Final

Program EIR for Small Erosion Repair Program

SCH#2009112088

Prepared for:

DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

AECOM

December 2013

Final

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SCH#2009112088

Prepared for:

California Department of Water Resources
Division of Flood Management
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AECOM

December 2013

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ACRONYMS AND OTHER ABBREVIATIONS

BCAQMD	Butte County Air Quality Management District
BANS TAC	Bank Swallow Technical Advisory Committee
Board	Central Valley Flood Protection Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CSLC	California State Lands Commission
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
DEIR	draft environmental impact report
DPEIR	draft program environmental impact report
DPC	Delta Protection Commission
DWR	California Department of Water Resources
FEIR	final environmental impact report
FPEIR	final program environmental impact report
FRAQMD	Feather River Air Quality Management District
GGERP	GHG Emissions Reduction Plan
GGS	giant garter snake
GHG	greenhouse gas
HPTP	historic property treatment plan
ITP	individual take permit
lb/day	pounds per day
MMRP	mitigation monitoring and reporting program
NMFS	National Marine Fisheries Service
NO_X	oxides of nitrogen
PM	particulate matter
PM_{10}	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less
RGP	regional general permit
RM	River Mile
ROG	reactive organic gas
RWQCB	regional water quality control board

ACRONYMS AND OTHER ABBREVIATIONS

SERP	Small Erosion Repair Program
SMAQMD	Sacramento Metropolitan Air Quality Management District
SRA	shaded riverine aquatic
SPCP	spill prevention and control plan
SRFCP	Sacramento River Flood Control Project
TPY	tons per year
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
YSAQMD	Yolo-Solano Air Quality Management District

1 INTRODUCTION

This final program environmental impact report (FPEIR) has been prepared by the California Department of Water Resources (DWR) to evaluate the potential environmental impacts of the Small Erosion Repair Program (SERP). Under the California Environmental Quality Act (CEQA), following completion of a draft EIR (DEIR), the lead agency is required to consult with and obtain comments from public agencies that have jurisdiction by law or discretionary approval power with respect to the proposed program and to provide the general public with opportunities to comment on the DEIR. DWR has completed its responsibilities in this regard (as described further below) and prepared this FPEIR, which includes the draft program EIR (DPEIR) (it is incorporated by reference) and this response to comments document.

The SERP is a collaborative interagency effort to develop a streamlined regulatory review and authorization process that will facilitate implementation of annual repairs of small erosion sites on levees within the Sacramento River Flood Control Project (SRFCP) area. The SRFCP contains approximately 900 to 1,000 miles of levees. For the initial 5-year (Phase 1) SERP effort, the coverage area is a subset of the SRFCP and represents approximately 300 miles of levees maintained by DWR.

This FPEIR, which includes the entirety of the DPEIR made available for public comment on March 20, 2013, has been prepared in accordance with the requirements of CEQA to respond to comments received during the agency and public review period for the DPEIR, and to present corrections, revisions, and other clarifications to the DPEIR.

The DPEIR evaluates potential direct, indirect, and cumulative impacts on the environment at a program level that could result from implementing the SERP. In addition, the DPEIR includes feasible mitigation measures to avoid, minimize, rectify, reduce, or compensate for potentially significant and significant adverse impacts.

This FPEIR was prepared consistent with California Code of Regulations (CCR) Title 15, Division 6, Chapter 3 (CEQA Guidelines), Section 15132 (“Contents of Final Environmental Impact Report”).

1.1 PUBLIC REVIEW PROCESS FOR THE DPEIR

The public comment period for the DPEIR began March 20, 2013, and ended May 3, 2013. On March 19, 2013, the DPEIR and notice of completion were provided to the State Clearinghouse for distribution to interested State agencies. In addition, a notice of availability was posted in the Sacramento Bee and was sent to federal, state, and local agencies with an interest in the proposed program. The DPEIR was made available on the following Web site: http://www.water.ca.gov/floodmgmt/fmo/msb/smallerosionrepairs.cfm. Hard copies of the

DPEIR were made available at DWR—Division of Flood Management (3310 El Camino Avenue, Suite 100, Sacramento, California), and public libraries in Chico, Sacramento, Yuba City, and Rio Vista.

One public hearing was held for the DPEIR on April 19, 2013 at 3:00 p.m. at 1416 9th Street, Sacramento. No members of the public attended.

DWR received all written comments on the DPEIR via mail. These comments were considered in preparation of this FPEIR.

1.2 FPEIR ORGANIZATION

This FPEIR includes the following chapters and appendices:

- Chapter 1.0, “Introduction”—This chapter describes the public review process for the DPEIR, the content and organization of this FPEIR, CEQA requirements, and future CEQA actions.
- Chapter 2.0, “Individual Comments and Responses”—This chapter presents the list of organizations and public agencies that commented on the DPEIR, and individual responses to significant environmental issues raised during the public review of the DPEIR.
- Chapter 3.0, “Revisions to the DPEIR”—This chapter presents errata and revisions/clarifications to the DPEIR.
- Chapter 4.0, “References”—This chapter contains references to documents used to support the responses to comments.
- Chapter 5.0, “List of Preparers”—This chapter lists individuals involved in preparing and reviewing this document.
- Appendix A, “Mitigation Monitoring and Reporting Program”—This appendix contains the mitigation monitoring and reporting program (MMRP) for the FPEIR.

1.3 RESPONSES TO COMMENTS

CEQA Section 21091(d) and CEQA Guidelines Section 15088 require the lead agency to evaluate comments received during the noticed comment period and prepare a written response for each comment relating to any significant environmental issues raised regarding the DPEIR.

This FPEIR contains responses to comments on the DPEIR from a federal agency, State agencies, and regional and local agencies. Individual responses to comments are presented in Chapter 2.0, “Individual Comments and Responses.”

1.4 FUTURE CEQA ACTIONS

CEQA Guidelines Section 15088 requires the lead agency to provide a written response to a public (State or local) agency on comments made by that public agency at least 10 days before certifying the FPEIR. DWR has met this requirement by providing written responses to public agencies on December 17, 2013, 10 days before proposed certification of the FPEIR on December 27, 2013. After the 10-day period, DWR will consider certification of the FPEIR before considering approval of the proposed program. The Central Valley Flood Protection Board (CVFPB), as a responsible agency under CEQA, also will review and consider the information in the FPEIR before formal adoption of the SERP. In addition, the California Department of Fish and Wildlife (CDFW) and Central Valley Regional Water Quality Control Board (RWQCB) are responsible agencies under CEQA. These agencies will provide approvals for programmatic permits for the SERP, but will not take action related to adoption of the SERP or certification of the PEIR. The State Lands Commission is a trustee agency and would issue leases for any work on state-owned sovereign lands such as the beds of navigable waters.

DWR and the CVFPB also will need to make written findings for each significant environmental effect of the proposed program, accompanied by a brief explanation of the rationale for each finding (CEQA Guidelines Section 15091); adopt an MMRP (CEQA Guidelines Section 15097); file a notice of determination (CEQA Guidelines Section 150940); and comply with other CEQA requirements for certifying the FPEIR and approving the proposed program.

Under the programmatic approach used for this FPEIR, independent environmental review or approval would be needed for any individual site repair that is not fully covered by the DPEIR and programmatic permits, although applicable portions of the DPEIR could still be incorporated by reference in that individual site repair’s CEQA document as needed. Many repairs would be considered categorically exempt from CEQA under exemption classes 1, 2, and/or 4. For exempt projects, an EIR is only triggered where significant effects would occur due to unusual circumstances or in other situations specified in CEQA Guidelines Section 15300.2.

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2 INDIVIDUAL COMMENTS AND RESPONSES

2.1 INTRODUCTION

This chapter contains the comment letters received on the SERP DPEIR. Following each comment letter are individual responses to those comments. Section 2.1.1 describes the format of the responses to comments. Section 2.1.2 provides a list of the commenters on the DPEIR, the date of each comment, and the assigned letter identification codes.

2.1.1 FORMAT OF RESPONSES TO COMMENTS

Each letter and each comment within a letter have been given an identification code. Responses are numbered so that they correspond to the appropriate comment. Where appropriate, responses are cross-referenced to other responses.

2.1.2 LIST OF COMMENTERS

Table 2-1 provides a list of all written comments received on the SERP DPEIR.

Table 2-1
List of Commenters on the SERP DPEIR

Comment Letter Code	Agency	Commenter Name	Date
SMAQMD	Sacramento Metropolitan Air Quality Management District	Karen Huss, Associate Air Quality Planner/Analyst	April 4, 2013
BANS TAC	BANS Technical Advisory Committee	The Bank Swallow Technical Advisory Committee	May 1, 2013
DPC	Delta Protection Commission	Michael Machado, Executive Director	May 2, 2013
CVFPB	Central Valley Flood Protection Board	Jay S. Punia, Executive Officer	May 3, 2013
CSLC	California State Lands Commission	Cy R. Oggins, Chief Division of Environmental Planning and Management	May 3, 2013
CDFW	California Department of Fish and Wildlife	Tina Bartlett, Regional Manager	May 3, 2013
NMFS	National Marine Fisheries Service	Maria Rea, Supervisor Central Valley Office	May 3, 2013

2.2 COMMENTS AND RESPONSES

2.2.1 SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT (SMAQMD)

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Letter SMAQMD

Larry Greene
AIR POLLUTION CONTROL OFFICER

April 4, 2013

SENT VIA E-MAIL ONLY

Mr. Jeff Schuette
California Department of Water Resources
Division of Flood Management
3310 El Camino Avenue, Suite 100
Sacramento, CA 95821

Program EIR for Small Erosion Repair Program (SAC201301448)

Dear Mr. Schuette:

Thank you for providing the Program EIR for Small Erosion Repair Program (SERP) to the Sacramento Metropolitan Air Quality Management District (SMAQMD) for review. The SERP outlines a process to repair small erosion sites to prevent more costly repair later and provide appropriate environmental protection. SERP covers 300 miles of waterways in Butte, Colusa, Glenn, Placer, Sacramento, Solano, Sutter, Yolo and Yuba counties. SMAQMD staff comments follow on the Program EIR.

1. SMAQMD requests to receive notification for repair sites chosen each year in Sacramento County (including the CEQA Compliance Checklist and project description information). SMAQMD-1
2. As noted in Table 3.2-5, the SMAQMD adopted a mass emission construction threshold of 85 pounds/day for NOx. Although Table 3.2-6 reports the modeled NOx emissions for a single erosion repair site at 26 lbs/day, the SERP allows for construction of up to 15 sites per year, which may exceed the SMAQMD's 85 pounds/day NOx threshold. SMAQMD-2
3. Due to the potential to exceed the 85 pounds/day NOx threshold, SMAQMD requests the attached mitigation, Enhanced Exhaust Control Practices, for construction equipment be included as a mitigation measure in the Program EIR (at a minimum for projects within Sacramento County) in addition to Mitigation Measure 3.2-1. SMAQMD-3
4. If barges are expected to be used for SERP work (page 5-11), barge emissions should be included in the air quality analysis. It is not clear that barge emissions were considered. SMAQMD-4
5. SMAQMD commends DWR for adopting a GHG Emissions Reduction Plan, which allows the SERP to adopt applicable GHG mitigation and effectively tier from that GHG Emissions Reduction Plan. SMAQMD-5
6. All projects are subject to SMAQMD rules in effect at the time of construction. A complete listing of current rules is available at www.airquality.org or by calling 916.874.4800. Attached is a list of rules commonly applicable to construction. SMAQMD-6

777 12th Street, 3rd Floor ▪ Sacramento, CA 95814-1908
916/874-4800 ▪ 916/874-4899 fax
www.airquality.org

If you have any questions regarding these comments, please contact me at 916-874-4881 or khuss@airquality.org. SMAQMD-7

Sincerely,

Karen Huss

Karen Huss
Associate Air Quality Planner/Analyst

Attachments

Cc: Larry Robinson, SMAQMD

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www.airquality.org

ATTACHMENTS

ENHANCED EXHAUST CONTROL PRACTICES

- The project shall provide a plan for approval by the lead agency and District demonstrating that the heavy-duty (50 horsepower [hp] or more) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NO_X reduction and 45% 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 District's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction.

- The project representative shall submit to the lead agency and District a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project representative shall provide the District with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The District's Model Equipment List can be used to submit this information.

- The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented and a summary provided to the lead agency and District monthly. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The District and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supercede other District, state or federal rules or regulations.

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

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www.airquality.org

SMAQMD Rules & Regulations Statement (revised 3/12, removed Rules 414 – Water Heaters, Boilers, and Process Heater and 417 – Wood Burning Appliances)

All projects are subject to SMAQMD rules in effect at the time of construction. A complete listing of current rules is available at www.airquality.org or by calling 916.874.4800. Specific rules that may relate to construction activities or building design may include, but are not limited to:

Rule 201: General Permit Requirements. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from SMAQMD prior to equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact the SMAQMD early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc.) with an internal combustion engine over 50 horsepower are required to have a SMAQMD permit or a California Air Resources Board portable equipment registration. Other general types of uses that require a permit include, but are not limited to dry cleaners, gasoline stations, spray booths, and operations that generate airborne particulate emissions.

Rule 403: Fugitive Dust. The developer or contractor is required to control dust emissions from earth moving activities, storage or any other construction activity to prevent airborne dust from leaving the project site.

Rule 442: Architectural Coatings. The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

Rule 460: Adhesives and Sealants. The developer or contractor is required to use adhesives and sealants that comply with the volatile organic compound content limits specified in the rule.

Rule 902: Asbestos. The developer or contractor is required to notify SMAQMD of any regulated renovation or demolition activity. Rule 902 contains specific requirements for surveying, notification, removal, and disposal of asbestos containing material.

Naturally Occurring Asbestos: The developer or contractor is required to notify SMAQMD of earth moving projects, greater than 1 acre in size in areas "Moderately Likely to Contain Asbestos" within eastern Sacramento County. Asbestos Airborne Toxic Control Measures, Section 93105 & 93106 contain specific requirements for surveying, notification, and handling soil that contains naturally occurring asbestos.

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www.airquality.org

RESPONSE

SMAQMD-1

The comment requests that SMAQMD receives notification for repair sites chosen in Sacramento County. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

SMAQMD-2

The comment and concern for a potential exceedance of the oxides of nitrogen (NOx) emissions threshold is noted. Currently, DWR has taken the following actions to comply with ARB's off-road fleet requirements:

- Annual reporting to the Air Resource Board
  - For DWR's whole fleet of off-road vehicles, staff is required by ARB to report on the percentage of DWR's vehicles that meet ARB standards. Compliance is determined by a percentage of vehicles meeting the standard.
  - Currently, DWR, as a whole, is in compliance.
- It is not cost effective to retrofit off-road vehicles, so DWR is building compliance through purchase of new vehicles. DWR is in the process of phasing out all tier 0 through tier 3 vehicles to be replaced by tier 4 vehicles.
- The flood maintenance yard's on-road diesel vehicles are in compliance, either through retrofit or through the purchase of new vehicles.
  - There is another option provided by ARB that is being used for some low-use vehicles. Some heavy equipment vehicles such as dozers are only used during flood response efforts and are considered low-use equipment. These vehicles are compliant if they are run no more than 1,000 hours each year. These hours are tracked.
- All DWR Off-Road equipment is listed on ARB's website, and DWR staff conducts monthly evaluations of DWR's compliance status by logging in to ARB's website.

In addition to continuing these actions, the requirement to conduct no more than three repairs at the same time within the SMAQMD, unless DWR chooses to implement components of SMAQMD's Enhanced Exhaust Control Practices, has been added to Mitigation Measure 3.2-1. Furthermore, depending on whether exceedance still occurs after implementing these components, DWR may need to pay off-site mitigation fees to mitigate construction emissions. By conducting a maximum of three sites at the same time, the maximum daily NOx emissions

with implementation of Mitigation Measure 3.2-1 (on page 3.2-23 of the DPEIR) would not exceed SMAQMD's 85 pounds/day threshold. The revised DPEIR text is shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

SMAQMD-3

The comment and concern for potential exceedance of the NO_X emissions threshold is noted. Per discussion with SMAQMD, it is necessary for projects to implement all feasible mitigation measures prior to using the off-site mitigation fee mechanism to mitigate construction emissions. Therefore, Mitigation Measure 3.2-1 has been modified to address this comment. The revised DPEIR text is shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

SMAQMD-4

The comment noted that it is not clear whether barge emissions were evaluated in the DPEIR. To address the comment, additional analysis has been performed and the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." The edits do not change the conclusions of the DPEIR.

SMAQMD-5

This comment acknowledges that the SERP includes greenhouse gas (GHG) mitigation and tiers from the GHG Emissions Reduction Plan (GGERP) and commends DWR for doing so. The GGERP Consistency Determination form has been appended to the DPEIR as shown in Chapter 3, "Revisions to the DPEIR." No further response is required.

SMAQMD-6

Comment noted. Applicable SMAQMD rules and regulations are presented in Table 3.2-1.

SMAQMD-7

Comment noted. DWR will contact the identified staff, or her successor, with any questions concerning SMAQMD's comments.

2.2.2 BANK SWALLOW TECHNICAL ADVISORY COMMITTEE (BANS TAC)

Letter BANS TAC

BANS Technical Advisory Committee
Promoting long-term conservation
and recovery of the Bank Swallow

May 1, 2013

Mr. Jeff Schuette, Senior Environmental Scientist
Maintenance and Support Branch
Division of Flood Management
Department of Water Resources
3310 El Camino Ave, Suite 140
Sacramento, CA 95821

Re: Small Erosion Repair Program EIR

Dear Mr. Jeff Schuette,

This comment letter is submitted on behalf of the Bank Swallow Technical Advisory Committee (BANS TAC) in regards to the Programmatic EIR for the Small Erosion Repair Program (SERP).

The BANS TAC is a collaborative advisory committee involving federal and State agencies, and conservation and research non-governmental agencies. We provide information and education regarding the California State Threatened Bank Swallow (*Riparia riparia*) to various entities involved in flood and water management and resource protection within the Sacramento River watershed.

We have reviewed the SERP Programmatic EIR and associated manual, and recognize and appreciate the efforts taken to avoid impacts to Bank Swallows through implementation of species specific conservation measures. In our review, however, we have identified several areas of concern regarding both the described range and habitat needs of the species, as well as, the cumulative effects of your program, especially when considered in the context of other programs throughout the Sacramento River watershed (e.g. Department of Water Resource's Flood System Repair Program, US Army Corps of Engineers' Sacramento River Bank Protection Project Phase II, etc.). We recommend that you review the attached draft Bank Swallow Conservation Strategy for the Sacramento River Watershed, California. Additionally, we provide our specific concerns below:

BANS TAC-1

Species Distribution- Historically, Bank Swallows bred throughout California, in both the Sacramento and San Joaquin watersheds on the main stems and tributaries. Currently, the species breeds on watersheds not considered by your conservation measures within the SERP Manual (e.g. American and Feather Rivers, Cache Creek, Sacramento River south of Knights Landing). **We recommend considering Bank Swallows throughout the SERP implementation area.**

BANS TAC-2

Suitable habitat- We find it important to recognize that, while the habitat suitability index model (Garrison 1989) is informative, Bank Swallow habitat is not a static feature on the landscape. The species depends on riverine ecosystem processes (sediment transport, river meander, erosion etc.) for the formation of their dynamic and ephemeral breeding habitat. Therefore, any impacts such as placement of rock revetment to natural river or stream bank within the connected floodplain, regardless of the presence of suitable habitat at the time of impact, eliminates the potential for that segment of bank to

BANS TAC-3

become habitat in the future. Additionally, changes to the condition of the bank from the placement of rock revetment have effects both upstream and downstream of the impacted site, further complicating the assessment of impacts to Bank Swallow habitat. **We recommend that any sites that involve placing rock revetment on natural river or stream bank, regardless of the presence of the SERP described "suitable habitat", be considered an impact to Bank Swallows.**

Cont. BANS TAC-3

Cumulative effects of placing rock-revetment- The Bank Swallow was listed as a State Threatened species due to range contraction and population decline throughout California resulting from impacts to riverine ecosystems. Since the species was listed, the continued impacts of the placement of rock revetment have incrementally degraded and reduced the species' dynamic and ephemeral nesting habitat, and the number of breeding birds has continued to decline. The natural banks throughout the Sacramento River watershed currently provide the most significant remaining habitat resource for the Bank Swallow, despite exhibiting declining numbers of burrows. It is important for the persistence of the species that these resources are protected. The SERP, which could potentially place 75,000 linear feet of rock revetment over the next 5 years within the species' California range, will lead to a continued reduction of available habitat for Bank Swallows. In an effort to avoid heightening the listing status of the species through habitat loss and further declines, we hope that flood managers will consider alternative and more sustainable approaches to managing river systems. The BANS TAC has developed a draft Conservation Strategy for the species, and we hope that its guidance related to protection, restoration, and mitigation measures (as a last resort) will prove invaluable in informing new approaches. **We recommend that the project team involved with the development of SERP review the draft Bank Swallow Conservation Strategy, including the Conservation Recommendations developed within this document, and adopt the Conservation Recommendations as standard programmatic procedure.**

BANS TAC-4

Please feel welcome to contact the BANS TAC regarding questions about Bank Swallow issues in the future, and thank you for the opportunity to comment on the SERP Programmatic EIR and Implementation manual.

BANS TAC-5

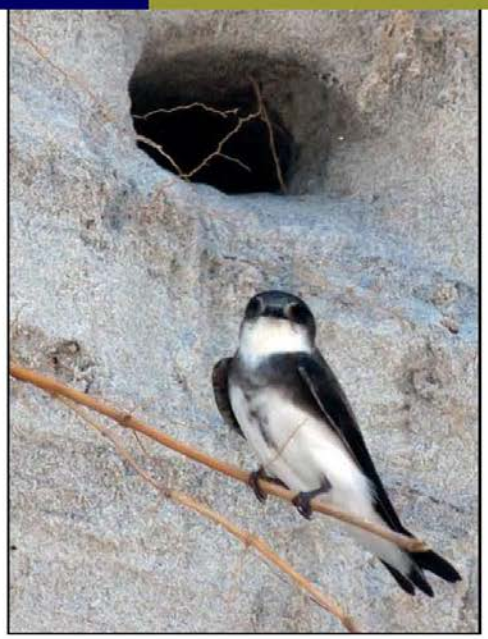
Regards,

The Bank Swallow Technical Advisory Committee (BANS TAC)

To contact members of the BANS-TAC please call or email Rob Irwin, Sacramento River Conservation Area Forum, at (530) 528-7401, bankswallowtac@mail.com

Attachments: Draft Bank Swallow (*Riparia riparia*) Conservation Strategy for the Sacramento River Watershed, California.

Bank Swallow (Riparia riparia) Conservation Strategy for the Sacramento River Watershed, California



Bank Swallow Technical Advisory Committee

April 2013

Cover photo: Bank Swallow perched near the entrance of a nest burrow.

Photo by Jim Barber, 2010

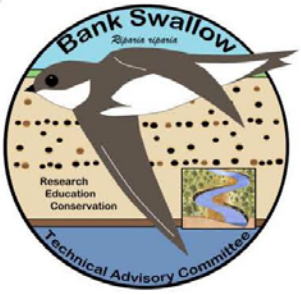
Bank Swallow (Riparia riparia) Conservation Strategy for the Sacramento River Watershed, California

Version 1.0
April 2013

Bank Swallow Technical Advisory Committee

Suggested citation:

Bank Swallow Technical Advisory Committee. 2013. Bank Swallow (*Riparia riparia*) Conservation Strategy for the Sacramento River Watershed, California. Version 1.0. www.sacramentoriver.org/bans/



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EXECUTIVE SUMMARY

The Bank Swallow is a State-listed Threatened Species and is intimately tied to natural river processes; its presence in sustainable numbers is an indicator of a healthy river system on which many of California's species depend. Most Bank Swallows in California nest along the Sacramento River and its tributaries, excavating burrows in vertical banks created by natural river processes. Natural river processes include bank erosion and deposition resulting from lateral migration of rivers within their natural meander belt and floodplain.

The population of Bank Swallows using the Sacramento River system has been estimated by counting burrows and has trended downward from 24,580 burrows in 1986 to 15,000 burrows in 2012. Burrow numbers on the Feather River have also declined, from almost 6,600 in 1987 to 2,320 in 2012. The continued decline of the Bank Swallow population in California coincides with the increase of rock revetment placed on the banks of the Sacramento River between Colusa and Red Bluff, from 50,000 linear feet (10 miles) in 1970 to 275,000 linear feet (52 miles) in 2010; and 64,000 linear feet (12 miles) of revetment on the Feather River. Nesting Bank Swallows have also been affected by alterations to the river's natural hydrology with the installation of water storage and flood control facilities, primarily dams.

The Bank Swallow Technical Advisory Committee (BANS-TAC) is a diverse coalition of State and federal agency and non-governmental organization personnel, created in response to the continued decline of Bank Swallow (*Riparia riparia*) populations on the Sacramento River. The BANS-TAC's mission is to promote collaborative long-term conservation and recovery of the Bank Swallow along the Sacramento River, its tributaries, and other areas throughout California by coordinating and supporting monitoring and research, habitat restoration and management, and outreach and education. To that end, the BANS-TAC has produced a conservation strategy to provide direction to better protect and recover the Bank Swallow in California, as well as benefit the many other species dependent on natural river systems.

To recover the Bank Swallow population in California, natural river processes will have to be restored on a significant portion of the Sacramento River and its tributaries. Many of the current flood management activities will have to be modified and replaced with more sustainable ones, and past habitat modification will have to be reversed. Spring and summer flow regimes that inundate or erode active colonies will have to be modified.

Specifically, the Bank Swallow Conservation Strategy recommends:

1. avoiding new impacts to river processes as well as to existing nesting habitat and colonies using current data; consulting with the California Department of Fish and Wildlife; maintaining appropriate construction buffers; using alternatives to bank stabilization; and maintaining non-impacting flow regimes during the nesting season.

2. protecting suitable habitat by acquiring permanent easements or fee-title to parcels with existing colonies and suitable nesting habitat; and reestablishing and reconnecting river floodplains.

3. restoring nesting habitat and river processes on the Sacramento and Feather Rivers by removing 53 miles of revetment and restoring 12,000 acres of floodplain by 2050; and managing flow regimes to improve floodplain connectivity and reduce inundation impacts to nesting Bank Swallows.

4. mitigating unavoidable impacts to Bank Swallow habitat and river processes by removing revetment from potential habitat at a 2:1 ratio and conserving habitat at a 1:1 ratio for known habitat; removing revetment from potential habitat at a 1:1 ratio, and conserving habitat at a 1:1 ratio, for impacts to potential habitat; and conserving eroding bank whenever flows impact Bank Swallows during the nesting season.

In addition to improving conditions for Bank Swallows, these actions will protect and restore natural river processes that contribute to the ecosystem services that our rivers provide: nutrient transport, fish and wildlife habitat, water quality, and flood protection. Stewardship of the Bank Swallow is one step toward managing our floodplains and rivers in a way that provides benefits for people and wildlife.

INTRODUCTION

Bank Swallows nest on vertical, or near-vertical, banks and bluffs in areas along rivers, lakes, and oceans (Fig. 1). Although comprehensive surveys are lacking, available information suggests that 70 - 90% of the current known Bank Swallow population in California nests in colonies along the Sacramento and Feather Rivers (Laymon et al., 1988; BANS-TAC, unpublished data). Because most colonies are located on eroding river banks, presence of this species in sustainable numbers is an indicator of the healthy riparian ecosystem that results from a river's lateral migration within its floodplain. The combination of hydrology, erosion, sediment deposition, river migration, and ecological disturbance and succession result in the physical and biological environment that provides essential habitat for the Bank Swallow and many other plants and animals along California's rivers.

Figure 1: Bank Swallow colony. Photo by Danika Tsao (CDWR) 2011

In 1989 the Bank Swallow (*Riparia riparia*) was State-listed as Threatened. Despite the listing and subsequent adoption of the Recovery Plan (CDFG,1992), which afforded the species additional legal protections, the Bank Swallow population on the Sacramento River has continued to decline and remains vulnerable to ongoing bank stabilization and flood control projects. This vulnerability was illustrated in 2007 when State and federal flood control agencies placed rock revetment on nearly a mile of eroding bank on the Sacramento River. This project covered a Bank Swallow colony site with eight years of surveyed nesting activity and over 4000 burrows, one of the largest in California.

The Bank Swallow Technical Advisory Committee was formed in response to this event. The BANS-TAC is a diverse coalition of State and federal agency, non-governmental

organization, and university personnel dedicated to the conservation of Bank Swallow (*Riparia riparia*) populations in California. The BANS-TAC's mission is to promote collaborative long-term conservation and recovery of the Bank Swallow along the Sacramento River, its tributaries, and other areas throughout California by coordinating and supporting monitoring and research, habitat restoration and management, and outreach and education . To that end, the BANS-TAC has produced a conservation strategy to provide direction to better protect and recover the Bank Swallow in California, as well as benefit the many other species dependant on natural river systems (www.sacramentoriver.org/bans) .

This conservation strategy is based on the species needs and is intended to guide the preservation, protection, and restoration of habitat and natural river processes that support Bank Swallow populations in California.

Specifically, the strategy is intended to provide flood management and regulatory agencies, conservation organizations, and private landowners with measurable conservation objectives for the species. Focusing on the Sacramento River and its tributaries, this strategy describes:

1. the natural history and ecology of Bank Swallows
2. the status and trends of Bank Swallow populations
3. threats to Bank Swallow populations
4. recommendations for conservation actions to help the population recover

Natural River Processes

Natural water flows, or hydrographs, are highly seasonal and influenced by storm events in the Sacramento Valley and snow melt in the surrounding mountains. Historically, Sacramento River flows were naturally low in the fall, and increased in the winter due to precipitation. Spring and summer snowmelt resulted in a spring peak and long tapering decline in flows into the summer, the amount and duration depending on snowpack.

Alluvial rivers naturally move, or migrate, due to erosion on the outside banks of channel bends and sediment deposition on the inside of the bends creating point bars (Fig. 2). As a result of these dynamic river processes, meander bends move through time, both downstream and cross-stream. The lateral extent of the river's migration is

called the meander belt. Movement of the river channel within the meander belt is driven by high flow events that cause the collapse and resurfacing of banks.

Flooding and bank erosion are vital processes of the river ecosystem for Bank Swallows. Bank erosion creates the near-vertical banks the swallows rely on for nesting. In the absence of bank erosion, over-steep banks collapse and become covered with vegetation, making them unsuitable for Bank Swallow nesting (Garrison, 1999). These river processes and the riparian (river-associated) ecosystem are also important to many other species (Golet et al, 2003; Stillwater Sciences, 2007a).

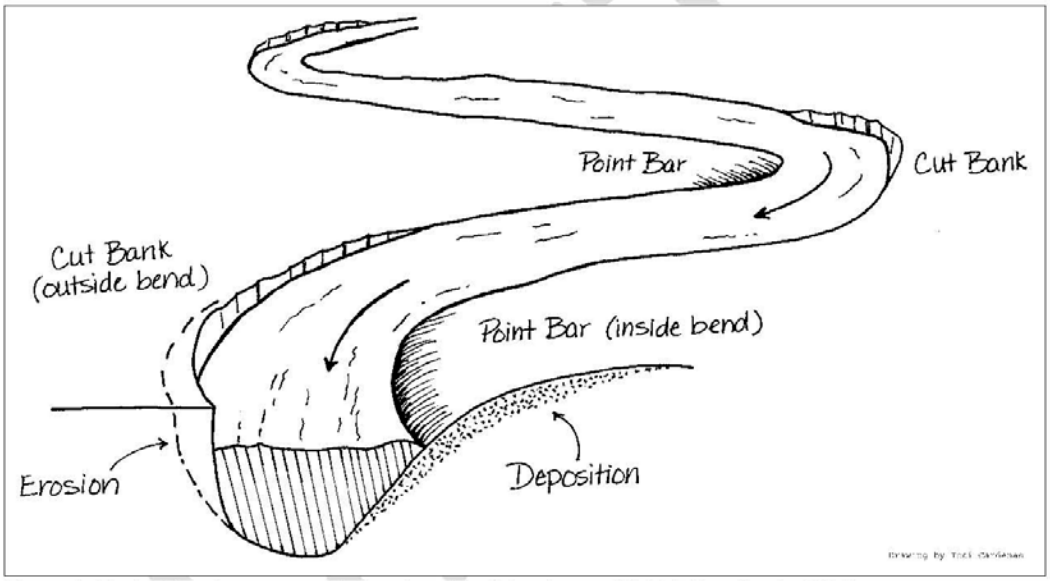

Figure 2: Typical bend on a meandering river (Toni Cardenas, SRCAF Handbook, 2003)

GLOSSARY

Adjacent levee - levee constructed on the landward side of an existing levee. The existing levee is allowed to erode and fail over time, resulting in the river eventually re-occupying a portion of its floodplain.

Bank protection - material (usually rock revetment) is placed on a river bank to prevent erosion on adjacent land. Also **bank stabilization, revetment, rock revetment, rip-rap.**

Brood - number of young produced from a clutch per adult Bank Swallow pair.

Burrow occupancy rate - a constant applied to burrow count numbers to account for the fact that not all burrows are occupied by nesting Bank Swallows. Published rates differ and the rate may change during a season.

Colony - a group of birds nesting together in close association. A Bank Swallow colony is identified as a cluster of burrows in bare or nearly bare cut banks.

Colony persistence - length of time a Bank Swallow colony is in use.

Conservation easement- Legally binding restrictions voluntarily placed on property by the owner that constrains the rights of present and future owners; these restrictions limit certain rights and uses of the property for conservation, preservation, or restoration purposes (California Civil Code Section 815)

Clutch size - the number of eggs laid by a female bird in one nesting attempt. The average Bank Swallow clutch is 3 to 5 eggs.

Cut bank - a steep, bare slope formed by erosion on the outside of a stream bend due to lateral migration, or meander, of a stream. Also **vertical bank, natural bank.**

Double-clutching - nesting pair produces two or more sets of eggs, which may result in the production of multiple sets of young, although all sets of eggs may fail.

Floodplain - the relatively flat area adjacent to a river that experiences flooding during periods of high discharge. Also **connected floodplain**

Geologic control - various substrates that are resistant to erosion, natural hard points that stop lateral migration of the river.

Habitat - refers to the vertical, or near-vertical, river banks with friable soils formed by erosion preferred by Bank Swallows for burrow excavation. Nesting habitat is created and maintained by erosion and sediment deposition, river migration, and ecological disturbance and succession. **Suitable habitat** or **potential habitat** includes sites that have the proper physical features (mixed alluvium within the meander belt) but may not be currently occupied by a Bank Swallow colony.

Hard point - a structure located adjacent to a river that changes the direction or rate of channel migration by interfering with the rivers movement. Examples include buildings, bridges, and

levees. A **natural hard point** may be formed in areas with erosion resistant soils, or geologic control.

Hydrograph - a graph showing discharge (rate of flow) over time at specific place on a river. Historically, Sacramento River flows were low in the fall and increased in the winter due to precipitation. Spring and summer snowmelt resulted in a spring peak and long tapering decline in flows into the summer, the amount and duration depending on snowpack.

Lateral migration - the lateral movement of a river channel as it adjusts to balance erosion with deposition. Also **channel migration**.

Levee - a natural or constructed ridge or wall which regulates water levels. Artificial levees are designed to prevent flooding of the surrounding land and slow natural course changes of a waterway.

Meander - the bend or curve in a river or stream channel. Also refers to the migration of the river or stream channel.

Meander belt - the average meander width of a river measured from outer bend to outer bend; the lateral extent of a river's migration on its floodplain. For the Sacramento River, the historic meanderbelt is often referred to as where the river has been since 1896, the first available maps of the channel. Also **one-hundred-year meander belt.**

Meander potential - the potential for a channel to migrate laterally, based on suitable soils.

Mitigation - an action designed to avoid, minimize, reduce, or compensate for a significant impact to the environment. Acceptable mitigation for impacts to Bank Swallow habitat or potential habitat, such as placement of rock revetment or sloping a cut bank, includes removal of rock from suitable habitat elsewhere on the river.

Restoration - the return of an altered ecological system to a stable, healthy, sustainable approximation of its former unimpaired condition.

Revetment - a sloping surface of stone, concrete, or other material placed on a river bank in such a way as to absorb the energy of incoming water, thereby protecting the bank from erosion. Also **bank stabilization**, **bank protection**, **rock revetment, rip-rap.**

Revetment removal - the removal of rock, or other, revetment from a river bank in order to allow restoration of natural river processes. Also **rock removal**.

Riparian - living or located on the banks of a stream or river, such as riparian woodland or riparian vegetation. Also **riverine.**

Rip-rap alternative - bank stabilization alternatives that do not include using rip-rap. Examples may include bioengineering (planting vegetation and natural features to reduce bank erosion) or set-back levees.

River mile - the distance in miles along a river measured from its confluence with the San Joaquin River. This conservation strategy references river miles on the Sacramento River as

published in the U.S. Army Corps of Engineers' "Sacramento River, Sloughs, and Tributaries, California 1991 Aerial Atlas, Collinsville to Shasta Dam." These river miles may no longer be on the main channel due to **meander**.

River processes - the processes associated with rivers and streams include erosion, transportation, and deposition of sediment. Rivers naturally move, or migrate, due to erosion on the outside banks of channel bends and sediment deposition on the inside of the bends, creating point bars. As a result, meander bends of a river are not static but move through time, both downstream and cross-stream. Also **dynamic river processes**, **natural river processes**, **geomorphic processes**, **fluvial processes**.

