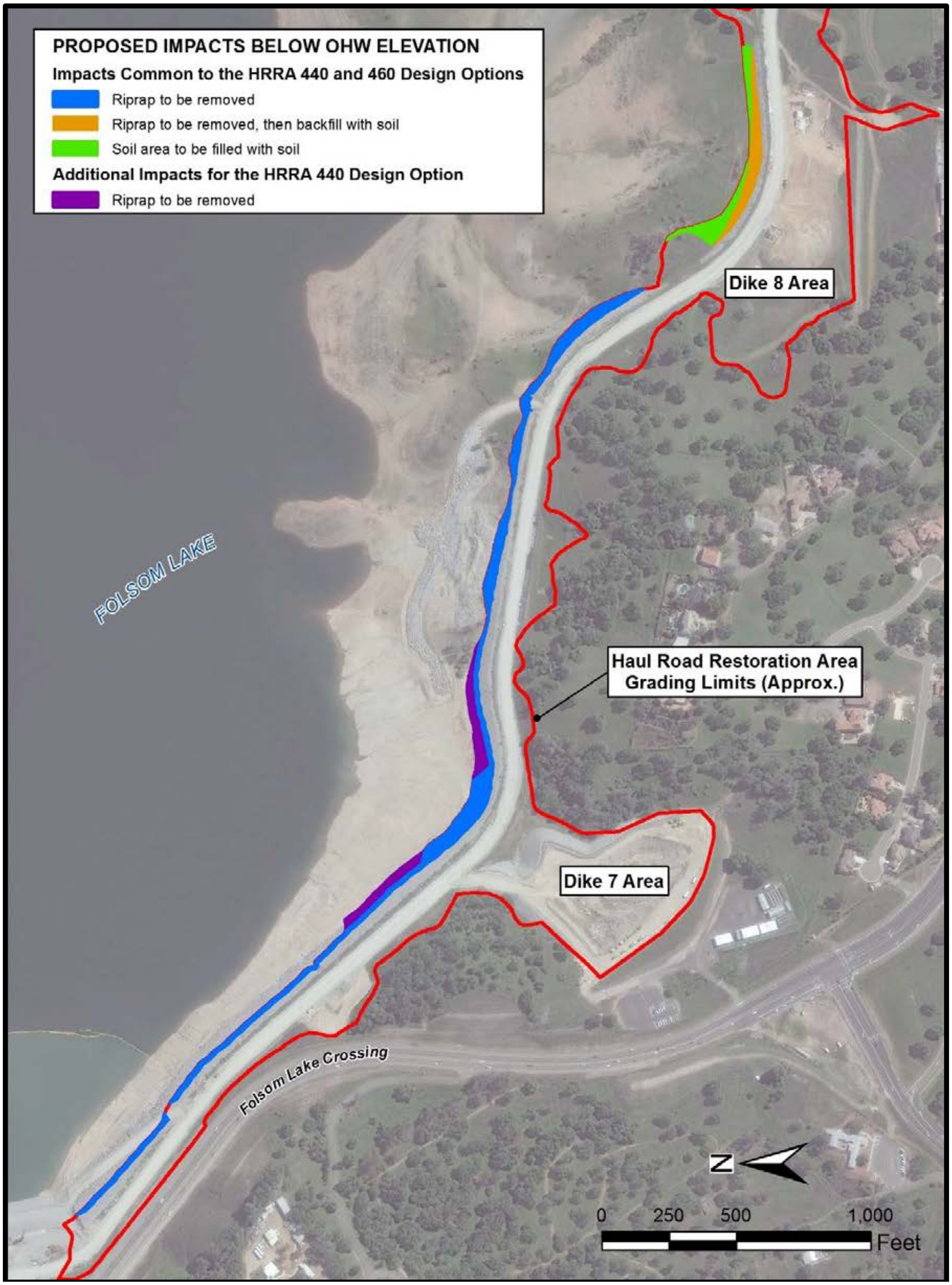


Figure 2. Proposed impacts to Waters of the United States during restoration of the HRRA based on both the HRRA 440 Design Option and the HRRA 460 Design Option (areas below the ordinary high water (OHW) elevation of Folsom Lake within the Haul Road Restoration Area).

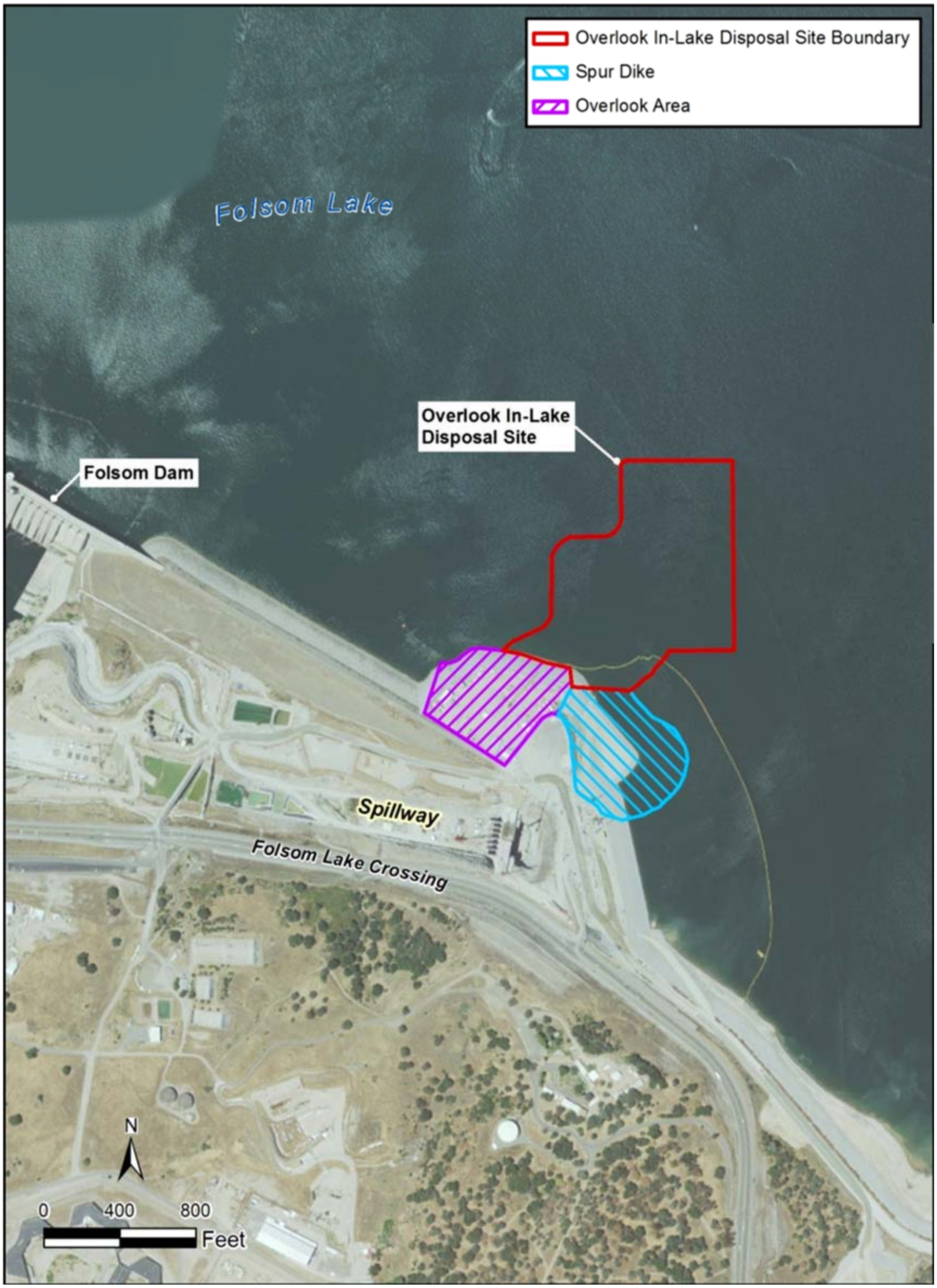


Figure 3. Overlook In-Lake Disposal (OILD) Site; location of potential Phase V impacts to Waters of the United States (e.g. Folsom Lake) that would result from disposal of rip-rap removed from the HRRA.

Additionally, in early 2013, a Water Quality Certification was put in place from the 1st of May, 2013 through the 31st of October, 2018 for the duration of the Folsom Dam Modification Project. Even though the certification did not specifically cover the Phase V activities, there are significant overlaps between the Phase IV and Phase V impacts below the ordinary high water elevation of the Lake. Mitigation measures have been implemented under this Water Quality Certification to cover the affected areas of Folsom Lake in this 5-year time span. Total area covered by the Water Quality Certification (WQC) for Phase IV also covers most of the area under Phase V. It is noted, however, that the Corps will obtain a new Section 401WQC from the Central Valley Regional Water Quality Control Board (CVRWQCB) for the proposed Phase V activities.

d. Authority

The Folsom Dam Modifications Project was authorized by Section 101(a)(6) of the WRDA 1999 (1111 Stat. 274). Further authorization and guidance for the collaboration between the Corps and the USBR under the Folsom JFP was provided by the Energy and Water Development and Appropriations Act of 2006 (119 Stat. 2259). Specifically, Section 128 of the 2006 Act authorizes the Secretary of the Army and the Secretary of the Interior to collaborate on developing alternatives to provide flood damage reduction improvements and dam safety measures at Folsom Dam, including an auxiliary spillway. Formal authorization for the Folsom JFP was included in Section 3029(b) of WRDA 2007, authorizing the Corps and Reclamation to construct the auxiliary spillway generally in accordance with Corps' Post Authorization Change Report, American River Watershed Project (Folsom Dam Modifications and Folsom Dam Raise) (Corps 2007). The relevant text of these public laws is included in Section 1.2 of the Draft SEA/EIR.

e. Alternatives [40 CFR 230.10]:

Alternative 1 – No Action

Under the No Action alternative, the Corps and the CVFPB would not implement the site restoration measures proposed in this SEA/EIR and would not meet the obligations of the 2007 EIS/EIR, 2012 SEIS/EIR, and the LUA. The interior haul road, stockpile, and disposal areas would remain in place. These features would continue to visually contrast with the surrounding landscape. The existing security fencing along the interior haul road would remain in place which prevents the public from accessing the site. Reclamation would likely need to maintain the interior haul road, stockpile and disposal areas to prevent erosion or complete the restoration work.

Alternative 2 – Site Restoration Measures (Preferred Action)

The 2007 EIS/EIR included a restoration commitment that called for ensuring "…that sites used for borrow development, staging, and construction activities will be re-contoured…to pre-construction conditions, or to contours which do not pose a safety hazard" (Reclamation, 2007). The activities proposed within the HRRA are intended to satisfy this commitment to the degree practicable. The main goals of restoration activities in the HRRA include:

- Restore a more natural looking topography (landscape) that generally mimics the appearance of adjacent natural areas and is similar to pre-project conditions, without the need for significant importing or exporting of materials (e.g. achieve a balanced cut and fill project).
- Perform restoration grading and contouring such that the majority of the restored area drains back to Lake Folsom following natural drainage paths that were present prior to project construction.
- Perform restoration grading and contouring in a manner that minimizes or eliminates nuisance drainage that could lead to erosion, slope instability, or ponding.
- Perform restoration grading and contouring such that the finished grades help ensure stable, safe slopes.
- Minimize long-term maintenance required by Reclamation staff and prevent erosion or adverse site stormwater runoff using permanent revegetation methods that establish native vegetation in the restoration area.