Setback levees - levees constructed at some distance from the river channel in order to allow the river to occupy a portion of its floodplain; these levees are usually smaller in size than levees placed immediately adjacent to the river channel.

Streamflow - the water flowing in streams or rivers. Streamflow is measured in volume over time, often cubic feet per second (cfs). Also **discharge**.

Sustainable population size - the minimum population size that allows a species to persist in the face of environmental uncertainty. For Bank Swallows that live in ephemeral habitats, a minimum number of 25000 breeding pairs guards against events such as breeding failure due to bank collapses, and stochastic events.

Take- To hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill. (FGC §86). Take is regulated by agencies such as California Department of Fish and Wildlife and U.S. Fish and Wildlife Service.

BANK SWALLOW NATURAL HISTORY AND ECOLOGY

Species Description

The Bank Swallow (Fig. 3) is the smallest North American swallow with a weight of about 13.5 grams. They are approximately 13 centimeters in length, with a wing span of 33 centimeters (Brinkley, 2007). The sexes appear similar and are distinguished only by the presence of a brood patch or cloacal protuberance (Garrison, 1999). Adult Bank Swallows have a grayish brown mantle, rump and wing coverts, and a brown tail. They have a distinct brown breast band contrasting with the white chin and belly (Garrison, 1999).

Figure 3: Adult Bank Swallow pair. Photo by Jim Dunn, 2009.

Distribution

Bank Swallows are migratory birds that breed in North America, Europe, and Asia, and winter in Central and South America and Africa (Garrison, 1999). The California populations winter in Central and South America, and currently breed in the northern and central regions of the state (Fig. 4). Despite their extensive range, Bank Swallow

breeding colonies are patchy, occurring only in areas where appropriate habitat exists (Grinnell and Miller, 1944). As a result, although there are nesting colonies scattered across Northern California, 70 - 90% of the Bank Swallow population occurs along the Sacramento River and its tributaries (Humphrey and Garrison, 1986; Garrison et al, 1987; CDFG, 1992;).

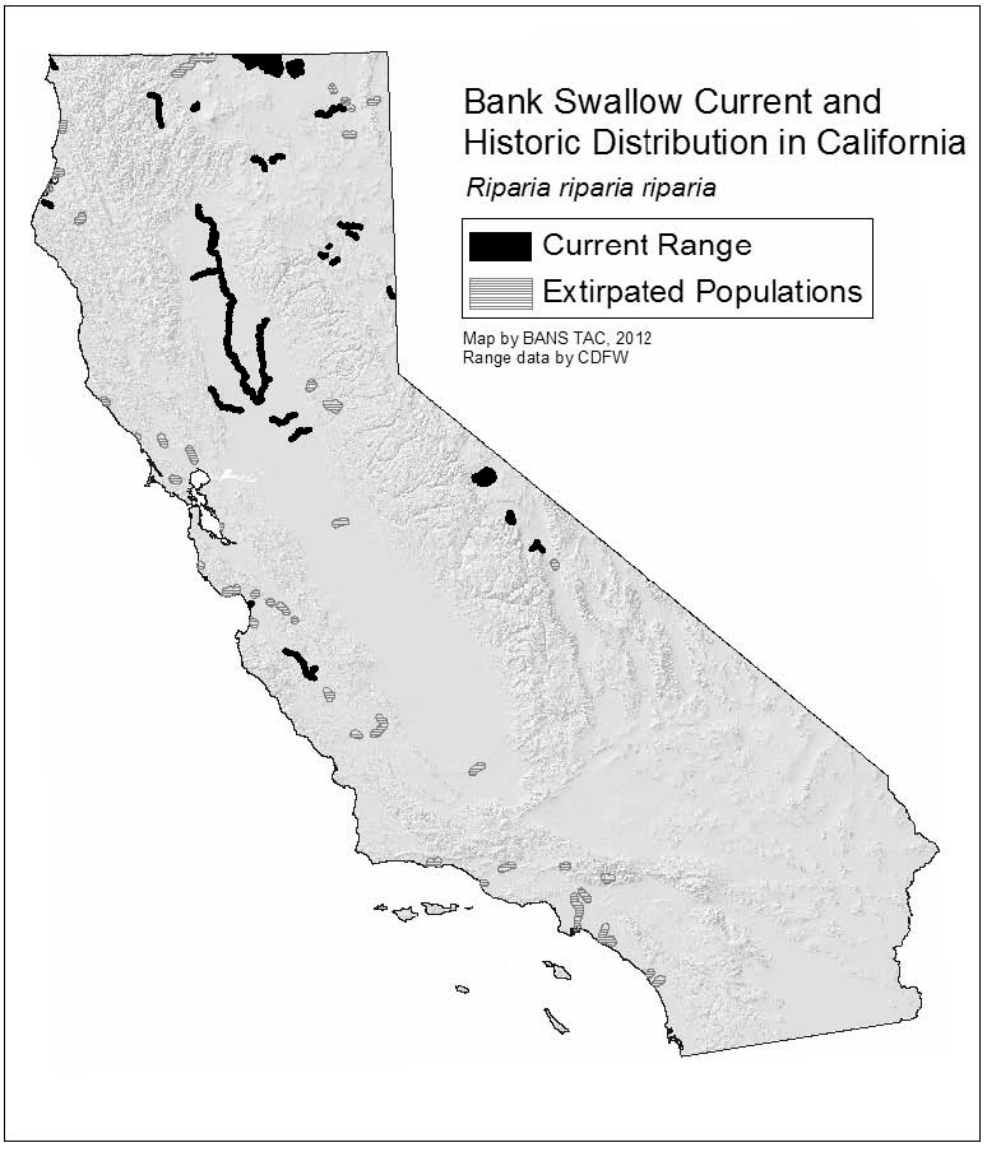

Figure 4. Current and Extirpated Bank Swallow Breeding Distribution in California.

Reproduction

Bank Swallows arrive in California each spring as early as March to nest; they seek suitable colony locations, excavate burrows, and form pairs. Males excavate burrows prior to pairing, and nests are built in the burrows using materials gathered from the ground, and pieces of roots from exposed banks (Fig. 5).

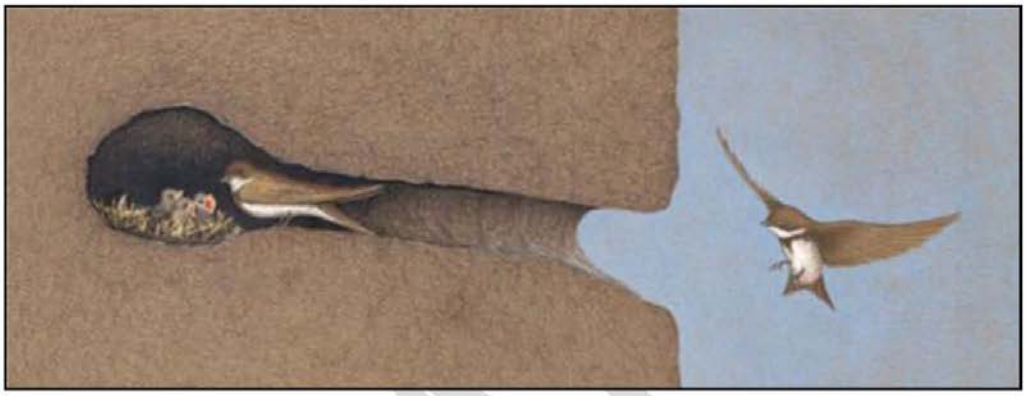

Figure 5: Artist rendition of Bank Swallow burrow and nest structure. Typical burrows can be as much as 3 feet deep. Figure by permission from Tim Gunther, www.gunthergraphics.biz

Bank Swallows typically lay 3 to 5 eggs, with peak egg-laying occurring between mid-April and mid-May. Most juveniles (Fig. 6) fledge by mid-July. Bank Swallows are thought to produce only one brood per season in California (Garrison, 1999), although some studies suggest Bank Swallows may have two broods in a given season (Stoner, 1925; Wright, 2011). Mortality and survivorship of young have not been extensively studied in North America, but average mortality of hatch-year Sand Martins (Bank Swallows) in Great Britain based on mark-recapture studies was 77–80% (Hardwood and Harrison, 1977; Cowley, 1979).

Figure 6. Juvenile Bank Swallows in Burrow. Note the brown chest band Photo by Ryan Martin (CDWR), 2009

Nesting Colonies and Habitat

Bank Swallows in California nest in colonies ranging in size from 3 to over 3,000 nest burrows. On the Sacramento River, 70% of colonies consist of 10 to 340 burrows (Schlorff, 1997; Garcia, 2009).

Bank Swallows establish colonies along eroded, vertical banks within river systems with friable alluvial soils (Fig. 7) (Garrison et al., 1987). Dynamic river processes create these conditions as rivers meander and expose fresh soil. In coastal areas and lakes, wave action erodes banks or bluffs to create vertical faces.

Figure 7. Active Bank Swallow Colony on the middle Sacramento River. Photo by Scott McReynolds (CDWR), 2012.

Burrows are often destroyed by erosional processes from year to year, exposing fresh banks that are used by the swallows. Due to the ephemeral nature of their nesting habitat, individual Bank Swallows have relatively low fidelity to a particular nest site (Freer, 1979); however, colonies may persist in a given area for many years as long as appropriate soil characteristics and vertical bank profile remain available. The regular resurfacing of this habitat may be beneficial to Bank Swallow populations by reducing parasite loads (Garrison and McKernan, 1994; Garrison, 1999; Moffatt et al., 2005), as

ectoparasites may reduce their reproductive success (Szep and Møller, 1999). Such resurfacing may also help reduce nest predation risk since older banks may become too accessible to predators due to minor bank sloughing or vegetation encroachment (Garrison et al, 1989; Garrison, 1998).

Bank Swallow nesting colonies are also found in artificial sites, including sand quarries (Fig. 8) and road cuts, where resurfacing occurs during mechanical removal of materials, but these are uncommon (Garrison, 1999). These off-river sites are not well documented although there are California records from Siskiyou, Shasta, Lassen, Plumas, San Joaquin, and Inyo counties (pers. comm. D Garcia, 2008).

Figure 8. Bank Swallow burrows in sand mine (in shadow, right-center), Shasta County. Photo by Tricia Bratcher (CDFW), 2011.

From 1987 to 1989, eight experimental nesting sites were constructed along the Sacramento River to evaluate the effectiveness and feasibility of created habitat to compensate for losses of natural Bank Swallow nesting habitat (CDFG, 1992; Garrison, 1991). Five of the eight locations were natural river banks "enhanced" by reshaping the bank to expose vertical faces and fresh soils. The other three locations were "artificial" sites constructed with soil mounds landward of the rip-rap above the bank. Although the enhanced sites were used by Bank Swallows, they required annual maintenance; use by the birds ended once maintenance stopped. The artificial sites lacked the needed characteristics of natural Bank Swallow nest sites and were not well used. Those that were used showed high levels of predation by herons and egrets (Garrison, 1991).

Because of these factors, Garrison (1991) recommended that artificial nesting sites not be used to mitigate for losses of natural Bank Swallow nesting habitat.

Relationship of Burrow Numbers to Number of Nesting Pairs

The number of nesting pairs of Bank Swallows is difficult to assess directly. It is not possible to derive the number of nesting pairs by counting active burrows, or by counting the number of burrows used in a season. Not all birds within an active colony nest at the same time, some males construct nest burrows but do not attract a mate and abandon them, and there is evidence that some pairs may produce more than one brood per season. For that reason, raw burrow counts are currently the best index of Bank Swallow numbers and are used in this document for that purpose. During surveys, burrows that have specific characteristics indicative of recent use are counted as surveyors pass in boats.

Occupancy rates, percent of burrows actually used for nesting that season, have been calculated for some raw burrow counts. Under close inspection, burrows that show signs of use, such as eggs, shells, nest material, incubating or brooding swallows, or young are deemed occupied. Calculated occupancy rates have ranged from 31.6 - 63% in studies conducted on the Sacramento River (Garrison et al., 1987; Garrison et al., 1989; Garrison, 1991; Wright et al., 2011). The BANS-TAC compared the studies that include occupancy rates, and has adopted a rate of 50% to convert raw burrow counts to a rough estimate of nesting pairs. Thus, the 15,000 burrows counted on the middle Sacramento River in 2012 would represent 7,500 nesting pairs.

Diet and Foraging Habitat

Bank Swallows usually forage in flight, both individually and in flocks, consuming mainly flying or jumping insects (Beal, 1918; Turner and Rose, 1989; Garrison, 1999). When feeding nestlings, birds are commonly observed foraging within 50-200 meters of nesting colonies (Garrison, 1998). Foraging habitat includes wetlands, open water, grasslands, riparian woodland, orchards, agricultural fields, shrub lands, and upland woodlands (Stoner, 1936; Gross, 1942; Freer, 1977; Turner and Rose, 1989; Garrison, 1999). Native remnant and restored riparian habitats provide structural and species diversity for an abundance of insect prey for Bank Swallows (Garcia, 2009).

Wintering Habitat

Little information exists regarding Bank Swallow wintering habitat. Bank Swallows have been recorded in grassland, savanna, open agricultural areas, and freshwater and brackish wetlands in Central and South America (Garrison, 1999).

BANK SWALLOW STATUS

Historic Distribution

Bank Swallows historically bred throughout lowland California (Grinnell and Miller, 1944), including coastal sites from Santa Barbara County south to San Diego County. In 1987, only four colonies were found south of San Francisco Bay (Laymon et al., 1988). At that time, the Sacramento River and Feather River populations were thought to comprise about 64 percent of the colonies and 70 percent of the California population. The remaining population was thought to be concentrated in the Klamath Basin and Modoc County areas of northeastern California.

Legal Status and Recovery Goals

In March 1989, the California Fish and Game Commission listed the Bank Swallow as a Threatened species under the California Endangered Species Act (CESA). CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project caused losses of listed species populations and their essential habitats.

In 1992, the California Department of Fish and Wildlife (CDFW) (formerly CDFG) published a recovery plan for the species (CDFG 1992: http://www.dfg.ca.gov/wildlife/nongame/publications/bm_research/docs/93_02.pdf). The recovery plan states that "While it is not expected that the Bank Swallow population can be fully restored to its former abundance and distribution, stabilizing the population at a level that ensures long-term viability is a reasonable and achievable goal." The plan did not, however, give a specific population target for recovery.

The Bank Swallow is not listed under the federal Endangered Species Act (ESA); however, it is protected by the Migratory Bird Treaty Act, the Fish and Wildlife Coordination Act, and under the California Environmental Quality Act.

The Migratory Bird Treaty Act (MBTA) was implemented in 1918 for the protection of migratory birds between the U.S. and Great Britain (on behalf of Canada). Later amendments implemented treaties between the U.S. and Mexico, Japan, and Russia. The MBTA makes it illegal to take or possess any migratory bird or parts, nests, or eggs, of such a bird except under the terms of a valid permit issued pursuant to Federal regulations.

The Fish and Wildlife Coordination Act (FWCA) of the United States was enacted in 1934 to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The Act provides the basic authority for

involvement of the United States Fish and Wildlife Service (USFWS) in evaluating impacts to fish and wildlife from proposed water resource development projects. The Act's purpose is to recognize the vital contribution of U.S. wildlife resources, and their increasing public interest and significance. FWCA requires that wildlife conservation be given equal consideration to other features of water-resource development programs through planning, development, maintenance and coordination of wildlife conservation and rehabilitation.

The California Environmental Quality Act (CEQA) was passed in 1970 to implement a statewide policy of environmental protection. CEQA applies to all discretionary projects proposed to be conducted or approved by a California public agency, including private projects requiring discretionary government approval (California Public Resources Code, Sections 21000 - 21178, and Title 14 CCR, Section 753, and Chapter 3, Sections 15000 - 15387). Under CEQA, analysis of project impacts to all aspects of the environment, including sensitive species and their habitats, is required. Due to their threatened status under CESA and declining population, disturbance to Bank Swallows or their habitat could be a significant impact. Any project with potential impacts to Bank Swallows or their habitat must comply with CEQA to identify and analyze the impacts and propose measures to reduce impacts to below a level of significance.

POPULATION TRENDS SINCE PROTECTION

Sacramento River

Since 1986 the CDFW (in partnership with the USFWS since 1999) has conducted annual surveys along the Sacramento River between Red Bluff and Colusa (Fig. 9) (Laymon et al., 1988; Schlorff, 1997; Hight, 2000; Garcia et al., 2008; Wright et al., 2011). At the time of CESA listing in 1989, the burrow count based on the 1986 survey was approximately 25,000. Through most of the 1990s burrow counts, and the corresponding estimate of Bank Swallow pairs, consistently declined, reaching a low of 9800 burrows in 1998. Since 1998, the number of burrows has fluctuated between 10,000 and 19,000 (Schlorff, 2000). The most recent estimate (2012) was of 15,000 burrows.

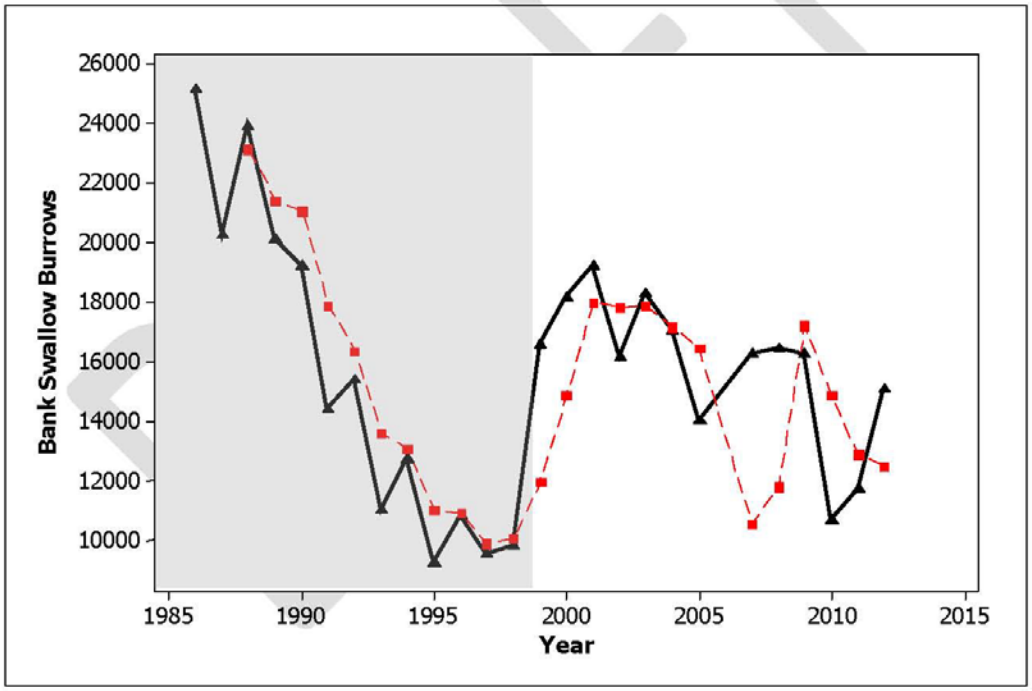

Figure 9. Bank Swallow burrow counts reported for the Sacramento River between Red Bluff and Colusa, from interagency survey efforts (1986-2012). Annual counts shown in black, 3 year moving average in red.

Feather River

In 1987, CDFW conducted a survey of the Feather River and obtained an estimate of 6,590 burrows (Laymon et al., 1988). In 2002 and 2003, the Department of Water Resources (DWR) surveyed the Feather River and obtained burrow estimates of 2,270 and 3,590, respectively. Since 2008, DWR has conducted annual surveys of the Feather River, counting a low of 1,830 burrows in 2010. The most recent estimate (2012) was 2,320 burrows (Fig. 10).

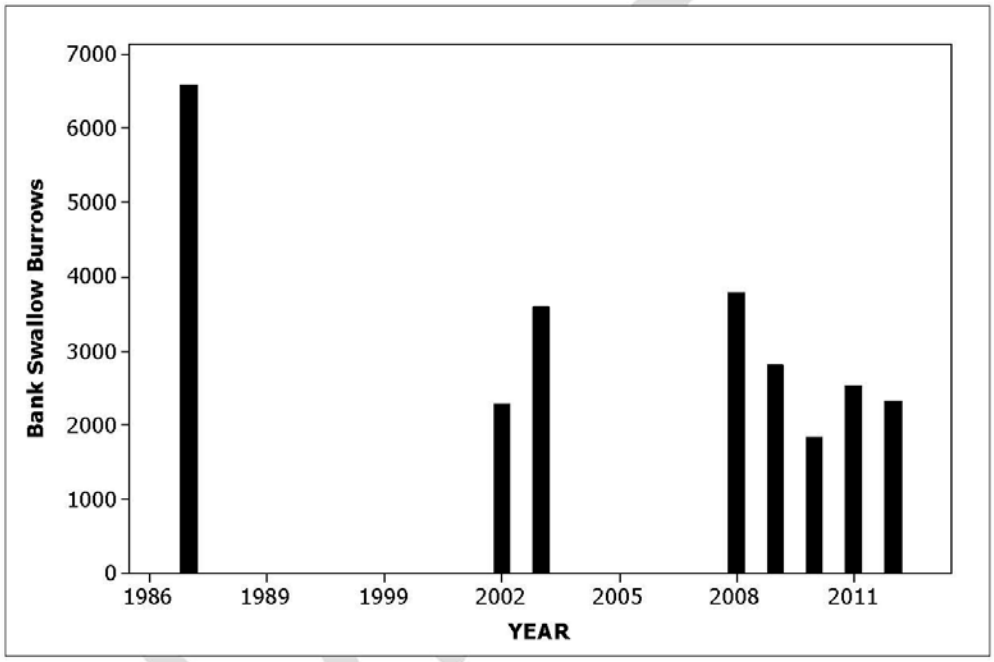

Figure 10. Bank Swallow burrow counts for the Feather River. DWR Annual surveys began in 2008. Surveys were not conducted in years without bars.

IMPACTS AND THREATS TO BANK SWALLOW POPULATIONS

On the Sacramento River and its tributaries, the most important overall threat to Bank Swallows has been the gradual loss of river processes that provide habitat for Bank Swallows and other wildlife. Bank Swallow populations have been impacted through direct mortality, as well as loss of suitable nesting and foraging habitat resulting from land conversion, bank stabilization, flood management activities, and water supply operations throughout California (Remsen, 1978; Humphrey and Garrison, 1987; CDFG, 1992; Schlorff, 1997).

Bank Stabilization

Projects that prevent lateral migration of the river channel through placement of rock revetment have significantly reduced the amount of available nesting habitat and altered the river processes that renew these habitat features (Garrison et al., 1987; Humphrey and Garrison, 1987; CDFG, 1992; Stillwater Sciences, 2007a, b) (Fig. 11). In addition, erosion control projects constructed at active nesting sites during the breeding season have caused direct mortality to adult and nestling birds (Garrison, 1991; Schlorff, 1995; Garcia et. al., 2008).

Figure 11. Agency revetment placed on an eroding bank on the middle Sacramento River under Executive Order S-01-06. Photo by Joe Silveira (USFWS), 2007.

The federal Flood Control Act of 1960 authorized the Sacramento River Bank Protection Project (SRBPP) to use bank stabilization actions to protect existing levees and flood control facilities of the Sacramento River Flood Control Project, in a partnership between the U.S. Army Corps of Engineers (USACE) and Central Valley Flood Protection Board (CVFPB). Between 1960 and 2007 the SRBPP was responsible for the installation of 320,000 linear feet (60.6 miles) of rock revetment along natural banks of the Sacramento River between Verona (River Mile 80) and Chico Landing (River Mile 194) (Table 1).

Table 1: Revetment, in linear feet, placed on the banks of the Sacramento River between Verona and Red Bluff, and the Feather River, from 1960 to present.

	Sacramento River			Feather River
Project Name	Verona to Colusa	Colusa to Chico Landing	Chico Landing to Red Bluff	
SRBPP, Phase 1	161,900	9,200		14,000
SRBPP, Phase 2	78,650	69,750		9,400
DWR Emergency 2005/06	3,800	6,200		
Chico Landing to Red Bluff			87,915	
Non-federal or State Revetment	**162,660**	**37,700**	**63,685**	**40,600**
Total (Linear Feet)	**407,010**	**122,850**	**151,600**	**64,000**

An additional 10,000 linear feet (1.9 miles) of revetment was placed in 2006, after the Governor's State of Emergency declaration, issuance of Executive Order S-01-06, and passage of AB 142 (Fig. 11). The federal Flood Control Act of 1958 and Water Resources Development Act of 1976 authorized the Sacramento River, Chico Landing to Red Bluff project and placed 88,000 linear feet (16.7 miles) of rock revetment between Chico Landing (River Mile 194) and Red Bluff (River Mile 245) (Table 1).

Installation of non-federal or State revetment by local maintaining agencies and private landowners proves difficult to quantify, but to date, an additional 264,000 linear feet (50 miles) of banks are known to have been impacted along the Sacramento River from Verona to Red Bluff (DWR unpublished data, 2012) (Table 1, Fig. 12).

These actions not only reduce the amount of Bank Swallow nesting habitat (Fig. 13), they also alter sediment transport and deposition, vegetation regeneration, and other natural river processes to the detriment of the entire riparian ecosystem, including special status species such as salmonids (USFWS, 2000; Stillwater Sciences, 2007a).

Figure 12. Private revetment being placed on eroding bank on the middle Sacramento River. Photo by Dave Forwalter (DWR, Northern Region Office), 2007.

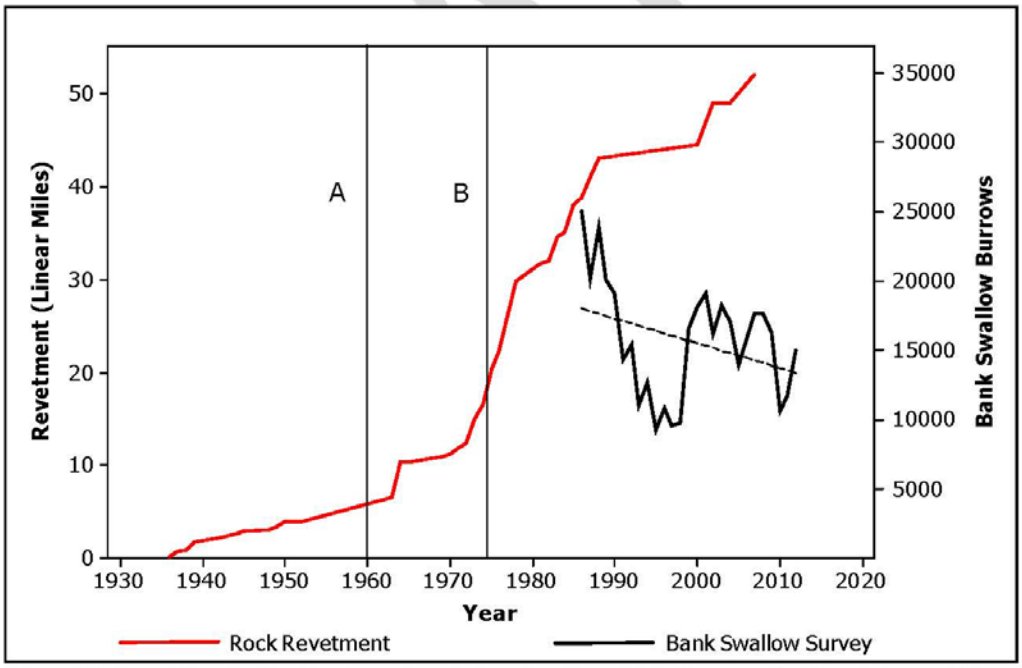

Figure 13. Cumulative length of rock revetment placed on the middle Sacramento River between Colusa and Red Bluff (approximately 100 miles of river) from 1935-present and Bank Swallow burrow counts and trend, beginning in 1986. Vertical line A - Initial authorization of SRBPP, Phase 1, 1960, Vertical line B – Authorization of SRBPP, Phase 2, 1974.

The findings of Girvetz (2010) indicate that river process restoration through removal of bank stabilization on the Sacramento River has the potential to significantly benefit Bank Swallow population viability.

Changes in River Flows

As described earlier ("*Natural River Processes*", Page 4), Bank Swallows rely on ephemeral nesting habitat created and maintained by dynamic river processes. Progressive channel migration and associated bank erosion during winter and early spring high flow events renews nesting habitat and is beneficial to Bank Swallows. In general, bankfull flows are necessary to promote more natural levels of channel migration and bank erosion, although lower flows can also contribute to maintaining these beneficial natural river processes. However, high flows during the late spring and summer nesting season may be detrimental to Bank Swallows due to direct inundation of burrows or loss of nests caused by localized bank sloughing.

Dam operations have greatly altered the timing, magnitude, duration, and frequency of winter high flow events on the Sacramento River (Fig. 14), and the Feather River. Since

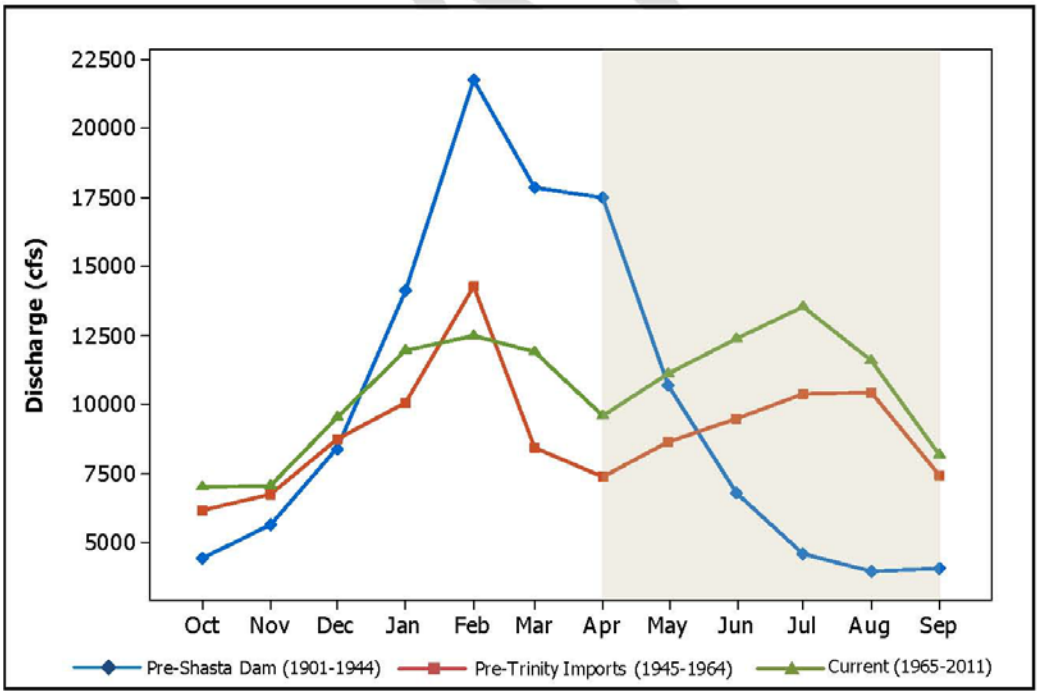

Figure 14. Monthly median flows in the Sacramento River at Bend Bridge, River Mile 258 (USGS Gage 11377100). Shaded bar indicates period of Bank Swallow nesting on the river.

the construction and operation of Shasta and Oroville dams, winter and spring flows have been reduced while summer and fall flows have been increased above natural levels to accommodate water delivery schedules and agricultural and environmental water needs.

Dampened winter and spring flows result in habitat degradation due to reduced bank erosion. When banks are not regularly eroded by high flows, minor bank sloughing can reduce bank slope and create debris piles at the base of the bank. This can lead to vegetation growth which makes banks unsuitable for nesting and provide access for predators to reach nest burrows. Further, high populations of ectoparasites may build up in nests over time, reducing nest success and leading to abandonment of nests or colonies that are not renewed by erosion (Hoogland and Sherman, 1976). In some instances, dam releases result in unnaturally late high-flow events on the Sacramento and Feather rivers, which can adversely affect Bank Swallow colonies if they occur during the breeding season (April 1-August 31). For example, breeding season flows in the range of 14,000 to 30,000 cfs on the Sacramento River have been associated with localized bank collapse events that resulted in partial or complete colony failure (Stillwater Sciences, 2007b). Higher flows (50,000 to 60,000 cfs) on the Sacramento River can cause extensive bank erosion which is beneficial during the non-breeding season but likely to lead to the loss of multiple colonies if such flows occur during the breeding season (Stillwater Sciences, 2007b). Additionally, high flows that cause large increases in river stage (water surface elevation) during breeding season may inundate nests and cause direct mortality of Bank Swallows (Stillwater Sciences, 2007b; Joe Silviera, pers. comm.).

Loss of Foraging Habitat

The loss of natural land cover (riparian, grassland, and wetlands) adjacent to waterways and nesting sites throughout the Central Valley has likely impacted Bank Swallow populations through the reduction of food resources; however, the magnitude of this impact remains difficult to quantify (Moffatt et al, 2005).

Ongoing and Future Impacts

Bank Swallow populations continue to be threatened by river and flood management activities, reservoir releases, and conversion of remaining natural land cover. The primary concern is the immediately planned flood projects that include: Central Valley Flood Protection Plan (CVFPP), DWR's Small Erosion Repair Program (SERP), and the SRBPP Phase II authorization to place an additional 80,000 linear feet of bank stabilization along the Sacramento River.

A recent trend to implement on-site mitigation for these projects to enhance shaded riverine aquatic habitat for fish, specifically salmonids, as well as proposed mitigation-banking projects that slope cut banks or stabilize banks for fish habitat, fail to recognize the needs of the Bank Swallow. Such mitigation is single species focused, does not restore river processes, and potentially impairs Bank Swallow recovery.

In addition to agency projects, unauthorized stabilization of eroding river banks continues on private lands throughout the Bank Swallows range (Fig. 13).

In the long term, continued human population growth in California, increasing water demand, and climate change could also pose serious threats to Bank Swallows.

RECOMMENDED CONSERVATION ACTIONS

The primary causes of the Bank Swallow population decline are permanent and semi-permanent loss of nesting habitat (eroding banks) and unnatural river flows that inundate and destroy active nest sites. Virtually all of these changes to the river system have occurred in the last 75 years, and most of these impacts have gone, and continue to go, unmitigated even though the standard mitigation ratio for loss of riparian and wetland habitat is 3:1. Because the Bank Swallow population has continued to decline since its CESA listing, it is obvious that an effective recovery plan or conservation strategy for the Bank Swallow must include mitigation and conservation activities that not only offset current impacts to the species habitat, but reverse the impacts that have already occurred.

The overall goal of this conservation strategy is to promote restoration of natural river processes on a sufficient portion of the Sacramento River and its tributaries to maintain and create habitat that will support a Bank Swallow population of at least 25,000 pairs (double the estimated population size at the time of proposed listing) based on a burrow count of at least 50,000. To achieve this goal, we propose that by 2050, State and federal agencies will need to 1) remove 53 miles of river bank revetment, 2) use set back levees and conservation easements to increase the meander belt by 7,000 acres, and 3) modify flow regimes that create river processes to maintain and improve Bank Swallow habitat.

Specifically, we propose four conservation actions:

1. Avoid impacts to individuals, colonies, current and potential habitat, and river processes;
2. Protect individuals, colonies, current and potential habitat, and river processes;
3. Restore habitat and river processes;
4. Mitigate unavoidable impacts to individuals, colonies, current and potential habitat, and river processes.

The goals and recommendations outlined here are based on our current knowledge of river processes and Bank Swallow ecology and can be reviewed and modified as new information becomes available.

Avoid Impacts to Individuals, Colonies, Current and Potential Habitat and River Processes

Project proponents should avoid impacts to Bank Swallows (individuals, colonies, and current and potential habitat), river processes, and natural banks. This applies to activities year-round, whether Bank Swallows are present or not. Because river meander modifies, refreshes, and exposes nesting habitat over time, installation of revetment should be avoided in any areas with suitable soils for nesting. High flow events may cause nesting failure from burrow collapse and inundation during Bank Swallow breeding season (April - August). Where proposed water management or land-use projects would impact Bank Swallows or river processes, alternatives such as setback levees and acquisition of easements or fee title can be used to avoid those impacts. We recommend the following to avoid impacts to Bank Swallow individuals, colonies, habitat, and natural river processes:

Goal 1: No impacts to individuals, colonies, and habitat

Recommendations:

1.1 Identify all potential impacts to individual, colonies, and habitat associated with a project. Use CNDDB, BIOS, and the BANS-TAC website for the most up-to-date information of colony locations (http://www.sacramentoriver.org/bans).

1.2 Consult with CDFW when planning projects within the floodplain of the Sacramento River and its tributaries to ensure projects do not impact colonies or current or potential habitat.

1.3 Maintain a construction buffer of 200 feet or more from active colonies, depending on project activities, and use biological monitors to ensure no disturbance to Bank Swallows during the breeding season (April 1 - August31).

1.4 Develop flow criteria that avoid impacts of high water flows, by limiting frequency and duration of peak flows over *under revision 05/01/2013* (Sacramento River), or rapid draw-downs to nesting Bank Swallows during the breeding season (April 1 - August 31); this includes considering downstream tributary flows when timing dam releases.

Goal 2: No impacts to river processes

Recommendations:

2.1 Use alternatives to bank stabilization that preserve natural river processes, such as setback and adjacent levees.

2.2 Continue providing flow regimes during the non-breeding season (September 1 - March 31) that promote natural river processes and create Bank Swallow habitat.