Figures 2 and 3 in Section 10 depicts the approximate boundaries of the proposed HRRA, which are labeled as the "haul road restoration area grading limits". Figure 2 shows the HRRA boundaries using the 440 Option and the overall HRRA would encompass roughly 58.0 acres using this design option. Figure 3 shows the HRRA boundaries using the 460 Option and the overall HRRA would encompass roughly 57.4 acres using this design option.

Earlier phases of the Folsom JFP included the construction of a haul road from the primary auxiliary spillway excavation, located just west of the HRRA, to the Mormon Island Auxiliary Dam (MIAD), located just east of the HRRA. During haul road construction, cuts were excavated through several hillsides along the lake, including a hill that carried a public road (Folsom Point Road) to the Folsom Point Recreation Area. Material from the cuts was used in haul road construction fills in addition to material from the Auxiliary Spillway Channel excavation. The boundaries of the HRRA contain approximately 7,200 linear feet (1.36 miles) of the existing haul road, which is also referred to as the interior haul road or upper haul road. The existing haul road tends to be approximately 60 feet wide, not including the road's side slopes, but this width varies depending on the location.

Dike 7. The area south of the existing haul road and labeled as "Dike 7 Area" in Figures 2 and 3 (see Section 10) was originally an arm of Folsom Lake but was converted (filled) to a relatively flat area in earlier phases of the Folsom JFP. The flat area has slopes armored with rip-rap that extend to the neighboring hillsides. This area has been used as a permanent storage site for material excavated from previous project phases. Approximately 160,000 cubic yards of processed rock and material have been placed in the Dike 7 stockpile area thus far. The southern boundary of the Dike 7 stockpile area runs along Dike 7, which is a saddle dike built long ago as part of the Folsom Dam system.

Dike 8. The area south of the existing haul road and labeled as "Dike 8 Area" in Figures 2 and 3 (see Section 10) was also originally an arm of Folsom Lake. Roughly 8 acres within this area was converted (filled) to a relatively flat area in earlier phases of the Folsom JFP. This area has been used as disposal site for materials excavated during earlier phases the project. Approximately 160,000 cubic yards (cy) of material has been placed in the Dike 7 disposal area thus far, with this fill extending to the crest of Dike 8. The far southern boundary of the Dike 8 area runs along Dike 8, which is also a saddle dike.

MIAD West. The area south of the existing haul road and labeled as "MIAD West Area" in Figures 2 and 3, Section 10, encompasses an approximately 8-acre site known as the Mormon Island Auxiliary Dam (MIAD) West Staging Area. This area has served as both a temporary and permanent disposal location for waste rock and soil generated during Phases I through III of the JFP. An extensive staging yard was also constructed here as part of Phase IV of the JFP. Over 200,000 cy of material is present in the constructed staging area. A steel maintenance building and other temporary features have also been erected within the staging area.

The proposed topographic restoration of the HRRA would largely be accomplished by re-distributing the existing native ground materials ("soil") located within the HRRA through excavation, filling, and grading. This process would not require importing new fill or exporting excavated soil. Newly contoured slopes would not be steeper than 3H:1V (e.g. a slope that has at least a 3-foot horizontal (H) distance per each foot of vertical (V) elevation change). Restored areas would be re-contoured in a manner to mimic natural slope appearance and to restore natural hillside slopes where practicable to pre-project conditions. There would be some exceptions to this general approach that are discussed in subsequent sections. It is also emphasized that restoring topography in the HRRA to be exactly the same as the topography that was present prior to JFP construction activities is not practicable. However, it is the intent of the design philosophy that the restored area should not appear "engineered" but instead would be re-contoured such that the finished topography conforms to adjacent natural topography and generally mimics the natural topography present prior to JFP alterations in the HRRA.

The project construction (restoration) work would be performed using typical heavy construction equipment such as tractors, motor graders, hydraulic excavators, scrapers, backhoes, bulldozers, rippers, track and wheel loaders, haulers, hydraulic shovels, dump trucks, water trucks, and similar equipment. The restoration construction work would effectively eliminate (remove) that segment of the existing haul road located within the boundaries of the HRRA and the Dike 7 stockpile area, the Dike 8 disposal area, and the MIAD West staging area would be decommissioned. One or more of the latter three areas would be used for temporary stockpiling and staging purposes during the activities necessary to complete earthwork and related construction work during the process of topographic restoration. However, these uses would be discontinued following completion of the project.

During the construction of the existing internal haul road, a layer of rip-rap armor was placed extensively along the north side (lake side) of the road. The rip-rap consists of solid rock boulders up to 3 feet in diameter and the rip-rap layer along the haul road is up to 6 to 10 feet thick (deep). The Dike 7 stockpile area has existing rip-rap boulders (armoring) along much of its eastern, western, and northern sides. The MIAD West staging area also has a limited quantity of existing rip-rap boulders present along a construction access roadway in the southeast portion of the staging area. It is estimated that the total quantity of rip-rap currently present within the HRRA ranges from approximately 100,000 cy to 220,000 cy.

Some of the rip-rap within the HRRA may be removed by the JFP Phase IV construction contractor prior to beginning the JFP Phase V (subject) project. If this is done, it is likely the rip-rap would be moved to the existing approach channel for use at this location. A limited quantity of rip-rap would be retained at the Dike 7 area as part of the Phase V project. This would be used to construct a drainage feature under the proposed O&M Bench. However, the vast majority of the existing rip-rap situated within the HRRA would be removed from the HRRA as part of the Phase V restoration work. The fate of this rip-rap following removal is still being determined, but would involve one or more of three options: (1) Off-site transport to a different project; (2) Disposal in the MIAD East Area; (3) Disposal in the Overlook In-Lake Disposal Site. The following subsections describe each of these three options.

Option 1: Off-site Transport of Rip-Rap

Under this option, the rip-rap removed from the HRRA would be collected by another agency, such as DWR or SAFCA, and transported to an off-site location for use in another project. The specific non-federal project and its location have not yet been determined. The rip-rap located within the boundaries of the HRRA would first be removed (excavated) by the JFP Phase V construction contractor and likely temporarily stockpiled in the Dike 7 area and possibly the Dike 8 area and/or the MIAD East Area. The non-federal agency would then collect all the rip-rap and transport it to the selected off-site project location. The non-federal agency would be responsible for preparing a separate California Environmental Quality Act (CEQA) environmental document to address the collection, transport, and use of the rip-rap that would be removed from the subject project.

Option 2: Disposal of Rip-Rap in the MIAD East Area

Under this option, the JFP Phase V construction contractor would permanently dispose of the rip-rap within the MIAD East Area. Figure 7, in Section 10, illustrates the overall boundary of the MIAD East Area along with the approximate limits of the potential area within the overall boundary where the rip-rap would be disposed. The overall boundary would encompass approximately 31.4 acres, while the disposal area boundary within this area would encompass approximately 22.9 acres

The 2012 SEIS/EIR identified the “MIAD disposal area” as one of several proposed disposal sites that would be used to receive disposal material (excavated materials) associated with construction of the JFP approach channel project. The boundaries of the MIAD disposal area encompassed approximately 67.7 acres as evaluated in the 2012 SEIS/EIR, and contained all of the MIAD East Area and all of the MIAD West Area discussed herein plus additional lands contiguous to these latter two areas.

The MIAD East Area has thus far not been used as a JFP disposal site. Instead, this area and lands immediately east of this area have been used by Reclamation to obtain materials used in the overlay phase of Reclamation’s Mormon Island Auxiliary Dam Modification project. Materials (soil, rock, decomposed granite, etc.) have been excavated and processed in these areas by Reclamation’s contractor. The cited project has now been completed and the topography in disturbed areas has reportedly been restored to mimic pre-construction topography to the extent practicable. These areas will ultimately be revegetated by Reclamation’s contractor using native plant species selected based on existing vegetation in the project area and consultation with

USFWS (Reclamation, 2010). The specifics of Reclamation's revegetation plans for the MIAD East Area are not known at this time.

It is possible that up to 300,000 cy of material excavated during construction of the JFP Phase IV project (approach channel project) may still need to be disposed of within the MIAD East Area. The Phase IV material would be placed within the MIAD East disposal area as a layer having relatively uniform thickness. Using this approach, the topography of the disposal area would mimic the topography restored by Reclamation to the extent practicable following completion of Phase IV material placement.

Rip-rap removed from the HRRA would be placed within the disposal area of MIAD East after completion of the Phase IV material disposal activities in this same area. As mentioned, this could involve as much as 100,000 cy of rip-rap. The rip-rap would be removed using equipment such as excavators and bulldozers, placed in dump trucks, then hauled to the MIAD East disposal area. It is likely that the rip-rap would be placed (disposed of) in the northern portion of the disposal area near the existing haul road; however, the final placement location has not yet been determined. The maximum area occupied by the disposed rip-rap would range from approximately 6.5 to almost 8 acres, based on a rip-rap pile height ranging from 8 to 10 feet above the soil surface. The top of the completed rip-rap disposal pile would be relatively level, although it would follow the topography of the underlying soil, and edges of this pile would have approximately 1H:2V side slopes.

It is possible that a state or federal agency might eventually remove some or all of the rip-rap disposed of in the MIAD East Area under this option. Under this scenario, the agency's contractor would remove the rip-rap and transport it off-site for use in another project. Should this occur, the agency performing the removal and transport would be responsible for preparing a separate NEPA/CEQA environmental document to address the collection, transport, and use of the rip-rap removed from the MIAD East Area.

Option 3: Disposal of Rip-Rap in the Overlook In-Lake Disposal Site

Under this option, the JFP Phase V construction contractor would permanently dispose of the rip-rap within the Overlook In-Lake Disposal Site (OILD site). Figure 3 illustrates the current boundary of the OILD site, which is located in Folsom Lake near the spur dike and overlook area. The OILD site encompasses approximately 21.2 acres.

The 2012 SEIS/EIR evaluated two sites within Lake Folsom that would be used for the permanent disposal of materials associated with construction of the approach channel project (JFP Phase IV); the "in-lake disposal area (site 1)", situated immediately north of the Dike 7 area, and; the OILD site, referred to in the 2012 SEIS/EIR as the "overlook expansion in-lake disposal area (site 2)". The OILD site was to cover approximately 16.6 acres and would receive dredged and excavated materials generated during the JFP Phase IV project, such as sediments and decomposed granitic materials but excluding materials such as vegetation debris and asphalt.

Unusually low lake water levels occurring in 2013 and 2014 exposed lakebed areas that had not been previously surveyed for cultural resources. New cultural surveys of the exposed lake bed identified two cultural sites within the original boundaries of the OILD site. To protect the cultural sites, the boundaries of the OILD site were shifted eastward. The configuration of these boundaries was also adjusted to encompass a total of approximately 21.2 acres. This acreage expansion of roughly 4.6 acres allowed the projected depth (thickness) of disposal material to be reduced. The maximum amount of material to be deposited within the OILD site did not change with the boundary adjustments, remaining at 720,000 cy.