Protect Existing Colonies, Suitable Habitat, and River Processes

Agencies, non-governmental organizations, and private landowners should protect existing colonies, suitable habitat, and river processes by acquiring property or easements. Priority should be given to properties with highest value to Bank Swallows, with consideration to the risk of habitat loss. This document and CDFW, USFWS, and the BANS-TAC can provide information to assist with determining priority. We recommend the following to protect suitable Bank Swallow habitat, existing colonies, and river process:

Goal 3: Protect Existing Bank Swallow Colonies and Lands with Banks Suitable for Bank Swallow Nesting.

Recommendations:

3.1 Develop protection priorities and risk analysis for Bank Swallow colonies and lands with banks suitable for Bank Swallow nesting.

3.2 Acquire property or easements on private lands with Bank Swallow colonies and lands with banks suitable for Bank Swallow nesting.

3.3 Develop and promote incentives to private landowners to protect Bank Swallow colonies and lands with banks suitable for Bank Swallow nesting.

Goal 4: Protect Connected Floodplains and Dynamic Hydrologic and Geomorphic Processes on the Sacramento River and its Tributaries

Recommendations:

4.1 Develop protection priorities for connected floodplains and natural dynamic processes along the Sacramento River and its tributaries.

4.2 Acquire property or easements on adjacent floodplain to allow dynamic river processes, as described in *Natural River Processes*, and restore floodplain vegetation, as outlined in Goal 8.

4.2.1 USFWS will complete the Sacramento River National Wildlife Refuge (SRNWR), authorized to acquire up to 18,000 acres, by acquiring 6,000 acres in the floodplain between Red Bluff and Colusa (USFWS, 2005).

4.2.2 CDFW will continue to implement its Comprehensive Management Plan for the Sacramento River Wildlife Area (CDFG, 2004).

4.2.3 Non-governmental organizations, such as the Nature Conservancy and River Partners, will continue to acquire floodplain properties to support the agencies goals.

Restore Habitat and Dynamic River Processes

Restoring natural floodplain land cover, particularly riparian grassland, next to the river channel would provide vital foraging habitat for local colonies (Moffatt et al., 2005). Bank Swallow colony persistence, from 1999 through 2008, was highest at sites with herbaceous vegetation or scrub, followed by riparian forest. Colony sites with agriculture (orchards, grain, and hay) above the bank persisted for a much shorter time (Garcia, 2009). Management of restored floodplain should promote open grass and wildflower vegetation, including protocols that stimulate new plant growth and reduce invasive plant species. Floodplain habitat restoration and management is currently underway on public lands, such as Sacramento River National Wildlife Refuge (USFWS, 2005), with positive results for many species (Golet et al., 2008).

Agencies, non-governmental organizations, and private landowners should increase available habitat through restoration of natural banks, meander potential, and dynamic river processes by removing revetment, constructing setback levees, and improving flow regimes. The restoration of river processes by removing rock revetment and levees has

resulted in successful colonization of formerly unavailable habitat by the Bank Swallow (Golet et al., 2003). Various entities, including the BANS-TAC, have developed a preliminary list of locations where bank stabilization may be removed to increase potential Bank Swallow nesting habitat without impacting public safety.

Water resource managers and regulators should develop criteria for flow regimes that more accurately mimic natural river hydrograph to promote natural bank erosion, meander migration, and channel cutoff during non-breeding season (September - March) to increase availability of nesting habitat. We recommend the following to restore habitat and dynamic river processes:

Goal 5: Remove revetment to restore habitat and meander potential

Recommendations:

5.1 Remove 100,000 linear feet (19 miles) of rock revetment on the Sacramento River between Red Bluff and Chico Landing by 2050.
- 5.1.1 Remove 20,000 linear feet (4 miles) by 2025
- 5.1.2 Remove 50,000 linear feet (10 miles) by 2035
- 5.1.3 Remove 100,000 linear feet (19 miles) by 2050

5.2 Remove 50,000 linear feet (10 miles) of rock revetment between Chico Landing and Colusa by 2050.
- 5.2.1 Remove 10,000 linear feet (2 miles) by 2025
- 5.2.2 Remove 25,000 linear feet (5 miles) by 2035
- 5.2.3 Remove 50,000 linear feet (10 miles) by 2050

5.3 Remove 130,000 linear feet (25 miles) of rock revetment between Colusa and Verona by 2050. This recommendation will potentially require set back levees as outlined in Goal 6.
- 5.3.1 Remove 25,000 linear feet (5 miles) by 2025
- 5.3.2 Remove 65,000 linear feet (13 miles) by 2035
- 5.3.3 Remove 130,000 linear feet (25 miles) by 2050

5.4 Remove 10,000 linear feet (2 miles) of rock revetment from the Feather River by 2050.

5.5 Remove revetment where possible from other tributaries.

Goal 6: Construct setback levees to expand the meander belt by reconnecting floodplains to the river channel.

Recommendations:

6.1 Construct setback levees to restore 4500 acres of connected floodplain on the Sacramento River between Chico Landing and Colusa by 2050.

6.2 Construct setback levees to restore 7000 acres of connected floodplain on the Sacramento River between Colusa and Verona by 2050.

6.3 Construct setback levees to restore 500 acres of connected floodplain on the Feather River by 2050

Goal 7: Manage flow regimes to improve floodplain connectivity and restore natural banks and river processes

Recommendations:

7.1 Consider Bank Swallows, their habitat, and natural river processes when developing flow criteria for ecosystem improvements and reoperation for water conveyance.

7.1.1 Evaluate potential effects of flow management on Bank Swallow using existing tools such as the Sacramento River Ecological Flows Tool (TNC et al., 2008)

7.1.2 Develop flow criteria that promote bank erosion during the Bank Swallow non-breeding season (September 1 - March 31).

Goal 8. Restore and manage floodplain vegetation to provide Bank Swallow nesting and foraging habitat.

Recommendations:

8.1 Continue to restore floodplain habitats on the Sacramento River through:

8.1.1 Implementation of the USFWS Sacramento River NWR riparian and floodplain habitat restoration program (USFWS, 2005).

8.1.2 Implementation of the CDFW Comprehensive Management Plan for the Sacramento River Wildlife Area (CDFG, 2004).

8.1.3 Implementation of the California State Parks Central Valley Vision Implementation Plan (CDPR, 2009)

8.1.4 Continued support of agency efforts through the Sacramento River Project partnership to restore additional acreage (Golet et al, 2003; The Nature Conservancy, 2013; River Partners, 2013)

8.2 Manage restored floodplain habitats to promote long-term viability when undertaking floodplain restoration along the Sacramento River (USFWS, 2005; 2013).

Mitigate Unavoidable Impacts to Dynamic River Processes and Bank Swallow Habitat

Where impact avoidance is not possible through the use of alternatives, mitigation measures must provide a net increase in habitat of comparable value. Examples of projects with unavoidable impacts may include protection for the public and critical infrastructure, and certain changes in flow regimes associated with water conveyance. When revetment is added to Bank Swallow habitat, the only acceptable mitigation is removal of revetment from potential Bank Swallow habitat. Acquisition or protection of lands through fee title or conservation easement should continue to be included as a tool for offsetting impacts to Bank Swallows when coupled with recovery of river process and natural bank through revetment removal, but should not be considered mitigation in and of itself.

The following measures will only apply after the conservation actions above have been implemented to the greatest extent possible, and only to remaining impacts that are demonstrably unavoidable and have been rigorously minimized. We recommend the following for mitigation of impacts to Bank Swallow habitat and natural river process:

Goal 9: Mitigate unavoidable impacts
Recommendations:

9.1 Consult with CDFW when planning projects toassess the impacts to both potential Bank Swallow habitat and river processes and develop appropriate mitigation.

9.2 Acquire a conservation easement at a ratio of 1:1 linear feet for bank that will be impacted, **and** remove revetment at a ratio of 2:1, for impacts to current or potential Bank Swallow habitat. Additional revetment removal may be counted towards restoration goals (see Goal 5).

9.3 Acquire a conservation easement at a ratio of 1:1 linear feet for bank that is to be impacted, **and** remove revetment at a ratio of 1:1 for impacts to natural bank that is not currently Bank Swallow habitat. Additional revetment removal may count toward restoration goals (see Goal 5).

9.4 Consult with CDFW before making dam releases that could impact Bank Swallows during breeding season (April 1 - August 31) **and** acquire a conservation easement of 1:1 linear feet of eroding bank whenever flows cause loss of occupied nests, eggs, or chicks due to bank collapse or inundate colonies on the Sacramento River during breeding season.

RESEARCH NEEDS FOR ADVANCING BANK SWALLOW (*RIPARIA RIPARIA*) CONSERVATION ON THE SACRAMENTO AND FEATHER RIVERS

To help identify and prioritize research that will generate information that supports Bank Swallow conservation on the Sacramento and Feather Rivers, the Bank Swallow Technical Advisory Committee has generated a list of suggested studies. This is not an exhaustive list of all possible studies, but rather a list of projects that would directly contribute to informing and improving conservation actions.

- *Continue and expand the annual CDFW/USFWS surveys of colonies along the Sacramento River and its tributaries.* The ongoing Bank Swallow surveys provide critical data for understanding the status of the population and the effectiveness of conservation actions. By increasing the frequency of surveys in the Redding to Red Bluff (RM 292–243) and Colusa to Verona (RM 143–81) reaches, researchers could help eliminate the small but potentially significant data gap. Surveys of these additional areas would ideally be conducted every year, but if resources are limited, surveys in alternate years may suffice.

- *Investigate the relationship between the magnitude, timing, duration, and frequency of high flow events and potential impacts to Bank Swallow colonies and habitat..* There are documented observations of partial or complete loss of colonies caused by localized bank sloughing and erosion associated with high flow events during breeding season on the Sacramento River. However, much uncertainty exists regarding potential water management actions that might reduce the risk of such impacts. Research should be conducted to improve our ability to predict the locations that are most at risk of bank failure and colony loss, ad the flow conditions most likely to cause such impacts.

- *Correlate soil mapping with expected bank erosion to prioritize locations for potential Bank Swallow colonies.* A quantitative and spatially explicit analysis that combines expected patterns of river channel migration and soil types is needed. This information will help guide the acquisition of floodplain parcels and easements. It will also help identify areas where benefits to swallow may be maximized when riprap is removed or allowed to degrade.

- *Quantify the need for surplus nesting banks.* What percent of the suitable nesting banks should remain unoccupied to best support the metapopulation dynamics of the species? A comparison could be drawn between the Feather

and Sacramento Rivers to evaluate if this percentage that is occupied is similar between the two systems.

- *Study reproductive biology at existing colonies.* Additional studies of reproductive biology are needed to help develop a better understanding of the relationship between the burrow counts that are collected during the annual surveys and demographic parameters, such as burrow occupancy, number of nesting attempts, and number of young fledged per pair. Any information on how reproductive biology varies among colonies that differ in number of burrows, bank erosion rates, above-colony habitat types, proximity to different types of foraging habitat, or general geographic location would be valuable. This information could be used to revise parameter estimates in population viability analyses and to link the burrow index to actual population size.

- *Use other metrics to quantify the health of Bank Swallow of the Sacramento and Feather River Bank Swallow populations.* A number of tools, beyond the burrow counts that have been used to date, could provide valuable information about the status and health of the Bank Swallow population. These include a population genetic analysis to generate information about population dynamics and toxicological analyses of adults and young to evaluate the risk posed by exposure to pesticides and other contaminants.

- *Investigate potential for bank restoration via removal of mining deposits (slickens) along the Feather River channel.* Approximately 160,000 linear feet of mining debris was deposited along the banks of the Feather River in the late 1800's. These deposits are composed of fine sediments, sand, and gravel which have hardened over time and are unusable by Bank Swallows. Often these deposits are perched on alluvial soils. Research should be conducted to determine if removal of these deposits is feasible, and whether the restored bank would provide suitable nesting habitat for Bank Swallows.

We encourage researchers interested in studying Bank Swallows to contact the Bank Swallow Technical Advisory Committee to ensure that projects can be developed in a manner that will support conservation in California.

ABBREVIATIONS

BANS-TAC - Bank Swallow Technical Advisory Committee

BIOS - Biogeographic Information and Observation System

CDFW - California Department of Fish and Wildlife. Formerly the California Department of Fish and Game (CDFG)

CESA - California Endangered Species Act

CEQA - California Environmental Quality Act

CFS - cubic feet per second

CNDDB - California Natural Diversity Database

CVFPB - Central Valley Flood Protection Board

CVFPP - Central Valley Flood Protection Program

DWR - California Department of Water Resources

ESA - Endangered Species Act

FWCA - Fish and Wildlife Coordination Act

MBTA - Migratory Bird Treaty Act

PRBO Conservation Science - Formerly Point Reyes Bird Observatory, or PRBO

SERP - Small Erosion Repairs Program

SRBPP - Sacramento River Bank Protection Program, also known as Sac Bank

SRCAF - Sacramento River Conservation Area Forum

SRNWR - Sacramento River National Wildlife Refuge

TNC - The Nature Conservancy

USACE - United States Army Corps of Engineers

USFWS - United States Fish and Wildlife Service

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RESPONSE

BANS TAC-1

The comment requests a review of the April 2013 "Bank Swallow Conservation Strategy for the Sacramento River Watershed," prepared by the Bank Swallow Technical Advisor Committee (BANS TAC). This comment is not related to the adequacy of the CEQA document; therefore, no response is required. However, this document has been reviewed as requested, and the responses to comments below have been informed by an understanding of this report.

BANS TAC-2

For all sites within the SERP project area, including sites north of Knight's Landing, DWR must conduct a baseline assessment at each proposed site in accordance with Section B, "Baseline Assessment Methodology," of the SERP Manual. For a project to be eligible for implementation under the SERP, a qualified biologist must conduct a preconstruction survey to assess the potential for the project to cause disturbance or loss of special-status fish or wildlife species and habitats, and requires implementation of two conservation measures specific to bank swallows, BS-1 and BS-2 (see page I-14 and I-15 in the SERP Manual). The results of the baseline assessment and preconstruction surveys are described in the SERP Project Pre-Construction Notification Form, which provides a mechanism for evaluating and documenting the existing environmental conditions at potential SERP project sites, (see Section F, "Notification Requirements," in the SERP Manual). Agency staff members, including CDFW, will use this information to determine whether the project meets the criteria for coverage under their agency's programmatic SERP authorization. If in the course of reviewing the SERP Project Pre-Construction Notification Form, CDFW determines that a proposed project has potential to adversely affect bank swallow and its habitat, that project would not be eligible for inclusion as a SERP project.

BANS TAC-3

See response to Comment BANS TAC-2. Additionally, as part of the Central Valley Flood Protection Plan (CVFPP), DWR has developed a Conservation Framework (http://www.water.ca.gov/floodsafe/fessro/floodway/conservation/) (DWR 2012a), and is in the process of developing a Conservation Strategy in 2017, with the goal of integrating environmental stewardship with flood management improvements. DWR's Conservation Framework identifies natural river processes that serve important ecosystem functions, including sediment transport, river meander, erosion, riparian vegetation establishment, floodplain creation, and habitat creation. The effect of flood management projects, including SERP and other projects, on these river processes, and approaches to restore those processes, will be addressed as part of the Conservation Strategy.

BANS TAC-4

See response to Comment BANS TAC-2, and BANS TAC-3.

BANS TAC-5

Comment noted. No further response is required.

2.2.3 DELTA PROTECTION COMMISSION (DPC)

Letter DPC

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY EDMUND

DELTA PROTECTION COMMISSION
2101 Stone Blvd., Suite 210
West Sacramento, CA 95691
Phone (916) 375-4800 / FAX (916) 376-3962
Home Page: www.delta.ca.gov

Contra Costa County Board of Supervisors
Sacramento County Board of Supervisors
San Joaquin County Board of Supervisors
Solano County Board of Supervisors
Yolo County Board of Supervisors
Cities of Contra Costa and Solano Counties
Cities of Sacramento and Yolo Counties
Cities of San Joaquin County
Central Delta Reclamation Districts
North Delta Reclamation Districts
South Delta Reclamation Districts
Business, Transportation and Housing
Department of Food and Agriculture
Natural Resources Agency
State Lands Commission

May 2, 2013

Mr. Jeff Schuette, Senior Environmental Scientist
Maintenance Environmental Support Branch
Division of Flood Management
Department of Water Resources
3310 El Camino Ave, Suite 140
Sacramento, CA 95821

Subject: Small Erosion Repair Program (SCH # 2013032050)

Dear Mr. Schuette:

Delta Protection Commission (Commission) staff have reviewed the Draft Program Environmental Impact Report for the Department of Water Resources Small Erosion Repair Program (SCH #20130302050). Portions of this program's coverage area lie within the Primary Zone of the Sacramento-San Joaquin Delta and therefore are subject to the Commission's Land Use and Resource Management Plan for the Primary Zone of the Delta (LURMP). DPC-1

The program appears to be consistent with the LURMP, which includes goals to support the improvement of Delta levees and promote levee maintenance and rehabilitation to preserve the land areas and channel configurations in the Delta. The support of programs to make cost-effective levee investments is included as a policy in the LRUMP. DPC-2

Furthermore, the project in anticipated to have less than significant impacts, and in some cases beneficial impacts, on biological resources. Such beneficial impacts are also consistent with a goal of the LURMP which includes the protection of remnants of riparian and aquatic habitats. DPC-3

The Draft Program Environmental Impact Report does not state any potential negative impacts that the program could have on surrounding economic activities, such as agriculture or recreation. In the case that any negative impacts may occur, the Final Program Environmental Impact Report must outline what mitigation measures will be taken to minimize such impacts, in order to be consistent with the LURMP. DPC-4

Thank you for this opportunity to provide input. Please contact the Commission office at (916) 375-4800 if you have any questions. DPC-5

Sincerely,

Michael Machado
Executive Director

RESPONSE

DPC-1

Comment noted. No further response is required.

DPC-2

Comment noted. No further response is required.

DPC-3

Comment noted. No further response is required.

DPC-4

Impacts that are social and economic in nature are not required to be addressed under CEQA except to the extent that they relate to potentially significant adverse effects on the physical environment (CEQA Guidelines Section 15131). Impacts of the SERP on agriculture and recreation are addressed in the Initial Study that was prepared for the SERP and included in Appendix A of the SERP DPEIR. These impacts were found to be less than significant. As discussed in CEQA Guidelines Section 15124.4(a)(3), mitigation measures are not required for effects which are not found to be significant. Therefore, no mitigation would be required and none has been proposed in the DPEIR.

DPC-5

Comment noted. No further response is required.

2.2.4 CENTRAL VALLEY FLOOD PROTECTION BOARD (CVFPB)

Letter CVFPB

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY EDMUND G. B
CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-2380 FAX: (916) 574-0682

May 3, 2013

Mr. Jeff Schuette
Maintenance Environmental Support Branch
Division of Flood Management
Department of Water Resources
3310 El Camino Ave, Suite 140
Sacramento, California 95821

Subject: Draft Program Environmental Impact Report Small Erosion Repair Program
SCH: 2013032050

Dear Mr. Schuette:

The Central Valley Flood Protection Board (Board) is responsible for flood safety within California and maintains the integrity of the existing flood control system and designated floodways through the Board's regulatory authority. Construction and maintenance projects within the jurisdiction of the Board are required to meet standards for the construction, maintenance, and protection of adopted plans of flood control that will protect public lands from floods. The jurisdiction of the Board includes the Central Valley, including all tributaries and distributaries of the Sacramento River and the San Joaquin River, and designated floodways (Title 23 California Code of Regulations (Title 23 CCR), Section 2). Working with the Department of Water Resources (DWR) early in the process for implementing the proposed five (5) year Small Erosion Repair Program (SERP) pilot program will provide a streamlined program for DWR to complete maintenance for levees maintained by DWR. CVFPB-1

Board staff has reviewed the Draft Program Environmental Impact Report (DPEIR) for the Small Erosion Repair Program (SERP) and provides the following comments:

The DPEIR should include the Board as an approval agency prior to implementing SERP projects. According to the DPEIR page S - 6, "DWR would notify the applicable permitting agencies—USACE, USFWS, NMFS, CDFW, and RWQCB—of the proposed small erosion repair projects by bundling and submitting the required notification materials for up to 15 projects to the agencies as a package each spring (by June 1)." CVFPB-2

On April 27, 2012 the Board approved Resolution 2012-20 (enclosed) for the SERP, which identifies the Board as an approval agency for the SERP in the following finding "SERP approval agencies (including the Board) are participating in the five-year pilot program with the understanding that they will evaluate all proposed SERP site repairs, and can determine to reject individual sites that they believe do not qualify for repair under the SERP, and notify DWR of the determination and the reasons the agency made the determination." The Regulatory Setting, p. 3.6 - 9 should also be revised to show the Board's approval process for the SERP. CVFPB-3

Mitigation measures should be included for the SERP hydrology impacts. According to Table S-2 Environmental Impacts and Mitigation Measures for the Proposed Project, no mitigation measures for hydrology were identified.

According to the Board approved Resolution 2012-20 for the SERP, "WHEREAS, vegetation installed and maintained under the SERP program would be done so in a manner consistent with the vegetation management strategy proposed in the 2012 Public Draft Central Valley Flood Protection Plan (CVFPP)."

CVFPB-4

Board staff has worked closely with DWR hydraulic modeling staff to resolve concerns about the potential for adverse hydraulic impacts due to the proposed vegetation plantings described in the draft SERP Manual design templates. Board staff concerns have been sufficiently addressed to move forward as a pilot program partner. Implementing mitigation measures that include conducting the SERP program consistent with the vegetation management strategy proposed in the 2012 Public Draft CVFPP and consistent with DWR hydraulic modeling of the SERP would support the determination showing "NI" (no impact level of significance after mitigation).

CVFPB-5

Thank you for your consideration of these comments. If you have any questions, please contact Mr. Len Marino, Chief Engineer, by phone at (916) 574-0698, or via e-mail at Len.Marino@water.ca.gov.

Sincerely,

Jay S. Punia

Jay S. Punia
Executive Officer

Enclosure

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

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

RESOLUTION NO. 2012-20

DEPARTMENT OF WATER RESOURCES
SMALL EROSION REPAIR PROGRAM
FIVE-YEAR PILOT PROJECT

WHEREAS, the Central Valley Flood Protection Board (Board) has given assurances to the U.S. Army Corps of Engineers that the State will maintain and operate federal flood control works in accordance with federal law pursuant to California Water Code (CWC) § 8708; and

WHEREAS, the Department of Water Resources (DWR) has responsibilities to maintain portions of the Sacramento River Flood Control Project (SRFCP) pursuant to CWC § 8361 and § 12878, et seq.; and

WHEREAS, Code of Federal Regulations, Title 33 (CFR 33) – Navigation and Navigable Water, Chapter II – Corps of Engineers, War Department, Part 208 – Flood Control Regulations, Maintenance and Operation of Flood Control Works, § 208.10 (b) Levees (1) Maintenance states, "*The Superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structure in time of flood. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Where practicable, measures shall be taken to retard bank erosion by planting of willows or other suitable growth on areas riverward of the levees.*"; and

WHEREAS, the U.S. Army Corps of Engineers (USACE), Standard Operations and Maintenance (O&M) Manual for the Sacramento River Flood Control Project, § 4.02 Maintenance, page 10 states, "*Applicable portions of the Flood Control Regulations, paragraph 208.10(b)(1), pertaining to maintenance are quoted as follows. "(b) Levees – (1) Maintenance. The Superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structure at the time of flood. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Where practicable, measures shall be taken to retard bank erosion by planting of willows or other suitable growth on areas riverward of the levees.*";and

WHEREAS, the O&M Manual for the SRFCP, § 4.05, Special Instructions, (b)(1), page 13 states, "*The Superintendent shall provide for clearing of brush, trees, and other wild growth from the levee crown and slopes. Brush and small trees may be retained on the waterward slope where desirable for the prevention of erosion and wave wash.*"; and

1

WHEREAS, California Code of Regulations, Title 23, (CCR 23), § 3, Intent states, *The regulations are also intended to comply with the board's obligations to the U.S. Army Corps of Engineers pursuant to numerous assurance agreements, Corps Operation and Maintenance Manuals, and 33 C.F.R. section 208.10*.; and

WHEREAS, CCR 23, § 4, Definitions states, *"Maintenance activities" means any work required to retain or maintain the intended functions of flood control facilities and of existing encroachments. Maintenance activities include but are not limited to mowing, tree and brush trimming and removal, revetment restoration, rodent control, spraying, painting, coating, patching, burning, and similar works, but does not include any significant excavation or any excavation during flood season. Maintenance activities of public agencies to maintain the designated level of function of flood control facilities within their jurisdiction are authorized and defined by Water Code sections 8361, 8370 and 12642.* Note: CWC sections 8370 and 12642 apply to local (non-State) maintaining agencies.; and

WHEREAS, CCR 23, § 6(a), Need for a Permit states, *Every proposal or plan of work, including the placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment or works of any kind, and including the planting, excavation, or removal of vegetation, and any repair or maintenance that involves cutting into the levee, wholly or in part within any area for which there is an adopted plan of flood control, must be approved by the board prior to commencement of work.*; and

WHEREAS, CCR 23, § 6(d), Need for a Permit states, *Permits are not required for maintenance activities as defined in article 2, section 4 of this title*; and

WHEREAS, after review of the statutes (in particular CFR 33, § 208.10 and the Standard O&M Manual for the SRFCP) Board staff has concluded that the Board's regulations as stated in CCR 23, § 6(a) were not intended to require an encroachment permit to plant vegetation that was included as a component of routine maintenance activities; and

WHEREAS, DWR created the Interagency Flood Management Collaborative Program (Collaborative) to facilitate cooperative actions to more effectively manage flood control projects in the Sacramento and San Joaquin River Basins within the Central Valley; and

WHEREAS, on January 17, 2007 a Small Erosion Repair Program (SERP) subcommittee (Subcommittee) was formed at the direction of the Collaborative; and

WHEREAS, the Subcommittee consists of federal and State resource and regulatory agency representatives and Board staff who have collaborated with DWR Flood Maintenance Office to develop a process and criteria for SERP repairs; and

WHEREAS, the SERP was developed to address long-term project delays of as much as several years due in part to the multiple layers of agency authorizations and levels of interagency coordination required for small erosion repair projects, and to develop more efficient means of

environmental permitting small erosion repairs on levees in a timely manner to prevent these sites from deteriorating into larger and more costly repair sites; and

WHEREAS, the SERP would provide a streamlined program for DWR to identify, obtain regulatory authorization for, and construct small levee repairs on levees maintained by DWR within the SRFCP area; and

WHEREAS, the Subcommittee is near completion of the planning phase of a proposed five (5)-year pilot program that would repair up to fifteen (15) sites per year throughout approximately 300 miles of leveed channels and bypasses maintained by DWR pursuant to CWC section 8361 within the Sacramento River Flood Control Project, including:

- Butte Creek
- Cache Creek (from Yolo Bypass to the upstream limit of SRFCP levees)
- Cherokee Canal
- Colusa Bypass
- Colusa Main Drain (northern portion depicted on Staff Report, Attachment C)
- East and West Interceptor Canals
- Feather River (portions depicted on Staff Report, Attachment C)
- Putah Creek
- Sacramento Bypass
- Sacramento River (portions depicted on Staff Report, Attachment C)
- Sutter Bypass (portions depicted on Staff Report, Attachment C)
- Tisdale Bypass
- Wadsworth Canal
- Willow Slough Bypass
- Yolo Bypass (portions depicted on Staff Report, Attachment C); and

WHEREAS, the Subcommittee is developing the SERP Manual (Manual), currently in draft form, which will provide the general guidelines under which the program will operate; and

WHEREAS, Board staff has worked closely with DWR geotechnical staff to review and resolve issues related to the geotechnical aspects of the design templates described in the draft SERP Manual. Board staff concerns have been sufficiently addressed and support staff's recommendation to move forward as a pilot program partner; and

WHEREAS, Board staff has worked closely with DWR hydraulic modeling staff to resolve concerns about the potential for adverse hydraulic impacts due to the proposed vegetation plantings described in the draft SERP Manual design templates. Board staff concerns have been sufficiently addressed and support staff's recommendation to move forward as a pilot program partner; and

WHEREAS, vegetation installed and maintained under the SERP program would be done so in a manner consistent with the vegetation management strategy proposed in the 2012 Public Draft Central Valley Flood Protection Plan (CVFPP); and

WHEREAS, in the event subsequent erosion occurs at a SERP site, and the vegetation that was planted in the area waterside of the Vegetation Management Zone (VMZ) defined in the CVFPP Conservation Framework (Attachment 2 of Staff Report Attachment B) is lost due to this erosion, the subsequent repair to the site would use a similar design and would replace, at a 1:1 ratio, the lost vegetation; and

WHEREAS, in the event that the SERP vegetation grows to extend upslope and into the VMZ, that portion extending into the VMZ will be subject to DWR's continuing program of routine annual levee maintenance in accordance with the applicable USACE standard O&M manuals and the vegetation management strategy defined in the CVFPP; and

WHEREAS, in the event that SERP vegetation waterside of the VMZ, but outside of the area that is twenty (20) feet from the waterside levee hinge point, grows to impede flow, visibility and accessibility for inspections, or maintenance and flood fight operations, DWR will coordinate with the environmental resource agencies on the best method to correct these impedances; and

WHEREAS, all SERP approval agencies (including the Board) are participating in the five-year pilot program with the understanding that they will evaluate all proposed SERP site repairs, and can determine to reject individual sites that they believe do not qualify for repair under SERP, and notify DWR of the determination and the reasons the agency made the determination; and

WHEREAS, DWR filed a Notice of Preparation pursuant to the California Environmental Quality Act (CEQA) with the State Clearinghouse (Number 2009112088) on November 25, 2009; and

WHEREAS, upon completion of the Manual, DWR will prepare and circulate a Draft Program Environmental Impact Report to solicit public comments pursuant to CEQA on the SERP program; and

WHEREAS, after the five-year pilot period, the Collaborative will evaluate the program's success and, if warranted, the SERP may be expanded in the future to include sites repaired by the local maintaining agencies throughout the Sacramento-San Joaquin Drainage District; and

WHEREAS, while the operation and maintenance activities proposed to repair individual SERP sites are generally not the subject of Board review and approval, Board staff does provide oversight for and authorization of maintenance activities from time to time. Due to the unique nature of the SERP program, and to provide an appropriate level of Board oversight, this Resolution seeks direction from the Board to not only provide direction to Board staff, but to inform DWR as to the Board's intent to participate in the SERP program as a State partner.

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

1. Deems all SERP program activities to be operations and maintenance activities not requiring Board encroachment permits;

2. Directs Board staff to assist DWR as necessary to finalize the SERP Manual, including geotechnical and hydraulic analysis review procedures, long-term vegetation maintenance procedures, and SERP member agency and public notification procedures;

3. Directs Board staff to prepare Responsible Agency comments pursuant to CEQA when DWR's Draft Program Environmental Impact Report is circulated;

4. Directs Board staff to prepare appropriate Responsible Agency findings pursuant to CEQA for Board approval when DWR's Final Program Environmental Impact Report is circulated;

5. Directs Board staff to review annual SERP repair proposals, and to determine (A) whether or not each SERP site has been designed according to the Manual, (B) that geotechnical design issues have been considered, (C) that there are no adverse hydraulic impacts, (D) that long-term vegetation management actions have been addressed, and (E) that annual noticing of SERP member agencies and the public is carried out, all in conformance with the SERP Manual;

6. Delegates to the Chief Engineer the authority to execute documents necessary to authorize or reject proposed sites for SERP pilot program repairs consistent with this resolution;

7. Directs Board staff to provide an annual report to the Board on the SERP pilot program, including a detailed listing of annually proposed and authorized (or denied) SERP sites, at a regular monthly Board meeting as soon as practical after the Chief Engineer's annual determination has been provided to DWR.

PASSED AND ADOPTED by vote of the Board on April 27, 2012

William Edgar
President

Jane Dolan
Secretary

RESPONSE

CVFPB-1

Comment noted. No further response is required.

CVFPB-2

DWR will notify the applicable permitting agencies—CVFPB, U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), NMFS, CDFW, and RWQCB—of the proposed small erosion repair projects by bundling and submitting the required notification materials for up to 15 projects to the agencies as a package each spring (by June 1). The CVFPB is an approval agency for the program and is listed in Table F1 on page F-2 of the SERP Manual. Text in the Summary on page S-6 has been revised to include the CVFPB as an approval agency that will be notified of the proposed small erosion repair projects each spring. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CVFPB-3

The comment notes that the Regulatory Setting on DPEIR page 3.6-9 should be revised to show the CVFPB's approval process for the SERP. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CVFPB-4

The comment notes that no mitigation measures have been identified for the SERP hydrology impacts. The comment also notes that vegetation installed and maintained under the SERP would be done in a manner consistent with the vegetation management strategy proposed in the 2012 Public Draft Central Valley Flood Protection Plan. As discussed on page B-3 of the SERP Manual, a hydraulic analysis was conducted to evaluate the potential impact of vegetation on water surface elevation (WSE) for a repair site that was deemed representative of future SERP project sites with the greatest potential hydraulic impact. The hydraulic analysis concluded that most proposed SERP projects for wide channels and bypasses are anticipated to produce negligible hydraulic impacts. For narrower channels, additional site-specific hydraulic analyses may be required to assess potential impacts to WSE. Table B-1 in the SERP Manual contains channel width thresholds for which an initial hydraulic analysis should be conducted and submitted by DWR to the CVFPB as part of the annual SERP repair proposal. Therefore, conducting hydraulic analyses as described in the SERP Manual is incorporated into the approval process for SERP repairs and will ensure that repairs included in the SERP have no impact on hydrology and hydraulics. As further discussed in Section 3.6,

"Hydrology and Water Quality," there would be no impact on water surface elevations, including those associated with 100-year and 200-year flood conditions, upstream of, downstream of, or within the Phase 1 SERP coverage area. In addition, the SERP would have a less-than-significant impact on drainage and potential increases in runoff. As discussed in the CEQA Guidelines Section 15124.4(a)(3), mitigation measures are not required for effects which are not found to be significant. Therefore, because the SERP is not expected to have any significant impacts on hydrology, no mitigation is proposed in the DPEIR.

CVFPB-5

See response to Comment CVFPB-4.

2.2.5 CALIFORNIA STATE LANDS COMMISSION (CSLC)

STATE OF CALIFORNIA — ED — Letter CSLC — mor

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

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Contact FAX: **(916) 574-1885**

May 3, 2013

File Ref: SCH #2013032050
(formerly SCH #2009112088)

Jeff Schuette
Maintenance Environmental Support Branch
Division of Flood Management
Department of Water Resources
3310 El Camino Ave, Suite 140
Sacramento, CA 95821
jeff.schuette@ca.water.gov

Subject: Draft Program Environmental Impact Report (PEIR) for the Small Erosion Repair Program, Butte, Colusa, Glenn, Placer, Sacramento, Solano, Sutter, Yolo and Yuba Counties

Dear Mr. Jeff Schuette:

The California State Lands Commission (CSLC) staff has reviewed the subject Draft PEIR for the Small Erosion Repair Program (SERP), which is being prepared by the Department of Water Resources (DWR). The DWR, as a public agency proposing to carry out a project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The CSLC is a trustee agency because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters. Additionally, if any projects authorized under the SERP involve work on sovereign lands, the CSLC will act as a responsible agency. CSLC-1

CSLC Jurisdiction and Public Trust Lands

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust. CSLC-2

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its CSLC-3

admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

Cont. CSLC-3

This is to advise that there are numerous rivers, streams and sloughs in the northern Central Valley Sacramento River watershed, covered under the SERP, in which the State of California has ownership or an interest and which are under the jurisdiction of the CSLC. This ownership and interest ranges from fee ownership, which would require a lease for any project located on sovereign lands, to a public trust easement for trust uses and to a right for public navigation. CSLC staff would like the opportunity to review and determine the CSLC's interest in the project areas covered under the SERP as more locational information becomes available and specific erosion repair sites are identified. Any sites identified under the CSLC's jurisdiction may require a lease. Please contact Wendy Hall at the contact information contained at the end of this letter to discuss the lease application process.

CSLC-4

Please also be advised that the waterways under the SERP are subject to a public navigational easement. This easement provides that members of the public have the right to navigate and exercise the incidences of navigation in a lawful manner on State waters that are capable of being physically navigated by oar or motor-propelled small craft. Such uses may include, but are not limited to, boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, and other water-related public uses. The activities completed under the SERP must not restrict or impede the easement right of the public.

CSLC-5

Project Description

The DWR proposes to implement a streamlined permitting program for small erosion repair projects on within the Sacramento River watershed to meet the agency's objectives as follows:

- Provide quicker repairs to small erosion sites, thereby preventing erosion areas from becoming larger;
- Foster consistent regulatory compliance efforts for similar repairs, from the standpoint of both environmental protection and operations and maintenance; and
- Obtain measurable data to evaluate program success.

Further, each repair project conducted under the SERP would be designed to:

- Maintain the Sacramento River Flood Control Project (SRFCP) integrity;
- Prevent further erosion and loss of riparian and nearshore aquatic habitat;
- Minimize the loss of riparian vegetation and endangered species habitat resulting from delayed repairs and construction activities; and

CSLC-6

- Enhance the existing riparian vegetation corridor at the erosion sites, where applicable.