Dredged and excavated materials generated by JFP Phase IV are presently being disposed of within the OILD site. It is estimated that up to 620,000 cy of material may be placed in the OILD site by the Phase IV construction activities. Upon completion of these disposal activities, the disposal mound(s) would have a maximum crest (top) elevation of 400 feet NAVD88 whereas the existing lake bottom elevations within the OILD site range from approximately 310 feet (north end of site) to 400 feet (south end of site) NAVD88. The disposal mound (pile) would have a relatively level top surface of varying width, with side slopes varying from 3H:1V to 4H:1V.

If rip-rap from the HRRA is disposed in the OILD site, it would first be removed from the HRRA using land-based bulldozers and excavators. If lake levels are sufficiently low, the rip-rap would be loaded in dump trucks and transported directly to the OILD site, gaining access to the crest of the Phase IV disposal mound within the OILD by traveling through the existing overlook area that borders the OILD. The rip-rap would then be dumped along the edges of the crest of the disposal mound and finally pushed into place down the face of the mound's side slopes. If the lake level prohibits this approach (e.g. work "in the dry"), the rip-rap would be loaded in dump trucks then transported to a floating barge. To accept the rip-rap, the barge would be stationed either at the transload facility (discussed in the 2012 SEIS/EIR) or at the end of an existing ramp that extends from the internal haul road to the lake. A crane on the barge would be used to off-load the rip-rap at the OILD site, depositing the rip-rap along the disposal mound's side slopes. Regardless of the disposal method employed, the rip-rap would be placed along the side slopes of the Phase IV disposal mound. It is anticipated that the final thickness of this additional layer of boulders added to the side slopes could be up to 35 feet.

Following the removal of the haul road rip-rap in the HRRA, some areas previously occupied by this armoring would be excavated (cut into) as part of the grading efforts to restore the natural look of the lake shore and to facilitate drainage back to the lake. To avoid large planar surfaces that do not appear natural, some of the re-graded slopes immediately adjacent to the lake would incorporate "scalloped" slopes. After removing the haul road rip-rap in certain areas, the underlying ground material may simply be lightly graded to achieve a relatively smooth surface.

The Dike 7 stockpile area has existing rip-rap boulders (armoring) along much of its eastern, western, and northern sides. Some of this rip-rap would also be excavated by the project construction contractor and subsequently removed from the project site by a DWR contractor, as described previously when discussing the haul road rip-rap removal. The remainder of the rip-rap would be excavated by the project construction contractor and used to build a portion of the proposed O&M Bench, as discussed in elsewhere in this section.

Restoration grading in the Dike 7 area would not include the removal of fill back to the pre-construction grade (the original lake bed). Reclamation requested the area be minimally graded to give it a natural appearance and to make surface runoff drain back to the lake. Reclamation also asked that an approximately 150 feet wide corridor along the northern toe of Dike 7 (basically the southern boundary of the HRRA by Dike 7) be left open with a gradual slope so that Reclamation can use this corridor for future dike maintenance work. Restoration grading in the Dike 7 area would include placing some fill along, the east, west, and north sides of the Dike 7 stockpile area to achieve the desired drainage and to support the proposed O & M Bench discussed below. Some of this fill and grading would extend slightly into adjacent areas not previously disturbed during the construction of the stockpile area.

The Dike 8 disposal site within the Dike 8 area would be subject to minimal grading during the restoration process. Generally, this would involve smoothing (grading) the area with to a minimum 2 percent slope to allow surface water runoff to drain toward the lake. As with Dike 7, Reclamation has asked that an approximately 150 feet wide corridor be provided along the north side of Dike 8 be left open with a gradual slope to allow Reclamation to use this corridor for future dike maintenance work if necessary. The southwest corner of the Dike 8 disposal site was previously filled in a manner that created a berm that could impound storm water draining from the site. The restoration grading would eliminate any ponding potential by extending fill material up the adjacent hillside and by creating a slight “valley” pathway within the Dike 8 area to direct surface runoff back toward the lake.

Unlike the majority of the HRRA, the MIAD West staging site and natural areas immediately adjacent to the east and west of the site drain toward the south/southeast rather than toward Folsom Lake. Prior to beginning restoration grading at this site, any remaining structures and materials would be removed. Next, any material needed to help provide fill in other portions of the HRRA would be excavated. Following this, the site would be graded and contoured to a natural looking hill similar to nearby hillsides. The finished grades would be such that stormwater runoff from the MIAD West Area would flow toward the southeast into an existing natural “draw” (slight valley) along the east side of the site that carries flows offsite to the south.

O & M Bench. In addition to the activities described above, proposed work in the HRRA would include construction of what is referred to as the “Operations and Maintenance Bench” or the “O&M Bench”. The primary purposes of this proposed permanent corridor/access feature are:

- To provide a permanent access route for Reclamation staff/vehicles/equipment and emergency personnel.
- To allow vehicular and personnel access to the HRRA following completion of the subject project construction activities for purposes of short-term and long-term maintenance.
- To help ensure the stability of certain slopes primarily adjacent to the south side of the O&M Bench.

The O&M Bench would be similar to the existing haul road but much narrower. It would have a crest width of 20 feet and variable earthen side slopes no steeper than 3H:1V. The bench would be built using existing native ground materials (soil), with the upper 18 to 36 inches of the bench compacted. The top of the bench may include a layer of gravel. The O&M Bench would be constructed in conjunction with the topographic grading and contouring work performed throughout the overall HRRA, and thus would blend into the restored topography as much as practicable.

Figures 2 and 3 (see Section 10) illustrates the proposed alignment of the O&M Bench. It would begin within the Dike & Area and continue eastward to the east boundary of the HRRA which stops at an existing fence along the east boundary of the MIAD West Area. The eastern end of the bench would align with an existing off-site recreational trail that goes to the top of MIAD. Overall, the O&M Bench would be approximately 6,000 feet long (1.14 miles) and the bench's top (bench crest; bench corridor) would occupy roughly 2.8 acres. The route of the bench would somewhat follow the existing haul road, but due to topography and drainage objectives, the bench would conform to restored hillside contours as much as possible in an effort to minimize elevation changes, meander around in-filled low areas, and to help stabilize relatively steep slopes near portions the bench. The bench's proposed alignment also would provide a buffer distance of at least 150 feet between the bench and a few heritage oaks that would remain following project construction.

Prior phases of the JFP included the installation of drainage culverts to help appropriately route stormwater runoff, particularly from the south side of the existing haul road to the north side of this road. There are 11 such culverts present within the HRRA as shown in Figures 2 and 3 of Section 10. Of these existing culverts, 6 would be abandoned in place and 5 would be removed during HRRA construction activities. Those culverts abandoned in place would remain below ground following completion of the re-grading and contouring (topographic restoration). They would be grouted solid and, where necessary, ends would be cut back and hidden from the ground surface for safety purposes and to reduce visual impacts.

Near the northeast corner of the Dike 7 Area, the proposed O&M Bench would cross an existing ravine that drains northward toward Lake Folsom, with flows passing under the existing haul road via one of the existing culverts mentioned above. Since the crest of the bench where it crosses this ravine must be at an elevation that is the same as the bench crest elevation on either side of the ravine, the O&M Bench would block drainage within the ravine. To avoid this situation, a layer of rip-rap with geotextile filter fabric would be installed at the base of the O&M Bench where it crosses the ravine. This would allow stormwater runoff flowing northward down the ravine to basically pass through the O&M bench. The proposed topography restored north of the bench would be such that stormwater flowing through the rip-rap base of the O&M Bench would naturally drain into the lake.

The primary, permanent access road to the Folsom Point boat launch and to the Folsom Point Recreation Area (the Folsom Point day-use area) is Folsom Point Road, as indicated in Figures 2 and 3 (see Section 10). The existing haul road was designed such that vehicles travelling on Folsom Point Road could pass over the haul road. This was achieved by cutting into the hillside near the future haul road/Folsom Point Road intersection thereby lowering the elevation of the haul road, and installing a pre-manufactured temporary bridge along Folsom Point Road over the haul road. As part of the proposed topographic restoration activities within the HRRA, the temporary bridge (Folsom Point Bridge) would be removed, a paved roadway segment would be built in the former bridge location, and a temporary bypass road would be built to maintain public access to Folsom Point during the construction process. The temporary bypass road would be removed after Folsom Point Road has been fully restored.

Following the completion of the major proposed construction activities within the HRRA (e.g.

re-grading and contouring, O&M Bench construction, construction and removal of the temporary bypass road, removal of the temporary bridge, and construction of replacement Folsom Point Road segment), a mixture of native grass and forb seeds would be planted throughout the HRRA except for where pavement is to remain in order to establish a permanent vegetative groundcover. In addition to the planting of native grasses and forbs, oak acorns would be planted in portions of the HRRA to help break up the visual sight lines and mimic nearby undisturbed habitats to a limited degree.

Construction Best Management Practices (BMPs). Prior to initiating project construction activities, the construction contractor would be required to:

- Obtain a National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (DWQ Order No. 2009-009-DWQ; NPDES No. CAS000002), otherwise known as a Construction General Permit (CGP), from CVRWQCB prior to initiating construction activities.
- Develop and implement a site-specific Storm Water Pollution Prevention Plan (SWPPP). Among other things, the SWPPP would identify measures necessary to mitigate potential construction-related water quality concerns, erosion and sediment control measures, control of non-stormwater discharges, hazardous spill prevention and response measures, BMP inspections, monitoring, and maintenance.
- Develop and implement a Spill Prevention, Containment, and Cleanup Plan (SPCC) that would address practices to prevent, minimize, and/or clean up potential spills during project construction.

Some of the proposed rip-rap removal, soil excavation, and grading activities adjacent to Folsom Lake would occur below the ordinary high water (OHW) elevation of the lake. Because of this, USACE would obtain a Clean Water Act (CWA) Section 401 Water Quality Certification (401 WQC) from the CVRWQCB prior to initiating project construction activities. If the optional rip-rap disposal method involving disposal in the OILD site is used, this activity would also be covered in the 401 WQC. The construction contractor would be required to comply with the applicable technical certification conditions set forth in this permit.

Impacts to water quality would be minimized during construction through adherence to the SWPPP, the CGP, and the 401 WQC, including any surface water sampling and monitoring requirements. Measures to minimize soil or sediment from migrating into Waters of the United States (WOUS) would include the installation and maintenance of erosion control devices such as silt fencing, straw wattles, and, if necessary, floating turbidity curtains (silt curtains). Such measures may also include the establishment of temporary water detention basins situated landward of the lake. Construction work necessary to remove the rip-rap, excavate soil, and conduct grading in areas below the lake's OHW elevation would be timed to coincide with low lake water levels when possible to minimize water quality impacts. Although the establishment of grasses and similar vegetation on disturbed soils is typically considered a construction BMP, the permanent revegetation of most areas within the HRRA would be an integral component of site restoration.