From the Project Description section of the PEIR, CSLC staff understands that the SERP would involve permitting and implementation of flood repair projects along certain waterways within the SRFCP area; only projects requiring disturbance of 0.5 acre or less, with a maximum linear foot limit of 1,000 feet, would qualify for permitting under the SERP, and a maximum of 15 individual repair projects could be implemented annually under the SERP during this first phase. SERP project design, construction, site restoration and mitigation would need to comply with the SERP Manual, developed in coordination with other responsible agencies. Cont. CSLC-6

For each SERP project, DWR will coordinate with the U.S. Army Corps of Engineers (USACE); U.S. Fish and Wildlife Service (FWS); National Marine Fisheries Service (NMFS); Central Valley Regional Water Quality Control Board (CVRWQCB); California Department of Fish and Wildlife (CDFW); and the Central Valley Flood Protection Board (CVFPB) (collectively, "SERP Agencies"). The Draft EIR identifies the SERP as proposed in the PEIR as the Environmentally Superior Alternative. CSLC-7

Environmental Review

CSLC staff requests that DWR consider the following comments on the SERP's Draft PEIR.

Program EIRs

1. Resource-Specific Conservation Measures. Because the SERP is being proposed under a "Programmatic" rather than a "Project-level" EIR, determination of the necessity of certain mitigation measures, such as those related to impacts on special-status species and habitat and cultural resources, for a given SERP project is, understandably, beyond the scope of the PEIR. To account for site-specific unknowns, the SERP Manual (Draft PEIR, Appendix B) provides a list of SERP "conservation measures," some of which shall be applied to all SERP projects and some of which shall be applied for certain projects, presumably contingent on the presence of certain resources or habitats. For each SERP project, DWR will identify which "contingent" measures must be implemented, and the SERP Agencies will need to approve or amend DWR's determination; however, the SERP Manual does not detail the decision-making criteria DWR will use to decide which "contingent" conservation measures apply. CSLC-8

   Pursuant to the State CEQA Guidelines,[1] mitigation should either be presented as specific, feasible, enforceable obligations, or should be presented as formulas containing "performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way" (State CEQA Guidelines, § 15126.4, subd. (b)). The PEIR or the SERP Manual, CSLC-9

[1] The State "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

then, should better describe the factors that will influence whether or not certain "contingent" conservation measures will be required; for example, the SERP Manual could clarify that any site with channels or habitat meeting certain criteria could reasonably support giant garter snake (GGS) and, therefore, would need to implement all GGS-related conservation measures. Cont. CSLC-9

Documenting the particular process that DWR will follow in selecting appropriate mitigation for each project provides trustee and responsible agencies not included among the SERP Agencies and other stakeholders with the information necessary to comment on the adequacy of the PEIR's mitigation and its implementation. Moreover, it would improve consistency in when mitigation is applied. Although DWR's lead role in selecting mitigation for each project, as well as the SERP Agencies' review of the project and required measures, will help ensure the SERP permit requires appropriate mitigation, formalizing this information in either the Final PEIR or the Final Regional Plan would act as an added assurance that individual projects avoid significant environmental impacts. CSLC-10

Cultural Resources

1. Submerged Resources: Among other information, Mitigation Measure 3.4-1 lists the steps DWR will take to research and evaluate the presence and significance of potential cultural resources at each SERP project site before implementation, such as conducting an inventory search as required by Section 106 of the National Historic Preservation Act and evaluating eligibility for listing on the California or National Register of Historic Places. CSLC staff suggests amending the mitigation measure to include consultation of the CSLC's shipwrecks database when conducting this research. CSLC staff requests that DWR contact Senior Staff Counsel Pam Griggs at the contact information noted at the end of this letter to obtain shipwrecks data from the database and CSLC records for SERP project sites. The database includes known and potential vessels located on the State's tide and submerged lands; however, the locations of many shipwrecks remain unknown. Please note that any submerged archaeological site or submerged historic resource that has remained in State waters for more than 50 years is presumed to be significant. CSLC-11

2. Title to Resources: The PEIR should also mention that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC. CSLC staff requests that DWR consult with Senior Staff Counsel Pam Griggs at the contact information noted at the end of this letter, should any cultural resources on state lands be discovered during construction of any of the SERP projects. CSLC-12

Thank you for the opportunity to comment on the Draft PEIR for the SERP. As a trustee and potentially responsible agency, the CSLC may need to rely on the Final PEIR and/or a project-specific tiered document for the issuance of any new leases as CSLC-13

specified above and, therefore, we request that you consider our comments prior to certification of the PEIR. Cont. CSLC-13

Please send copies of future SERP-related documents, including electronic copies of the Final PEIR, Mitigation Monitoring and Reporting Program (MMRP), Notice of Determination (NOD), CEQA Findings and, if applicable, Statement of Overriding Considerations when they become available, and refer questions concerning environmental review to Sarah Sugar, Environmental Scientist, at (916) 574-2274 or via e-mail at Sarah.Sugar@slc.ca.gov. For questions concerning archaeological or historic resources under CSLC jurisdiction, please contact Senior Staff Counsel Pam Griggs at (916) 574-1854 or via email at Pamela.Griggs@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Wendy Hall, Public Land Management Specialist, at (916) 574-0994, or via email at Wendy.Hall@slc.ca.gov. CSLC-14

Sincerely,

for Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
Wendy Hall, LMD, CSLC
Sarah Sugar, DEPM, CSLC
Eric Milstein, Legal, CSLC
Pam Griggs, Legal, CSLC

RESPONSE

CSLC-1

The comment notes that CSLC is a trustee agency, and will act as a responsible agency if a SERP project involves work on sovereign lands. Comment noted. As indicated on page D-6 of the SERP Manual, DWR staff will coordinate with the CSLC on work within CSLC's jurisdictional areas and CSLC leasing requirements will be met, as necessary.

CSLC-2

Comment noted. No further response is required.

CSLC-3

Comment noted. No further response is required.

CSLC-4

DWR staff will coordinate with CLSC on work within CSLC's jurisdictional areas to determine the CSLC's interest in projects proposed for implementation under the SERP and CSLC leasing requirements will be met, as necessary. DWR will contact Wendy Hall, or her successor, with any questions concerning the CLSC lease application process.

CSLC-5

Construction activities associated with the implementation of repairs under the SERP may temporarily restrict public access to sections of waterways, but would not be expected to impede the easement right of the public.

CSLC-6

Comment noted. No further response is required.

CSLC-7

Comment noted. No further response is required.

CSLC-8

Comment noted. The application of the resource-specific conservation measures in Appendix I of the SERP manual generally will depend upon the presence of the specific resources at the specific sites to be repaired each year. If DWR determines presence of a specific resource, then all resource-specific conservation measures for that resource will apply. DWR’s determination regarding the appropriate resource-specific measures to be applied will be made

in coordination with the appropriate SERP agencies. Any objections by a SERP agency to DWR's proposed determination will be addressed in the context of that coordination process.

CSLC-9

See response to Comment CSLC-8. DWR disagrees with the suggestion in the comment that the resource-specific conservation measures in Appendix I of the SERP Manual do not represent specific, feasible, and enforceable obligations. Taking the example of giant garter snake (GGS) in the comment, the six resource-specific measures for GGS in Appendix I are detailed and quantitative (specifying distances and dates, for example). To the extent that there will be project-specific issues to be addressed (such as determining how to confine vegetation clearing "to the minimum area necessary"), the measures set forth represent adequate performance standards for CEQA purposes. Also, as indicated in the response to Comment CDFW-6, the enforceability of the conservation measures will be further ensured through a reference in the DPEIR clarifying that they are mandatory. Compliance with the SERP manual, including the conservation measures, will also be a condition of approval of the SERP.

CSLC-10

See response to Comment CSLC-10.

CSLC-11

The comment requested that Mitigation Measure 3.4-1 be revised to include contacting CSLC's senior counsel and consultation of the CSLC's shipwrecks database. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

CSLC-12

The comment requests that the DPEIR note that the titles to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands are under the jurisdiction of the CSLC. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

CSLC-13

The CLSC's comments have been considered prior to FPEIR certification in this document.

CSLC-14

DWR will send copies of future SERP-related documents, including CEQA-related documentation to the CSLC Environmental Planning and Management Division at the email

address provided, as they become available, and will contact the appropriate identified staff, or their successor, if questions arise concerning archaeological or historic resources, or lease jurisdiction.

2.2.6 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW)

Letter CDFW

State of California
Department of Fish and Wildlife

Memorandum

Date: May 3, 2013

To: Jeff Schuette, Senior ES
California Department of Water Resources
3310 El Camino Ave, Suite 140
Sacramento, CA 95821

From: Tina Bartlett, Regional Manager
Department of Fish and Wildlife
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

Subject: Public Draft Program Environmental Impact Report for the Small Erosion Repair Program (SCH #2009112088)

On March 19, 2013, the California Department of Fish and Wildlife (Department) received a Public Draft Program Environmental Impact Report (PEIR) from the California Department of Water Resources for the Small Erosion Repair Program (SERP). The Department appreciates the Lead Agency's willingness to accept comments on the PEIR until May 3, 2013. As a trustee for California's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and their habitat. As a responsible agency, the Department administers the California Endangered Species Act (CESA), the Native Plant Protection Act, and other provisions of the Fish and Game Code (FGC) that conserve the State's fish and wildlife public trust resources. The Department offers the following comments and recommendations on this draft PEIR in our role as a trustee and responsible agency Pursuant to Section 15082(b) of the California Environmental Quality Act (CEQA) Guidelines, and the California Public Resource Code §21000 et seq. CDFW-1

The Department's general and substantive comments relate to the representation of impacts and mitigation incorporated into the PEIR, and analysis of indirect and cumulative impacts, as explained below. More specific comments on various sections of the PEIR follow. CDFW-2

The comments provided herein are based on the information provided in the draft PEIR, the Department's knowledge of species and habitat in the proposed Program's area, and our participation in the SERP Interagency Subcommittee. Comments are limited to the Project and alternatives that may likely result in biological resource impacts.

Project Overview and Description

The purpose of the Project is to ensure the continued flood management integrity of the Sacramento River Flood Control Project (SRFCP) levees that the Department of Water Resources (DWR) maintains while protecting environmental resources by providing an efficient method of selecting, evaluating, and permitting small erosion repair projects. The PEIR only covers Phase 1 of the SERP which is restricted to specific waterways maintained by DWR.

The waterways identified below are included in the SERP for Phase 1.

- Butte Creek
- Cache Creek from the Yolo Bypass to the upstream limit of the SRFCP levees
- Cherokee Canal
- Colusa Bypass
- Northern portion of Colusa Main Drain, as identified in the PEIR
- Portions of Feather River, as identified in the PEIR
- Putah Creek
- Sacramento Bypass
- Portions of Sacramento River, as identified in the PEIR
- Sutter Bypass
- Tisdale Bypass
- Wadsworth Canal
- Willow Slough Bypass
- Portions of Yolo Bypass, as identified in PEIR
- East and West Interceptor Canals

CDFW-3

Each year for five years, a maximum of 15 individual SERP repair projects (SERP projects) (maximum of 75 sites over five years) will be proposed to the collaborating agencies, including the Department. Potential SERP repair sites will be categorized into two tiers based on the size of the project disturbance area (0.1 acre or less with a maximum linear foot limit of 264 feet, or 0.5 acre or less with a maximum linear foot limit of 1,000 feet).

For each proposed site, DWR will select one of seven SERP design templates created by the collaborating agencies and identified in the SERP manual to apply to the site. DWR will notify the applicable permitting agencies including U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service, (NMFS), the Department and Regional Water Quality Control Board (RWQCB), of the proposed small erosion repair project(s). The required notification materials for each project will be submitted to the agencies each spring by June 1st.

Upon receipt of the annual SERP project notification package, the permitting agencies will review the projects and independently respond to DWR, indicating whether the projects are acceptable under their program level SERP authorizations, and including any additional terms or conditions for approval in their responses.

Construction activities will take place at individual sites throughout each summer and fall during the 5-year Phase 1 period. Each site will require no more than 1–4 weeks of active construction. Effective construction and replanting methods, employed in the recent past for similar small erosion control projects will be used. Bank reconstruction will in most cases incorporate plantings into the revetment in accordance with the bioengineering techniques outlined in the program design templates.

As part of this program, the SERP Subcommittee developed the SERP manual (Appendix B of the draft PEIR), which provides the general guidelines under which the SERP will operate. The SERP Subcommittee has developed guidelines in several areas such as project design, conservation measures, and monitoring and reporting requirements. Additionally, a CEQA Compliance Checklist developed by DWR based on the environmental analysis in this PEIR would be used to ensure that, for each project site, repairs conducted under the SERP would comply with CEQA and to provide substantial information to streamline permitting.

Cont. CDFW-3

The Department's History with the SERP

The SERP is a collaborative interagency effort that the Department has been participating in since the SERP Subcommittee was formed at the direction of the Interagency Flood Management Collaborative Program Group in 2007. Over the past six years, the subcommittee has worked together to incorporate features and measures into the SERP to reduce impacts to the environment. These environmental commitments are memorialized through conservation measures in the SERP Manual that guides the program. However, the product of those meetings does not reduce the Department's responsibility to comment on a project during the formal CEQA review process.

CDFW-4

The Department's December 22, 2009, response to the Notice of Preparation (NOP) focused on the need for the DEIR to analyze all potential direct, indirect, short term, long term and cumulative impacts to biological resources and provide mitigation. The Department's comments were largely addressed by DWR incorporating the conservation measures into the Program through the SERP manual and by the analysis provided in the draft PEIR.

CDFW-5

Discussion of Mitigation Incorporated into the SERP

The Department recommends that DWR clarify in the document that the conservation measures in the SERP manual are mandatory, will be implemented on every applicable project and were developed with resource agency involvement. We recommend including the conservation measures in a table to be inserted into the text of the PEIR. Also, the Department recommends summarizing the conservation measures for biological resources included in the SERP manual and including them in the text in Section 3.3 after the first impact as was done on pages 3.6-18-20 for the Hydrology and Water Quality section.

CDFW-6

We recommend including a table in the PEIR of all environmental commitments that are part of the SERP including those required mitigation measures from the PEIR along with mandatory conservation measures and species/resource-specific conservation measures from the SERP manual. This will better represent all the measures that reduce the impacts of this program without having to reference to various sources. CDFW-7

We recommend changing the statement "no mitigation is required" that appears on impacts 3.3-1-3.3-8 to "No ***additional*** mitigation is required." CDFW-8

Impacts 3.3-1, 3.3-2, and 3.3-4 through 3.3-6 say "The SERP Manual includes conservation measures that would be implemented to avoid and/or minimize *X* impact. This impact would be less than significant." To be more clear, we suggest revising it to read, "The SERP Manual includes conservation measures to avoid, minimize and/or mitigate *X* impact. By implementing the conservation measures in the SERP Manual, this impact would be less than significant." CDFW-9

Table S-2 is confusing for the following reasons: "Level of Significance before mitigation" should include reference to incorporation of the SERP manual conservation measures as the conservation measures in the SERP manual are the reason the impacts to biological resources, hydrology and water quality and other environmental categories are less than significant and this is unclear. The acronym NA under the mitigation measure column is misleading. There are many mitigation measures incorporated through the SERP manual and simply stating NA does not accurately reflect all that is built into the program to avoid, minimize and mitigate impacts. CDFW-10

Compliance with CESA

Throughout the PEIR, reference should be made to complying with the California Endangered Species Act (CESA). While operational conditions are expected to avoid the potential take of an endangered species, it is still an action that will need to be complied with during implementation of the projects. Table 1-1 should reflect that an Incidental Take Permit (ITP) might be one of the Permits/Agreements that is needed. CDFW-11

Page S-17; Table S-2; 3.3 Biological Resources; Impact 3.3-2: This impact implies that there could be a loss of special status species or wildlife species and habitats. If take as defined by the Fish and Game Code (Section 86) is expected to occur, the Department recommends that an ITP be obtained to implement the proposed project. In addition, the level of significance before mitigation should not be listed as less than significant for the potential take of listed species. CDFW-12

The Department recommends a CESA Permit be obtained if the SERP project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the project. If the SERP project has the potential to take CESA listed species, early consultation is encouraged, as significant modification CDFW-13

to the project and mitigation measures may be required in order to obtain a CESA Permit. Candidate species are protected under CESA to the same extent as species listed as endangered or threatened (Fish & G. Code, § 2085.)

Cont. CDFW-13

A CESA permit may only be obtained if the impacts of the authorized take of the species is minimized and fully mitigated and adequate funding has been ensured to implement the mitigation measures. The Department may only issue a CESA permit if the Department determines that issuance of the permit does not jeopardize the continued existence of the species. The Department will make this determination based on the best scientific information available, and shall include consideration of the species' capability to survive and reproduce, including the species known population trends and known threats to the species. Issuance of a CESA permit may take up to 180 days from receipt of an application from the applicant.

CDFW-14

Indirect and Cumulative Impacts

The PEIR's analysis fails to adequately consider potential cumulative and indirect impacts.

CDFW-15

The cumulative impacts analysis implies that since future projects will be required to obtain and follow State and federal permits and authorizations, that there will not be any cumulative impacts. Obtaining authorization and following mitigation measures is not reason enough to determine that there will not be cumulative impacts.

CDFW-16

The cumulative effects analysis for the SERP fails to provide a complete list of past, present, and probable future projects producing related or cumulative impacts. Please add the following foreseeable future project to the list of projects under cumulative impacts (page 5-7):

> The Sacramento River Bank Protection Project (SRBPP), Phase II Supplemental Authorization of 80,000 linear feet of bank protection under the Water Resources Development Act of 1997 which will occur within the Sacramento River and its tributaries.

CDFW-17

The PEIR's Analysis Methodology looks at temporary, short-term, and long-term effects of the SERP. CEQA requires analysis of direct, indirect and cumulative impacts. Indirect effects are not clearly analyzed in this document. The analysis can further be broken down into temporary and permanent impacts. We recommend being consistent with CEQA impact analysis. Specifically, the loss of natural river processes from implementation of bank protection should be analyzed under indirect impacts for the SERP and cumulative effects of the SERP and SRBPP together.

CDFW-18

Coordinate with Ongoing Planning Efforts

As various Habitat Conservation Plans and Natural Community Conservation Plans progress during the Pilot Phase 1 SERP, the Department recommends continued coordination with those efforts to ensure that the SERP does not impact the planning or implementation of those plans.

CDFW-19

The Bank Swallow Working Group Technical Advisory Committee (BANS-TAC) is developing a draft Conservation Strategy for the Sacramento River Watershed to provide direction and better protect and recover the bank swallow in California, as well as benefit the many other species dependent on natural river systems. The Department recommends that the SERP coordinate with the BANS-TAC to maintain consistency with their developing conservation strategy and recommendations. Please include a list of conservation planning efforts and how you plan to coordinate with those efforts in your environmental document. CDFW-20

Specific Comments:

Page S-5; Line 3 states that the SERP uses "programmatic authorizations, issued by federal and State agencies with regulatory obligations…" The Department does not issue programmatic authorizations under FGC 1600 et seq or CESA. The Department suggests changing this to "program-level authorizations" or some other term acceptable to all the permitting agencies. (The word programmatic in this context also appears on Pages S-6; 3rd paragraph, 1-2; 2nd paragraph, 2-5; last paragraph, and 2-7; last paragraph). CDFW-21

Page S-9; First paragraph states that under the No-Project Alternative "a number of minor repairs would be conducted by various maintenance yards, and would qualify as categorical exemptions under CEQA." Determining whether a project qualifies for a categorical exemption under CEQA requires identification of the potential impacts and knowledge of the physical environment at the proposed project site. It is incorrect to assume that these minor repairs would qualify for an exemption without that information. (This incorrect information appears on page 4-4 and 4-6 in the Biological Resources section as well). CDFW-22

Page S-11; Table S-1, Biological resources row; reword as follows: "Less than significant *after mitigation*" CDFW-23

Page S-11; Table S-1 and repeated on Page 4-14: Table 4-2: The row covering the Biological resources section does not accurately represent potential impacts. Based on the analysis in the Alternatives section, impact levels for the various alternatives could be designated with "Similar". Specifically, in the Biological Resources section of the "Native Soil Disturbance Minimization Alternative," it states that, "the potential impacts to biological resources would be similar but more off-site and/or compensatory mitigation measures would be needed. Therefore, impacts to biological resources are considered greater." Having to do more compensatory mitigation does not necessarily mean project impacts to biological resources are greater. Each of these actions would require mitigation to be implemented and would result in all alternatives having a similar impact on the environment. If the delay in getting projects constructed would create larger erosion repairs which would create a greater impact, then that should be the reason they are classified as "greater," but not due to more compensatory mitigation being required. The text should clarify this or the table should be modified to reflect that this would all be similar. CDFW-24

Page 1-4; Table 1-1, Under Permit/Agreements for CDFW it says "Agreement on avoidance and mitigation measures" for compliance with the California Endangered Species Act. This language should be removed as this is not something the Department can provide. The only permits that would be issued under CESA for this program are a Fish and Game Code (FGC) Section 2080.1 Consistency Determination or a Section 2081 Incidental Take Permit. DWR should specify in the table if they will be obtaining a permit under CESA. CDFW-25

Page 2-5; 3rd paragraph, The sentence "Additionally, a CEQA Compliance Checklist developed by DWR based on the environmental analysis in this DEIR would be used to ensure that, for each project site, repairs conducted under the SERP would comply with CEQA and to provide substantial information to streamline permitting." Completing the checklist will not comply with CEQA, it will ensure the repair was covered by the CEQA analysis done in this PEIR. We suggest rewriting this sentence like the one on page 2-7 that states, "The CEQA Compliance Checklist would be based on the findings of the SERP Final PEIR and used to determine whether the EIR provides adequate CEQA coverage for each of the SERP projects or if further project-level environmental documentation would be required to fully satisfy CEQA requirements." CDFW-26

Page 2-9; First paragraph of maintenance states that DWR intends to manage the SERP plantings consistent with the Central Valley Flood Protection Plan (CVFPP) vegetation management strategy. If the vegetation management strategy changes in the 2017 version of the CVFPP to be more restrictive of lower waterside vegetation or will impact SERP plantings more than currently planned, it will need to be discussed with the regulatory agencies through the SERP Subcommittee. The Department recommends including this coordination in the environmental document and the SERP manual. CDFW-27

Pages 3.1-3 and 3.1-4; Less-than-significant and beneficial effect bullets. The paragraphs describing these impacts should explain that although this impact level does not require mitigation beyond what the project proposes, that it does require the conservation measures in the SERP manual be implemented. CDFW-28

Page 3.1-4; Impact Mechanisms; last bullet; Short-term impacts: The definition used for short-term impacts seems too long. Short-term impacts would be those that are one-year or less. Impacts to vegetation that go longer than a year should be considered long-term. Loss of habitat for greater than one year will impact both migratory and resident species. The definition of Long-term impacts should also be modified to longer than one year. CDFW-29

Page 3.3-5; 2nd paragraph; last sentence: "Under the CESA, 'take' is defined as an activity that would directly or indirectly kill an individual of a species…" This is incorrect. Take is defined in FGC Section 86 as "Hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture or kill." The federal definition is quoted in the ESA section and the CESA section should be rewritten with the actual definition. CDFW-30

Page 3.3-5; Streambed Alteration Agreement section: This paragraph gives the regulatory definition of stream. This term is not defined in FGC and should be removed from this section. If used elsewhere it should be cited where the definition is found. Also, the sentence reading, "CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife" is incorrect. Please remove that sentence. CDFW-31

Page 3.3-10; Emergent Marsh; last sentence: Reword as follows: "...refuge for several special-status ***native*** fish species from predatory..." CDFW-32

Page 3.3-11; Wildlife: The Swainson's hawk (*Buteo swainsoni*) should be added to the list of species commonly found in this area. CDFW-33

Page 3.3-12; Fisheries and Aquatic Habitats; 1st sentence: Deer Creek is not included in SERP Phase 1, please remove. Deer Creek appears again on page 5-19 in the 2nd paragraph under Biological Resources. Please remove. CDFW-34

Page 3.3-12; Fisheries and Aquatic Habitats; 3rd sentence: reword as follows: "Native fish species that may occur in the open-water habitats adjacent to potential erosion sites include ***all runs of*** Chinook salmon (*Oncorhynchus shawytscha*)..." CDFW-35

Page 3.3-13; Fisheries and Aquatic Habitats; 2nd paragraph; last sentence: Please provide a citation for this statement or consider deleting sentence. CDFW-36

Pages 3.3-27-40; Table 3.3-3 had the following errors: CDFW-37

Central Valley steelhead are not State listed
California Tiger Salamander is State listed as Threatened
California red-legged frog is a State species of special concern
Peregrine falcon is Delisted under State and federal ESA (and still State fully protected as noted in the table)
Greater sandhill crane is State listed as Threatened (and State fully protected as noted in the table)
Bank swallow is State listed as Threatened
Riparian brush rabbit *(Sylvilagus bachmani riparius)* should be included in the table.

Page 3.3-31 through 3.3-37; Table 3.3-3; Birds: Recommend grouping the bird species listed in the table by families rather than listed alphabetically based on their scientific name. CDFW-38

Page 3.3-38 through 3.3-40; Table 3.3-3; Mammals: Recommend grouping the mammal species listed in the table by families rather than listed alphabetically based on their scientific name. CDFW-39

Page 3.3-42; Central Valley Spring-run Chinook salmon: Spring-run Chinook salmon are a State Threatened species. The text should be modified to reflect this listing. CDFW-40

Page 3.3-43; Sacramento River Winter-run Chinook salmon: Winter-run Chinook salmon are a State Endangered species. The text should be modified to reflect this listing. CDFW-41

Page 3.3-46; Delta Smelt: Delta Smelt are a State Endangered species. The text should be modified to reflect this listing. CDFW-42

Page 3.3-49; Giant Garter Snake: The Giant Garter snake is a State Threatened species. The text should be modified to reflect this listing. CDFW-43

Page 3.3-51; Bank Swallow: The Bank Swallow is a State Threatened species. The text should be modified to reflect this listing. CDFW-44

Page 3.3-59; Impact 3.3-6; Temporary Loss or Degradation of Riparian Habitat/Forest or Other Sensitive Natural Communities; second to last sentence: Delete wording as follows: "In addition, DWR is requesting a streambed alteration agreement ~~memorandum of agreement~~ from CDFW for activities under the SERP,..." CDFW-45

Page 4-1; Chapter 4, Alternatives: The Alternatives section needs to include a description of the Proposed Program. In section 4.1.1, it states that the analysis for the SERP was done in Chapter 3. In reviewing Chapter 3, it was not apparent where the description of the proposed program alternative was located. In addition, Table 4-1 is described as providing a comparison of the alternatives described in this chapter, Table 4-1 does not offer a comparison of the four alternatives; instead it only examines before and after mitigation is implemented. Table 4-2 does offer a comparison of the four options, located on page 4-14. This section is confusing and does not offer the reader a clear picture of the proposed program and it should be rewritten to include a description of the proposed program in section 4.3.1 Description of Program Alternatives Evaluated. CDFW-46

Page 4-6 No-Project Alternative; Biological resources section states that "Minor erosion repair projects would be implemented by maintenance yards through categorical exemptions under CEQA and would not require resource agencyauthorizations..." This is not a valid assumption. Even minor erosion repair projects may require CEQA analysis and permits if there are potential impacts to the environment. CDFW-47

Page 4-14, 3rd paragraph says that "USFWS, NMFS, and CDFW strongly prefer on-site mitigation to off-site mitigation." This is not always the case; it depends on the proposed project and the impacts. The Department promotes onsite restoration and enhancement in waterways to maintain connectivity of habitat, but mitigation must be appropriate for the impact and the species or habitat for which the mitigation is required. CDFW-48

Page 5-6, first line: Recommend adding ***(or 75,000 linear feet)*** after 37.5 acres. CDFW-49

Thank you for the opportunity to provide comments on the SERP PEIR. Department staff is available to discuss our concerns, comments, and recommendations in greater detail. Please contact Staff Environmental Scientist, Kelley Barker, at (916) 358-4353 or Kelley.Barker@wildlife.ca.gov if you have questions. CDFW-50

Attachments/Enclosures:

ec: Jeff Drongesen
Jennifer Navicky
Kelley Barker

RESPONSE

CDFW-1

Comment noted. No further response is required.

CDFW-2

Comment noted. No further response is required.

CDFW-3

Comment noted. No further response is required.

CDFW-4

Comment noted. No further response is required.

CDFW-5

Comment noted. No further response is required.

CDFW-6

DWR has added a footnote to Table S-2 confirming that "conservation measures in the SERP manual are mandatory and will be included as conditions of approval for any SERP repair. The conservation measures are a critical component of the proposed project analyzed under CEQA in this PEIR." Additionally, DWR has added a table to Chapter 2 (Table 2-1) listing all of the conservation measures, and has also included a summary of the conservation measures for biological resources in Section 3.3, as requested in the comment. Finally, DWR has included in the mitigation monitoring and reporting program, all applicable conservation measures from the SERP manual. These revisions are shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

CDFW-7

See response to Comment CDFW-6.

CDFW-8

The comment recommends that Impacts 3.3-1 through 3.3-8 in the DPEIR be revised to state that no additional mitigation is required. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

CDFW-9

The comment requests that the DPEIR be revised to note that Impacts 3.3-1, 3.3-2, and 3.3-4 through 3.3-6 are less than significant with the incorporation of conservation measures. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

CDFW-10

See response to Comment CDFW-6.

CDFW-11

DWR will be managing its SERP activities to avoid take of fully protected or listed species. The SERP Manual states that this program does not authorize DWR to take, under CESA, incidentally or otherwise, any fully protected or listed species. Thus DWR will be managing its SERP activities to avoid take of both fully protected species, for which no take authorization is available, and for listed species, for which take authorization under CESA has not currently been obtained. DWR has successfully implemented similar conservation measures to avoid take associated with multiple erosion site projects and expects to be able to avoid take through implementation of specific mandatory measures described in the SERP Manual. The level of significance is accurately assessed as less than significant because every SERP project includes mandatory application of conservation measures that reduce the impacts to a less-than-significant level.

CDFW-12

See response to Comment CDFW-11.

CDFW-13

See response to Comment CDFW-11.

CDFW-14

See response to Comment CDFW-11.

CDFW-15

The comment does not describe or explain the ways in which the commenter considers the indirect and cumulative impact discussion in the SERP DPEIR to be inadequate. The DPEIR includes 29 pages discussing cumulative impacts in Section 5.1, and indirect impacts are considered throughout the DPEIR as appropriate. This DPEIR also incorporates by reference the environmental analysis and other information contained in the 2012 Central Valley Flood Protection Plan Consolidated Final Program Environmental Impact Report, June, 2012, State

Clearinghouse #2010102044 (CVFPP FPEIR) (DWR 2012). The CVFPP FPEIR addresses a broad range of flood protection activities throughout the Central Valley, including those areas that will be addressed by the SERP. It is referenced in this DPEIR to provide additional information about the CVFPP's broad-scale issues and planning efforts, near- and long-term management actions, and the associated direct, indirect, and cumulative environmental effects (both beneficial and potentially adverse). Mitigation strategies described in the CVFPP FPEIR have been adapted for purposes of this DPEIR as appropriate. The executive summary of the CVFPP FPEIR is included as Appendix G, "Central Valley Flood Protection Plan Consolidated Final Program Environmental Impact Report: Executive Summary." The full text of the CVFPP FPEIR is available online at http://www.water.ca.gov/cvfmp/documents.cfm.

CDFW-16

See response to Comment CDFW-15. Compliance with conditions in future State and federal permits and authorizations was only one of the reasons for the conclusion that the SERP would not result in a cumulatively considerable incremental contribution to a significant cumulative impact related to biological resources. Other factors that contributed to that conclusion include:

- The SERP Manual contains mandatory conservation measures to be applied to all individual erosion repair sites, and resource-specific conservation measures to be applied at selected erosion repair sites to minimize impacts on sensitive biological resources; sensitive natural communities; native trees; and special-status fish, wildlife, and plant species.

- In the absence of the SERP, small erosion sites could become major erosion sites that would require extensive repairs and greater impacts to natural resources; by implementing the SERP, impacts of future flood management projects would be reduced.

- The SERP is part of the 2012 Central Valley Flood Protection Plan (CVFPP), which includes an associated Conservation Framework (http://www.water.ca.gov/floodsafe/fessro/floodway/conservation/). The goal of the Conservation Framework, and of the SERP which was started before the CVFPP, is to integrate environmental stewardship with flood management improvements. The SERP is part of a comprehensive, system-wide strategy to promote protection and recovery of sensitive species and habitats while implementing flood management projects.

CDFW-17

The comment recommends the Sacramento River Bank Protection Project (SRBPP) be added to the list of projects under cumulative impacts. To address the comment, the text of the

DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-18

See responses to Comment BANS TAC-3, CDFW-15, and CDFW-16.CDFW-19

See responses to Comments BANS TAC-3, CDFW-15, and CDFW-16.

CDFW-20

See response to Comment BANS TAC-2, and BANS TAC-3. DWR’sFMO also has staff participating in the BANS TAC Subcommittee.

CDFW-21

The comment requests that “program authorizations” be used instead of “programmatic authorizations.” To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-22

DWR does not assume that all minor repairs qualify for an exemption under CEQA. The text is not meant to imply that minor repairs are assumed to qualify for an exemption. The text is meant to indicate that under the No-Project scenario some minor repairs will likely be found to meet the criteria for a categorical exemption and therefore would be implemented under a CEQA exemption as currently occurs. DWR understands that repair sites must be examined before a determination can be made that the repair can be implemented under a Categorical Exemption.

CDFW-23

CDFW's concern is noted. However, as described in the response to Comment CDFW-6 above, the conservation measures are a critical component of the proposed project analyzed under CEQA in this DPEIR.. Because the conservation measures are a mandatory part of the program that is the "project" under CEQA, the appropriate significance conclusion in this case is "less than significant." No change has been made to the wording of the referenced significance conclusions. A table has been added to Chapter 2 (Table 2-1) listing all of the conservation measures in response to Comment CDFW-6, and the conservation measures have been included in the Mitigation Monitoring and Reporting Program (MMRP).

CDFW-24

The Native Soil Disturbance Minimization Alternative is appropriately considered an alternative that would have greater impacts on biological resources compared to the proposed program because this alternative would involve the same level of disturbance at a project site as with the proposed program, but at the end of project construction the site would offer fewer opportunities to create aquatic or shaded riverine habitat.

CDFW-25

See response to Comment CDFW-11. When CDFW reviews the notification form for a proposed SERP repair site, it will have the ability to confirm the applicable conservation measures, and if appropriate, require additional measures to avoid, minimize, or mitigate potential effects on biological resources. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-26

The comment recommends revising the text on DPEIR page 2-5 to indicate that completing the Checklist does not comply with CEQA, but will ensure the repair was covered by the CEQA analysis done in the DPEIR. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-27

Comment noted. DWR will coordinate with the regulatory agencies on any changes made to the vegetation management strategy in the 2017 version of the CVFPP.

CDFW-28

The comment notes that less-than-significant impacts and beneficial effects may require the incorporation of the conservation measures. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-29

The comment recommends that the definitions of short-term and long-term impacts are revised. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-30

The comment notes that the definition of “take” on DPEIR page 3.3-5 is incorrect. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-31

The comment notes that the definition of “stream” on DPEIR page 3.3-5 is incorrect. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-32

The comment notes that emergent aquatic vegetation provides refuge for several special-status native fish species. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-33

The comment indicates that Swainson's hawk should be added to the list of species on DPEIR page 3.3-11. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-34

The comment notes that Deer Creek is not in the Phase 1 SERP Coverage Area and should be removed from the text. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-35

The comment notes that text on DPEIR page 3.3-12 should be revised to note that all runs of chinook salmon have the potential to occur adjacent to erosion sites. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-36

The comment requests that the text on DPEIR page 3.3-13 be deleted or a citation be provided. To address the comment, the text of the DPEIR has been revised as shown in

Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-37

The comment indicates that the status of several species listed in Table 3.3-3 in the DPEIR is incorrect. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-38

Comment noted. This comment is not related to the adequacy of the DPEIR, and no further response is required.

CDFW-39

Comment noted. This comment is not related to the adequacy of the DPEIR, and no further response is required.

CDFW-40

The comment notes that Spring-run Chinook salmon is a state-listed species. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-41

The comment notes that Winter-run Chinook salmon is a state-listed species. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-42

The comment notes that delta smelt is a state-listed species. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-43

The comment notes that giant garter snake is a state-listed species. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-44

The comment notes that bank swallow is a state-listed species. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-45

The comment requests that “memorandum of agreement” be deleted from the text on DPEIR page 3.3-59. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-46

The SERP is the proposed project and is described in Chapter 2 of the DPEIR. The Table of Contents clearly states where the proposed project is described. The word “Project” has been replaced with "Program" in the heading for section 4.1.1 to be consistent with Chapter 2 and the Table of Contents. "Program" has been used throughout the document, rather than "Project." Table 4-1 is accurately described in the 2nd sentence of section 4.1.1 as "a summary of SERP impact levels before and after implementation of mitigation..." The title of Table 4-1 has been changed to: Summary of the SERP Impact Levels Before and After Mitigation. The program alternatives described in section 4.3.1 are alternatives to the Proposed Project. A description of the Proposed Project does not belong in section 4.3.1 because it is the Proposed Project and not an alternative to the Proposed Project. DPEIR text revisions summarized above are shown in Chapter 3, “Revisions to the DPEIR.” These edits do not change the analysis or conclusions of the DPEIR.

CDFW-47

The comment indicates that the assumption that minor erosion repair projects would be implemented by maintenance yards through categorical exemptions under CEQA and would not require resource agency authorizations is not correct. Some minor repairs would not result in impacts, and therefore would qualify for and be implemented through categorical exemptions under CEQA. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-48

Comment noted. No further response is required.

CDFW-49

The comment recommends adding “(or 75,000 linear feet)” after “37.5 acres” on DPEIR page 5-6. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

CDFW-50

This comment is not related to the adequacy of the CEQA document. DWR will contact the identified staff, or her successor, if questions concerning CDFW's comments arise. No further response is required.

2.2.7 NATIONAL MARINE FISHERIES SERVICE (NMFS)

Letter NMFS

UNITED STATES DEPART
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814-4700

MAY 0 8 2013

Jeff Schuette
Maintenance Environmental Support Branch
Division of Flood Management
Department of Water Resources
3310 El Camino Avenue, Suite 140
Sacramento, California 95821

Dear Mr. Schuette:

This is in response to your March 10, 2013, letter requesting NOAA's National Marine Fisheries Service's (NMFS) review of the draft Environmental Impact Report (EIR) for the Small Erosion Repair Program (SERP). The California Department of Water Resources (DWR) is requesting permission for the U.S. Army Corps of Engineers (Corps) to address small erosion sites on levees within the Sacrament River Flood Control Project (SRFCP) area.

SERP is a collaborative interagency (including NMFS) effort to develop a streamlined regulatory review and authorization process that will facilitate implementation of annual repairs of small erosion sites on SRFCP area levees. SERP plans to use programmatic authorizations to streamline the process for implementation of small erosion repairs in accordance with conservation-based design and monitoring standards. SERP proposed projects would be designed to minimize effects on listed fish species, and to protect and enhance the existing aquatic and riparian habitats comprising the riverine corridor.

NMFS-1

For Phase 1 of SERP (an initial 5-year period) the coverage area would be a subset of SRFCP, representing approximately 300 miles of levees maintained by DWR in Butte, Colusa, Glenn, Placer, Sacramento, Solano, Sutter, Yolo, and Yuba counties. The following waterways would be eligible for inclusion in Phase 1:

(1) Butte Creek;
(2) Cache Creek from the Yolo Bypass to the upstream limit of the SRFCP levees;
(3) Cherokee Canal;
(4) Colusa Bypass;
(5) Northern portion of Colusa Main Drain;
(6) Portions of Feather River;
(7) Putah Creek;
(8) Sacramento BypassPortions of Sacramento River;
(9) Sutter Bypass Tisdale Bypass;
(10) Wadsworth Canal;

(11) Willow Slough Bypass;
(12) Portions of Yolo Bypass; and
(13) East and West Interceptor Canals.

Implementation of SERP would begin with DWR conducting annual maintenance surveys each spring to identify small erosion sites that need repairs within the Phase 1 SERP coverage area. A maximum of 15 individual repair projects would be implemented annually under SERP during Phase 1 of the program. For each proposed site, DWR would select as a guide, one of seven SERP design templates created by the collaborating agencies and identified in the SERP Manual. DWR would notify the applicable permitting agencies; the Corps, U.S. Fish and Wildlife Service, NMFS, California Department of Fish and Wildlife, and the Central Valley Regional Water Quality Control Board, of the proposed small erosion repair projects each spring.

Upon receiving agency verification of SERP authorization, DWR would proceed with the repairs in accordance with the applicable conservation measures and any additional terms or conditions for approval that the permitting agencies may require. Construction activities would take place at individual sites throughout each summer and fall during the 5-year Phase 1 period. Each site would require no more than 1–4 weeks of active construction. The program design templates have been developed with the intent that once repaired the erosion sites would require little or no additional upkeep or maintenance.

Some comments on the draft EIR (found below) are general in nature, others relate to specific language in the draft EIR, and some are editorial.

Cont. NMFS-1

GENERAL COMMENT

The draft EIR fails to discuss in sufficient detail what will be the determining factors to guide which design template is chosen for a particular repair site. These details should be identified as part of the final EIR to assist in assuring that the appropriate template is used and that biological resource impacts are maintained at less-than-significant levels.

NMFS-2

SPECIFIC COMMENTS

Page S-1: Referring to the following sentence, "Levees that sustain erosion damage during winter periods of high flows may undergo further erosion that over time could lead to…" It is important to note that levee erosion can also occur during periods of lower flow and erosion can occur during the summer.

NMFS-3

Page S-1: Referring to the following sentence, "Erosion sites need to be repaired in a timely manner to maintain the integrity of the existing flood management system." Not necessarily true, new levees could be constructed; for example, setback levees, and the old levee could continue to erode thus increasing levee integrity. In the context of SERP, the proceeding sentence would hold true, but this should be specified.

NMFS-4

Page S-5: Referring to the following sentence, "The purpose of the SERP is to ensure the continued flood management integrity of the SRFCP levees while protecting environmental

NMFS-5

resources by providing an efficient method of selecting, evaluating, and permitting small erosion repair projects." It is important to note that SERP alone will not do this; it may help in conjunction with other efforts. This is repeated on page 2-5. Cont. NMFS-5

Page S-6: Editorial note for the following sentence, "DWR may proceed with the repairs in accordance with the applicable conservation measures in the SERP Manual)". There appears to be an un-coupled parenthesis. NMFS-6

Page S-6: Referring to the following statement, "For each proposed site, DWR would select as a guide one of seven SERP design templates created by the collaborating agencies and identified in the SERP Manual to apply to the site. The program design templates are described in more detail in Section S.3.2, "Program Elements," below". For the final EIR, it should be described how the permitting agencies have input on what template is used. How would this process work? NMFS-7

Table 1-1: The stated permit or agreement that DWR is seeking from NMFS for SERP is incorrect. Through recent collaboration with the DWR project lead, the programmatic Biological Assessment will include a 'may affect, likely to adversely affect' determination on listed fish species. NMFS-8

Page 2-6: Under the Project Purpose, Goals and Objections it is stated that the implementation of the project will "enhance the existing riparian vegetation corridor at the erosion sites, where applicable". More specificity would assist in this instance. Recommend including language describing the inclusion of shaded riverine aquatic habitat and in-stream woody material. NMFS-9

Page 2-7: There is discussion of Tier 1 and Tier 2. Why the two tiers? Can a Tier 1 also be classified as a Tier 1? The final EIR should include clarification. NMFS-10

Page 2-9: Editorial comment, two periods "dead plantings.." NMFS-11

Page 2-9: The following paragraph seems contradictory: NMFS-12

> DWR recognizes that woody vegetation on levees must be appropriately managed. The Central Valley Flood Protection Plan's (CVFPP) vegetation management strategy is focused on improving public safety by providing for levee integrity, visibility, and accessibility for inspections, maintenance, and flood fight operations. Vegetation will be removed (in coordination with resource agencies) only when it presents an unacceptable threat. Furthermore, flood management actions will protect existing, and promote the development of, appropriate vegetation for erosion control on the waterside slope, outside of the vegetation management zone.

The CVFPP discusses lifecycle management; this process is not 'approved' by NMFS as a method of vegetation control and seems to counter, in part, the second part of the above paragraph regarding unacceptable threat.

Page 2-9: Referring to the following statement, "To maintain the SRFCP levee system, erosion repairs are needed on a continual basis. The SERP Subcommittee discussed a dozen repair alternatives and decided that the SERP would use seven design templates". The final EIR should include some discussion as to why the other designs were dropped. NMFS-13

Page 2-10: It is stated that SERP project sites would be considered "self-mitigating" if the successful establishment of vegetation plantings incorporated into the project design would restore or enhance the biological function of the existing conditions at the erosion sites. However, it is also stated in the draft EIR that it may not be feasible in some circumstances to revegetate a proposed project site. In the event that a proposed project site may not be suitable for revegetation, it should be explained how project impacts to biological resources will be mitigated to a less-than-significant impact. NMFS-14

Page 2-11: Referring to the following sentence, "Resource-specific conservation measures have also been developed by the SERP Subcommittee for the following species, habitats, and resources:" Why are the salmonids and sturgeon not a part of the list? They should be included for the final EIR. NMFS-15

Page 3.1-1: It is stated in the introductory paragraph of section 3 that mitigation measures for significant and potentially significant impacts have been built-in to SERP projects. However, there is no fish habitat mitigation in place for project sites that may be proposed to be completed with a design template that does not have built in mitigation features for aquatic species. Specifically, how will template 6 (bank fill slope with native grass planting) incorporate mitigation to offset impacts to listed fish and their habitat? This information should be included in the final EIR. NMFS-16

Page 3.3-12: Misspelled "*Oncorhynchus shawytscha*" Correct spelling is "*Oncorhynchus tshawytscha*" NMFS-17

Page 3.3-12: Should include sturgeon (green and white) in the list of native fish that could be present. NMFS-18

Page 3.3-27: Regarding green sturgeon, there is confirmed presence in the San Joaquin River and Delta. For all the salmonids, the Delta should be included for presence, similar to how delta smelt is defined. NMFS-19

Page 3.3-45: For green sturgeon the life history needs to be updated. Spawning has been confirmed in the Feather River. Presence has been confirmed in the Yuba and San Joaquin rivers. NMFS-20

Page 3.3-56: Impact 3.3-3. NMFS does not agree with the long-term beneficial determination. In the long-term what would benefit the species would be continued erosion to the point the levees were gone allowing the river to reclaim its natural paradigm. Recognizing this is not realistic, I would describe the impact as 'no impact'. Certainly SERP will prevent some potential short-term losses in fish habitat, but realistically SERP only maintains baseline levels. NMFS-21

This documents NMFS comments on the draft EIS/EIR. NMFS comments to the draft EIS/EIR are intended to help guide the development of the final EIS/EIR and future SERP processes. If you have any questions regarding this correspondence contact Michael Hendrick. Michael Hendrick may be reached by telephone at (916) 930-3605 or by e-mail at Michael.Hendrick@noaa.gov. NMFS-22

Sincerely,

Maria Rea
Supervisor, Central Valley Office

cc: Copy to file: ARN 151422SWR2013SA00055
NMFS-PRD, Long Beach, CA

RESPONSE

NMFS-1

The comment summarizes NMFS' understanding of the SERP. This comment is not related to the adequacy of the CEQA document; therefore, no response is required.

NMFS-2

Choosing one design template over another would not contribute to a significant impact to biological resources. Rather, impacts to biological resources are minimized by the actions taken during the entire SERP process, including preparation of a notification package with a CEQA Compliance Checklist to assess and document that each small erosion repair project and site is consistent with the findings and parameters of this DPEIR and the SERP Manual prepared for the SERP. The Checklist would be used to determine whether the DPEIR provides adequate CEQA coverage for each of the SERP projects or if further project-level environmental documentation would be required to fully satisfy CEQA requirements. Upon receipt of the annual SERP notification package, the agencies would review the projects and independently respond to DWR, indicating whether the projects are acceptable under their programmatic SERP authorizations, and including any additional terms or conditions for approval in their responses. Upon receiving the agencies' verification of the SERP authorization, DWR may proceed with the repairs in accordance with the applicable conservation measures in the SERP Manual and any additional terms or conditions for approval that the agencies may require. Refer to C-2 in the SERP Manual.

NMFS-3

The comment indicates that it is important to note that levee erosion can also occur during periods of lower flow and erosion can occur during the summer. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

NMFS-4

Construction of setback levees is outside the scope of the proposed program, would not accomplish the purpose and objectives of the program, and would be an infeasible approach to small erosion repairs.

NMFS-5

The comment indicates that it is important to note that the SERP alone will not ensure the continued flood management integrity of the Sacramento River Flood Control Project (SRFCP) levees. To address the comment, the text of the DPEIR has been revised as shown in

Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-6

The comment noted that there is an un-coupled parenthesis on DPEIR page S-6. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-7

See response to Comment NMFS-2. Table C1 in the SERP Manual, SERP Template Applicability Matrix, offers guidance as to which templates provide benefits to special-status species such as anadromous fish and wildlife species dependent on riparian habitat. The biological benefits of a particular design will be one of the factors considered during site-specific selection of a template. Permitting agencies will have an opportunity to review and approve the proposed SERP projects, as described in the SERP Manual.

NMFS-8

The comment indicates that the permit to be issued by NMFS should be changed to a ‘may affect, likely to adversely affect' determination. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-9

The comment suggests adding greater specificity in how this program enhances the existing vegetation corridor. The comment further recommends adding language to the Project Purpose, Goals and Objectives on DPEIR page 2-6 that enhancement is inclusive of aquatic shaded riverine habitat and in-stream woody material. Installing in-stream woody material is outside the scope of this program; however to address the comment, the text of the DPEIR has been revised to specify the inclusion of aquatic shaded riverine habitat as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-10

As discussed on page B-2 of the SERP Manual, a two-tiered definition for SERP sites has been developed for the program by the SERP Subcommittee. This approach establishes sizing and spacing limitations while providing flexibility for situations that warrant repair of sites that are larger or closer to one another. Additionally, classifying projects as Tier 1 or Tier 2 is intended to facilitate agency evaluation and approval of the proposed erosion repair projects contained in DWR’s annual SERP project notification packages.

NMFS-11

The comment indicates that there is a duplicate period on DPEIR page 2-9. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, "Revisions to the DPEIR." This edit does not change the analysis or conclusions of the DPEIR.

NMFS-12

Comment noted. The last sentence is not contradictory to the previous statements. This sentence is in reference to vegetation outside of the vegetation management zone, as clearly stated at the end of the sentence.

NMFS-13

A description of why the other designs were dropped is provided in the 3rd paragraph under section 4.2.1, SERP Subcommittee Design Alternatives, on page 4-3 of the DPEIR.

NMFS-14

For CEQA purposes, the applicable threshold of significance articulated in the DPEIR at pages 3.3-52 and 3.3-53 generally triggers a significance finding only where the impact of the project is "substantial." This qualification is derived from, and supported by, amendments to the CEQA Guidelines made in 2004. (See, Resources Agency CEQA Guidelines Amendments of 2004, Final Statement of Reasons, July 2004, at pages 34 through 76.) As a result, not every repair site needs to be fully self-mitigating for a less-than-significant impact to result from the SERP. It is expected that the net impacts from the SERP as a whole will be beneficial, and that they will clearly be less than significant under this standard. It is also anticipated that no individual SERP repair will have a significant impact under this standard, even if not fully self-mitigating, given the limited size and geographic dispersion of individual repairs, the exclusion from the program of repairs with certain potential impacts, the program's conservation measures, and the annual agency review process. Note that the CEQA threshold is separate from, and does not affect, the "take" definition under the federal Endangered Species Act, which the commenting agency applies in its regulatory capacity.

NMFS-15

In section I of the SERP Manual, salmonids and sturgeon are not listed because conservation measures pertaining to anadromous fish are captured in the mandatory conservation measures.

NMFS-16

See response to Comment NMFS-14.

NMFS-17

The commenter notes that "*Oncorhynchus tshawytscha*" is misspelled on DPEIR page 3.3-12. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-18

The comment noted that the text on DPEIR page 3.3-12 should include green and white sturgeon. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-19

The comment noted that there is confirmed presence of green sturgeon and all salmonids in the Delta. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-20

The comment noted that the life history of green sturgeon on DPEIR 3.3-45 should be updated. To address the comment, the text of the DPEIR has been revised as shown in Chapter 3, “Revisions to the DPEIR.” This edit does not change the analysis or conclusions of the DPEIR.

NMFS-21

Comment noted. The impact is considered beneficial because it would provide improved habitat (bio engineered design) relative to existing baseline conditions (eroded site). Additionally, by implementing timely repairs at small erosion sites under the SERP, further erosion will be prevented, which can prevent greater loss of vegetation and associated loss of SRA and instream habitat for fish. Finally, some erosion sites that will be repaired will have little to no existing vegetation before the repair (previously rocked sites that need additional rock to maintain the levee's integrity), and planting these sites can be considered enhancement. Some erosion sites will have lost the vegetation due to erosion, and planting these sites can be called restoration. The overall benefit of the program is a combination of restoration and enhancement that creates a long-term net benefit for fish habitat above baseline levels.

NMFS-22

This comment is not related to the adequacy of the CEQA document. DWR will contact the identified staff, or his successor, if questions concerning NMFS' comments arise. No further response is required.

3 REVISIONS TO THE DPEIR

3.1 INTRODUCTION

This chapter presents minor corrections and revisions made to the DPEIR initiated by the public, staff, and/or consultants based on their on-going review. These corrections and revisions are shown as excerpts from the DPEIR, with strikethrough (~~strikethrough~~) text to indicate deletions and underlined (underlined) text to indicate additions.

The changes identified below are clarifications or amplification of the information and analysis contained in the DPEIR. The changes are presented in the order in which they appear in the DPEIR and are identified by page number in respective chapters. None of the changes identified below results in a significant impact that was not already identified in the DPEIR. Furthermore, none of the impacts identified in the DPEIR were found to be substantially more severe as the result of the following changes. For these reasons, recirculation of the DPEIR is not warranted.

3.2 REVISIONS TO THE DPEIR

EXECUTIVE SUMMARY

The text of Section S.2, "Background," on page S-1 of the DPEIR is hereby revised as follows:

> Levees that sustain erosion damage during winter periods of high flows, low-flow periods, or during the summer may undergo further erosion that over time could lead to levee failure and cause substantial flood damage in both urban and nonurban environments.

The text of Section S.2, "Background," on page S-2 of the DPEIR is hereby revised as follows:

> … Additionally, a CEQA Compliance Checklist developed by DWR based on the environmental analysis in this DEIR would be used to ~~ensure that, for each project site, repairs conducted under the SERP would comply with CEQA~~ determine whether the final program EIR (FEIR) provides adequate CEQA coverage for each of the SERP projects and to provide substantial information to streamline permitting.

Figure S-1 on page S-3 of the DPEIR has been revised to include the East and West Intercept Canals and is hereby replaced as follows:

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Source: DWR 2009, Adapted by AECOM 2010

Exhibit S-1

Phase 1 SERP Coverage Area

The text of Section S.3, “Project Purpose and Objectives,” on page S-5 of the DPEIR is hereby revised as follows:

> The purpose of the SERP is to help ensure the continued flood management integrity of the SRFCP levees while protecting environmental resources by providing an efficient method of selecting, evaluating, and permitting small erosion repair projects. The SERP uses ~~programmatic~~ program-level authorizations, issued by federal and state agencies with regulatory obligations associated with erosion repair projects to streamline the process for implementing small erosion repairs in accordance with conservation-based design and monitoring standards established by the SERP Subcommittee.

The text of Section S.3, “Project Purpose and Objectives,” on page S-5 of the DPEIR is hereby revised as follows:

> The identified objectives of the proposed levee/bank repairs will be to:
>
> - maintain SRFCP integrity,
> - prevent further erosion and loss of riparian and nearshore aquatic habitat,
> - minimize the loss of riparian vegetation and endangered species habitat resulting from delayed repairs and construction activities, and
> - enhance the existing riparian vegetation corridor at the erosion sites, including increasing areas of shaded riverine aquatic habitat, where applicable.

The text of Section S.4.1, “Project Characteristics,” on page S-6 of the DPEIR is hereby revised as follows:

> DWR would notify the applicable permitting agencies—CVFPB, USACE, USFWS, NMFS, CDFW, ~~and~~ RWQCB, and potentially affected air districts—of the proposed small erosion repair projects by bundling and submitting the required notification materials for up to 15 projects to the agencies as a package each spring (by June 1). The notification package would include a CEQA Compliance Checklist for SERP projects to document that each small erosion repair project and site is consistent with the findings and parameters of this DEIR and the SERP Manual prepared for the SERP. The CEQA Compliance Checklist would be based on the findings of the SERP ~~Final D~~FEIR and used to determine whether the EIR provides adequate CEQA coverage for each of the SERP projects or if further project-level environmental documentation would be required to fully satisfy CEQA requirements. Upon receipt of the annual SERP notification package, the agencies would review the projects and independently respond to DWR, indicating whether the projects are acceptable under their ~~programmatic~~ program-level SERP authorizations, and including any additional terms or conditions for

approval in their responses. Upon receiving the agencies' verification of the SERP authorization, DWR may proceed with the repairs in accordance with the applicable conservation measures in the SERP Manual~~)~~ and any additional terms or conditions for approval that the agencies may require. This process should shorten the permitting time frame for those projects, allowing the necessary repairs to be implemented in a timely manner while fully considering and protecting environmental resources.

The text in Table S-2, "Environmental Impacts and Mitigation Measures for the Proposed Project," on pages 19 is clarified as follows:

Impact 3.4-2: Potential Impacts on ~~Assumed Historically Significant~~ Levees

The text in Table S-2, "Environmental Impacts and Mitigation Measures for the Proposed Project," on pages S-18 through S-21, and S-25 of the DPEIR is hereby revised as follows:

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
3.4 Cultural Resources			
Impact 3.4-1: Potential Impacts on Identified Cultural Resources	PS	**Mitigation Measure 3.4-1: Comply with the PA prepared by USACE, SHPO, and DWR and/or otherwise comply with Section 106; Consult with Stakeholders as Required under Section 106 and/or a PA; Perform Site-specific Technical Studies to Identify and Evaluate Cultural Resources; and Implement Avoidance or Treatment Protocols as Necessary to the Extent Feasible** Management of cultural resources for the SERP would be performed under ~~the~~a PA prepared by USACE, and/or otherwise in compliance with the standard section 106 process. DWR will perform technical studies and treatment required to identify and manage impacts on cultural resources subject to the input of stakeholders and the approval of USACE and the SHPO. Management of cultural resources required under CEQA would be combined with the management protocols stipulated in the PA and/or otherwise during section 106 consultation. Prior to implementation of individual small erosion repair activities, DWR will perform the following steps: • conduct an inventory of the individual small erosion repair site and define an APE as	LTS

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
		required under section 106; • evaluate identified resources eligible for listing in the NRHP and CRHR; • consult with Senior Staff Counsel at CSLC should any cultural resources on state lands be discovered during construction of any of the SERP projects; • determine if the proposed activity would result in significant impacts on resources eligible for the CRHR or adverse effects on historic properties within the meaning of section 106; • resolve significant impacts either by developing resource-specific treatment protocols or by selecting and implementing treatment measures from a palette of treatment protocols developed pursuant to the PA; and • consult with stakeholders and consulting parties in accordance with section 106 requirements and/or the PA, as applicable, such as the SHPO. The inventory, evaluation, and selection of treatment will include a review of relevant local land use policies regarding cultural resources. DWR will employ methods for inventory efforts and consultation that are appropriate for the sensitivity of the individual small erosion repair site and the probable resources that may occur.	

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
		Such methods may include geomorphological studies, subsurface testing, and consultation with appropriate Native American organizations and representatives (for example in the identification of TCPs). Inventory efforts shall include consulting CSLC's shipwreck database to gather information on known and potential vessels located on the State's tide and submerged lands. Abandoned shipwrecks, archaeological sites and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and is under the jurisdiction of CSLC, although CSLC's jurisdiction does not negate the responsibilities of DWR or the USACE for compliance with CEQA and with section 106, respectively. As necessary, specific technical studies prepared for individual small erosion repairs will define important historic themes relevant to individual repair sites. Mitigation efforts will include, when feasible, avoidance of the resource rather than data recovery excavations or other work that would require disturbance of the deposit.	
Impact 3.4-3: Impacts on Previously Unidentified Cultural Resources	PS	**Mitigation Measure 3.4-3: Train Construction Workers before Construction Begins, Monitor Construction Activities, Stop Potentially Damaging Activities, Evaluate Discovery(ies), and Resolve Adverse Effects on Significant**	LTS

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
		Resources DWR will implement the following measures to minimize potential impacts on previously undiscovered cultural resources: • Every 2 years or before construction begins, construction crews will be given a presentation and training session incorporated into the environmental awareness training before performing work in areas sensitive for previously unidentified resources so that they can assist with identifying undiscovered cultural resource materials and avoid them where possible. • A DWR archaeologist, where appropriate, will monitor all ground-disturbing construction activities at locations determined to be sensitive for unidentified cultural resources. If a previously unidentified archaeological resource is uncovered during construction, construction activities will be halted within 100 feet of the find and USACE, and other appropriate parties, will be notified regarding the discovery. • <u>Consult with Senior Staff Counsel at CSLC should any cultural resources on state lands be discovered during construction of any of the SERP projects.</u> • DWR will then consult with USACE and the	

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
		SHPO to determine the eligibility of the resource for listing in the NRHP or qualification as a unique archaeological resource. If DWR and USACE, in consultation with the SHPO, concur that the resource is eligible for listing and the project may result in adverse effects or significant impacts on the resource, DWR either will implement one of the treatment protocols developed under the PA for the resource or will prepare a resource-specific treatment plan. • Work may only resume when either all necessary treatment has been performed under the treatment method selected, or approved by the appropriate entity, or construction in the vicinity of the resource will not result in adverse effects or encroach within an appropriate distance from the known boundaries of the resource or the boundaries of the resource.	

...

Chapter 5 Other CEQA-Required Sections			
Construction-Generated Greenhouse Gas Emissions	PS	<u>Mitigation Measure 5-1: Implement Pre-Construction, Final Design, and Construction BMPs.</u> <u>Pre-construction and Final Design BMPs are designed to ensure that individual projects are evaluated and their unique characteristics are</u>	LTS

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
		taken into consideration when determining whether specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from a project. In addition to mitigation measures defined in the various sections of this DEIR, the following BMPs will be applied as applicable and appropriate: • BMP 1. Evaluate project characteristics, including location, project work flow, site locations, and equipment performance requirements, to determine whether specifications for the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project. • BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines. • BMP 3. Coordinate opportunities to carpool to the construction site. • BMP 4. Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of	

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
		business. • BMP 5. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible. • BMP 6. Recycle construction debris to reduce construction waste. • BMP 7. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction. • BMP 8. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement	

Table S-2 Environmental Impacts and Mitigation Measures for the Proposed Project			
EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[b,c]
		of construction. Construction BMPs would apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All the SERP projects are expected to implement all construction BMPs.	

The notes in Table S-2, "Environmental Impacts and Mitigation Measures for the Proposed Project," on pages S-25 and S-26 of the DPEIR are hereby revised as follows:

Table S-2
Environmental Impacts and Mitigation Measures for the Proposed Project

EIR Section and Impact(s)	Level of Significance before Mitigation[a]	Mitigation Measure[b]	Level of Significance after Mitigation[~~b~~c]

Note:

NA No mitigation is needed.

[a] Impact Significance before Mitigation

B Beneficial

NI No impact

LTS Less than significant

PS Potentially significant

[b] Conservation (avoidance and minimization) Measures in the SERP Manual are mandatory and will be included as conditions of approval for construction of any SERP repair. The conservation measures are a critical component of the proposed project analyzed under CEQA in this PEIR.

[~~b~~c] Impact Significance after Mitigation

B The impact would be beneficial and no mitigation is required; therefore, the impact would remain beneficial.

NI No impact

LTS The impact would be less than significant and no mitigation is required; therefore, the impact would remain less than significant, whether or not mitigation has been provided to further reduce the impact.

CHAPTER 1, "INTRODUCTION"

The text of Section 1.2, "Purpose of the EIR and Program-Level Analysis," on page 1-2 of the DPEIR is hereby revised as follows:

> … Any individual site repair that is not fully covered by the DEIR and ~~programmatic~~ program-level permits would not be implemented under the SERP and would require independent environmental review or approval, although applicable portions of this DEIR could still be incorporated by reference in that individual site repair's CEQA document as needed.

The text of Table 1-1, "SERP Authorizing Agencies, Authority, and Permit/Agreements," on page 1-4 of the DPEIR is hereby revised as follows:

Table 1-1
SERP Authorizing Agencies, Authority, and Permits/Agreements

Agency	Authority	Permit/Agreement
U.S. Army Corps of Engineers	Clean Water Act section 404 Rivers and Harbors Act section 10	Regional General Permit (RGP)
U.S. Fish and Wildlife Service	Federal Endangered Species Act section 7 Fish and Wildlife Coordination Act Migratory Bird Treaty Act	Programmatic Biological Opinion Programmatic Not Likely to Adversely Affect Concurrence Letter
National Marine Fisheries Service	Federal Endangered Species Act Section 7 Magnuson-Stevens Fishery Conservation and Management Act Marine Mammal Protection Act	Programmatic Biological Opinion/Essential Fish Habitat Determination Programmatic May Affect, Likely to Adversely Affect Determination ~~Programmatic Not Likely to Adversely Affect Concurrence Letter~~
State Historic Preservation Officer	National Historic Preservation Act section 106	Programmatic Agreement
Central Valley Regional Water Quality Control Board	Clean Water Act section 401	Section 401 Programmatic Water Quality Certification for RGP

Table 1-1 SERP Authorizing Agencies, Authority, and Permits/Agreements		
Agency	Authority	Permit/Agreement
California Department of Fish and Wildlife	California Fish and Game Code section 1600 et seq. California Endangered Species Act	Streambed Alteration Agreement for routine maintenance Review and approval of proposed conservation measures and any additional avoidance, minimization, or mitigation measures deemed necessary by CDFW. ~~Agreement on avoidance and mitigation measures~~
State Lands Commission	State CEQA Guidelines section 15386(c)	Project review as trustee agency; may require lease to conduct work on state-owned sovereign lands such as the beds of navigable waters
Central Valley Flood Protection Board	California Water Code sections 8361 and 12878. California Code of Regulations Title 23 Division 1	SERP activities are operations and maintenance activities not requiring ~~Board~~ CVFPB encroachment permits
Source: Compiled by AECOM in 2010		

CHAPTER 2, "PROJECT DESCRIPTION"

Figure 2-1 on page 2-3 of the DPEIR has been revised to include the East and West Intercept Canals and is hereby replaced as follows:

The text of Section 2.3, "Background and Need for the Project," on page 2-5 of the DPEIR is hereby revised as follows:

> Levees that sustain erosion damage during winter periods of high flows, low-flow periods, or during summer may undergo further erosion that over time could lead to levee failure and cause substantial flood damage in both urban and nonurban environments.

The text of Section 2.3, "Background and Need for the Project," on page 2-5 of the DPEIR is hereby revised as follows:

> … Additionally, a CEQA Compliance Checklist developed by DWR based on the environmental analysis in this DEIR would be used to ~~ensure that, for each project site, repairs conducted under the SERP would comply with CEQA~~ determine whether the final program EIR (FEIR) provides adequate CEQA coverage for each of the SERP projects and to provide substantial information to streamline permitting.

The text of Section 2.4, “Project Purpose, Goals, and Objectives,” on pages 2-5 and 2-6 of the DPEIR is hereby revised as follows:

> The purpose of the SERP is to help ensure the continued flood management integrity of the SRFCP levees while protecting environmental resources by providing an efficient method of selecting, evaluating, and permitting small erosion repair projects. The SERP uses ~~programmatic~~ program-level authorizations, issued by federal and state agencies with regulatory obligations associated with erosion repair projects to streamline the process for implementing small erosion repairs in accordance with conservation-based design and monitoring standards established by the SERP Subcommittee.

The text of Section 2.4, “Project Purpose, Goals, and Objectives,” on page 2-6 of the DPEIR is hereby revised as follows:

> The identified objectives of the proposed levee/bank repairs will be to:
>
> - maintain SRFCP integrity,
> - prevent further erosion and loss of riparian and nearshore aquatic habitat,
> - minimize the loss of riparian vegetation and endangered species habitat resulting from delayed repairs and construction activities, and
> - enhance the existing riparian vegetation corridor at the erosion sites, including increasing areas of shaded riverine aquatic habitat, where applicable.

The text of Section 2.5.1, “SERP Project Identification and Implementation Process,” Erosion Repair Project Identification and Characterization, on page 2-7 of the DPEIR is hereby revised as follows:

DWR would notify the applicable permitting agencies—CVFPB, USACE, USFWS, NMFS, CDFW, ~~and~~ RWQCB, and potentially affected air districts—of the proposed small erosion repair projects by bundling and submitting the required notification materials for up to 15 projects to the agencies as a package each spring (by June 1). The notification package (see the SERP Project Pre-construction Notification Form in Section C of the SERP Manual in Appendix B) would include a CEQA Compliance Checklist for SERP projects to document that each small erosion repair project and site is consistent with the findings and parameters of this DEIR and the SERP Manual (Appendix B) prepared for the SERP. The CEQA Compliance Checklist would be based on the findings of the SERP ~~Final D~~FEIR and used to determine whether the EIR provides adequate CEQA coverage for each of the SERP projects or if further project-level environmental documentation would be required to fully satisfy CEQA requirements.

Source: DWR 2009, Adapted by AECOM 2010

Exhibit 2-1 **Phase 1 SERP Coverage Area**

Upon receipt of the annual SERP notification package, the agencies would review the projects and independently respond to DWR, indicating whether the projects are acceptable under their ~~programmatic~~ program-level SERP authorizations, and including any additional terms or conditions for approval in their responses.

The text of Section 2.5.1, "SERP Project Identification and Implementation Process," Site Repairs, on page 2-8 of the DPEIR is hereby revised as follows:

Construction materials for levee repair sites would be delivered to the project sites using a landside or waterside option. The landside option would use heavy-duty haul trucks to deliver construction equipment and levee construction materials to each project site. When using the landside option, DWR would not conduct greater than three repairs at the same time within the SMAQMD, unless DWR chooses to implement components of their Enhanced Exhaust Control Practices. The waterside option would use a tugboat and three barges to bring a crane and enough levee construction materials for approximately five levee repair sites. Under the waterside option, following completion of a single levee repair site, the tugboat and barges would be moved to the next repair site for a maximum of five levee repair sites. At the time of this analysis, it has not yet been determined whether the landside or waterside option would be used; however, it is possible that both delivery options would be used throughout the duration of the project. Thus both delivery options are evaluated in this analysis. It should be noted that the waterside option would only be feasible for erosion repair sites located south of the Sacramento-Sutter County line.

The text of Section 2.5.1, "SERP Project Identification and Implementation Process," Maintenance, on page 2-9 of the DPEIR is hereby revised as follows:

… During the initial vegetation establishment period, DWR intends to manage the SERP plantings consistent with the CVFPP's vegetation management strategy~~,~~. Maintenance activities for planted areas may include removing invasive vegetation, pruning planted vegetation for visibility and accessibility on levees, and replacing dead plantings.~~.~~

The text of Section 2.5.2, "Program Elements," Conservation Measures, on page 2-11 of the DPEIR is hereby revised as follows:

…

- cultural resources.

Table 2-1 contains a complete list of the conservation measures included in the SERP Manual.

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
Mandatory Conservation Measures to be Applied to all SERP Projects	
Timing	
CM-1	The following timing restrictions apply to SERP projects within Regions 1–4 as defined below and shown in Figure I1 below: **Region 1: Delta-Sacramento River and Major Tributaries, RM 0 to RM 60** Major tributaries include: • Putah Creek • Sacramento Bypass • Portions of Sacramento River downstream of RM 60 • Yolo Bypass, as identified in Figure A1 **Region 2: Mainstem Sacramento River and major tributaries, RM 60 to RM 143** Major tributaries include: • Butte Creek • Cherokee Canal • Colusa Bypass • Northern portion of Colusa Main Drain, as identified in Figure A1 • Portions of Feather River, as identified in Figure A1 • Portions of Sacramento River between RM 60 and 143 • Sutter Bypass • Tisdale Bypass • Wadsworth Canal • East and West Interceptor Canals **Region 3: Upper Sacramento and major tributaries, RM 143 to RM 194** Major tributaries include: • Portions of Sacramento River between RM 143 and RM 194 **Region 4: Non-anadromous SERP waterways, including:** • Willow Slough Bypass • Cache Creek, from the Yolo Bypass to the upstream limit of the SRFCP levees
CM-1(a)	**Region 1 Timing Restrictions:** All in-water construction will occur from August 1 to November 30. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration).