Construction equipment and vehicles would be properly maintained and inspected to help prevent spills or leaks of liquids, including petroleum products. On-site fueling of the equipment and vehicles would only occur in designated staging areas with appropriate spill controls. Any hazardous materials and wastes would be appropriately managed to prevent spills or similar discharges. The construction contractor would be required to comply with measures called for in the SWPPP and the SPCC to help avoid and minimize non-stormwater discharges and hazardous spills.

HRRA Project Schedule. It is anticipated that the HRRA restoration activities discussed above would begin in the spring of 2016 and would end in the fall of 2017. One of the first construction priorities would be to complete construction of the temporary bypass road to Folsom Point so that public access to the Folsom Point boat launch and the Folsom Point recreation area (day use area) would not be interrupted by other project construction activities, particularly the removal of the temporary bridge and re-establishment of that portion of Folsom Point Road impacted by the bridge's removal. It is noted that the temporary bypass road would not be removed until bridge removal and construction of the paved roadway segment that will take its place have been completed.

Current projections are that the construction work necessary to complete topographic restoration (excavation, filling, grading, contouring, bypass road construction and removal, etc.) would take approximately 7 to 8 months. The initial planting of the grass/forb seed mixture and the oak acorns would likely occur in the fall of 2016, following completion of this construction.

Additional project activities that would be occurring during Phase V and not impacting WOUS include:

Dike 7 Office Complex Parking Area. The northern portion of this project area is what is referred to as the "Dike 7 Office Complex Parking Area". Removal of this area would be put in place, followed by restoration and planting of native grasses, forbs, and oak acorns. This would not directly impact WOUS due to its location in immediately surrounding and previously disturbed uplands.

Prison Staging Area. Removal of buildings and gravel parking/storage areas would be implemented in this area, coupled with limited re-grading and planting of native grasses and forbs in the areas that are not currently paved. This would not affect WOUS due to its location in a previously disturbed upland area.

Guardrail Installation. Approximately 5,300 linear feet of new guardrail along the north side of Folsom Lake Road would be constructed. This would start at the beginning of the eastern end of the bridge over the American River and continue eastward. This would not directly impact WOUS as the affected area is previously disturbed upland.

Rossmoor 14-Acre Mitigation Site. To compensate for tree impacts addressed in the 2012 Supplemental EIS/EIR, mitigation activities would be implemented to establish an oak woodland. A 14-acre mitigation site referred to as the "Rossmoor Bar 14-Acre Mitigation Site", located near Rancho Cordova along the east side of the American River, would provide habitat for the planting of various native trees, shrubs, grasses, and forbs. Activities at this mitigation site would not directly impact WOUS as the site and immediately adjacent areas are located in upland habitats.

f. General Description of Dredged or Fill Material

The following sections are only evaluating project actions that would directly impact WOUS. These actions include: construction activities necessary to complete restoration of the HRRA, and; disposal of rip-rap removed from the HRRA into the OILD site, but only if this option for rip-rap disposal is employed. It is emphasized that if either of the two other options for rip-rap disposal are used, there would be no additional direct impacts to WOUS besides those generated through construction of the HRRA.

(1) General Characteristics of Material

Material to be excavated (dredged) includes rock rip-rap and soils placed within the HRRA during prior phases of the Folsom JFP, as discussed in the Alternative 2 project description above. If the excavated rip-rap is disposed in the OILD site, the "fill" material added to this site would simply be rock rip-rap. Material to be placed as fill within certain WOUS located within the HRRA boundary would consist of native soil and decomposed granite acquired from upland portions of the HRRA.

(2) Quantity of Material

Under the HRRA 440 Design Option, a total of approximately 120,000 to 220,000 cy of rip-rap would need to be removed from the HRRA to accomplish restoration goals. Of this total, a maximum of approximately 52,600 cy would be removed (excavated) within the jurisdictional boundaries of Folsom Lake. Restoration grading within the HRRA would also involve the deposition of approximately 7,300 cy of soil within the jurisdictional boundaries of the lake. Table 1 below provides data for the proposed impacts to WOUS based on the HRRA 440 Design Option.

Under the HRRA 460 Design Option, a total of approximately 100,000 to 200,000 cy of rip-rap would need to be removed from the HRRA to accomplish restoration goals. Of this total, a maximum of approximately 39,800 cy would be removed (excavated) within the jurisdictional boundaries of Folsom Lake. Restoration grading within the HRRA would also involve the deposition of approximately 7,900 cy of soil within the jurisdictional boundaries of the lake. Table 2 below provides data for the proposed impacts to WOUS based on the HRRA 460 Design Option.

Table 1. HRRA construction impacts to jurisdictional Waters of the United States, based on the HRRA 440 Design Option.

Project Component	Impact Type	Impact Area (acres)	Excavation Quantity (cubic yards)	Fill Quantity (cubic yards)
Rip-Rap Removal	Temporary	2.7	43,500	0
Rip-Rap Removal, Followed by Backfill	Temporary	0.5	9,100	4,900
Soil Area Filled	Temporary	0.4	0	2,400
Soil Area Filled	Permanent	0.1	0	600
Total Temporary Impacts		**3.6**	**52,600**	**7,300**
Total Permanent Impacts		**0.1**	**0**	**600**
Grand Total – All Impacts		**3.7**	**52,600**	**7,900**

Note: All values indicated are approximate. The quantities indicated represent the maximum anticipated. Actual quantities would likely be less than those listed.

Table 2. HRRA construction impacts to jurisdictional Waters of the United States, based on the HRRA 460 Design Option.

Project Component	Impact Type	Impact Area (acres)	Excavation Quantity (cubic yards)	Fill Quantity (cubic yards)
Rip-Rap Removal	Temporary	1.9	30,700	0
Rip-Rap Removal, Followed by Backfill	Temporary	0.5	9,100	4,900
Soil Area Filled	Temporary	0.4	0	2,400
Soil Area Filled	Permanent	0.1	0	600
Total Temporary Impacts		**2.8**	**39,800**	**7,300**
Total Permanent Impacts		**0.1**	**0**	**600**
Grand Total – All Impacts		**2.9**	**39,800**	**7,900**

Note: All values indicated are approximate. The quantities indicated represent the maximum anticipated. Actual quantities would likely be less than those listed.

The 2012 SEIS/EIR established the OILD site as a disposal area for some of the materials excavated and dredged as part of JFP Phase IV. Impacts to WOUS resulting from this use were evaluated in this document.

Table 3 below provides data for impacts to jurisdictional WOUS that would occur if the OILD site is used as the disposal site for rip-rap removed from the HRRA as part of the JFP Phase V restoration activities. This table also includes data for estimated impacts within the OILD site that would result from completion of Phase IV disposal activities. One should note that the impact acreages listed for Phase IV and Phase V actions are highly speculative. The impact footprint of the Phase IV disposal mound will be a function of the total quantity disposed and the mound's construction configuration (determined by the construction contractor) within the overall OILD site boundary. The rip-rap from Phase V would be placed along the side slopes of the Phase IV disposal mound; thus, the total acres occupied by this rip-rap will be dependent on the configuration of the Phase IV disposal mound. The important consideration is the overall impact footprint occupied by Phase IV and Phase V disposal activities combined would affect no more than 21.2 acres, e.g. the overall size of the OILD site.

Table 3. OILD Site impacts to jurisdictional Waters of the United States

Project Component	Impact Type	Impact Area (acres)	Quantity Disposed (cubic yards)
Disposal of Material from Phase IV within OILD Site	Temporary	18.3	620,000
Disposal of Rip-Rap from Phase V HRRA within OILD Site	Temporary	2.9	100,000
Totals		**21.2**	**720,000**

Notes:
(1) The impact area acreages indicated for the material generated by Phase IV and for rip-rap from Phase V are speculative. These acreages cannot be accurately estimated until the total volume of the Phase IV material to be placed in the OILD site is known and the configuration of the Phase IV disposal mound(s) is determined.
(2) The total impact area for the OILD site represents the maximum that may be directly affected by disposal activities. The actual impact area will likely be less.
(3) All quantity values indicated are approximate. These quantities represent the maximum anticipated. Actual quantities will likely be less than those listed.

Under the No Action alternative, there would be no material excavated from or placed into WOUS. It is noted, however, that the materials dredged and excavated as part of the JFP Phase IV activities would still be disposed in the OILD site as indicated in Table 3, since the Phase IV work is ongoing and not dependent upon actions proposed as part of the Phase V project.

(3) Source of Material

The source of material for the HRRA includes existing rip-rap and soil in the immediate area. Excavated soils would be redistributed within the upland portions of the HRRA, therefore, no fill would be imported. If the OILD site is used to dispose of rip-rap removed from the HRRA, all the rip-rap involved would necessarily come from the HRRA.

The No Action alternative would not require a new source of material.

g. Description of the Proposed Discharge Site

(1) Location

The boundaries of the HRRA contain approximately 7,200 linear feet (1.36 miles) of the existing haul road, which is also referred to as the interior haul road or upper haul road. The location of the WOUS excavation and fill sites would be all along the north side of the haul road. Figure 2 illustrates where direct WOUS impacts would occur as part of the restoration activities within the HRRA based on both the 440 Option and the 460 Option.

If rip-rap is disposed at the OILD site, it would be placed within the boundaries of this site, which are shown in Figure 3.

(2) Size

Under the 440 Option (see Figure 2), there would be two separate areas of rip-rap removed from within the jurisdictional boundary of Folsom Lake (e.g. from below the lake's OHW line). These areas would encompass a total of approximately 2.7 acres and would be located west of the Dike 8 area. Under the 460 Option (see Figure 2), there would be three separate areas of rip-rap removed in this same region rather than two. These areas would encompass a total of approximately 1.9 acres. After the rip-rap is removed, the affected areas would be graded to establish relatively smooth surfaces that would blend with the re-graded topography created landward of these areas as part of the HRRA construction work. This grading would result in some incidental fallback of soil (fill) into the excavated jurisdictional WOUS, as would the initial excavation process. Such "fill" would be minor as regards both the extent and quantity of fallback material, and thus is considered a *de minimis* impact.

For both the 440 Option and the 460 Option, there would be one WOUS area where the existing stone rip-rap would first be removed and then the same area would be backfilled using soil obtained from the Dike 8 area. This area is located immediately north of the Dike 8 area. Under both design options, the limits of the affected area would be identical and would contain approximately 0.5 acre.

Immediately north of the rip-rap removal/backfill area described above, the existing surface is comprised of soil rather than rip-rap. Under both the 440 Option and the 460 Option, 0.5 acre of jurisdictional WOUS would be directly impacted via placement of fill during HRRA construction.

Should rip-rap removed from the HRRA be disposed at the OILD site, it is not possible to accurately estimate the area the rip-rap would occupy within this site which is completely located within WOUS (e.g. Folsom Lake). The final footprint of the Phase IV disposal mound(s) at the OILD site are not known since disposal activities are ongoing. The rip-rap from the HRRA would be placed on the side slopes of the Phase IV disposal mound(s); thus, the area occupied by the Phase V rip-rap will be dependent on the final configuration of the Phase IV disposal. Regardless, the size of the WOUS area impacted by disposal of Phase IV materials and Phase V rip-rap combined would not exceed approximately 21.2 acres (the overall size of the OILD site).

The No Action alternative would not cause any changes to the HRRA. However under this alternative, the OILD site would still be impacted by the ongoing Phase IV disposal activities.

(3) Type of Site

The HRRA excavation and filling activities would be occurring on the lake bed and a reservoir shoreline fluctuation zone along the north side of the HRRA. Disposal of previously existing soils where the immediate excavation of rip-rap is occurring would be located in existing upland areas of the HRRA, above Folsom Lake's OHW elevation. The OILD site is located within the open water of Folsom Lake.

(4) Type of Habitat

The WOUS areas that would be impacted by HRRA excavation activities are all located within the shoreline water fluctuation zone of Folsom Lake. These lacustrine habitats were heavily disturbed in the initial phase of the JFP during construction of the internal haul road and are largely devoid of vegetation. The areas that would be affected do provide some foraging habitat for various waterfowl and shorebirds, and habitat for fish when the areas are inundated. One should note that the majority of the affected areas would still provide fish and wildlife habitat following the proposed impacts since these areas would still be situated within the shoreline water fluctuation zone of the lake.

The WOUS areas that would be impacted by disposal of rip-rap in the OILD site are presently open water lacustrine habitat within Folsom Lake. Some of the OILD site is not inundated when the lake water level is low, whereas portions remain inundated under most low water conditions. The OILD site provides habitat for fish and other aquatic organisms. This site is presently undergoing disturbance since it is being used as a disposal site for materials excavated and dredged during the Phase IV construction process. Following any disposal of Phase V rip-rap, the affected areas would still provide habitat for fish and other aquatic organisms since these areas would still remain within the open water area of the lake.

(5) Timing and Duration of Discharge

Excavation and other earthwork activities within the HRRA would begin in the spring of 2016 and would end in the fall of 2017. Any rip-rap disposal at the OILD site would occur during this same period.

h. Description of Disposal Method

Rip-rap removed from WOUS and rip-rap removed from upland areas would be disposed using one or more of the three options previously described. Following removal of soil and rip-rap from the affected WOUS areas, some grading in these areas would be required to establish relatively smooth slopes. This grading, combined with the initial soil and rip-rap excavation process, would generate some minor incidental fall back of soil within the WOUS impact areas; however, this fall back (or "fill") would be insubstantial and is thus considered *de minimis*. Soil placed in one WOUS area following rip-rap removal and soil deposited in the single WOUS presently consisting of soil rather than rip-rap would be gathered from existing uplands in the Dike 8 area. The HRRA construction (restoration) work would be performed using typical construction equipment such as tractors, motor graders, hydraulic excavators, scrapers, backhoes, bulldozers, rippers, track and wheel loaders, haulers, hydraulic shovels, dump trucks, water trucks, and similar equipment.

If rip-rap from the HRRA is disposed in the OILD site, it would first be removed from the HRRA using land-based bulldozers and excavators. If lake levels are sufficiently low, the rip-rap would be loaded in dump trucks and transported directly to the OILD site, gaining access to the crest of the Phase IV disposal mound within the OILD by traveling through the existing overlook area that borders the OILD. The rip-rap would then be dumped along the edges of the crest of the disposal mound and finally pushed into place down the face of the mound's side slopes. If the lake level prohibits this approach (e.g. work "in the dry"), the rip-rap would be loaded in dump trucks then transported to a floating barge. To accept the rip-rap, the barge would be stationed either at the transload facility (discussed in the 2012 SEIS/EIR) or at the end of an existing ramp that extends from the internal haul road to the lake. A crane on the barge would be used to off-load the rip-rap at the OILD site, depositing the rip-rap along the disposal mound's side slopes. Regardless of the disposal method employed, the rip-rap would be placed along the side slopes of the Phase IV disposal mound. It is anticipated that the final thickness of this additional layer of boulders added to the side slopes could be up to 35 feet.

The No Action alternative would not require the disposal of materials into WOUS, with the exception that JFP Phase IV activities would still occur. Because of this, some of the materials excavated and dredged during this phase would still be disposed within the OILD site.

II. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations (Sections 230.11 (a) and 230.20)

(1) Comparison of Existing Substrate and Fill

The soils within the proposed project area are mapped as Andregg, Argonaut, Auburn, Inks, Xerolls, and Xerothents. Large areas of the project area have been graded and altered during the original construction of Folsom Dam and its supporting infrastructure, with further modifications performed as part of prior phases of the JFP and routine maintenance activities. Fill material used during project construction came from existing on-site substrate excavated as part of construction of the new auxiliary spillway and was placed at locations both inside and outside of Folsom Reservoir. Fill material was granitic rock origin and lake sediment.

The substrate that would remain in WOUS areas where rip-rap would simply be excavated during HRRA construction work would largely consist of the fill material placed in these areas during prior JFP phases and possibly some areas of native soil. The same is true for the one rip-rap area that would be excavated and backfilled. There would be one area in the HRRA where fill would be deposited over existing soil and decomposed granite. The substrate following fill placement would essentially be the same as the existing substrate.

The substrate within the OILD site prior to any JFP construction consisted primarily of unconsolidated sediments overlying native soils present prior to the establishment of Folsom Lake. This substrate is currently in the process of changing as materials excavated and dredged during Phase IV construction are being disposed there. These deposition materials include decomposed granite, lake sediments, and rock fragments. If rip-rap removed from the HRRA is disposed here also, this “fill” would consist of relatively large boulders and rock fragments that would be placed on the new substrate formed by Phase IV disposal activities.

(2) Changes to Disposal Area Elevation

WOUS areas within the HRRA where only rip-rap would be removed would be lowered in elevation since only excavation is proposed in these areas. The degree of elevation change compared to existing conditions would vary depending on the thickness of rip-rap encountered. On average, it is estimated that the average elevation in the rip-rap excavation areas would decrease by roughly 6 to 10 feet. In the WOUS area where rip-rap would be removed and then backfilled, the existing elevation would decrease by roughly 2 to 3 feet since the volume of rip-rap removed would exceed the volume of backfill deposited. In the single WOUS area where only fill would be placed, it is estimated the existing elevation would increase by approximately 2 feet on average.

As mentioned, rip-rap excavated from the HRRA would be disposed elsewhere. Soil excavated from WOUS at the HRRA would be disposed in upland portions of the HRRA. Topography in the upland areas would be substantially changed during HRRA construction work, since the main goal of this work is to restore relatively natural grades that are similar to grades present prior to JFP disturbance.

Existing lake bottom elevations would be permanently altered if rip-rap removed from the HRRA is disposed at the OILD site. Undisturbed lake bottom elevations range from approximately 310 feet to 400 feet NAVD88 within the boundaries of the OILD site. The rip-rap disposal areas would have a maximum crest elevation of 400 feet NAVD88 and would extend downward to meet the existing lake bottom.

The No Action alternative would not modify the substrate elevation or bottom contours, with one exception. Phase IV construction work would continue under the no action alternative. Disposal of Phase IV materials into the OILD site would continue to permanently alter lake bottom elevations within this site. The Phase IV disposal mound(s) would have a maximum elevation of 400 feet NAVD88 compared to undisturbed lake bottom elevations that range from roughly 310 feet to 400 feet NAVD88 within the OILD site.

(3) Migration of Fill

Under Alternative 2, fill movement within the HRRA would only involve re-distribution of existing ground materials (soils) to create a more natural topography in upland areas above the OHW. Rip-rap removed from the HRRA would be disposed elsewhere, as previously discussed.

Should the OILD site be used for the disposal of rip-rap removed from the HRRA, placement of this rip-rap along the side slopes of the Phase IV disposal mound(s) could result in the displacement of some of the Phase IV material (fill). Such displacement should not be substantial and would not increase the footprint of this fill significantly. Migration of the rip-rap following disposal is not anticipated given the size and weight of the majority of the rip-rap boulders.

The No Action alternative would not require any migration of fill.

(4) Duration and Extent of Substrate Change

The existing substrates present in WOUS areas directly affected by HRRA construction would be permanently altered. Substrate in the areas where rip-rap would be only be removed (2.7 acres for the 440 Option; 1.9 acres for the 460 Option) would be converted from rip-rap boulders to existing fill materials (soils, decomposed granite) currently underlying the rip-rap. Substrate in the singe area where rip-rap would first be removed and then fill would be deposited (0.5 acre under both design options) would be converted from rip-rap to soil and decomposed granite, similar to the substrate presently underlying this area. Substrate in the single area that would only be affected by fill placement (0.5 acre under both design options) would be the same as it is now following fill placement.

Any HRRA rip-rap disposed at the OILD site would be placed along the side slopes of Phase IV disposal mounds, thereby permanently changing the surface of the substrate underling the rip-rap from an admixture of Phase IV materials (lake sediments, decomposed granite, etc.) to rock boulders. Substrate at the base of the rip-rap disposal features consists of lake sediments, which would be converted to rip-rap. It is not possible to accurately estimate (footprint) of the rip-rap features within the OILD site.

The No Action alternative would not modify the substrate in the HRRA. Phase IV construction activities would continue under this alterative, thereby permanently altering the pre-construction substrate within the OILD site. Substrate here would be converted from lake sediments to a mixture of lake sediments, decomposed granite, and some rocky materials.

(5) Changes to Environmental Quality and Value

Removal of rip-rap from WOUS areas within the HRRA would not result in long-term adverse changes to the existing quality and value of these areas. The same is true for the single WOUS area where rip-rap would be removed followed by backfilling. This is because all these areas would still classify as jurisdictional WOUS and there would be no net loss of existing aquatic functions and values provided by these areas. In the single WOUS area that would only be filled, 0.1 acre would be permanently converted from WOUS to upland, thereby resulting in a permanent loss of the aquatic functions and values provided by this portion. The remaining 0.4 acre portion of this area would still classify as jurisdictional WOUS and thus there would be no net loss of aquatic functions and values currently provided by this area.

Grading called for in the HRRA under both the 440 Option and 460 Option would create a depression immediately adjacent to the south side of the area where rip-rap would be removed and backfilled (see Figure 2). This depression would extend southward into the central portion of the Dike 8 area. An approximately 0.5-acre portion of this depression would be lower than elevation 466 feet NAVD88 (Folsom Lake's jurisdictional WOUS boundary), thereby restoring roughly 0.5 acre of jurisdictional WOUS that was present prior to the JFP. This restoration feature would therefore more than compensate for the 0.1 acre of permanent WOUS impacts that would result from HRRA construction activities.

Folsom Lake (reservoir) is a regulated facility and the OILD site is devoid of aquatic vegetation. Disposal of rip-rap within the OILD site would not adversely change the environmental quality and value of the overall lake on a long-term basis.

The No Action alternative would not modify the environmental quality and value of WOUS situated within the HRRA. The 2012 SEIS/EIR determined that disposal of Phase IV materials into the OILD site, which would continue under this alternative, would not adversely affect the environmental quality and value of Folsom Lake.