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
CM-1(b)	**Region 2 Timing Restrictions:** All in-water construction will occur from July 1 to October 15. With rare exception, no extensions will be granted on this timing window. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration).
CM-1(c)	**Region 3 Timing Restrictions:** All in-water construction will occur from July 1 to August 31. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration).
CM-1(d)	**Region 4 Timing Restrictions:** All in-water construction will occur from April 15 to October 1. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration). Note: For projects occurring within 200 feet of drainage or irrigation canals that may support GGS, conservation measure GGS-6, which stipulates that ***all*** project work be completed May 1 to October 1, may be applicable, as determined through coordination with USFWS.
CM-1(e)	**Flood Season Timing Restrictions:** All work within the floodway will occur from April 15 to November 1. The Board, on prior written request, may allow work to be done during flood season, within the floodway, provided that in the judgment of the Board, forecasts for weather and river conditions are favorable. For the SERP, this written request may be in the form of an e-mail request. Revegetation and erosion control work that do not involve the use of heavy equipment are not confined to the above timing windows.
CM-2	**Timing Extensions for CM-1(a)–(d):** Requests for extensions on the above timing windows may be considered by the SERP agencies on a project-by-project basis upon written request from DWR. Requests for timing extensions must include a justification for the request, and any additional information deemed necessary by the agencies. Modifications to the established timing windows may be made only with written concurrence from the SERP agencies.
CM-3	Construction activities will be timed to avoid precipitation and increases in stream flow. If there is a chance of rain within 48 hours, the project site will be prepared with adequate erosion control measures to protect against wind and water erosion. Within 24 hours of any predicted storm event, construction activities within the stream zone will cease until all reasonable erosion control measures, inside and outside of the stream zone, have been implemented.
Vegetation Disturbance	
CM-4	Disturbance to existing grades and vegetation will be limited to the actual site of the project, necessary access routes, and staging areas. The number of access routes, the size of staging areas, and the total area of the project

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
	activity will be limited to the minimum necessary to achieve the project goal. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to stream bank or stream channel habitat as much as possible. When possible, existing ingress or egress points will be used and/or work will be performed from the top of the creek banks or from barges on the waterside of the project levee. Following completion of the work, the contours of the creek bed and creek flows will be returned to preconstruction conditions, or improved to provide increased biological functions.
CM-5	If vegetation removal is required within project access or staging areas, the disturbed areas will be replanted with native species and monitored and maintained to ensure the revegetation effort is successful.
CM-6	If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations as necessary to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used.
CM-7	To minimize ground and vegetation disturbance during project construction prior to beginning project activities, DWR will establish and clearly mark the project limits, including the boundaries of designated equipment staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones.
CM-8	Disturbance or removal of vegetation will not exceed the minimum necessary to complete operations. Except for the trees specifically identified for removal in the notification, no native trees with a trunk diameter at breast height in excess of 3 inches will be removed or damaged without prior consultation with and approval by a CDFW, USFWS, and NMFS representative. Using hand tools (e.g., clippers, chainsaw), trees may be trimmed to the extent necessary to gain access to the work sites. Work will be done in a manner that ensures that, to the extent feasible, living native riparian vegetation within the vegetation-clearing zones is avoided and left undisturbed where this can reasonably be accomplished without compromising basic engineering design and safety.
CM-9	The amount of rock riprap and other materials used for bank protection will be limited to the minimum needed for erosion protection.
CM-10	All invasive species (e.g., giant reed, *Arundo donax*) will be completely removed from the project site, destroyed using approved protocols, and disposed of in an appropriate upland disposal area.
CM-11	All pesticides/herbicides (pesticides) used to control nonnative vegetation will be used in accordance with label directions. Methods and materials used for herbicide application will be in accordance with DWR's most current guidelines on herbicide use and with laws and regulations administered by the

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
	Department of Pesticide Regulation. Note: Improper application of any pesticides near water can affect fish species and may result in "take" of protected fish as defined under the ESA. To aid in protection of these species, NMFS emphasizes caution and awareness of the following when working near water: • Label is the law: read and follow the pesticide label. • Check wind/weather conditions hourly (minimum) or at any observed change. • Avoid drift: wind can cause drift; adhere to label requirements for wind speed. • Do not allow spray to drift off target. • Avoid spraying over or in the water. • When spraying near the water's edge, spray should be directed away from the water toward the targeted plant. • Keep all sprayed materials out of the water. Use caution and be aware of adjoining areas with potential liability as listed on any attachments.
Construction Equipment Staging	
CM-12	Construction materials such as portable equipment, vehicles, and supplies, including chemicals, will be stored at designated construction staging areas and on barges, exclusive of any riparian or wetland areas.
CM-13	Barges will be used to stage equipment and construct the project when practical to minimize noise and traffic disturbances and effects on existing landside vegetation. When barge use is not practical, construction equipment and plant materials will be staged in designated landside areas adjacent to the project sites. Existing staging sites, maintenance toe roads, and crown roads will be used to the maximum extent possible for project staging and access to avoid affecting previously undisturbed areas.
Material Stockpiling	
CM-14	Stockpiling of soil and grading spoils will occur in designated areas on the landside of the levee reaches or on offshore barges. Sediment barriers (e.g., silt fences, fiber rolls, and straw bales) will be installed around the base of stockpiles to intercept runoff and sediment during storm events. If necessary, stockpiles will be covered to provide further protection against wind and water erosion.

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
Erosion Control During Construction	
CM-15	There will be no site dewatering activities, including temporary diversion of flows around the work area, unless deemed necessary by CDFW and USFWS to avoid impacts to GGS (NOTE: If dewatering is deemed necessary by CDFW and USFWS, dewatering activities must be conducted in a manner that does not result in the discharge of fill material into waters of the United States or waters of the state).
CM-16	Erosion control measures (best management practices) that minimize soil or sediment from entering waterways and wetlands will be installed, monitored for effectiveness, and maintained throughout construction operations.
CM-17	If use of erosion control fabrics is necessary, only non-monofilament, wildlife-safe fabrics will be used.
CM-18	DWR will ensure sand, sediment, or sediment-water slurry does not enter the stream channel.
CM-19	No material will be placed in a manner or location where it can be eroded by normal or expected high flows. Jute netting or another non-monofilament erosion control fabric will be used to cover soil that is placed over or mixed into riprap or other revetment materials.
CM-20	Adequate erosion control supplies (e.g., gravel, straw bales, shovels) will be kept at all construction sites during all construction and maintenance activities to ensure that sand and sediments are kept out of any water bodies.
CM-21	Precautions to minimize turbidity/siltation will be taken into account during project planning and will be implemented at the time of construction. This may require placing silt fencing, well-anchored sandbag cofferdams, coir logs, coir rolls, straw bale dikes, or other siltation barriers so that silt and/or other deleterious materials are not allowed to erode into downstream reaches. These barriers will be placed at all locations where the likelihood of sediment input exists and will be in place during construction activities, and afterward if necessary. If any sediment barrier fails to retain sediment, corrective measures will be taken immediately. The sediment barrier(s) will be maintained in good operating condition throughout the construction period and, if necessary, the following rainy season. Maintenance includes, but is not limited to, removing or replacing these barriers. DWR is responsible for removing nonbiodegradable silt barriers (such as plastic silt fencing) after the disturbed areas have been stabilized with vegetation (usually after the first growing season). Upon determination by any of the SERP agencies that turbidity/siltation levels resulting from project-related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation will be halted until effective control devices approved by the determining agency are installed or abatement

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
	procedures are initiated.
CM-22	DWR will inspect performance of sediment control barriers at least once each day during construction to they are functioning properly. Should a control barrier not function effectively, it will be immediately repaired or replaced. Additional controls will be installed as necessary.
CM-23	Sediment will be removed from sediment controls once the sediment has reached one-third of the exposed height of the control. Sediment collected in these devices will be disposed of away from the collection site at designated upland disposal sites. The location of the sediment disposal site for the project will be shown on the site plan diagram submitted to the SERP agencies with the project notification.
CM-24	All disturbed soils will undergo appropriate erosion control treatment (e.g., sterile straw mulching, seeding, planting) prior to the end of the construction season, or prior to October 15, whichever comes first.
CM-25	All debris, sediment, rubbish, vegetation, or other material removed from the project site or access or staging areas will be disposed of at an approved disposal site. There will be no sidecasting of material into any waterway.
CM-26	All work pads and other construction items will be removed upon project completion.
CM-27	Upon completion of the construction phase and installation of erosion control materials, the work area within the stream zone will be digitally photographed to document the completed state of the repair site.
Hazardous Materials	
CM-28	DWR will exercise every reasonable precaution to protect streams and other waters from pollution with fuels, oils, bitumens, calcium chloride, and other harmful materials.
CM-29	Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials will not be allowed to enter flowing waters and will be collected and transported to an authorized upland disposal area. DWR will identify the location of the hazardous materials disposal site as part of the project description information contained in the project notification.
CM-30	Gas, oil, or other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, will be prevented from contaminating the soil and/or entering waters of the state and/or waters of the United States. Any of these materials placed by DWR or any party working under contract or with the permission of DWR below the

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
	OHWM or within the adjacent riparian zone, or where they may enter these areas, will be removed immediately. In the event of a spill, work will stop immediately and CDFW, USFWS, the RWQCB, NMFS, and USACE will be notified within 24 hours. DWR will implement the spill prevention and control plan (CM-32) and consult with these agencies regarding any additional cleanup procedures. Any such spills and the cleanup efforts will be reported in an incident report and submitted to the SERP agencies.
CM-31	Safer alternative products (such as biodegradable hydraulic fluids) will be used where feasible.
CM-32	A written spill prevention and control plan (SPCP) will be prepared, and the SPCP and all material necessary for its implementation will be accessible on-site prior to initiation of project construction and throughout the construction period. The SPCP will include a plan for the emergency cleanup of any spills of fuel or other material. Employees will be provided the necessary information from the SPCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur.
CM-33	No solid petroleum products such as asphalt will be used.
CM-34	No concrete or similar rubble will be used.
CM-35	Construction vehicles and equipment will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease.
CM-36	Heavy equipment will be checked daily for leaks. If leaks are found, the equipment will be removed from the site and will not be used until the leaks are repaired.
CM-37	Equipment other than barges will be refueled and serviced at designated refueling and staging sites located on the crown or landside of the levee and at least 50 feet from active stream channels or other water bodies. All refueling, maintenance, and staging of equipment and vehicles will be conducted in a location where a spill will not drain directly toward aquatic habitat. Appropriate containment materials will be installed to collect any discharge, and adequate materials for spill cleanup will be maintained on-site throughout the construction period.
CM-38	Storage areas for construction material that contains hazardous or potentially toxic materials will have an impermeable membrane between the ground and the hazardous material and will be bermed to prevent the discharge of pollutants to groundwater and runoff water.

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
Other Mandatory Conservation Measures	
CM-39	Water (e.g., trucks, portable pumps with hoses, etc.) will be used to control fugitive dust during temporary access road construction.
CM-40	All materials placed in streams, rivers, or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.
CM-41	No materials will be placed in any location or in any manner that will impair the flow of surface water into or out of any wetland area.
CM-42	No fill material other than silt-free gravel or riprap will be allowed to enter the live stream.
CM-43	Water containing mud or silt from construction activities will be treated by filtration, or retention in a settling pond, adequate to prevent muddy water from entering live streams.
CM-44	Screens will be installed on water pump intakes as directed by NMFS salmonid-screening specifications. Where Delta smelt may be present, the intake for water pumps must meet a 0.2 feet per second approach velocity standard.
CM-45	All litter, debris, unused materials, equipment, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All trash and construction debris will be removed from the work area immediately upon project completion.
Resource-Specific Conservation Measures to be Applied as Necessary to SERP Projects	
Sensitive Biological Resources	
SBR-1	A qualified biologist will provide environmental awareness training to workers before project activities begin and will appoint a crew member to act as an on-site biological monitor. The awareness training will include a description of the relevant species and their habitats that are known to occur in the project vicinity and will describe the guidelines that will be followed by all construction personnel to avoid impacts to the species during project activities. A set of guidelines will be provided by DWR to the maintenance crew foreman or contractor(s) participating in the project, and the crew foreman will be responsible for ensuring that crew members comply with the guidelines.

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
SBR-2	Construction barrier fencing or stakes and flags will be placed around sensitive biological resources located in and within the project site boundaries and will remain in place until all project work involving heavy equipment is complete to ensure that construction activities avoid disturbing these resources. The size of the fenced buffer area will be determined on a project-specific basis through coordination with CDFW and/or other relevant resource or regulatory agencies.
SBR-3	A qualified biologist will monitor all construction activities in and within 100 feet of the project site boundaries to ensure that no unauthorized activities occur within the project area. The 100-foot distance may be increased at the direction of a CDFW or other agency representative. The biological monitor will be empowered to stop construction activities that threaten to cause unanticipated and/or unpermitted project impacts. Project activity will not resume until the conflict has been resolved. DWR will notify the relevant agency(ies) if the stopped project activity is related to a provision of any SERP permit/authorization.
Giant Garter Snake	
GGS-1	To the extent possible, construction activities will be avoided within 200 feet from the banks of GGS aquatic habitat, including marshes, sloughs, ponds, irrigation canals, drainage ditches, and flooded rice fields. Movement of heavy equipment in these areas will be confined to existing roadways, where feasible, to minimize habitat disturbance.
GGS-2	Vegetation clearing will be confined to the minimal area necessary to facilitate construction activities. GGS habitat, including marshes, sloughs, ponds, irrigation canals, drainage ditches, and flooded rice fields, within or adjacent to the project site will be flagged and designated as environmentally sensitive areas. These areas will be avoided by all construction personnel.
GGS-3	Work crews and contractors will be given environmental awareness training before beginning work on the project site. This training will instruct workers to recognize GGS and its habitats and explain the possible penalties of noncompliance.
GGS-4	No more than 24 hours prior to construction activities, the project area will be surveyed for GGS by a qualified biologist. Surveys will cover all upland habitat within 200 feet of GGS aquatic habitat and will be repeated if a lapse in construction activity of 2 weeks or greater occurs. If construction activities are proposed within aquatic habitat, the qualified biologist will determine if the habitat could support GGS, and if so, implement measures to exclude GGS from the work area. A GGS-exclusion plan could include measures such as installation of a snake exclusion fence or dewatering the work area (NOTE: Dewatering must be conducted in a manner that does not result in the

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
	discharge of fill material into waters of the United States or waters of the state). Any proposed GGS-exclusion plan will be reviewed and approved by CDFW, USFWS and NMFS prior to implementation. If a GGS is encountered during construction, activities will cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. DWR will report any sighting and any incidental take to USFWS immediately by telephone at (916) 414-6600 and to CDFW at (916) 358-4353.
GGS-5	Any temporary fill and construction debris will be removed after completion of construction activities, and, wherever feasible, disturbed areas will be restored to pre-project conditions. Restoration work may include such activities as replanting banks or emergent vegetation in the active channel. Restoration work beyond what is approved under the SERP must be approved by USFWS prior to implementation.
GGS-6	All construction activity within GGS habitat, including marshes, sloughs, ponds, irrigation canals, drainage ditches, and flooded rice fields, will occur from May 1 to October 1. This includes in-water construction and work outside the active stream channel.
Valley Elderberry Longhorn Beetle	
VELB-1	DWR work crews and contractors will be given environmental awareness training that will emphasize the identification of elderberry shrubs, the need to avoid damaging the elderberry shrubs, and the possible penalties of noncompliance.
VELB-2	Signs will be erected every 50 feet along the edge of elderberry avoidance areas. The signs will include the following information: “This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the federal Endangered Species Act. Violators are subject to prosecution, fines, and imprisonment.” The signs must be clearly readable from a distance of 20 feet and will be maintained throughout the construction period.
VELB-3	Avoidance areas for valley elderberry longhorn beetle will be temporarily fenced or flagged to serve as a visual boundary and keep people, vehicles, and other sources of disturbance from crossing into the area.
VELB-4	No insecticides, herbicides, fertilizers, or other chemicals that might harm the elderberry shrub or beetle will be used within 100 feet of any elderberry shrub having one or more stems measuring 1.0 inch or greater in diameter at ground level unless written approval for encroachment within the 100-foot buffer has been secured from USFWS. For projects where the application of insecticides, herbicides, fertilizers, or other chemicals may encroach upon the 100-foot buffer from an elderberry shrub, a description of that encroachment, including

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
	methods of application and chemicals to be used, will be specified in the project description section of the project notification form (see Section F, "Notification Requirements") for USFWS review and approval.
VELB-5	When a 100-foot (or wider) buffer is established and maintained around elderberry plants, complete avoidance (i.e., no adverse effects) will be assumed. Where encroachment on the 100-foot buffer has been approved by USFWS, a setback of 20 feet from the dripline of each elderberry plant will be maintained whenever possible. In areas where work will need to occur within the 20-foot setback, a biological monitor will be on site to ensure that no unauthorized take of the beetle or damage to its habitat occurs. Erosion controls will be installed and revegetation with appropriate native seed or plants will be completed on the disturbed areas.
VELB-6	DWR will secure the approval of USFWS prior to working within 100 feet of an elderberry shrub during the flight season of the valley elderberry longhorn beetle (March 15 and June 15).
Delta Smelt	
DS-1	DWR work crews and contractors will be given environmental awareness training that will emphasize the identification of Delta smelt, its habitat needs, and the possible penalties of noncompliance.
Swainson's Hawk	
SWH-1	DWR will initiate nest site surveys by March 15 for all projects that are scheduled between March 15 and September 1. All nest sites within 0.5 mile of the project site will be noted and reported to CDFW.
SWH-2	DWR will conduct a preconstruction breeding-season (approximately February 1 through August 30) survey of the project site. The survey will be conducted by a qualified biologist and must conform to the Swainson's Hawk Technical Advisory Committee (2000) guidelines. If the protocol-level surveys do not identify any nesting raptor species within the survey area, no further mitigation is required. If nesting raptors are detected, DWR will ensure avoidance by project activities of all active bird nest sites located in the survey area during the breeding season (approximately February 1 through August 30). This avoidance may require a delay of construction to avoid the nesting season. Any occupied nest will be monitored by a qualified biologist to determine when the nest is no longer in use. If construction cannot be delayed, avoidance will include the establishment of a non-disturbance buffer zone around the nest site. The size of the buffer zone will be determined in consultation with CDFW.

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
Burrowing Owl	
BO-1	Prior to any ground-disturbing project-related construction activity, a focused survey for burrowing owls will be conducted by a qualified biologist in accordance with CDFW protocol (DFG 1995) to identify active burrows on and within 250 feet of the project site. The surveys will be conducted no more than 30 days prior to the beginning of construction. If no occupied burrows are found in the survey area, no further mitigation is required. If an occupied burrow is found, a buffer will be established—165 feet during the nonbreeding season (September 1 through January 31) or 250 feet during the breeding season (February 1 through August 31)—for all project-related construction activities. The size of the buffer area may be adjusted if a qualified biologist and CDW determine project-related construction activities are not likely to have adverse effects. No project-related construction activity will commence within the buffer area until a qualified biologist confirms that the burrow is no longer occupied, or until consultation with CDFW specifically allows certain construction activities to continue. If avoidance of occupied burrows is infeasible for project-related construction activities, on-site passive relocation techniques approved by CDFW will be used to encourage owls to move to alternative burrows outside of the project site. However, no occupied burrows will be disturbed by project-related construction activities during the nesting season unless a qualified biologist verifies through noninvasive methods that the burrow is no longer occupied.
Bank Swallow	
BS-1	For any SERP project located above (north of) Knights Landing, the project site must be evaluated for its impacts on occupied and potential bank swallow habitat. A pre-project bank swallow survey will be conducted by a CDFW-approved biologist. The survey will include mapping of known and existing bank swallow colonies within a 500-foot radius of the disturbance boundaries of the project. The survey will also include mapping of any suitable breeding colony habitat within the same 500-foot radius. Suitable breeding colony habitat is herein defined by the habitat suitability index model developed to evaluate habitat for bank swallow breeding colonies within the continental United States (Garrison 1989). Based on that model, it is assumed that a bank suitable for a nesting colony must be at least 5 meters (m) (16.7 feet) long; that suitable foraging habitat occurs within 10 kilometers (km) (6 miles) of the colony; that insect prey are not limited; and that optimal colony locations are in vertical banks, greater than 1 m (3.3 feet) tall, greater than 25 m (83 feet) long, and consisting of suitable soft soils (i.e., sand, loamy sand, sandy loam, loam, and silt loam) in strata greater than 0.25 m (0.8 feet) wide. The pre-project bank swallow survey information will be submitted to CDFW in a written report accompanying the project notification materials.

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
BS-2	Projects at sites containing occupied and/or potential bank swallow habitat within the proposed disturbance boundaries will not be authorized under the SERP. Project sites that contain suitable nesting colony habitat outside the project disturbance limits, but within the 500-foot survey radius, may be authorized under SERP at the discretion of CDFW with implementation of additional, site-specific protective measures. However, no project that will affect an existing bank swallow colony will be authorized under the SERP. Any project that would result in take of bank swallow, as defined in California Fish and Game Code section 2081, will require issuance of an incidental take permit from CDFW and does not qualify for authorization under the SERP.
Nesting Birds/Migratory Birds	
NB-1	It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by the Fish and Game Code. Without prior consultation and approval of a CDFW representative, no trees that contain active nests of birds will be disturbed until all eggs have hatched and young birds have fledged. Under the MBTA, it is unlawful to pursue, hunt, take, capture, kill, attempt to take capture, or kill, possess any migratory bird, any part, nest, or eggs of any such bird. Because incidental take coverage is not authorized under the MBTA, incidental take of a migratory bird should be avoided. If it is necessary to remove trees for purposes of the project, it is recommended that the trees that are identified for removal be removed during the non-nesting period of August 31 to February 1. If tree removal must occur during the period of February 1 to August 31, a qualified biologist will conduct a preconstruction survey for bird nests or nesting activity within 500 feet of the project boundaries. If any active nests or nesting behaviors are found, CDFW and USFWS must be notified prior to further action. DWR may be required to create exclusion zones of between 75 feet and 0.25 mile depending on the species observed. The exclusion zone must be maintained until birds have fledged or the nest is abandoned. The survey results will be provided to CDFW prior to removal of any trees.
Raptors	
R-1	If project work will occur during the raptor nesting season (February 1 to August 31), a focused survey for raptor nests will be conducted by a qualified biologist during the nesting season to identify active nests within 500 feet of the project site. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting raptors are found within 500 feet 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 approved by CDFW.

Table 2-1 SERP Manual Conservation Measures	
Conservation Measure No.	Description
Woody Shaded Riverine Habitat	
WSRH-1	All remaining, natural woody riparian or shaded riverine aquatic (SRA) habitat will be avoided or preserved to the maximum extent practicable.
WSRH-2	Woody riparian and SRA habitat will be replaced at a 3:1 ratio on an area or linear-foot basis, as determined appropriate by DWR in coordination with NMFS.
WSRH-3	Species chosen for replanting will reflect native species lost during the permitted activity or native species usually found in the riparian and SRA zones of the project location.
WSRH-4	Plantings will be installed during the optimal season for the species being planted. Therefore, completion of the planting effort may not occur at the same time as the remainder of the permitted activity.
WSRH-5	Maintenance of revegetated sites will continue for at least three growing seasons to allow the vegetation to establish. Maintenance will be continued as necessary until the final performance criteria are met.
Cultural Resources	
CR-1	DWR will ensure that SERP project activities near any historic property do not approach closer to the property than identified and allowed for in the resource-specific historic properties treatment plan (HPTP) and the construction monitoring and inadvertent discovery plan in accordance with requirements of the PA.
CR-2	DWR will ensure that an archaeological monitor is present during any ground-disturbing activities in areas where monitoring of construction is necessary to prevent or reduce adverse effects. Specific situations requiring archaeological monitoring and the methods and procedures for archaeological monitoring will be described in the *Construction Monitoring and Inadvertent Discovery Plan* as stipulated by the PA. In situations other than those described in the *Construction Monitoring and Inadvertent Discovery Plan* which specifically require archaeological monitoring, an archaeologist will be available on an on-call basis. If suspected archaeological materials are discovered during ground-disturbing activities, work will stop at that location and within 50 feet of the find until the archaeologist can inspect and assess the find and provide recommendations to DWR and USACE. Work may not resume at that location until DWR and USACE authorize resumption of work.

SECTION 3.1, "APPROACH TO ENVIRONMENTAL ANALYSIS"

The text of Section 3.1.2, "Approach to Impacts and Mitigation Measures," on page 3.1-3 of the DPEIR is hereby revised as follows:

- A **less-than-significant impact** is one that would not result in a substantial or potentially substantial change in the physical environment. This impact level does not require mitigation, even if applicable measures are available; however, implementation of mandatory conservation measures in the SERP Manual may be required for some less-than-significant impacts. In addition, measures may be recommended to further reduce less-than-significant impacts.

The text of Section 3.1.2, "Approach to Impacts and Mitigation Measures," Terminology Used to Describe Impacts, on page 3.1-4 of the DPEIR is hereby revised as follows:

- A **beneficial effect** is one that would result in a positive change in any of the physical conditions within the Phase 1 SERP coverage area. This impact level does not require mitigation, even if applicable measures are available; however, implementation of mandatory conservation measures in the SERP Manual may be required for some beneficial impacts.

The text of Section 3.1.2, "Approach to Impacts and Mitigation Measures," on page 3.1-5 of the DPEIR is hereby revised as follows:

- A **short-term impact** would last from the time construction ceases to within ~~3~~1 years~~s~~ after construction.

- A **long-term impact** would last longer than ~~3~~1 years~~s~~ after construction. In some cases, a long-term impact could be considered a permanent impact.

SECTION 3.2, "AIR QUALITY AND CLIMATE CHANGE"

The title of Section 3.2, "Air Quality and Climate Change" on page 3.2-1 is hereby revised as follows:

3.2 AIR QUALITY AND ~~CLIMATE CHANGE~~GREENHOUSE GAS EMISSIONS

The text in Section 3.2.1, "Introduction," on page 3.2-1 is hereby revised as follows:

> This section describes the proposed program's impacts on air quality and ~~climate change~~greenhouse gas emissions (GHG).

The text of Section 3.2.1, “Introduction,” on page 3.2-1 is hereby revised as follows:

> The regulatory setting and environmental setting for ~~climate change~~GHG emissions are presented in this section, but impacts are addressed in Chapter 5, “Other CEQA-Required Sections,” as a part of the cumulative impact analysis. This is because it is unlikely that any single project by itself could have a significant impact on climate changerelated to its ~~greenhouse gas (~~GHG~~)~~ emissions alone.

The text of Section 3.2.2, “Regulatory Setting,” Global Climate Change, State Plans, Policies, Regulations, and Laws, Senate Bill 97 on page 3.2-6 is hereby revised as follows:

> The provisions of Senate Bill 97, enacted in August 2007 as part of the State Budget negotiations and codified at section 21083.05 of the Public Resources Code, directed the Office of Planning and Research (OPR) to propose CEQA Guidelines “for the mitigation of GHG emissions or the effects of GHG emissions.” ~~SB 97 directs OPR to develop such Guidelines by July 2009, and directs the State Resources Agency (now Natural Resources Agency), the agency charged with adopting the CEQA Guidelines, to certify and adopt such Guidelines by January 2010. In April 2009, OPR prepared draft CEQA Guidelines and submitted them to the Natural Resources Agency (see below). On July 3, 2009, the Natural Resources Agency began the rulemaking process established under the Administrative Procedure Act. The Natural Resources Agency adopted those guidelines on December 30, 2009, and~~Amendments to the CEQA ~~g~~Guidelines pursuant to SB 97 became effective March 18, 2010.
>
> The ~~Natural Resources Agency-adopted~~ amendments for GHGs fit within the existing CEQA framework for environmental analysis, which calls for lead agencies to determine baseline conditions and levels of significance, and to evaluate mitigation measures.

The text of Table 3.2-2, “Summary of State Laws and Executive Orders that Address Climate Change” on page 3.2-7 is hereby revised as follows:

Table 3.2-2
Summary of State Laws and Executive Orders that Address Climate Change

Legislation Name	Signed into Law/ Ordered	Description	CEQA Relevance
SB 97*	08/2007	Directed the Governor’s Office of Planning and Research to develop guideline amendments for the analysis of ~~climate change~~GHGs in CEQA documents.	Requires climate change analysis in all CEQA documents.

The text of Section 3.2.2, “Regulatory Setting,” Global Climate Change, State Plans, Policies, Regulations, and Laws, Senate Bill 97 on page 3.2-8 is hereby revised as follows:

> In addition, as part of the CEQA Guideline amendments and additions, a new set of environmental checklist questions related to GHGs (VII. *Greenhouse Gas Emissions*) was added to the CEQA Guidelines Appendix G~~. The new set asks whether a project would~~:

The text of Section 3.2.2, “Regulatory Setting,” Global Climate Change, State Plans, Policies, Regulations, and Laws on pages 3.2-9 and 3.2-10 is hereby revised as follows:

> ~~***Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under CEQA***~~
>
> ~~CEQA gives discretion to lead agencies to establish thresholds of significance based on individual circumstances. To assist in that exercise, and because OPR believes the unique nature of GHGs warrants investigating a statewide threshold of significance for GHG emissions, OPR engaged the ARB technical staff to recommend a methodology for setting thresholds of significance. In October 2008, ARB released *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act* (ARB 2008b). This draft proposal included a conceptual approach for thresholds associated with industrial, commercial, and residential projects. For nonindustrial projects, the steps to concluding that an impact related to climate change would be less than significant generally include analyzing whether the project is exempt under existing statutory or categorical exemptions; complies with a previously approved plan or target; meets specified minimum performance standards; and falls below an as-yet-unspecified annual emissions level (ARB 2008c). The performance standards focus on construction activities, energy and water consumption, generation of solid waste, and transportation. For industrial projects, the draft proposal recommends a tiered analysis procedure similar to the procedure for nonindustrial projects. However, for industrial projects a quantitative annual emissions limit for less-than-significant impacts is established at ~7,000 metric tons of CO_2e. To date, these standards have not been adopted or finalized as a basis to evaluate the significance of a project’s contribution to climate change.~~

The text of Section 3.2.3 “Environmental Setting,” Global Climate Change on page 3.2-13 is hereby revised as follows.

> … However, after 1950, increasing ~~greenhouse gas~~GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase.

The text of Section 3.2.3 “Environmental Setting,” Global Climate Change on page 3.2-16 is hereby revised as follows.

> Increases in ~~greenhouse gas~~GHG concentrations in the Earth’s atmosphere are thought to be the main cause of human induced climate change. ~~Greenhouse gases~~GHGs naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space. Some ~~greenhouse gases~~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.
>
> The principa~~l~~e ~~greenhouse gases~~GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFC), hydrofluorocarbons (HFC), and water vapor.

The text of Section 3.2.4 “Environmental Impacts and Mitigation Measures,” Global Climate Change, on page 3.2-19 of the DPEIR is hereby revised as follows:

> ~~Based on the 2010 amendments to Appendix G of the CEQA Guidelines, t~~The SERP would ~~result in a~~be determined to have a less-than-significant impact ~~on global climate change~~with respect to GHGs if it ~~would~~is found to be consistent with DWR’s Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan (GGERP) (DWR 2012~~a~~) which shows how DWR’s activities in aggregate would not result in either:
>
> - ~~generate~~ generation of GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or,
> - a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The text of Section 3.2.4 “Environmental Impacts and Mitigation Measures,” Global Climate Change, on page 3.2-20 of the DPEIR is hereby revised as follows:

> No other applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs beyond those discussed in the GGERP are applicable to the SERP, and ~~N~~none of the relevant local air districts has adopted or proposed GHG emission thresholds. DWR has developed ~~a Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan~~the GGERP to~~. This Plan~~ provide~~s~~ analysis of current and historical GHG emissions from DWR activities~~,~~ and establish GHG reduction ~~targets~~ goals of ~~Near-Term Goal at~~ 50% below 1990 levels by 2020 (Near-Term Goal), and ~~Long-Term Goal at~~ 80% below 1990 levels by 2050 (Long-Term Goal), and strategies to

achieve the GHG reduction ~~targets~~ goals (DWR 2012a). ~~DWR intends to use this Plan to streamline the CEQA cumulative impact analysis of GHG emissions consistent with CEQA Guidelines section 15183.5. To streamline analysis, DWR projects must incorporate relevant reduction measures identified in the Greenhouse Gas Emissions Reduction Plan.~~

Although the emissions of one single project would ~~not~~ be unlikely to measurably affect~~cause~~ global climate change, GHG emissions from multiple projects throughout the world could result in ~~the~~ a cumulative impact on GHG concentrations in the atmosphere which are linked to~~of~~ global climate change. See Section 5.1, "Cumulative Impacts," for a complete impact discussion on project-generated GHG emissions.

The text of Section 3.2.4 "Environmental Impacts and Mitigation Measures," Analysis Methodology, on page 3.2-21 of the DPEIR is hereby revised as follows:

… Modeled construction-related emissions were compared with applicable air district thresholds to determine significance.

URBEMIS can model typical construction-related emission sources such as on-road vehicles, off-road construction equipment, and fugitive dust from various construction activities (e.g., site grading, trenching, and demolition); however, it does not include emissions sources such as tugboats and barges, which would be an option for delivery and staging of construction equipment and materials. Emission factors from EPA were used to estimate air quality emissions associated with tugboats delivering construction equipment and materials to the project site and between erosion repair sites and maneuvering during waterside construction activities (EPA 2000). Modeled construction-related emissions for landside construction, including delivery of equipment and materials by truck, and for waterside construction, including delivery of equipment and materials and construction staging using tugboats and barges, were compared with applicable air district thresholds to determine significance. See Appendix C for detailed assumptions and emission calculations.

The text of Section 3.2.4 "Environmental Impacts and Mitigation Measures," Analysis Methodology, on page 3.2-21 of the DPEIR is hereby revised as follows:

Potential impacts associated with ~~climate change~~GHG emissions are addressed in Chapter 5, "Other CEQA-Required Sections," as a part of the cumulative impact analysis.

The text of Impact 3.2-1 on pages 3.2-21 through 3.2-23 of the DPEIR is hereby revised as follows:

IMPACT 3.2-1 *Construction-Related Emissions that Could Exceed Local Thresholds of Significance. The SERP could result in temporary construction-related emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ that could exceed local air district thresholds of significance. This impact would be* ***potentially significant.***

Construction emissions are described as temporary in duration and have the potential to represent a significant impact with respect to air quality, especially fugitive dust emissions (PM_{10} and $PM_{2.5}$). Fugitive dust emissions are associated primarily with extensive site preparation activities and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and miles traveled by construction vehicles on- and off-site. ROG and NO_X emissions are associated primarily with gas and diesel equipment exhaust. Emissions from site preparation (e.g., clearing and grading), material transport, bank stabilization, installation of erosion control features, vegetation planting, and other activities associated with repair of small erosion sites would result in the temporary generation of ROG, NO_X, PM_{10}, and $PM_{2.5}$. Proposed construction activities could be implemented using haul trucks (i.e., landside Option) or tugboats and barges (i.e., waterside option) to bring construction materials to the project site. At the time of this analysis, it has not yet been determined which material and equipment delivery option would be used. It is possible that some erosion repair sites would be completed using the landside option, while others would use the waterside option. However, it should be noted that the waterside option would not be used at erosion repair sites north of the Sacramento-Sutter County line. Therefore, the waterside option would only be applicable for activities within the SMAQMD's, and to a lesser extent, the Yolo-Solano Air Quality Management District's (YSAQMD's) jurisdictions. On-site construction equipment for ~~these types of activities~~ either delivery option may include dozers, excavators, haul trucks, ~~barges with~~ cranes, cement mixers with extended arms, and water trucks. ~~In addition, f~~For modeling purposes, approximately 18 truck trips per day carrying 3,900 cubic yards of material were assumed to be required for equipment, and material delivery and removal for the landside option. For the waterside option, a single tugboat hauling three barges was assumed to bring construction equipment and materials for approximately five potential erosion repair sites.

Construction at each erosion repair site would last for no more than 4 weeks, and up to 15 erosion repairs would be made annually. The maximum acreage disturbed per site would be 0.5 acre or 1,000 linear feet for a Tier 2 project, or 0.1 acre or 264 linear feet for a Tier 1 project.

Temporary construction-generated emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ were modeled using the URBEMIS 2007 Version 9.2.4 computer program. Input parameters were based on default model settings and project-specific information where available

(e.g., number and type of equipment, amount of material transport, acreage disturbed). The modeled maximum temporary daily construction emissions for the landside option are summarized in Table 3.2-6 and for the waterside option in Table 3.2-7. ~~and described in more detail below and in Appendix C, "Air Quality Modeling Calculations."~~ These quantities represent the amount of emissions per site and do not represent the entire SERP as a whole. Modeling assumptions along with the detailed results are included in Appendix C, "Air Quality Modeling Calculations."

Table 3.2-6
Summary of Modeled Maximum Temporary Construction-Generated Emissions Per Single Erosion Repair Site (Landside Option)

Source	ROG	NO_X	PM_{10}	$PM_{2.5}$
Erosion Repair Activities—Single Site (2011)				
Mobile Equipment Exhaust[1]	3 lb/day	26 lb/day	1 lb/day	1 lb/day
Fugitive Dust	–	–	3 lb/day	1 lb/day
Total Maximum Unmitigated (lb/day)	3 lb/day	26 lb/day	4 lb/day	2 lb/day
Total Maximum Mitigated (lb/day)[2]	*2 lb/day*	*21 lb/day*	*1 lb/day*	*0 lb/day*
Annual Total Maximum Unmitigated—15 sites (TPY)[3]	0.2 TPY	2.0 TPY	0.3 TPY	0.2 TPY

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; TPY = tons per year.

[1] Accounts for employee commute trips, on-site heavy-duty construction equipment operations, and material transport (e.g., soil and aggregate base).

[2] Mitigation Measure 3.2-1 would reduce emissions of ROG and NO_X approximately 20 percent and PM_{10} and $PM_{2.5}$ emissions approximately 75 percent below their unmitigated levels.

[3] Summation of emissions from 15 individual repair sites per year.

See Appendix C for modeling results and assumptions.

Source: Data modeled by AECOM in 2009

As shown in Table 3.2-6, landside option construction-related activities in 2011 would generate daily unmitigated ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions of 3 lb/day, 26 lb/day, 4 lb/day, and 2 lb/day, respectively, per erosion repair site. Annual SERP-generated construction-related emissions for 15 annual repair sites of unmitigated ROG, NO_X, PM_{10}, and $PM_{2.5}$ would be 0.2 TPY, 2.0 TPY, 0.3 TPY, and 0.2 TPY, respectively. Daily emissions of NO_X would exceed Feather River Air Quality Management District (FRAQMD) and Butte County Air Quality Management District (BCAQMD) applicable thresholds of 25 lb/day. Because DWR would not conduct greater than three repairs at the same time within SMAQMD, unless DWR chooses to implement components of the

Enhanced Exhaust Control Practices, the daily emissions of NO_X would not exceed the SMAQMD applicable threshold of 85 lbs/day.