(6) Actions to Minimize Impacts

Construction activities within the HRRA would primarily have relatively minor, short-term impacts to WOUS and would have only one long-term adverse impact to a tiny (0.1 acre) WOUS area. However, standard BMPs would be implemented to avoid or minimize any effects of potential erosion concerns. This would ensure that the effects from erosion and transport of soils or substrate would remain at less-than-significant levels. Standard BMPs and other measures that would be used to minimize impacts are discussed above in the Alternative 2. Proposed BMPs and related minimization/mitigation measures are further discussed in the following sections of the SEA/EIR: 2.3.1; 3.3.9; 3.3.12.

Use of the OILD site for Phase V rip-rap disposal purposes would also result in short-term and long-term WOUS substrate impacts. BMPs and other measures would be used to help minimize the short-term impacts. These BMPs and mitigation measures are discussed in Sections 2.3.1, 3.3.9, and 3.3.12 of the Draft SEA/EIR. Long-term substrate elevation changes would be minimized by restricting the maximum elevation of the disposed rip-rap to 400 feet NAVD88. There is no means of minimizing the long-term effect of changing the type of substrate present.

There would be no impacts to WOUS within the HRRA under the No Action alternative, so measures would not need to be taken to minimize them. The OILD site would still be used for the disposal of Phase IV materials under the No Action alternative. Measures employed to minimize the impact to WOUS are discussed in the 2012 SEIS/EIR.

b. Water Circulation, Fluctuation, and Salinity Determinations

(1) Alteration of Current Patterns and Water Circulation

The Folsom Reservoir is located within the American River Basin, which covers an area of approximately 2,100 square miles and has an average annual unregulated runoff volume of 2,700,000 acre-feet; however, because Folsom Reservoir is managed as a flood control facility, the annual runoff volume has varied in the past from 900,000 acre-feet to 5,000,000 acre-feet. The Folsom Reservoir is fed by the North Fork American River and the Middle Fork American River, and the water is released on a regulated basis into Lake Natoma and the South Fork American River. Folsom

Reservoir is the principal reservoir on the American River, impounding runoff from a drainage area of approximately 1,875 square miles.

The Folsom Reservoir is fed by the North Fork American River and the Middle Fork American River, and the water is released on a regulated basis into Lake Natoma and the South Fork American River. It is managed as a flood control facility and covers an area of approximately 2,100 square miles. Because the Folsom Dam and Reservoir is an already regulated system designed for flood protection, the impacts of the proposed project Alternative 2 would have minimal impact to current, circulation and drainage patterns. The Folsom Dam uses a regulated system to control flows of the water from the lake.

The No Action alternative would assume the currents, circulation and drainage patterns of Folsom Reservoir to remain the same.

(2) Interference with Water Level Fluctuation

Because the Folsom Facility is regulated to allow a specific amount of water to be released into Lake Natoma and the lower American River, the No Action alternative and Alternative 2 would not change water level fluctuation patterns.

(3) Salinity Gradients Alteration

Salinity gradients would not be affected.

(4) Effects on Water Quality

The water quality within Folsom Lake is currently good, with the water being utilized for: municipal and domestic water supply; irrigation; industrial power; water contact and non-contact recreation; warm and cold freshwater habitat, warm freshwater spawning habitat; and wildlife habitat.

(a) Water Chemistry

Construction activities within the HRRA have the potential to affect turbidity. Approved BMPs and water quality monitoring will be conducted in compliance with the Section 401 Water Quality Certification. Storm water runoff has the potential to impact turbidity and pH of the reservoir. Storm water discharges will be permitted under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activities. All storm water discharges and activities will be monitored under the project Storm Water Pollution Prevention Plan (SWPPP). With appropriate BMPs and an approved SWPPP, impacts to turbidity and pH from storm water runoff is anticipated to be minimal.

Heavy equipment and vehicles would be used on site. Appropriate measures such as BMPs and a Spill Prevention, Control and Countermeasures Plan (SPCC) which includes designs and narratives for spill control measures, adverse impacts from inadvertent spills or releases of hazardous substances would be low, and less than significant.

Placement (disposal) of rip-rap within the OILD site may disturb or mobilize sediments, which have the potential to affect turbidity, total suspended solids, dissolved oxygen, pH, and water temperature. The re-suspension of sediments may also affect the concentrations of various metals in the water column by releasing such metals from lake sediments, including sediments deposited at the OILD site by Phase IV construction. In addition to the potential adverse effects to general water quality that could result from mobilizing such metals, this could create the potential for bioaccumulation of mercury in the aquatic environment.

Use of the OILD site for rip-rap disposal would incorporate this area into the same SWPPP that would apply to the HRRA. The Section 401 WQC and the CGP obtained for the HRRA would also incorporate rip-rap disposal activities within the OILD site. The construction contractor would be required to comply with the provisions of the SWPPP, the Section 401 WQC (including any associated Waste Discharge Requirements (WDR) Order issued by the CVRWQCB), and the CGP.

Typical lake water quality monitoring requirements contained in past Section 401 WQCs and WDR Orders issued for the JFP have focused on monitoring dissolved oxygen, pH, turbidity, settleable matter, and visible pollutants like oil, grease, fuel, and petroleum products. USACE would monitor Folsom Lake water quality parameters in the immediate vicinity of the OILD site in accordance with monitoring requirements set forth in the project's WQC. This monitoring would be conducted throughout the period that the OILD site is used for disposal purposes. Additional monitoring of turbidity levels would be performed adjacent to the lake side of Folsom Dam during June through October to ensure turbidity levels do not exceed CVRWQCB Section 401 thresholds. Other water quality monitoring required by the project's WQC would be performed in compliance with the WQC. The construction contractor may install silt curtains around the OILD site to minimize construction-generated turbidity and related water quality effects outside the boundary formed by these curtains. However, the contractor may employ other BMPs to help ensure water quality thresholds identified in the WQC and applicable water quality thresholds set forth in the Basin Plan are not exceeded.

Disposal activities within the OILD site would result in short-term adverse water quality impacts that would largely be confined to the immediate area. The impacts would be minimized through the use of the BMPs discussed above, by compliance with WQC and CGP requirements, and through implementation of a thorough monitoring plan. These mitigation measures would reduce long-term effects on water quality to a less than significant level.

(b) Salinity

The project would not change salinity levels.

(c) Clarity

Excavation and filling of WOUS within the HRRA combined with earthwork in upland portions of the HRRA would temporarily reduce water clarity due to an increase in total suspended solids. However, the reduction of clarity caused by construction activities would be short in duration and would return to pre-construction levels upon project completion.

Disposal of rip-rap at the OILD site would also temporarily reduce water clarity resulting from an increase in total suspended solids. This reduction would be limited to the duration of disposal activities, returning to pre-construction levels soon after disposal activities are completed.

(d) Color

The activities discussed above would temporarily induce a color change due to an increase in turbidity. However, conditions would return to pre-construction levels upon completion of the project.

(e) Odor

The project would not affect odor.

(f) Taste

The project would not affect taste.

(g) Dissolved Gas Levels

Construction activities within the HRRA and rip-rap disposal at the OILD site would temporarily increase turbidity levels, which could minimally change water temperature and reduce dissolved oxygen concentrations in the immediate vicinity of the project. Dissolved oxygen concentrations would return to pre-construction levels once the project reaches completion.

(h) Temperature

Construction activities within the HRRA and especially rip-rap disposal at the OILD site have the potential to create substantial turbidity, thus affecting water temperature. Proposed minimization measures that would be implemented by the BMP's would help limit the extent and magnitude of any water temperature changes. Water temperature would no longer be affected following project completion.

(i) Nutrients

Release of suspended sediments from project activities could potentially cause turbidity thresholds to be exceeded. This could concurrently cause thresholds for metals and nutrients to be exceeded. Turbidity would be controlled outside the working areas using a combination of BMPS previously discussed. Development and implementation of an approved SWPPP would also prevent release of excess nutrients into the lake.

(j) Eutrophication

The project would not input excess nutrients into the lake or promote excessive plant growth. The project would not contribute to eutrophication.

(5) Changes to Environmental Quality and Value

The proposed project could temporarily impact the water quality of the Folsom Lake during construction from earth moving operations in the HRRA, disposal operations in the OILD site, and the operation and maintenance of construction equipment in project areas adjacent to the lake. Construction and associated materials, including solvents, waste materials and oil and gas associated with operation and maintenance of construction equipment present on-site could introduce hazardous or toxic materials and silt and debris into surrounding waters and could cause degradation of the water quality within the Folsom Lake. Although there may be impacts to water quality during project construction, these impacts would be short term, minimized and monitored with appropriate BMPs.

The proposed direct impacts to WOUS would not result a long-term reduction in the existing extent of WOUS. Reductions in aquatic functions and values (environmental quality and value) would be restricted to the time project construction activities are occurring. There would be no long-term adverse effects, hence there would be no net loss of aquatic functions and values.

(6) Actions to Minimize Impacts

BMPs and other measures that would be employed to avoid and minimize potential impacts to WOUS are discussed in Sections 2.3.1, 3.3.9, and 3.3.12 of the SEA/EIR. Some of the main measures include: conducting construction/disturbance activities in WOUS when the lake water level is low, if feasible; adherence to WQC requirements, including water quality monitoring and reporting requirements; development of and adherence to the SWPPP; adherence to CGP requirements. Through these actions, project impacts to water quality would be less than significant.

c. Suspended Particulate/Turbidity Determinations

(1) Alteration of Suspended Particulate Type and Concentration

During construction of the HRRA, there could be increased levels of turbidity as soils are exposed and during rain events, which may erode these soils into the reservoir. In addition, excavation of material and placement of previously existing soils in upland areas could cause increased turbidity into the reservoir. Removal of rip-rap and soil from WOUS portions of the HRRA would expose the underlying substrate. This exposed material could be eroded by wave action or storm runoff. The water could enter the Folsom Reservoir, and could potentially migrate into Lake Natoma to the south. It is likely, however, that the suspended particulates would settle in

Folsom Lake before reaching Lake Natoma. Any suspended particulates that do migrate to Lake Natoma would settle within this lake and it is unlikely that the lower American River would be affected. The use of best management practices (BMP's), such as utilizing erosion control devices (silt fencing, silt curtains) within the project area, and stabilizing the side slopes of all exposed soil surfaces until they can be revegetated would minimize any increases in suspended sediments or turbidity associated with the proposed project.

Turbidity (suspended particulates) would temporarily increase in the OILD site during the process of placing rip-rap in this site. This would mainly consist of lake sediments and smaller-grained materials disposed within the OILD site as part of Phase IV construction. It is anticipated that the majority of the suspended particulates would settle within Folsom Lake following completion of disposal activities. Any such particulates that migrate downstream of Folsom Dam would wattle within Lake Natoma.

The No Action alternative would result in no impacts to suspended sediment and turbidity, with one exception. Under this alternative, Phase IV would still dispose of materials within the OILD site, thereby temporarily increasing suspended particulates.

(2) Particulate Plumes Associated with Discharge

Temporary and local particulate plumes may occur during construction activities but would quickly dissipate after construction activities are complete.