Table 3.2-7
Summary of Modeled Maximum Temporary Construction-Generated Emissions Per Single Erosion Repair Site (Waterside Option)

Source	ROG	NO_X	PM_{10}	$PM_{2.5}$
Erosion Repair Activities—Single Site (2011)				
Initial Barge Delivery[1]	7 lb/day	355 lb/day	9 lb/day	8 lb/day
Construction Work Day[2,3,4]	5 lb/day	65 lb/day	5 lb/day	3 lb/day
Barge Movement Between Sites[5]	4 lb/day	213 lb/day	5 lb/day	5 lb/day
Barge Return Delivery[6]	5 lb/day	333 lb/day	8 lb/day	8 lb/day
Total Maximum Unmitigated (lb/day)	7 lb/day	355 lb/day	9 lb/day	8 lb/day
Total Maximum Mitigated (lb/day)[7]	*7 lb/day*	*355 lb/day*	*9 lb/day*	*8 lb/day*
Annual Emissions Mitigated (TPY)	*0.8 TPY*	*12.1 TPY*	*0.8 TPY*	*0.4 TPY*

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; TPY = tons per year.

[1] waterside option *Initial Barge Delivery* assumes that a single tugboat would travel 10 hours with three loaded barges to reach the project site.

[2] waterside option *Construction Work Days* would include barge maneuvering assumes the tugboat would idle for a total of an hour each day to maneuver the barges for construction activities.

[3] Construction equipment for *Construction Work Days* on every levee repair site would include cranes, excavators, rubber tired dozers, backhoes, and water trucks.

[4] Assumes that 10 construction workers would visit the site per day. Each construction worker would travel approximately 20 miles round trip.

[5] waterside option *Between Site Barge Movement* assumes that a tugboat would travel 6 hours (approximately 36 miles) between levee repair sites.

[6] waterside option *Barge Return Delivery* assumes that a tugboat would travel approximately 10 hours with unloaded barges.

[7] Similar to Table 3.2-6, Mitigation Measure 3.2-1 would reduce equipment emissions of ROG and NO_X approximately 20 percent and PM_{10} and $PM_{2.5}$ emissions approximately 75 percent below their unmitigated levels. However, the maximum daily emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ are all associated with tugboat emissions and therefore no reduction has been taken.

See Appendix C for modeling results and assumptions.

Source: Data modeled by AECOM in 2013

As shown in Table 3.2-7, construction-related activities for the waterside option would generate maximum daily unmitigated ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions of 7 lb/day, 355 lb/day, 9 lb/day, and 8 lb/day, respectively, per erosion repair site. The waterside option would only occur within the jurisdiction of the SMAQMD, which has

established a maximum daily threshold of significance for NO_X. The waterside option would exceed the SMAQMD daily NO_X threshold of 85 lb/day. In addition, construction-related activities for the waterside option would generate annual ROG and NO_X emissions of 0.7 TPY and 11.3 TPY, respectively. Although this level of annual emissions would exceed the YSAQMD's threshold for NO_X, it should be noted that these emissions are for the construction of 15 levee repair sites. In reality, it is anticipated that less than half of the annual maximum of 15 levee repair sites would occur within the YSAQMD's jurisdiction in any given year. Therefore, considering that emissions occurring within YSAQMD's jurisdiction would be approximately half of the annual emissions shown in Table 3.2-7, the waterside option would not exceed the YSAQMD annual threshold of 10 TPY for ROG and NO_X, or its daily PM_{10} threshold of 80 lb/day.

Mandatory conservation measures in the SERP Manual will require water (e.g., trucks, portable pumps with hoses) to control fugitive dust during temporary access road construction (Section I, "Conservation Measures," of the SERP Manual). In addition, several air districts in the Phase 1 SERP coverage area have not adopted mass emission thresholds for construction-generated criteria air pollutants and precursors. Instead, these air districts require that standard equipment exhaust (i.e., ROG and NO_X) and fugitive dust control measures (i.e., PM_{10} and $PM_{2.5}$) shall be incorporated into project design and implemented during project construction (BCAQMD 2008, SMAQMD 2009b). Not all measures recommended by the affected air districts for controlling equipment exhaust and fugitive dust emissions are currently incorporated as part of the SERP, and emissions in BCAQMD and FRAQMD could exceed applicable thresholds. Thus, SERP-generated landside option construction-related emissions of criteria air pollutants and precursors could exceed the local FRAQMD and BCAQMD thresholds of significance for NO_X. This impact would be potentially significant.

In addition, the SERP-generated waterside option construction-related emissions of criteria air pollutants and precursors for the waterside option could exceed the local SMAQMD threshold of significance for NO_X. Because SERP-generated construction-related emissions could exceed local air district thresholds, this impact would be potentially significant.

The text of Mitigation Measure 3.2-1 on pages 3.2-23 and 3.2-24 of the DPEIR is hereby revised as follows:

Mitigation Measure 3.2-1: Implement Applicable Air District–Recommended Mitigation Measures for Particulate Matter and Exhaust Emissions.

DWR will incorporate the following measures to reduce exhaust emissions and emissions of fugitive dust (PM_{10} and $PM_{2.5}$) during construction activities:

- Comply with applicable air district rules and regulations that pertain to construction activities (e.g., asphalt ROG requirements, administrative requirements, and fugitive dust management practices). As applicable, implement construction-related requirements from air districts or local governments with authority over the project at the commencement of and during each construction activity.

- When using barges to deliver materials to a project site, DWR will enter into an agreement with SMAQMD to pay an off-site mitigation fee for the portion of construction-generated emissions of NO_X that exceed SMAQMD's daily emissions threshold of 85 lbs/day. The calculation of the fee shall be determined annually in coordination with the SMAQMD and paid within 30 days (or a different time that might be negotiated) of the occurrence of construction-related activities.

- Do not use open burning to dispose of any excess materials generated during site preparation or other project activities.

- Schedule construction truck trips during nonpeak traffic hours to reduce peak-hour emissions and traffic congestion to the extent feasible.

- Follow air pollution regulations, which includes the use of diesel-powered construction equipment and equipment idle times, that meet CARB's 1996 or newer certification standard for in-use off-road heavy-duty diesel engines [California Code of Regulations: (article 4.8, chapter 9, division 3 of title 13)].

- Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition.

- Check all tires and maintain for proper inflation.

Implementation of the applicable dust and exhaust control measures outlined above under Mitigation Measure 3.2-1 would reduce emissions of ROG and NO_X approximately 20 percent and PM_{10} and $PM_{2.5}$ approximately 75 percent. Furthermore, if the waterside option for material and equipment transport and construction is selected for one or more sites, the payment of off-site mitigation fees to SMAQMD each year the waterside option is selected would reduce construction-related emissions of NO_X to a level less than the SMAQMD significance threshold of 85 lbs/day. Thus, Mitigation Measure 3.2-1 would bring the SERP landside and waterside construction options into compliance with local air district thresholds and recommendations for decreasing

emissions of criteria air pollutants and precursors and would reduce this impact to a less-than-significant level.

The Table number for Table 3.2-7 on page 3.2-25 of the DPEIR is hereby revised as follows:

Table 3.2-~~7~~8
Summary of Modeled Maximum Long-Term Operations-Generated Emissions Per Single Erosion Repair Site

The text of Section 3.2.5, “Residual Impacts,” on page 3.2-27 is hereby revised as follows:

… ~~Climate change i~~Impacts associated with GHG emissions are addressed in Chapter 5, “Other CEQA-Required Sections,” as a part of the cumulative impact analysis.

SECTION 3.3, “BIOLOGICAL RESOURCES”

The text of Section 3.3.2, “Regulatory Setting,” Endangered Species Act, on page 3.3-4 of the DPEIR is hereby revised as follows:

Under the CESA, “take” is defined as "hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture or kill." ~~an activity that would directly or indirectly kill an individual of a species, but the definition does not include “harm” or “harass,” as the federal act does.~~

The text of Section 3.3.2, “Regulatory Setting,” California Fish and Game Code Sections 1600-1616—Streambed Alteration Agreement, on page 3.3-5 of the DPEIR is hereby revised as follows:

Diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports fish or wildlife resources are subject to regulation by CDFW, as required by Sections 1600–1616 of the California Fish and Game Code. ~~The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports wildlife, fish, or other aquatic life.~~ This includes watercourses that have a surface or subsurface flow that supports or has supported riparian vegetation. ~~CDFW’s jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.~~ A CDFW streambed alteration agreement must be obtained for a project that would result in an impact on a river, stream, or lake.

The text of Section 3.3.3, “Environmental Setting,” Emergent Marsh, on page 3.3-10 of the DPEIR is hereby revised as follows:

> Emergent aquatic vegetation provides refuge for several special-status native fish species from predatory fish as well as a base for food production.

The text of Section 3.3.3, “Environmental Setting,” Wildlife, on page 3.3-11 of the DPEIR is hereby revised as follows:

> Species that are expected to commonly occur in these habitats near erosion sites in the Phase 1 SERP coverage area include the Pacific treefrog (*Pseudacris regilla*), western fence lizard (*Sceloporus occidentalis*), Swainson's hawk (*Buteo swainsoni*), western scrub-jay (*Aphelocoma californica*), red-shouldered hawk (*Buteo lineatus*), Nuttall’s woodpecker (*Picoides nuttallii*), California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo maculates*), black phoebe (*Sayornis nigricans*), mourning dove (*Zenaida macroura*), beaver (*Castor canadensis*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), blacktailed deer (*Odocoileus hemionus*), and raccoon (*Procyon lotor*).

The text of Section 3.3.3, “Environmental Setting,” Fisheries and Aquatic Habitats, on page 3.3-12 of the DPEIR is hereby revised as follows:

> Primary open-water habitats within the Phase 1 SERP coverage area include the active channels of the Sacramento River, Feather River, American River, Cache Creek, ~~Deer Creek~~, and Sutter Bypass. These watercourses provide multiple habitat functions for a diverse assemblage of native and nonnative fish species. Native fish species that may occur in the open-water habitats adjacent to potential erosion sites include all runs of Chinook salmon (*Oncorhynchus tshawytscha~~shawytscha~~*), steelhead (*Oncorhynchus mykiss*), river lamprey (*Lampetra ayresi*), green sturgeon (*Acipenser medirostris*), white sturgeon (*Acipenser transmontanus*), delta smelt (*Hypomesus transpacificus*), hardhead (*Mylopharadon conocephalus*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento splittail (*Pogonichthys macrolepidotus*), longfin smelt (*Spirinchus thaleichthys*), California roach (*Lavinia symmetricus*), hitch (*Lavinia exilicauda*), Sacramento blackfish (*Orthodon microlepidotus*), and Sacramento sucker (*Catostomus occidentalis*).

The text of Section 3.3.3, “Environmental Setting,” Fisheries and Aquatic Habitats, on page 3.3-13 of the DPEIR is hereby revised as follows:

> … As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat that furnishes refugia from predators, creates variable water

velocities, and provides habitat for aquatic invertebrates. ~~For these reasons, many fish species are attracted to SRA habitat.~~

The text of Table 3.3-3, “Special-Status Fish and Wildlife Species Evaluated for the SERP,” on pages 3.3-15 through 3.3-25 of the DPEIR is hereby revised as follows:

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Fish				
Central Valley steelhead *Oncorhynchus mykiss*	T	~~T~~ --	Spawns in cool, moderately fast-flowing water with gravel bottom. Migrates through streams and rivers throughout the Sacramento Valley.	**Present.** Suitable habitat present in the Sacramento, Feather, and Lower American rivers.
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T	T	Spawns and rears in mainstem Sacramento River and suitable perennial tributaries. Requires cool year-round water temperatures and deep pools for over-summering habitat. Spawns in riffles with gravel and cobble substrate.	**Present.** Suitable habitat present in the Sacramento, Feather, and Lower American rivers, and in tidally influenced reaches of the Delta.
Sacramento River winter-run Chinook salmon *Oncorhynchus tshawytscha*	E	E	Spawns and rears in mainstem Sacramento River. Requires cool year-round water temperatures because spawning occurs during summer. Requires deep pools and riffles and clean gravel and cobble substrate to spawn.	**Present.** Suitable habitat present in the Sacramento, Feather, and Lower American rivers, and in tidally influenced reaches of the Delta.
Central Valley fall/late fall-run Chinook salmon *Oncorhynchus tshawytscha*	SC	SC	Spawns and rears in mainstem Sacramento River and suitable perennial tributaries. Requires cool year-round water temperatures and deep pools for over-summering habitat. Spawns in riffles with gravel and cobble.	**Present.** Suitable habitat present in the Sacramento, Feather, and Lower American rivers, and in tidally influenced reaches of the Delta.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Green sturgeon *Acipenser medirostris*	T	SC	Prefers deep, low-gradient reaches (>5 meters) or off-channel covers.	**Present.** Suitable habitat present in the Sacramento, Feather, and Lower American rivers, and in tidally influenced reaches of the Delta.
Delta smelt *Hypomesus transpacificus*	T	E	Known to occur as far north as the city of Sacramento. Spawns in shallow, fresh, or slightly brackish water.	**Present.** Suitable habitat present in tidally influenced reaches of the ~~Sacramento–San Joaquin Delta (~~Delta~~)~~.
Longfin smelt *Spirinchus thaleichthys*	SC	T	Occurs in sloughs of Suisun Bay and Delta. Found close to shore in bays and estuaries. Ascends coastal streams to spawn.	**Present.** Suitable habitat in tidally influenced and brackish waters of the Delta.
River lamprey *Lampetra ayresi*	--	SC	Spawns in freshwater rivers and streams with juveniles found in slow-moving current, silty bottom habitats; metamorphosed juveniles migrate through estuaries to the ocean. Found in the Sacramento River.	**Present.** Suitable habitat present in the Sacramento, Feather, and Lower American rivers and their tributaries.
Hardhead *Mylopharadon conocephalus*	--	SC	Prefers deep, rock- and sand-bottomed pools of small to large rivers. Found throughout the Sacramento and San Joaquin River systems.	**Present.** Suitable habitat present in the Sacramento River and all of its tributaries.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Sacramento splittail *Pogonichthys macrolepidotus*	SC	SC	Occurs in shallow, dead-end sloughs with submerged vegetation and backwater slough areas in the lower Delta. Prefers low-salinity shallow-water areas. Occurs in the Sacramento River north to River Mile (RM) 97.0 and in the Feather River to RM 10.0.	**Present.** Sacramento splittail may be present in the Sacramento River as far north as RM 97.0 and in the Feather River to RM 10.0.
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	–	Elderberry shrubs in the Central Valley and adjacent foothills.	**Present.** Elderberry shrubs are present within the Phase 1 SERP coverage area.
Conservancy fairy shrimp *Branchinecta conservatio*	E	–	Highly turbid, large vernal pools.	**Not expected to occur.** No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.
Vernal pool fairy shrimp *Branchinecta lynchi*	T	–	Pools with inundation period of more than 2 weeks; distributed throughout California.	**Not expected to occur.** No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.
Delta green ground beetle *Elaphrus viridis*	T	–	Vernal pools; restricted to Jepson Prairie, Solano County.	**Not expected to occur.** No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area, and the area is outside of this species' known range.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Vernal pool tadpole shrimp *Lepidurus packardi*	E	–	Pools with inundation period of more than 2 weeks; distributed throughout California.	**Not expected to occur.** No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.
Amphibians				
California tiger salamander *Ambystoma californiense*	T	T~~SC~~	Vernal or temporary pools in annual grasslands or open stages of woodlands.	**Not expected to occur.** No breeding ponds, vernal pools, or suitable upland habitat occurs within the Phase 1 SERP coverage area.
California red-legged frog *Rana aurora draytonii*	T	–SC	Streams, freshwater pools, and ponds with overhanging and emergent vegetation.	**Not expected to occur.** Potentially suitable habitat may exist within the Phase 1 SERP coverage area; however, this species is not currently known to occur in the Central Valley.
Foothill yellow-legged frog *Rana boylii*	–	SC	Rocky streams in a variety of habitats; found in the Coast Ranges.	**Not expected to occur.** Suitable rocky stream habitat is not present in the Phase 1 SERP coverage area.
Western spadefoot toad *Spea hammondii*	–	SC	Grasslands with temporary pools.	**Not expected to occur.** No suitable vernal pool habitat occurs within the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Reptiles				
Western pond turtle *Emys marmorata*	–	SC	Slow-water aquatic habitat with available basking sites. Hatchlings require shallow water with dense submergent or short emergent vegetation. Requires upland oviposition site near an aquatic site.	**Present.** Suitable habitat occurs within the Sacramento, Feather, and Lower American rivers and their tributaries.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	–	SC	Occurs in open, dry, treeless areas, including grassland and saltbush scrub.	**Not expected to occur.** Suitable grasslands or saltmarsh scrub habitat is not present within the Phase 1 SERP coverage area.
Coast horned lizard *Phrynosoma blainvillii*	–	SC	Occurs in arid grasslands, woodlands, coniferous forests, and chaparral with patches of sandy soils.	**Not expected to occur.** Suitable habitat, including grasslands or canyons with open arid areas and loose friable soils, is not present within the Phase 1 SERP coverage area.
Giant garter snake *Thamnophis gigas*	T	T	Freshwater marshes and low-gradient streams with emergent vegetation; adapted to drainage canals and irrigation ditches with mud substrate.	**Present.** Suitable habitat is present within the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Birds				
Northern goshawk *Accipiter gentilis*	–	SC	Generally requires mature conifer forests with large trees, snags, downed logs, dense canopy cover, and open understories for nesting; aspen stands also are used for nesting. Foraging habitat includes forests with dense to moderately open overstories and open understories interspersed with meadows, brush patches, riparian areas, or other natural or artificial openings. Goshawks reuse old nest structures and maintain alternate nest sites.	**Not expected to occur.** No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.
Tricolored blackbird *Agelaius tricolor*	–	SC	Breeds in colonies near fresh water in dense emergent vegetation. Forages in agricultural croplands.	**Low potential to occur.** Some emergent vegetation may be present; however, dense or extensive emergent vegetation stands that could support a breeding population are absent in the vicinity of the erosion sites.
Golden eagle *Aquila chrysaetos*	–	FP	Mountains and foothills throughout California; nests on cliffs and escarpments or in tall trees.	**Low potential to occur.** Suitable nesting habitat is not present within the Phase 1 SERP coverage area; individuals may occasionally use portions of the coverage area for foraging.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Short-eared owl *Asio flammeus*	–	SC	Nests on the ground in dense vegetation in open grassland and marshes.	**Not expected to occur.** No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.
Long-eared owl *Asio otus*	–	SC	Found in a variety of habitat types throughout its range. Nests in woodland, forest, and open settings. Occupies wooded and non-wooded areas that support relatively dense vegetation adjacent to or within larger open areas such as grasslands or meadows. Trees and shrubs used for nesting and roosting include oaks, willows, cottonwoods, conifers, and junipers.	**Low potential to occur.** Dense riparian areas and woodlands are uncommon within the Phase 1 SERP coverage area.
Western burrowing owl *Athene cunicularia hypugaea*	–	SC	Grasslands and ruderal habitats.	**Moderate potential to occur.** Potentially suitable habitat occurs in the Phase 1 SERP coverage area.
Swainson's hawk *Buteo swainsonii*	–	T	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah; forages in adjacent livestock pasture, grassland, or grain fields.	**Moderate potential to occur.** Potentially suitable habitat occurs in the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Yellow-headed blackbird	–	SC	Breeds in marshes that have tall emergent vegetation, such as cattails or tules, and in open areas near and over relatively deep water.	**Low potential to occur.** Suitable nesting habitat is not present within the Phase 1 SERP coverage area; individuals may occasionally use portions of the coverage area for foraging.
Vaux's swift *Chaetura vauxi*	–	SC	Prefers redwood and Douglas-fir habitats; nests in hollow trees and snags or, occasionally, in chimneys; forages aerially.	**Low potential to occur.** Suitable nesting habitat is absent from the Phase 1 SERP coverage area.
Western snowy plover *Charadrius alexandrines nivosus*	T	SC	Occurs throughout California, on sandy or gravelly beaches along the coast on estuarine salt ponds, alkali lakes, and Salton Sea.	**Not expected to occur.** Suitable sandy or gravelly beach-type habitat is absent in the Phase 1 SERP coverage area.
Mountain plover *Charadrius montanus*	–	SC	Wintering habitat includes short grasslands and plowed fields below 3,000 feet. Mountain plovers do not breed in California.	**Not expected to occur.** No suitable wintering habitat for this species is present within the Phase 1 SERP coverage area.
Black tern *Chlidonias niger*	–	SC	Shallow water and fresh emergent wetlands, lakes, ponds, moist grasslands, and agricultural fields.	**Not expected to occur.** No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Northern harrier *Circus cyaneus*	–	SC	Found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, and freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained marshland, and shrub-steppe in cold deserts.	**Low potential to occur.** No suitable nesting habitat for this species is present within the Phase 1 SERP coverage area. Occasionally individuals may forage in or migrate through the Phase 1 SERP coverage area.
Black swift *Cypseloides niger*	–	SC	Nests in moist crevices, in caves or sea cliffs above the surf, or on cliffs behind or adjacent to waterfalls in deep canyons; forages widely in many habitats.	**Not expected to occur.** No suitable nesting habitat for this species is present within the Phase 1 SERP coverage area.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	C	E	Nesting habitat in cottonwood/ willow riparian forest. Occurs only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter County, the south fork of the Kern River in Kern County, and along the Santa Ana, Amargosa, and lower Colorado rivers.	**Low potential to occur.** No suitable nesting habitat (extensive riparian forest) for this species is present within the Phase 1 SERP coverage area. Occasionally individuals may forage in or migrate through the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Yellow warbler *Dendroica petechia*	–	SC	Typically breeds in wet areas with dense riparian vegetation. Breeding habitats primarily include willow patches in montane meadows and riparian scrub and woodland dominated by willow, cottonwood, aspen, or alder with dense understory cover.	**High potential to occur.** Suitable nesting habitat present in riparian woodlands within the Phase 1 SERP coverage area.
White-tailed kite *Elanus leucurus*	–	FP	Occurs in low elevation grassland, agricultural, wetland, oak-woodland, or savannah habitats. Riparian habitat adjacent to open areas also used.	**High potential to occur.** Suitable nesting and foraging habitat is present within the Phase 1 SERP coverage area.
Willow flycatcher *Empidonax traillii*	–	E	Suitable habitat typically consists of montane meadows that support riparian deciduous shrubs and remain wet through the nesting season. Important characteristics of suitable meadows include a high water table that results in standing or slow-moving water or saturated soils during the breeding season, abundant riparian deciduous shrub cover, and riparian shrub structure with moderate to high foliar density that is uniform from the ground to the shrub canopy.	**Not expected to occur.** Willow flycatcher is a spring/ fall migrant that breeds in Sierras and Cascades in montane meadows. Migrating individuals may pass through the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Peregrine falcon *Falco peregrinus*	–	~~E~~FP	Nests and roosts on protected ledges of high cliffs, usually adjacent to water bodies and wetlands that support abundant avian prey.	**Low potential to occur.** No suitable cliffs are present to serve as breeding habitat, but this species may forage within the Phase 1 SERP coverage area.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	–	SC	Limited to the San Francisco Bay area. Occurs in salt and brackish water with tall grasses and tule patches.	**Not expected to occur.** No suitable marsh habitat is present within the Phase 1 SERP coverage area; the coverage area is outside of the species range.
Greater sandhill crane *Grus canadensis tabida*	–	T, FP	Extensive marshlands required for breeding; forages in nearby pastures, fields, and meadows. This species does not breed in the Central Valley.	**Not expected to occur.** No suitable marsh habitat is present within the Phase 1 SERP coverage area.
Bald eagle *Haliaeetus leucocephalus*	–	E, FP	Uses ocean shorelines, lake margins, and river courses for both nesting and wintering. Most nests are within 1 mile of water and in large trees with open branches. Bald eagles roost communally in winter.	**Low potential to occur.** No suitable nesting habitat is present within the Phase 1 SERP coverage area; individuals may forage within the coverage area.
Yellow-breasted chat *Icteria virens*	–	SC	Breeds in riparian habitats with dense understory vegetation, such as willow and blackberry on the coast and in the Sierra foothills.	**Moderate potential to occur.** Suitable nesting habitat is present in riparian woodlands within the Phase 1 SERP coverage area.
Western least bittern *Ixobrychus exilis hesperis*	–	SC	Breeds in expansive freshwater marshes.	**Not expected to occur.** No suitable marsh habitat is present within the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Loggerhead shrike *Lanius ludovicianus*	–	SC	Forages in open grassland habitats throughout the Central Valley of California. Nests in shrubs and trees.	**Low potential to occur.** Open grassland habitats are not present within the Phase 1 SERP coverage area.
California black rail *Laterallus jamaicensis coturniculus*	–	T	Coastal and inland tidal salt marsh and freshwater marsh habitat.	**Not expected to occur.** No suitable marsh habitat is present within the Phase 1 SERP coverage area.
Suisun song sparrow *Melospiza melodia maxillaris*	–	SC	Suisun Bay; brackish water with emergent vegetation.	**Not expected to occur.** No suitable marsh habitat is present within the Phase 1 SERP coverage area; species range is limited to Suisun Bay.
American white pelican *Pelecanus erythrorhynchos*	–	SC	Nests on small islands or remote dikes that are flat or gently sloping and lack shrubs or other obstructions and in large freshwater or saltwater lakes.	**Not expected to occur.** No suitable nesting habitat is present within the Phase 1 SERP coverage area.
Purple martin *Progne subis*	–	SC	Nests in valley foothill, montane hardwood-conifer, and riparian habitats with tree cavities or human-made structures available for nesting.	**Not expected to occur.** Breeding populations in California are limited to the coast and mountains and several bridges in the city of Sacramento. Suitable nesting structures or cavities are very limited within the Phase 1 SERP coverage.
California clapper rail *Rallus longirostris obsoletus*	E	E	San Francisco, Morro, and Monterey Bays; mudflats, marshes, or tidal sloughs with taller plant material.	**Not expected to occur.** No suitable marsh habitat is present within the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Bank swallow *Riparia riparia*	–	T~~SE~~	Nests in fine-textured or sandy banks or cliffs along rivers, streams, ponds, or lakes. Typically nests in colonies.	**Moderate potential to occur.** Levees and erosion sites may provide or be near suitable habitat.
California spotted owl *Strix occidentalis occidentalis*	–	SC	Occurs in several forest vegetation types, including mixed conifer, ponderosa pine, red fir, and montane hardwood. Nesting habitat is generally characterized by dense canopy closure with medium to large trees and multistoried stands. Foraging habitat can include intermediate to late-successional forest with greater than 40 percent canopy cover.	**Not expected to occur.** No suitable nesting or foraging habitat for this species is present within the Phase 1 SERP coverage area.
Mammals				
Pallid bat *Antrozous pallidus*	–	SC	Locally common at lower elevations in California and occurs in grassland, shrubland, woodland, and mixed conifer forests. Absent from highest elevation locations in the Sierra Nevada. Rocky outcrops, caves, crevices, and occasional tree cavities or buildings provide roosts.	**Low potential to occur.** Suitable roosting habitat is absent from erosion sites. Individuals may forage within the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Ring-tailed cat *Bassariscus astutus*	–	FP	Occurs in dense riparian habitats and in brush stands of most forest and shrub habitats. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests.	**Low potential to occur.** Erosion sites are unlikely to support the ample riparian habitat required by this species.
Pale Townsend's big-eared bat *Corynorhinus townsendii pallescens*	–	SC	Range is throughout California, mostly in mesic habitats. Limited by available roost sites (i.e., caves, tunnels, mines, and buildings).	**Low potential to occur.** Suitable roosting habitat is absent from erosion sites. Individuals may forage within the Phase 1 SERP coverage area.
Marysville kangaroo rat *Dipodomys californicus eximius*	–	SC	Annual grassland, desert, or chaparral with friable soils or other rodent burrows. Known distribution limited to Sutter Buttes.	**Not expected to occur.** No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
California mastiff bat *Eumops perotis californicus*	–	SC	Many open habitats, including coniferous and deciduous woodlands, grassland, and chaparral. Roosts in significant rock outcroppings and crevices in cliff faces.	**Low potential to occur.** Suitable roosting habitat is absent from erosion sites. Individuals may forage within the Phase 1 SERP coverage area.
Western red bat *Lasiurus blossevillii*	–	SC	Day roosting common in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. An association with intact riparian habitat may exist (particularly willows, cottonwoods, and sycamores).	**Moderate potential to occur.** Suitable roosting and foraging habitat present within the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		
Riparian woodrat *Neotoma fuscipes riparia*	E	SC	Deciduous valley oak habitat with abundant shrub cover. Occurs in San Joaquin and Stanislaus River watersheds. Only known population in Caswell State Park, San Joaquin County.	**Not expected to occur.** No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
Salt-marsh harvest Mouse *Reithrodontomys raviventris*	E	E	San Francisco, San Pablo, and Suisun Bays; pickleweed and other halophytes in marshes.	**Not expected to occur.** No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
Suisun shrew *Sorex ornatus sinuosus*	–	SC	San Pablo and Suisun Bays; tidal marshes.	**Not expected to occur.** No suitable habitat is present within the Phase 1 SERP coverage area; the species range is outside of the coverage area.
American badger *Taxidea taxus*	–	SC	Variety of habitats, including grasslands and shrub-dominated areas with loose, dry, friable soils.	**Not expected to occur.** No suitable habitat with loose friable soils is present within the Phase 1 SERP coverage area.
San Joaquin kit fox *Vulpes macrotis mutica*	E	–	San Joaquin Valley; prefers grasslands and prairie habitats near freshwater marshes and alkali sinks.	**Not expected to occur.** No suitable open grassland habitat is present within the Phase 1 SERP coverage area.
Sierra Nevada red fox *Vulpes vulpes necator*	–	T	Inhabits upper montane and alpine habitats of Sierra Nevada, Cascades, Klamath, and north Coast Ranges. Needs water source and denning sites. Rarely seen. Sensitive to human disturbance.	**Not expected to occur.** No suitable montane or alpine habitat present in the Phase 1 SERP coverage area.

Table 3.3-3
Special-Status Fish and Wildlife Species Evaluated for the SERP

Common Name and Scientific Name	Regulatory Status[1]		Habitat Associations	Potential for Occurrence[2]
	Federal	State		

Notes:

[1] Regulatory Status Definitions:

Federal—U.S. Fish and Wildlife Service:

E = Endangered species under the federal Endangered Species Act
T = Threatened species under the federal Endangered Species Act
C = Candidate for listing under the federal Endangered Species Act

State—California Department of Fish and Wildlife:

T = Threatened
E = Endangered
FP = Fully Protected
SC = Species of special concern

[2] Potential for Occurrence Definitions:

Observed	Species was observed in the study area during site visits or was documented there by another reputable source.
High potential to occur	All of the species' specific life history requirements can be met by habitat present in the study area, and populations are known to occur in the immediate vicinity.
Moderate potential to occur	Some or all of the species life history requirements are provided by habitat in the study area; populations may not be known to occur in the immediate vicinity, but are known to occur in the region.
Low potential to occur	Species not likely to occur because of marginal habitat quality or distance from known occurrences.
Not expected to occur	None of the species' life history requirements are provided by habitat in the study area and/or the study area is outside of the known distribution for the species. Any occurrence would be very unlikely.

Source: Data compiled by AECOM in 2012

The text of Section 3.3.3, “Environmental Setting,” Central Valley Spring-Run Chinook Salmon, on page 3.3-42 of the DPEIR is hereby revised as follows:

> The Central Valley spring-run Chinook salmon ESU was federally listed as threatened on September 16, 1999 (64 FR 50394–50415) and state listed as threatened on February 5, 1999.

The text of Section 3.3.3, “Environmental Setting,” Central Valley Winter-Run Chinook Salmon, on page 3.3-43 of the DPEIR is hereby revised as follows:

> The Sacramento River winter-run Chinook salmon ESU was listed as threatened under the federal ESA on August 4, 1989 (54 FR 32085–32088) and state listed as endangered on September 22, 1989.

The text of Section 3.3.3, “Environmental Setting,” Green Sturgeon, on page 3.3-45 of the DPEIR is hereby revised as follows:

> The green sturgeon is anadromous, but it is the most marine-oriented of the sturgeon species and has been found in nearshore marine waters from Mexico to the Bering Sea (71 FR 17757–17766). The northern DPS has included spawning populations in the Rogue, Klamath, and Eel rivers; the southern DPS has a ~~single~~ spawning population in the Sacramento River (71 FR 17757–17766). Adults typically migrate upstream into rivers between late February and late July. Spawning occurs from March to July, with peak spawning from mid-April to mid-June. Green sturgeon are believed to spawn every 3–5 years, although recent evidence indicates that spawning may be as frequent as every 2 years (Moyle 2002). Little is known about the green sturgeon’s specific preferences for spawning habitat. Adult green sturgeon are believed to broadcast their eggs in deep, fast water over large cobble substrate, where the eggs settle into the interstitial spaces (Moyle 2002). In the Central Valley, spawning occurs in the Sacramento River upstream of Hamilton City, perhaps as far upstream as Keswick Dam, and possibly in the lower Feather River (Moyle 2002). Studies conducted by DWR in 2011 revealed that green sturgeon spawned in the Feather River below the Thermalito Afterbay Outlet Pool (Seesholtz et al. 2013). This species has also been confirmed as occurring in the Yuba River downstream of Daguerre Point Dam (Bergman et al. 2011), and in the San Joaquin River between Stockton and the Highway 140 bridge (IEP 2013).

The text of Section 3.3.3, “Environmental Setting,” Delta Smelt, on page 3.3-46 of the DPEIR is hereby revised as follows:

> Delta smelt was federally listed as threatened on March 5, 1993 (58 FR 12854–12863), and critical habitat was designated on December 19, 1994 (59 FR 65256–65278). Delta

smelt was state listed as threatened on December 9, 1993 and subsequently upgraded to endangered on January 20, 2010.

The text of Section 3.3.3, "Environmental Setting," Giant Garter Snake, on page 3.3-49 of the DPEIR is hereby revised as follows:

The giant garter snake is listed as a threatened species under the ESA and CESA.

The text of Section 3.3.3, "Environmental Setting," Bank Swallow, on page 3.3-51 of the DPEIR is hereby revised as follows:

Bank swallow (*Riparia riparia*) is listed as ~~endangered~~ threatened under the CESA.

The text of Impact 3.3-1 on page 3.3-54 of the DPEIR is hereby revised as follows:

IMPACT 3.3-1 *Temporary Effects to Fish and Aquatic Habitat Resulting from Construction. SERP construction activities could result in temporary adverse effects on water quality, aquatic habitats, and the aquatic community. However, the SERP Manual includes conservation measures ~~that would be implemented~~ to avoid and/or minimize temporary adverse effects that could otherwise result from construction. By implementing the conservation measures in the SERP Manual, this impact would be* ***less than significant****.*

The text of Impact 3.3-1 on page 3.3-55 of the DPEIR is hereby revised as follows:

The SERP Manual contains mandatory conservation measures to be applied to all SERP projects, and resource-specific conservation measures to address impacts on fish and aquatic habitat. These conservation measures include timing restrictions for in-channel work to avoid impacts on seasonally present fish species; restrictions on vegetation and habitat disturbance; and specific direction for construction, equipment, staging, material stockpiling, erosion control during construction, and hazardous materials~~; and other mandatory or resource-specific conservation measures as detailed in Section I, "Conservation Measures," of the SERP Manual (see Appendix B)~~.

In addition, conservation measure DS-1, which would provide worker awareness training for delta smelt, and conservation measures WSRH-1 through WSRH-5, which would include avoiding existing SRA habitat when possible, replacing SRA at a 3:1 ratio, planting SRA habitat during the optimal season, and maintaining SRA areas for three growing seasons, would be implemented. Detailed descriptions of all mandatory conservation measures are provided in Section I, "Conservation Measures," of the SERP Manual (see Appendix B).

The text of Impact 3.3-1 on page 3.3-55 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

The text of Impact 3.3-2 on page 3.3-55 of the DPEIR is hereby revised as follows:

IMPACT 3.3-2 *Temporary Construction-Related Disturbance or Loss of Special-Status Fish or Wildlife Species and Habitats. SERP activities could result in the loss of individuals or nests or cause disruptions to nesting, spawning, or migration of the 20 special-status species known to occur or with a moderate or high potential to occur in the Phase 1 SERP coverage area. Portions of the Phase 1 SERP coverage area include habitat for special-status fish and other aquatic species; construction activities could temporarily degrade these habitats. However, the SERP Manual includes conservation measures* ~~that would be implemented~~ *to avoid and/or minimize disturbance or loss of species or habitat that could otherwise result from construction. By implementing the conservation measures in the SERP Manual, this impact would be* ***less than significant****.*

The text of Impact 3.3-2 on page 3.3-56 of the DPEIR is hereby revised as follows:

To address potential impacts on special-status fish and wildlife species that could result from construction activities, SERP projects must implement mandatory conservation measures, including timing restrictions for in-channel work to avoid impacts on seasonally present fish species; restrictions on vegetation and habitat disturbance; specific direction for construction, and equipment, staging, material stockpiling, erosion control during construction~~,~~.

In addition, conservation measures SBR-1 through SBR-3, which include having a qualified biologist provide environmental awareness training, use of construction barrier fencing around sensitive biological resources, and monitoring of construction sites, would be implemented. Conservation measures DS-1 and WSRH-1 through WSRH-5 described in Impact 3.3-1 would also be implemented.

Conservation measures GGS-1 through GGS-6 would be implemented for giant garter snake. These measures include staying 200 feet from giant garter snake habitat, when possible, minimizing vegetation clearing, providing worker awareness training, conducting pre-construction surveys, removing any temporary fill or debris from construction, and limiting work within giant garter snake habitat to May 1 to October 1.

Conservation measures VELB-1 through VELB-6 would be implemented for valley elderberry longhorn beetle. These measures include providing worker awareness training, erecting signs around elderberry shrubs, flagging avoidance areas, restricting use of herbicides, insecticides, and fertilizers that could harm elderberry shrubs,

avoiding buffer areas around elderberry shrubs, and consulting with USFWS before working within a buffer area.