(3) Changes to Environmental Quality and Value

Particulate plumes resulting from any construction activity are not expected to persist after project completion. Particulates suspended within the disposal area are not expected to differ in type from particulates currently within the project area.

(4) Actions to Minimize Impacts

Effects would be minimized by performing work during low lake level periods to the extent feasible. Other measures to minimize impacts are in Sections 2.3.1, 3.3.9, and 3.3.12 of the SEA/EIR.

d. Contaminant Determinations

The potential biological hazard for sediments within Folsom Reservoir stems from mercury released into the American River and its tributaries from historic mining activities. Chemical testing of reservoir sediment has not identified concentrations of mercury above background in areas where in-reservoir work may occur. There may also be residual contaminants on the downstream side of the reservoir from the original construction of the Folsom Facility, likely as a result of spills of petroleum products during initial construction. The soil contamination is being handled through standard hazardous materials protocols and is not at risk of being released into the terrestrial or aquatic environments.

The No Action alternative would result in no impacts due to potential contaminants.

e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton

Plankton are drifting organisms that inhabit the pelagic zone of oceans, seas, or bodies of fresh water. Construction of the project would be temporary and short termed. Limited impacts to plankton are anticipated during the construction phase and any reduction in the plankton population or changes in plankton composition would be alleviated after completion of the project.

(2) Effects on Benthos

Benthic organisms are found in the benthic zone which is the ecological region at the lowest level of a body of water such as ocean or a lake, including the sediment surface and some sub-surface layers. Excavation activities proposed in the HRRA may initially result in the complete removal of many benthic organisms from the rip-rap removal sites. Following completion of rip-rap removal and other HRRA construction work, benthic organisms found in undisturbed portions of Folsom Lake would rapidly colonize the affected areas. In fact, the substrate remaining following removal of rip-rap would likely be more favorable for such organisms since it would more closely resemble undisturbed lake bottom habitats.

Disposal of rip-rap at the OILD site may initially result in the death of some benthic organisms through physical crushing or smothering. This would largely apply to sessile organisms, whereas most relatively motile organisms would likely avoid the affected area following initiation of disposal activities. Benthic organisms from adjacent habitats would recolonize affected areas fairly rapidly once these activities cease. However, due to the change in substrate, the species composition and/or abundance of benthic organisms may change compared to pre-construction conditions. Because of the relatively small area disturbed by rip-rap disposal combined with at least some repopulation of the disturbed area, the impact to the overall benthic community of the lake would be minimal and less than significant.

(3) Effects on Nekton

Nekton are comprised of actively swimming aquatic organisms. Habitat within Folsom Reservoir and Lake Natoma allow for a diverse assemblage of native and introduced fish species to coexist. Folsom Reservoir is managed as a ‘two-story’ fishery, with cold-water fishes such as trout inhabiting the hypolimnion and warm water fishes such as bass and sunfish inhabiting the epilimnion and shoreline areas. Two cold water fisheries for rainbow trout and Chinook salmon are actively maintained through a stocking program.

The Folsom Reservoir provides habitat for game fish such as: Rainbow trout (*Oncorhynchus mykiss*), Chinook Salmon (*Oncorhynchus tsawytcha*), Brown Trout (*Salmo trutta*), Bluegill (*Lepomis macrochirus*), Redear sunfish (*Lepomis microlophus*), Green sunfish (*Lepomis cyanellus*), White crappie (*Promoxis annularis*), Black crappie (*Promoxis nigromaculatus*), Largemouth bass *(Micropterus salmoides),* Spotted bass *(Micropterus punctulatus)*, Brown bullhead *(Ameiurus* *nebulosus),* White catfish *(Ictalurus catus),* and Channel catfish *(Ictalurus punctatus).* Native, non-game fishes present within the project area include: Hardhead *(Mylopharodon conocephalus),* Sacramento pikeminnow *(Ptychocheilus grandis),* California roach *(Lavinia symmetricus),* Sacramento sucker *(Catostomus occidentalis),* and Riffle sculpin *(Cottus gulosus).* Introduced, non-game fishes common to the Folsom Reservoir include: Threadfin shad *(Dorosoma pretenense)* and Wakasagi smelt *(Hypomesus nipponensis),*

Under Alternative 2, the proposed project would not result in any permanent loss of potential fish habitat. However, excavation and fill activities in the HRRA and disposal activities in the OILD site could result in temporary adverse impacts to habitat from an increase in suspended sediments and turbidity associated with the proposed project. Impacts to habitat would be minimized through the use of BMPs and other measures discussed in Section 3.3.9 of the draft EA/EIR. Provided the proposed BMPs and related measures are conducted, the proposed project would have minimal impacts on fish and aquatic wildlife habitat.

The No Action alternative would result in no losses of habitat for fish and other aquatic organisms.

(4) Effects on Aquatic Food Web

Excessive turbidity in aquatic systems can lead to light altered regimes that can directly affect primary productivity, species distribution, behavior, foraging, reproduction and survival of aquatic biota (Wilber and Clarke 2001). Aquatic system productivity can also be reduced. As an indirect effect, the suppression of aquatic productivity is not as apparent as direct effects on larger organisms. Sustained turbidity can cause the shading of primary phytoplankton, zooplankton and invertebrates which serve as food for smaller fish, and larval fish upon which game fish forage (Lloyd 1987). Sufficient turbidity can result in direct lethal or sublethal effects on fish (Newcombe and Jensen 1996). An increase of resuspended dissolved or particulate organic carbon from the sediment may decrease dissolved oxygen (DO) concentrations. Reduction in DO availability for aquatic species causes reduced oxygen uptake. Turbidity can clog fish and amphibian gills and cause physical abrasion to the level of sub-lethal or lethal effect. Settling of suspended sediment can coat fish and amphibian eggs, reducing or eliminating DO uptake required for development or survival. This could potentially play a part in the overall food web of the aquatic ecosystem inhabiting Folsom Lake. Implementation of BMP’s would result in minimal impacts on fish and aquatic wildlife habitat.

The No Action alternative would result in no effect to the aquatic food web of Folsom Lake except for temporary impacts resulting from disposal of excavated and dredged materials into the in-lake disposal areas as Phase IV construction activities continue.

(5) Effects on Special Aquatic Sites

(a) Sanctuaries and Refuges

No sanctuaries and refuges are within the project area.

(b) Wetlands

No wetlands would be affected.

(c) Mud Flats

No mud flats are within the project area.

(d) Vegetated Shallows

No vegetated shallows are within the project area.

(e) Coral Reefs

No coral reefs are within the project area.

(f) Riffle and Pool Complexes

No riffle and pool complexes are within the project area.

(6) Threatened and Endangered Species

The proposed project area may affect Federally-listed and California- listed endangered or threatened species. The valley elderberry longhorn beetle (VELB) has the potential to occupy approximately 11 elderberry shrubs that would be impacted by construction activities within the HRRA. Formal consultation under Section 7 of the Endangered Species Act of 1973 was initiated with U.S. Fish and Wildlife Service (USFWS) to discuss necessary mitigation measures, and these measures would be implemented. HRRA construction activities also have a remote potential for impacting Swainson's hawk, Coopers hawk, and white-tailed hawk if any of these species have active nests in close proximity to the project. Preconstruction surveys would be conducted for such nests. If active nests of one or more of these species are discovered within roughly 1,000 feet of the project, the CDFW would be contacted to determine the appropriate course of action necessary to ensure these nests are not adversely affected. HRRA construction activities would not have any effect upon threatened or endangered species inhabiting waters of the United States.

The No Action alternative would not result in direct impacts to endangered and/or threatened species.

(7) Other Wildlife

The project Alternative 2 could have short-term effects on resident mammals, birds, reptiles, and amphibians. Noise from construction equipment and increased human presence could temporarily displace some wildlife, and temporary alteration of aquatic habitat would occur. Species utilizing the project area should be accustomed to the noise and activity of the area, due to the long-term nature of the Folsom JFP. Disturbance to the area's wildlife species does not have the potential to significantly alter habitat beyond current operations, with the exception of the HRRA excavation and fill activities and the disposal or rip-rap in the OILD site. These activities would temporarily affect aquatic species, as previously discussed. Following completion of restoration work in the HRRA, wildlife habitat quality would be significantly improved compared to existing conditions.

To ensure that there would be no effect to migratory birds, preconstruction surveys would be conducted, if needed, in and around the project area. If any active migratory bird nests are found, a protective buffer would be delineated, and USFWS and CDFG would be consulted for further actions. Known migratory bird nests located beneath the Folsom Point bridge would be removed during the non-nesting season prior to the removal of this bridge.

The No Action alternative would result in no direct impacts to wildlife other than those resulting from the continuation of Phase IV construction activities. Such impacts are addressed in the 2012 SEIS/EIR.

(8) Actions to Minimize Impacts

Minimizations measures to reduce impacts to WOUS would be implemented through the BMP's and other measures discussed in Sections 2.3.1, 3.3.9, and 3.3.12 of the draft SEA/EIR. Additionally, Folsom Lake would also be stocked with at least 6,000 catchable size triploid rainbow trout. The re-stocking would be provided for past impacts on recreational fisheries in the lake (e.g. lost recreational fishing opportunities). Re-stocking of rainbow trout in the lake would impact WOUS, but not in a manner that is regulated by Sections 401 or 404 of the Clean Water Act. The only lake impacts would be beneficial.

Actions proposed to minimize and mitigate for project impacts to listed species are discussed in Section 3.3.7 of the draft SEA/EIR. As regards impacts to VELB specifically, mitigation would be provided in accordance with the requirements set forth by the USFWS. These requirements are provided in Appendix E of the draft SEA/EIR.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Size Determination

A mixing zone is not applicable to HRRA construction activities.

Disposal of rip-rap within the OILD site would require the establishment of a mixing zone. The physical limits of this mixing zone would depend on the construction contractor's means of confining turbidity, which could include installation of turbidity curtains or bubble curtains. It is anticipated that the mixing zone would include the boundaries of the OILD site plus open water areas extending no more than approximately 250 feet beyond these boundaries. The final mixing zone limits would be established to help ensure applicable water quality thresholds outside the mixing zone are not exceeded.

(2) Determination of Compliance with Applicable Water Quality Standards

Previously used fill material did not violate Environmental Protection Agency or State water quality standards or violate the primary drinking water standards of the Safe Drinking Water Act (42 USC 300f - 300j). Project design, standard construction and erosion practices would preclude the introduction of substances into surrounding waters.

The project BMPs and monitoring included in the 401 Water Quality Certification and Storm Water Discharge Permit for Construction would be followed to ensure the project activities conform to applicable water quality standards.

(3) Potential Effects on Human Use Characteristics

(a) Municipal and Private Water Supplies

Folsom Lake supplies drinking water and irrigation water to a variety of end users. The proposed project would not decrease the availability of water to such users since it would not appreciably reduce the water storage capacity of the lake. Through compliance with the provisions of the Section 401 WQC that would be obtained for the project, applicable water State water quality standards would be achieved. Primary drinking water standards set forth in the Safe Drinking Water Act (42 USC 300f – 300j) are not applicable to the lake itself, but rather to the water suppliers that receive water from the lake. Various water treatment facilities such as the Folsom water treatment plant, the San Juan District water treatment plant, the El Dorado Hills water treatment plant, and the Roseville water treatment plant, are used to ensure drinking water meets the required standards. The proposed project would not impair the ability of the treatment facilities to achieve these standards.

(b) Recreation and Commercial Fisheries

The proposed project could affect recreational fisheries in lake areas immediately adjacent to the HRRA, as temporary access restrictions may be necessary at some locations while construction is occurring. Recreational fishing access would also be prohibited within the OILD site and immediately adjacent lake areas until rip-rap disposal activities at the OILD site are completed. Section 3.3.9 of the draft SEA/EIR describes BMPs and other measures that would be employed to minimize fisheries impacts to the extent that such impacts would be less than significant.

The No Action alternative would result in no impacts to recreational fisheries, except for those that would result from completing Phase IV construction activities. These impacts are addressed in the 2012 SEIS/EIR.

(c) Water-related recreation

In addition to recreational fishing, Folsom Reservoir is a popular location for picnicking, swimming and boating. Temporary access restrictions may be necessary at some locations while construction is occurring. The public will be notified in advance of any closures and will be directed to alternative lake access sites for recreational opportunities. The reservoir itself would not be closed during construction and the public would be allowed access to launch boats and are expected to continue recreational activities. Therefore, the impacts to other water related recreation from Alternative 2 would be less than minimal.

The No Action alternative would result in no impacts to other water related recreation other than those that would be generated by the continued Phase IV construction activities. These impacts are addressed in the 2012 SEIS/EIR>

(d) Aesthetics

The proposed HRRA activities would temporarily negatively affect the aesthetics of the area during construction. These temporary impacts are discussed in Section 3.3.1 of the draft SEA/EIR. The impacts to the aesthetics within the project area due to construction activities would be temporary, and would mainly affect only those that live adjacent to the HRRA and people using Folsom Lake and the Folsom Point day use area. Following completion of HRRA construction, aesthetics would be substantially improved compared to existing conditions.

Rip-rap disposed at the OILD site would not be visible when the lake water level is high. As the lake water level drops below elevation 400 feet NAVD88, more and more of the rip-rap would be exposed and would appear like a rocky shoreline along the isolated peninsula formed by materials disposed during the Phase IV project. This feature would be visible to lake users in the immediate vicinity, to people using certain portions of Folsom Point, and to a few residences on a hill just east of the Dike 7 Area. The exposed rip-rap would blend into the existing rip-rap along the dam overlook area, spur dike, and left wing of Folsom Dam, and would occupy a relatively limited area. Given this blending effect and considering the limited area occupied by the rip-rap, disposal of rip-rap at the OILD disposal site would affect visual resources and aesthetics in a manner that is less than significant.

The No Action alternative would not alter the aesthetics and therefore would have no impacts.

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves.

Folsom Lake State Recreation Area (FLSRA) is managed by the California Department of Parks and Recreation. This area attracts approximately a million visitors annually for boating, swimming, hiking, biking, equestrian activities, and picnicking. Sections 2.3.1 and 3.3.6 of the draft SEA/EIR discusses the measures that would be used to ensure the proposed project does not significant affect recreational opportunities.

The No Action alternative would not affect the current state recreation area.

g. Determination of Cumulative Effects on the Aquatic Ecosystem

The proposed construction activities within the HRRA would result in the following direct impacts to WOUS.

- Temporary impacts to from 2.8 acres (460 Design Option) to 3.6 acres (440 Design Option), with the affected areas remaining as WOUS following impacts.
- Permanent impacts to 0.1 acre (for both the 440 Option and 460 Option), with the affected area being converted to upland as a result of the impacts.
- If the OILD site is used for disposal of rip-rap removed from the HRRA, an additional area of WOUS would also be temporarily impacted, with the affected area remaining as WOUS following impacts.

Only the permanent impact to 0.1 acre would result in a decrease in the existing extent of WOUS (e.g. Folsom Lake) and a permanent loss of the minimal existing aquatic functions and values provided by the affected area. The remaining temporary impacts would not result in a decrease in the existing extent of WOUS (e.g. Folsom Lake). In the long term, these temporary impacts would also not result in a significant degradation of existing aquatic functions and values. Topographic changes resulting from HRRA construction would form a depression within the north central portion of the Dike 8 area. An area encompassing about 0.5 acre within this depression would be converted from upland to jurisdictional WOUS since its elevation would be below 466 feet NAVD88 and it would have a direct hydrologic connection to Folsom Lake. This restored WOUS would more than compensate for the single permanent WOUS impact mentioned above. Given these considerations, the cumulative impacts to WOUS resulting from the proposed project are expected to be minor.

The No Action alternative would not alter the aquatic ecosystem other than alterations that would result from the continued construction of Phase IV. These alterations and their anticipated impacts to the aquatic ecosystem are discussed in the 2012 SIES/EIR.

h. Determination of Secondary Effects on the Aquatic Ecosystem

Secondary impacts of the proposed project could include: the discharge of previously existing soil fill material outside of the proposed project area, an increase in contaminants from vehicles accessing the Folsom Reservoir via the haul roads, an increase in animal predation, and adverse impacts from future maintenance activities at the project site.

Secondary effects from Alternative 2 could result from the unintentional placement of soil material or the unintentional excavation of material outside of the proposed project area. This could result in additional adverse impacts to water quality, erosion and accretion patterns, aquatic and other wildlife habitat, recreation, aesthetics and air quality. In order to minimize impacts associated with such actions, construction contract specifications would require that the contractor implement all BMP’s, such as installing erosion control (i.e. silt fencing, silt curtains) within any standing waters.

Secondary impacts of the proposed HRRA activities could include the unintentional excavation of WOUS outside the limits described herein. Other earthwork activities could potentially result in the inadvertent placement of fill within WOUS (Folsom Lake). To avoid these possibilities, the construction contractor would be required to physically mark the limits of construction adjacent to and within WOUS prior to starting any earthwork activities near Folsom Lake. Work in upland portions of the HRRA could increase turbidity in the lake as a result of storm water runoff and erosion. Construction equipment could potentially release contaminants (i.e., petroleum products) that could migrate into the lake. Such secondary impacts would be avoided and minimized through the use of BMPs previously discussed.

Secondary impacts that could occur during the process of disposing rip-rap in the OILD site include the potential discharge of contaminants from construction equipment (i.e., petroleum products) directly into Folsom Lake or in adjacent areas that drain into the lake. These impacts would be avoided and minimized through the use of BMPs previously discussed. Any barges and support vessels used to place the rip-rap could theoretically be contaminated with invasive aquatic species that could escape into the lake. All barges and support vessels would be required to be free of invasive aquatic species, thereby avoiding this potential impact. The construction contractor could inadvertently place rip-rap in areas outside the authorized limits of the OILD site. The contractor would be

Under the No Action alternative, construction of JFP Phase IV would continue until completed. These construction activities have impacted, and would continue to impact, jurisdictional WOUS. However, Phase IV also includes mitigation for WOUS/aquatic ecosystem impacts such that these impacts would not be significant.

III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Impact on the Aquatic Ecosystem

As regards proposed HRRA activities, no practicable alternative exists which meets the project objectives that does not involve excavations within waters of the United States. There were no alternatives identified that would have significantly less adverse effects on the aquatic ecosystem than the proposed alternative.

If the HRRA 440 Design Option is used, this option would have greater direct impacts to WOUS, in terms of the acres of excavation impacts, compared to the HRRA 460 Design Option. However, neither of these two options would result in a reduction in the existing extent of jurisdictional WOUS, nor would either of the options result in a net reduction in aquatic functions and values since the only true loss of existing WOUS (e.g. the 0.1 acre permanent impact) would be compensated by the restoration of WOUS from an existing upland (e.g. grading to form a new 0.5 acre WOUS). It could be argued that the 440 Option is preferable to the 460 Option since the 440 Option would remove more rip-rap from Folsom Lake's shoreline fluctuation zone, thereby providing a greater area for colonization by emergent wetland plant species that could enhance the aquatic ecosystem. It must be remembered, however, that both of these options would not result in significant adverse long-term impacts to WOUS or aquatic ecosystems.

The three options for disposing rip-rap removed from the HRRA were previously discussed. It is recognized that the option whereby rip-rap would be disposed in the MIAD East disposal site is preferable to the option whereby rip-rap would be disposed in the OILD site. This is because the MIAD East option would not result in any direct impacts to WOUS. However, the final agreements between the Corps and the Bureau of Reclamation (owner of the MIAD East site) concerning usage of the MIAD East site for disposal purposes have not yet been achieved. Since there is a limited potential that final agreements may not come to fruition, disposal at the OILD site cannot be eliminated at this stage.

The option whereby a state agency would collect the rip-rap removed during HRRA construction and then transport the rip-rap off-site for use at a state project would not require further impacts to WOUS at the JFP. This option would be preferable compared to the OILD site disposal option or even the MIAD East disposal option. At this time, however, no state agency is willing to commit to the "off-site disposal" option. It has only been discussed as a possibility. Since this option may ultimately not be viable, rip-rap disposal at the OILD site cannot be eliminated at this stage.

c. Compliance with Applicable State Water Quality Standards

The excavation activities would not cause or contribute to violation of any applicable State water quality standards, nor would the potential fill (disposal) activities. The discharge operations would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. Compliance with Endangered Species Act of 1973

HRRA activities in WOUS would not impact federally listed species or federally-designated critical habitats for such species. Construction in upland portions of the HRRA would affect the VELB via direct impacts to 11 elderberry shrubs. The Corps would provide the necessary mitigation for these impacts as required by the USFWS (see Appendix E); thus, the proposed impacts would not jeopardize the continued existence of the VELB.

Rip-rap disposal activities at the OILD site would not impact federally listed species or federally-designated critical habitats for such species.

e. Evaluation of Extent of Degradation of the Waters of the United States

HRRA construction activities would result in temporary impacts to a total of anywhere from 2.8 acres (under the 460 Option) to 3.6 acres of WOUS, but the affected areas would still classify as WOUS and they would provide aquatic functions and values that are equal to or exceed those provided by the temporarily affected areas. HRRA construction would result in the permanent loss of 0.1 acre of existing WOUS; however, this loss would be compensated by the creation (restoration) of 0.5 acre of WOUS similar to the existing WOUS lost. As a result, HRRA construction would not have significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife would not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values would not occur.

While disposal of rip-rap at the OILD site would result in temporary adverse impacts to WOUS (Folsom Lake), there would be no long-term significant adverse effects on recreational and commercial fishing, fish, shellfish, wildlife, or human health and welfare. This disposal would not impact any special aquatic sites. Long-term significant adverse effects on aquatic ecosystem diversity, productivity, and stability would not occur, nor would long-term adverse effects to recreational, aesthetic, and economic values of the affected WOUS occur.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

Not applicable.

g. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems will be implemented. On the basis of the guidelines, the proposed WOUS excavation sites within the HRRA and the potential WOUS disposal site (e.g. the OILD site) are specified as complying with the requirements of the guidelines with the inclusion of appropriate and practicable conditions to minimize pollution or adverse effects to the aquatic ecosystem