Conservation measures SWH-1 and SWH-2 would be implemented for Swainson's hawk. These measures include surveying nest sites for projects between March 15 and September 1, and conducting pre-construction surveys during the breeding season (February 1 through August 31).

Conservation measure BO-1 would be implemented if burrowing owl is present. This measure includes focused burrowing owl surveys prior to starting construction.

Conservation measures BS-1 and BS-2 would be implemented for bank swallow. These measures include evaluating any sites above Knights Landing for bank swallow habitat, and excluding sites with occupied or potential bank swallow habitat from the SERP.

Conservation measures NB-1 and R-1 would be implemented for nesting birds and raptors. These measures include restricting removal of any tree with an active nest until all eggs have hatched and young birds have fledged, and conducting focused surveys prior to any work being conducted during the raptor nesting season (February 1 through August 31).

Detailed descriptions of all of the mandatory conservation measures are provided in~~and hazardous materials; and other mandatory or resource-specific conservation measures (see~~ Section I, "Conservation Measures," of the SERP Manual in Appendix B of this EIR~~)~~.

The text of Impact 3.3-2 on page 3.3-56 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

The text of Impact 3.3-3 on page 3.3-57 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

The text of Impact 3.3-4 on page 3.3-57 of the DPEIR is hereby revised as follows:

IMPACT 3.3-4 *Loss or Disturbance of Special-Status Plant Species and Habitats. The SERP could result in mortality of individuals of the seven special-status plant species with moderate or high potential to occur in the Phase I SERP coverage area. Portions of the Phase I SERP coverage area include habitat for special-status plant species and construction activities could temporarily degrade these habitats. However, the SERP Manual includes conservation measures ~~that would be implemented~~ to avoid and/or minimize disturbance or loss of species or habitat that could otherwise result from construction. By implementing the conservation measures in the SERP Manual, this impact would be* ***less than significant****.*

The text of Impact 3.3-4 on page 3.3-57 of the DPEIR is hereby revised as follows:

> The SERP Manual provides mandatory conservation measures CM-4 through CM-11 to protect sensitive biological resources, including restrictions on vegetation and habitat disturbance and specific direction for construction equipment staging, material stockpiling, erosion control during construction, and hazardous materials (see Section I, "Conservation Measures," of the SERP Manual in Appendix B).

The text of Impact 3.3-4 on page 3.3-58 of the DPEIR is hereby revised as follows:

> No additional mitigation is required.

The text of Impact 3.3-5 on page 3.3-58 of the DPEIR is hereby revised as follows:

IMPACT 3.3-5 *Discharge of Dredged or Fill Material into Jurisdictional Waters of the United States. The SERP could result in permanent or temporary fill of waters of the United States. However, the SERP Manual includes conservation measures ~~that would be implemented~~ to avoid and/or minimize such discharges and the resulting disturbance of special-status habitats. In addition, DWR is requesting a regional general permit from USACE for activities under the SERP, and the conservation measures include measures typically required as special conditions of such a permit. By implementing the conservation measures in the SERP Manual and obtaining a regional general permit, this impact would be* ***less than significant****.*

Erosion repair activities may involve grading and recontouring within the ordinary high-water mark of waters of the United States. As a result, fill materials would be discharged into waters of the United States and/or waters of the state. In addition to direct fill, indirect impacts on water quality could result from the transport of pollutants and sediment in runoff from SERP construction sites. The SERP Manual contains mandatory conservation measures CM-1 through CM-3 to be applied to all SERP projects to minimize and avoid impacts on waters of the United States and waters of the state. These measures include timing restrictions for work within and adjacent to active stream channels, and measures that specifically direct equipment staging, material stockpiling, and erosion control to maximize protection of water quality. ~~Other m~~Mandatory conservation measures CM-15 through CM-27, which include prohibiting placement of materials that would impair flow of surface water into or out of any wetland area; prohibiting placement of fill material other than silt-free gravel or riprap into live streams; treating water through filtration or retention pond settling before release into live streams; and removing materials, trash, and debris from the construction site immediately upon completing work, would also be implemented. Disturbance areas would be limited to the minimum necessary to accomplish the necessary repair. When repair work is completed at a given site, waterway contours and flows would be returned

as close as possible to pre-erosion, preconstruction conditions (see Section I, "Conservation Measures," of the SERP Manual in Appendix B).

In addition, the SERP would be implemented in coordination with USACE. DWR is seeking to obtain a regional general permit (RGP) from USACE for compliance with section 404 of the CWA. Compliance with section 401 of the CWA would be achieved through development of a ~~programmatic~~ program-level 401 water quality certification from the Central Valley RWQCB.

The text of Impact 3.3-5 on page 3.3-59 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

The text of Impact 3.3-6 on page 3.3-59 of the DPEIR is hereby revised as follows:

IMPACT 3.3-6 *Temporary Loss or Degradation of Riparian Habitat/Forest or Other Sensitive Natural Communities. The SERP could result in removal of surrounding riparian or marsh vegetation. Construction activities could temporarily or permanently degrade riparian or marsh habitat. However, the SERP Manual includes conservation measures ~~that would be implemented~~ to avoid and/or minimize loss or degradation of riparian or marsh vegetation that could otherwise result from construction. In addition, DWR is requesting a streambed alteration agreement ~~memorandum of agreement~~ from CDFW for activities under the SERP, and the conservation measures include mitigation typically required by such a permit. By implementing the conservation measures in the SERP Manual and obtaining a streambed alteration agreement, this impact would be less than significant.*

The text of Impact 3.3-6 on page 3.3-60 of the DPEIR is hereby revised as follows:

The SERP Manual provides mandatory conservation measures CM-5 through CM-8 and WSRH-1 through WSRH-5 to protect sensitive biological resources, including restrictions on vegetation and habitat disturbance (see Section I, "Conservation Measures," of the SERP Manual in Appendix B). Disturbance or removal of vegetation would not exceed the minimum necessary to complete operations. Work would be done in such a manner that, to the extent feasible, native riparian vegetation within the vegetation-clearing zones would be avoided and left undisturbed. When repair work is completed at a given site, waterway contours and flows would be returned as close as possible to pre-erosion, preconstruction conditions. Areas with vegetation that are disturbed by project activities will be replanted as specified in the SERP Manual, Appendix B. Measures to prevent soil or water contamination are also included in the conservation measures.

The text of Impact 3.3-6 on page 3.3-60 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

The text of Impact 3.3-7 on page 3.3-61 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

The text of Impact 3.3-8 on page 3.3-63 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

The text of Impact 3.3-9 on page 3.3-64 of the DPEIR is hereby revised as follows:

No additional mitigation is required.

SECTION 3.4, "CULTURAL RESOURCES"

The text of Section 3.3.3, "Environmental Setting, on page 3.4-6 of the DPEIR is hereby revised as follows:

During development of the PA and/or the standard section 106 compliance process, Native American organizations that attach cultural and religious significance to resources that may occur in the SRFCP would be contacted. If the SERP would result in adverse effects on specific cultural resources during implementation of individual small erosion repairs, USACE and DWR will be required to consult with Native American organizations that are culturally affiliated with such resources.

The text of Section 3.3.3, "Environmental Setting, on page 3.4-7 and 3.4-8 of the DPEIR is hereby clarified as follows:

The potential for impacts on cultural resources is addressed at a program level. Because of the large size of the Phase 1 SERP coverage area, records of identified cultural resources were not retrieved from the California Historical Resources Information System (CHRIS). The Sacramento and San Joaquin Valleys and the Delta are known to be densely populated with prehistoric and historic-era cultural resources; thus, this analysis assumes that resources that are significant under CEQA and section 106 may be present on at least some of the Phase 1 SERP project sites. ~~For purposes of section 106 consultation for the PA, in coordination with USACE,~~ DWR has assumed that the SRFCP levees ~~are historically significant for the purposes of this analysis~~ protect or may protect cultural resources. The levees themselves are not listed in the California Register of Historical Resources, a local register of historical resources, or identified in a historical resources survey. DWR does not regard the levees themselves as historic structures.~~, although it is likely that few, if any of the levees would be found to meet the significance criteria if they were formally evaluated.~~

The text of Impact 3.4-1 on page 3.4-8 of the DPEIR is hereby revised as follows:

> The SERP Manual contains mandatory conservation measures CR-1 and CR-2 to address impacts on cultural resources. These conservation measures include ensuring that SERP activities comply with buffer restrictions in applicable historic properties treatment plans, and providing archaeological monitoring in any areas where there is the potential to impact cultural resources. Detailed descriptions of all mandatory conservation measures are provided in Section I, "Conservation Measures," of the SERP Manual (see Appendix B).
>
> Although the mandatory conservation measures would reduce the potential for impacts to cultural resources, t~~T~~his impact would still be potentially significant.

The text of Mitigation Measure 3.4-1 on page 3.4-9 of the DPEIR is hereby revised as follows:

> Mitigation Measure 3.4-1: Comply with the PA prepared by USACE, SHPO, and DWR and/or otherwise comply with Section 106; Consult with Stakeholders as Required under Section 106 and/or ~~the~~ a PA; Perform Site-specific Technical Studies to Identify and Evaluate Cultural Resources; and Implement Avoidance or Treatment Protocols as Necessary to the Extent Feasible.
>
> Management of cultural resources for the SERP would be performed under a PA prepared by USACE, and/or otherwise in compliance with the standard section 106 process. DWR will perform technical studies and treatment required to identify and manage impacts on cultural resources subject to the input of stakeholders and the approval of USACE and the SHPO. Management of cultural resources required under CEQA would be combined with the management protocols stipulated in the PA and/or otherwise during section 106 consultation. Prior to implementation of individual small erosion repair activities, DWR will perform the following steps:
>
> - conduct an inventory of the individual small erosion repair site and define an APE as required under section 106;
> - evaluate identified resources eligible for listing in the NRHP and CRHR;
> - consult with Senior Staff Counsel at CSLC should any cultural resources on state lands be discovered during construction of any of the SERP projects;
> - determine if the proposed activity would result in significant impacts on resources eligible for the CRHR or adverse effects on historic properties within the meaning of section 106;

- consult with stakeholders and consulting parties in accordance with section 106 requirements ~~under~~and/or the PA, as applicable, such as the SHPO. The inventory, evaluation, and selection of treatment will include a review of relevant local land use policies regarding cultural resources.

DWR will employ methods for inventory efforts and consultation that are appropriate for the sensitivity of the individual small erosion repair site and the probable resources that may occur. Such methods may include geomorphological studies, subsurface testing, and consultation with appropriate Native American organizations and representatives (for example in the identification of TCPs).

Inventory efforts shall include consulting CSLC's shipwreck database to gather information on known and potential vessels located on the State's tide and submerged lands. Abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and is under the jurisdiction of CSLC, although CSLC's jurisdiction does not negate the responsibilities of DWR or USACE for compliance with CEQA and with Section 106, respectively.

As necessary, specific technical studies prepared for individual small erosion repairs will define important historic themes relevant to individual repair sites. Mitigation efforts will include, when feasible, avoidance of the resource rather than data recovery excavations or other work that would require disturbance of the deposit. These measures represent the feasible methods for identifying significant cultural resources and reducing potential impacts. Implementation of these measures and compliance with the PA and/or section 106, as applicable, would ensure that adverse effects on cultural resources that may be identified are resolved. Therefore, after the implementation of mitigation, potential impacts to prehistoric or historic resources would be less than significant.

The text of Impact 3.4-2 on page 3.4-10 of the DPEIR is hereby clarified as follows:

IMPACT 3.4-2. **Potential Impacts on ~~Assumed Historically Significant~~ Levees**. DWR assumes that the SRFCP levees protect or may protect cultural resources, but the levees themselves are not historically significant and the project will not adversely affect the levees. ~~The Phase 1 SERP coverage area encompasses aspects of reclamation and flood risk reduction that are assumed to be historically significant for the purposes of this analysis. Therefore, repair of small erosion sites could affect significant historic resources but would not materially impair the historical significance of the levees. This impact would be less than significant.~~

~~Although it is likely that few if any of the~~ The SERP levees are not listed in the California Register of Historical Resources, a local register of historical resources, or identified in a historical resources survey, and DWR does not regard the levees themselves as historic structures. ~~would be found to meet significance criteria, for purposes of section 106~~

~~consultation and this analysis DWR in coordination with USACE has assumed that the SRFCP levees are historically significant.~~ SERP does not propose the removal of any levee, the construction of any new levee, the alteration of any levee such that land use patterns would change, nor any changes to any land uses in the vicinity of the program. ~~The waterside small erosion repair sites would not adversely affect these levees, and the historically significant characteristics of the levees would be preserved by implementation of SERP; that is, there would be no change to the characteristics of levees that make them historically significant.~~ Minor alterations to SRFCP levees from small erosion repair projects implemented under SERP would not materially alter the underlying levees. As a result, even if such levees were deemed to be historically significant, the impact of the project ~~the historical significance of the levees; therefore, impacts on assumed historically significant levees~~ would be less than significant.

No mitigation is required.

The text of Mitigation Measure 3.4-3 on page 3.4-11 of the DPEIR is hereby revised as follows:

DWR will implement the following measures to minimize potential impacts on previously undiscovered cultural resources:

- Every 2 years or before construction begins, construction crews will be given a presentation and training session incorporated into the environmental awareness training before performing work in areas sensitive for previously unidentified resources so that they can assist with identifying undiscovered cultural resource materials and avoid them where possible.

- A DWR archaeologist, where appropriate, will monitor all ground-disturbing construction activities at locations determined to be sensitive for unidentified cultural resources. If a previously unidentified archaeological resource is uncovered during construction, construction activities will be halted within 100 feet of the find and USACE, and other appropriate parties, will be notified regarding the discovery.

- Consult with Senior Staff Counsel at CSLC should any cultural resources on state lands be discovered during construction of any of the SERP projects.

- DWR will then consult with USACE and the SHPO to determine the eligibility of the resource for listing in the NRHP or qualification as a unique archaeological resource. If DWR and USACE, in consultation with the SHPO, concur that the resource is eligible for listing and the project may result in adverse effects or significant impacts on the resource, DWR either will implement one of the treatment protocols developed under the PA for the resource or will prepare a resource-specific treatment plan.

- Work may only resume when either all necessary treatment has been performed under the treatment method selected, or approved by the appropriate entity, or construction in the vicinity of the resource will not result in adverse effects or encroach within an appropriate distance from the known boundaries of the resource or the boundaries of the resource.

Implementation of this mitigation measure, in concert with implementation of Mitigation Measure 3.4-1 and compliance with the PA and/or Section 106, as applicable, reduces this impact to less than significant because erosion repair will be allowed to proceed only after the treatment method has been fully implemented.

The text of Section 3.4.5, "Residual Impacts," on page 3.4-13 of the DPEIR is hereby revised as follows:

The implementation of the SERP would result in potentially significant impacts to previously identified cultural resources and resources that may be discovered during inventory efforts performed for the SERP (Impacts 3.4-1, 3.4-3, and 3.4-4). The available mitigation consists of cultural resource inventories, implementation of treatment measures, and inadvertent discovery protocols. Management of cultural resources for the SERP would be performed under a PA prepared by USACE and/or otherwise in compliance with the standard section 106 process. Therefore, Impacts 3.4-1, 3.4-3, and 3.4-4 would be **less-than-significant** with implementation of Mitigation Measures 3.4-1, 3.4-3, and 3.4-4, respectively. No significant and unavoidable impacts would occur.

SECTION 3.6, "HYDROLOGY AND WATER QUALITY"

The text of Section 3.6.2, "Regulatory Setting," State Plans, Policies, Regulations, and Laws, Section 401 Water Quality Certification, on page 3.6-1 of the DPEIR is hereby revised as follows:

Compliance with CWA section 401 for the SERP would be achieved through development of a ~~programmatic~~ program-level 401 water quality certification from the Central Valley RWQCB. Issuance of a 401 water quality certification or waiver from the Central Valley RWQCB is a requirement for issuance of the SERP Regional General Permit (RGP) from USACE.

The text of Section 3.6.2, "Regulatory Setting," State Plans, Policies, Regulations, and Laws, SWRCB Resolution No. 68-16, on page 3.6-8 of the DPEIR is hereby revised as follows:

Compliance with SWRCB Resolution No. 68-16 would be achieved through a ~~programmatic~~ program-level water quality certification from the Central Valley RWQCB and a section 404 RGP from USACE.

The text of Section 3.6.2, “Regulatory Setting,” State Plans, Policies, Regulations, and Laws, SWRCB Resolution No. 68-16, on page 3.6-8 of the DPEIR is hereby revised as follows:

Title 23

CCR Title 23 contains regulations and guidelines to regulate the modification and construction of levees and floodways to ensure public safety. The regulations state that review and an encroachment permit from the Central Valley Flood Protection Board (CVFPB) are required for any project or plan of work that is within federal flood control project levees and within a ~~Board~~ CVFPB easement, may have an effect on the flood control functions of project levees, is within a ~~Board~~ CVFPB designated floodway, or is within regulated Central Valley streams listed in Table 8.1 in Title 23 of the CCR.

The text of Section 3.6.2, “Regulatory Setting,” State Plans, Policies, Regulations, and Laws, on pages 3.6-9 of the DPEIR is hereby revised as follows:

… The Resolution also directed CVFPB staff to assist DWR as necessary to finalize the SERP Manual, including geotechnical and hydraulic analysis review procedures, long-term vegetation maintenance procedures, and SERP member agency and public notification procedures; to review annual SERP repair proposals for conformance with the SERP Manual; and to provide an annual report on the SERP to the CVFPB including a detailed listing of annually authorized SERP sites.

Central Valley Flood Protection Board

The CVFPB has given assurances to USACE that the state will maintain and operate federal flood control works in accordance with federal law pursuant to CWA section 8708. Although the operation and maintenance activities proposed to repair individual SERP sites are generally not the subject of CVFPB review and approval, CVFPB staff does provide oversight for and authorization of maintenance activities from time to time. Because of the unique nature of the SERP, and to provide an appropriate level of CVFPB oversight, CVFPB Resolution 2012-20 was approved on April 27, 2012, that provides direction to CVFPB staff and informs DWR as to the CVFPB’s intent to participate in the SERP as a state partner. The CVFPB resolved the following:

1. Deems all SERP program activities to be operations and maintenance activities not requiring CVFPB encroachment permits;

2. Directs CVFPB staff to assist DWR as necessary to finalize the SERP Manual, including geotechnical and hydraulic analysis review procedures, long-term vegetation maintenance procedures, and SERP member agency and public notification procedures;

3. Directs CVFPB staff to prepare Responsible Agency comments pursuant to CEQA when DWR’s DEIR is circulated;

4. Directs CVFPB staff to prepare appropriate Responsible Agency findings pursuant to CEQA for CVFPB approval when DWR's FEIR is circulated;

5. Directs CVFPB staff to review annual SERP repair proposals, and to determine: (A) whether or not each SERP site has been designed according to the SERP Manual, (B) that geotechnical design issues have been considered, (C) that there are no adverse hydraulic impacts, (D) that long-term vegetation management actions have been addressed, and (E) that annual noticing of SERP member agencies and the public is carried out, all in conformance with the SERP Manual;

6. Delegates to the Chief Engineer the authority to execute documents necessary to authorize or reject proposed sites for SERP pilot program repairs consistent with this resolution;

7. Directs CVFPB staff to submit an annual report to the CVFPB on the SERP pilot program including a detailed listing of annually proposed and authorized (or denied) SERP sites at a regular monthly CVFPB meeting as soon as practical after the Chief Engineer's annual determination has been provided to DWR.

The text of Section 3.6.4, "Environmental Impacts and Mitigation Measures," on page 3.6-17 of the DPEIR is hereby revised as follows:

IMPACT 3.6-1 *Temporary Water Quality Effects from Stormwater Runoff, Erosion, and Spills Associated with Construction. The ~~programmatic~~ program-level approval of erosion repairs under the SERP would enable DWR to implement repair activities within the same year that the damage is identified, reducing the amount of levee-side erosion and sedimentation that take place between identification of the damage and completion of the repair. Ground-disturbing activities associated with project construction could cause soil erosion and sedimentation of local drainages and waterways. Construction activities could also discharge waste petroleum products or other construction-related substances that could enter these waterways in runoff. These discharges could adversely affect river water quality. Because mandatory conservation measures to prevent release of soil or other materials into these waters are incorporated into Section I of the SERP Manual and would be applied to all SERP projects, this impact would be* ***less than significant.***

The Phase 1 SERP is proposed by DWR as a means to accomplish small (0.1- to 0.5-acre) erosion repairs along levees maintained by DWR within the SRFCP area. The ~~programmatic~~ program-level approval of erosion repairs under the SERP would enable DWR to implement repair activities within the same year that the damage is identified, reducing the amount of levee-side erosion and sedimentation that take place between identification of the damage and completion of the repair. A benefit of the SERP is that it reduces the hydrology and water quality effects of ongoing erosion damage on levees within the Phase 1 SERP coverage area.

CHAPTER 4, "ALTERNATIVES"

The text of Section 4.2, "Alternatives Considered and Rejected from Further Consideration," on pages 4-1 and 4-2 of the DPEIR is hereby revised as follows:

> Under CEQA, feasible alternatives should be considered that would avoid or substantially reduce any of the significant effects of the proposed project and attain most of the ~~project~~ program objectives. Furthermore, CEQA requires that an EIR should briefly describe the rationale for selecting the alternatives to be discussed and briefly explain the reasons underlying the lead agency's determination for rejecting alternatives including: failure to meet most of the basic ~~project~~ program objectives, infeasibility, or inability to avoid significant environmental impacts (CEQA Guidelines section 15126.6[c]).

The text of Table 4-1, "Summary of Impact Levels Before and After Mitigation," on page 4-2 of the DPEIR is hereby revised as follows:

Table 4-1
Summary of the SERP Impact Levels Before and After Mitigation

Environmental Resource	Before Mitigation	After Mitigation
Air Quality and Climate Change	Significant	Less than significant
Cultural Resources	Potentially significant	Less than significant
Biological Resources	Less than significant	Less than significant (no mitigation required)
Geology, Soils, and Paleontological Resources	Less than significant	Less than significant (no mitigation required)
Hydrology and Water Quality	Less than significant	Less than significant (no mitigation required)
Noise	Potentially significant	Less than significant

Source: Compiled by AECOM in 2011

The text of Section 4.3.2, "Analysis of Alternatives Evaluated," No-Project Alternative, Biological Resources, on page 4-6 of the DPEIR is hereby revised as follows:

> Implementation of the No-Project Alternative would maintain the status quo. Minor erosion repair projects that would not result in impacts would be implemented by maintenance yards through categorical exemptions under CEQA and would not require resource agency authorizations; although larger erosion repair projects would be

required to obtain resource agency authorizations before repairs could be performed because of their potential impact on the environment.

CHAPTER 5, "OTHER CEQA-REQUIRED SECTIONS"

The text of Section 5.1.3, "Geographic Scope," on pages 5-5 and 5-6 of the DPEIR is hereby revised as follows:

> The combined total area, if all projects under the SERP were Tier 2 (0.5 acre), would be 37.5 acres (or 75,000 linear feet) spread throughout the 300 miles of levees in the SRFCP.

The text of Section 5.1.4, "List of Related Projects in the Phase 1 SERP Coverage Area," on page 5-8 of the DPEIR is hereby revised as follows:

- Shasta Lake Water Resources Investigation;
- Sacramento River Bank Protection Project;
- North Bay Aqueduct Alternative Intake Project; and
- Bay Delta Conservation Plan/Delta Habitat Conservation and Conveyance Plan/Delta Plan.

The text of Section 5.1.5, "Analysis of Cumulative Impacts," Air Quality on pages 5-10 and 5-11 of the DPEIR is hereby revised as follows:

Temporary Construction Impacts

As discussed in Section 3.2, "Air Quality and ~~Climate Change~~Greenhouse Gas Emissions," emissions of pollutants generated during construction are temporary, but can contribute to exceedance of local thresholds. Emissions from site preparation (e.g., clearing and grading), material transport, bank stabilization, erosion control feature installation, vegetation planting, and other miscellaneous activities associated with repair of small erosion sites and similar projects would result in the temporary generation of reactive organic gases (ROG), oxides of nitrogen (NO_X), PM_{10}, and fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$). Several air districts in the Phase 1 SERP coverage area have not adopted mass emission thresholds for construction-generated criteria air pollutants and precursors. Instead, some of these air districts require that standard equipment exhaust (i.e., ROG and NO_X) and fugitive dust control measures (i.e., PM_{10} and $PM_{2.5}$) be incorporated into project design and implemented during project construction. However, other air districts have established quantitative thresholds of significance that SERP-generated daily

construction emissions were evaluated against. As shown in Table 3.2-6 and 3.2-7 of Section 3.2 "Air Quality and ~~Climate Change~~Greenhouse Gas Emissions," daily construction NO_X emissions associated with SERP's construction activities would exceed the Butte County AQMD,~~and~~ Feather River AQMD, and Sacramento Metropolitan AQMD thresholds of significance. Thus, SERP-generated, construction-related emissions of criteria air pollutants and precursors, especially if overlapping with other construction activities of similar projects or other construction projects, would exceed local thresholds of significance. Implementation of the mitigation in Section 3.2, "Air Quality and ~~Climate Change~~Greenhouse Gas Emissions," would reduce significant impacts in all jurisdictions to a less-than-significant level by requiring compliance with local air district recommendations for decreasing emissions of criteria air pollutants and precursors or payment of off-site mitigation fees.

Assuming that similar flood risk reduction projects or other similar construction projects would also implement all feasible construction emission control measures consistent with respective air district guidelines, construction emissions on some of the related projects may be less than significant, although it is likely that larger projects would result in significant and unavoidable air quality impacts on their own. This impact cannot be more precisely determined or quantified because the construction schedules for related projects are not known, and it is also unknown at what sites small erosion repair projects would occur under the SERP each year. However, taken in total and combined with the nonattainment status of the SVAB for ozone and PM_{10}, and other development that would occur in the SVAB, these reasonably foreseeable projects would result in a significant cumulative impact on air quality.

~~However, as shown in Table 3.2-5 in Section 3.2,~~Given the total emissions profile of the SVAB, the Phase 1 SERP would contribute only nominally to the existing and expected future nonattainment status of the SVAB. Construction at each repair site would require no more than 1–4 weeks of active construction and the maximum acreage disturbed per site would be 0.5 acre or 1,000 linear feet. ~~In addition, the SERP would use barges to transport material to the individual erosion sites whenever feasible. Using barges would further reduce construction-related emissions because it would reduce the amount of individual truck trips required to each site.~~ Therefore, the SERP would not result in a cumulatively considerable incremental contribution to the significant cumulative impact on air quality from emissions of criteria air pollutants and precursors.

The text of Section 5.1.5, "Analysis of Cumulative Impacts," Air Quality, Climate Change and Greenhouse Gas Emissions, Construction-Generated Greenhouse Gas Emissions on page 5-13 to 5-19 of the DPEIR is hereby revised as follows:

~~Climate Change and~~ Greenhouse Gas Emissions

As stated in Section 3.2, "Air Quality and ~~Climate Change~~Greenhouse Gas Emissions," the SERP would be determined to have a less-than-significant impact with respect to GHGs if it is found to be consistent with DWR's Climate Action Plan Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP), which shows how DWR's activities in aggregate would not result in either: ~~the California Office of Planning and Research proposed amendments to the CEQA Guidelines, including Appendix G, to address the impacts of greenhouse gas (GHG) emissions, as directed by Senate Bill 97 (2007). CNRA adopted those guidelines on December 30, 2009, and the guidelines became effective March 18, 2010 (CNRA 2010). The amendments include the following additions to Appendix G. An impact related to global climate change is considered significant if the proposed program would:~~

- ~~generate~~ generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

~~Assembly Bill (AB) 32 demonstrates California's commitment to reducing its rate of GHG emissions and associated contribution to climate change without limiting population or economic growth within the state. To meet the GHG emissions targets mandated by AB 32, California would need to generate a lower level of GHG emissions in the future than at the present time. For most projects, however, no simple metric is available to determine whether a single project would substantially increase or decrease overall GHG emissions levels or conflict with the goals of AB 32. None of the applicable air districts has adopted or proposed GHG thresholds.~~DWR's DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP) details DWR's efforts to reduce its GHG emissions consistent with Executive Order S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32). DWR also adopted an Initial Study/Negative Declaration prepared for the GGERP in accordance with the CEQA Guidelines review and public process (DWR 2012b). Both the GGERP and Initial Study/Negative Declaration are incorporated herein by reference and are available at: http://www.water.ca.gov/climatechange/CAP.cfm. The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g. building-related energy use). The GGERP specifies aggressive 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures to achieve these goals.

DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of CEQA Guidelines section 15183.5. That section provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its

very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG Reduction Plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See CEQA Guidelines, § 15064, subd. (h)(3).)

More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project." (CEQA Guidelines § 15183.5, subd. (b)(2).)

Section 12 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. These steps include: 1) analysis of GHG emissions from construction of the proposed project , 2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, 3) incorporation into the design of the project DWR's project-level GHG emissions reduction strategies, 4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions reduction measures identified in the GGERP, and 5) determination that the project would not add electricity demands to the State Water Project system that could alter DWR's emissions reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

As required under step 1, emissions from the proposed program have been quantified and alternatives assessed. Construction emissions would be well below the Extraordinary Construction Project threshold (step 2). All project-level emissions reduction measures from the Greenhouse Gas Emissions Reduction Plan have been incorporated (step 3). The proposed program would not conflict with DWR's ability to implement any of the reduction measures (step 4). The Phase 1 SERP would not result in additional energy demands exceeding the threshold included in step #5. Consistent with these requirements, a GGERP Consistency Determination Checklist documenting that the project has met each of the required elements is included as Appendix H.

GHG Emissions Calculations

GHG emissions generated by the project would predominantly be in the form of carbon dioxide (CO_2). While emissions of other GHGs such as methane (CH_4) and nitrogen dioxide (NO_2) are important with respect to global climate change, the emission levels of these GHGs for the sources associated with construction activities are relatively small compared with CO_2 emissions, even considering their higher global warming potential

(GWP). Therefore, all GHG emissions for construction and operation are reported as CO_2.

Emissions calculations do not include the full life cycle GHG emissions that would occur over the production, transportation, use, and disposal of materials used during construction of the SERP or solid waste that occurs over the life of the SERP. Estimation of the GHG emissions associated with these processes would require analysis beyond the current state of the art in impact assessment, and may lead to a false or misleading level of precision in reporting of project-related GHG emissions. See Appendix C, "Air Quality Modeling Results," for detailed model input and assumptions.

~~Construction-related GHG emissions associated with activities related to restoration and bank stabilization were calculated using URBEMIS 2007 version 9.2.4.~~ Operational emissions, including direct (e.g., landscaping and maintenance) and indirect (e.g., vehicle trips) emissions were also calculated using URBEMIS 2007 (Rimpo and Associates 2008).

Construction-Generated Greenhouse Gas Emissions

Construction-related GHG emissions associated with activities related to restoration and bank stabilization were calculated using URBEMIS 2007 version 9.2.4. Construction activities associated with individual erosion repairs would occur in several locations with a maximum daily area disturbed of 0.5 acre or 1,000 linear feet per site. During this time, construction-related GHG emissions would be associated with engine exhaust from heavy-duty construction equipment, material transport trucks, and worker commute trips.

The modeled worst-case construction-generated emissions of GHGs would be ~~132.3~~498.27 metric tons of CO_2 equivalent (MT CO_2e/yr)~~total mass CO_2 emissions (in~~ landside option and 973.01 MT CO_2e/yr for the waterside option ~~metric tons)~~for the (Rimpo and Associates 2008). This number represents the construction emissions modeled for ~~2011~~ a single year.~~and does not include the full life cycle of GHG emissions that would occur over the production/transport of materials used during construction of the SERP, solid waste that occurs over the life of the SERP, and the end of life of the materials and processes that indirectly result from the SERP. Estimation of the GHG emissions associated with these processes would be speculative, would require analysis beyond the current state of the art in impact assessment, and may lead to a false or misleading level of precision in reporting of project-related GHG emissions. In addition, the URBEMIS 2007 computer model does not account for CO_2 emissions associated with the production of concrete or other materials used in project construction. URBEMIS also does not estimate GHG emissions other than CO_2, such as CH_4 and nitrous oxide, because these levels are expected to be nominal in~~

~~comparison to the estimated CO_2 levels despite their higher GWP. See Appendix C, "Air Quality Modeling Results," for detailed model input, assumptions, and threshold calculations.~~

~~While any increase in GHG emissions would add to the quantity of emissions that contribute to global climate change, emissions associated with construction of the SERP would occur over a limited period, and emissions would be reduced to the extent feasible by implementation of mitigation in Section 3.2, "Air Quality and Climate Change."~~

~~In May 2012, DWR adopted a Greenhouse Gas Emissions Reduction Plan in an effort to reduce its impact on the environment (DWR 2012). The plan will guide project development and decision making with respect to energy use and GHG emissions. This plan shows how DWR will make substantial reductions in its GHG emissions in the near-term (present to 2020) and how it will continue to reduce emissions beyond 2020 to achieve long-term (2050) emissions reduction goals. The near-term goal is to reduce emissions by 50 percent below 1990 levels by 2020. The long-term goal is to reduce emissions by 80 percent below 1990 levels by 2050. DWR identified 11 GHG emissions reduction measures to achieve these goals.~~

~~DWR would use this plan to streamline the CEQA cumulative impacts to GHG emissions, consistent with CEQA Guidelines section 15183.5. To streamline these impacts, the SERP projects would incorporate relevant reduction measures as identified in the Greenhouse Gas Emissions Reduction Plan. The reduction measures identify replacement of a power station with sources of electricity that involve lower rates of GHG emissions, increasing energy efficiency of equipment, and other measures that would not apply to the proposed program.~~

~~However, could apply to the proposed program. CO-1 Construction Best Management Practices (BMPs), would involve implementing practices aimed at minimizing fuel consumption by construction equipment and transportation of materials, among other actions. Appendix D of DWR's Greenhouse Gas Emissions Reduction Plan identifies the construction BMPs, which have some overlap with the requirements of Mitigation Measure 3.2-1 in this EIR. Those that are not already included as a part of Mitigation Measure 3.2-1 are included below as Mitigation 5-1.~~

~~CO-2 Improved Statewide Equipment and Fuel Regulations, involves reductions achieved by compliance with current and anticipated air quality regulations. This measure would not be directly imposed by DWR, but would be required as a result of the current regulatory environment as it applies at the time of a project execution~~Following completion of individual erosion repairs, all construction emissions would cease. Additionally, the effort to repair small erosion sites before they become

larger erosion sites has the benefit of reducing emissions that would result when repairing the larger sites.

Operation-Related Greenhouse Gas Emissions

Operational GHG emissions would be generated by area and mobile sources after completion of erosion repair construction activities and would be related to ongoing maintenance and upkeep of the sites. Area-source GHG emissions would be associated with landscaping and maintenance largely related to vegetation establishment, employee commute trips, and other miscellaneous activities. No increase in GHG emissions would be associated with off-site electricity generation or water use. Mobile-source GHG emissions would be generated by the slight increase in vehicle trips associated with maintenance activities. Operational emissions, including direct (e.g., landscaping and maintenance) and indirect (e.g., vehicle trips) emissions, were calculated using URBEMIS 2007 and are summarized in Table 5-3.

Table 5-3
Summary of Modeled Operational Emissions of Greenhouse Gases[1]

Source	Annual Mass CO_2 Emissions (metric tons/year)
Operational Emissions of the SERP (Year 2013)	
Area Sources[1]	3.4
Mobile Sources[1]	73.9
Electricity Consumption[2,3]	0.0
Municipal Water Use[2,3]	0.0
Total Operational Emissions[4]	77.3

Notes:

[1] Direct operational emissions (i.e., area and mobile sources) were modeled using the URBEMIS 2007 computer model, based on the same assumptions and input parameters used to estimate emissions of criteria air pollutant. URBEMIS also does not estimate GHG emissions other than carbon dioxide (CO_2), such as methane and nitrous oxide because the emission levels of these pollutants are expected to be nominal in comparison to the estimated CO_2 levels despite their higher global warming potential.

[2] No additional substantial electricity consumption is expected.

[3] No additional substantial water consumption is expected.

[4] Assumes maintenance of up to 15 erosion sites per year.

See Appendix C, "Air Quality Modeling Results," for detailed model input, assumptions, and threshold calculations.

Source: Modeling conducted by AECOM in 2009

An increase in carbon sequestration by riparian vegetation at the project sites is anticipated. Because riparian forest sequesters an estimated 53.7 metric tons per acre

within 10 years (COLE Development Group 2011), riparian restoration could reduce emissions in the study area during the first decade following completion of construction activities. The amount of carbon sequestered would be dependent on the number of acres allowed to regrow vegetation and the types of vegetation that repopulated the area. Therefore, because the precise restored acreage is unknown, no quantity of sequestered carbon is presented here, but it would take approximately 15 acres of restored vegetation per year to offset the maintenance emissions presented in Table 5-3.

The incremental contribution to climate change by the SERP's construction emissions (132 metric tons) and operational activities (77 metric tons/year) would be minimal and mitigation measures would be implemented to reduce emissions to the extent possible.

Determination

Because the specific number and exact characteristics of future projects completed under the SERP cannot be known at this time, a detailed GHG inventory and accounting of GHG emissions from the projects cannot be completed. However, the project criteria established for the program provide an upper bound for the scale and scope of erosion repair projects that could qualify under the program. Therefore, an analysis of the potential worst-case emissions from projects under the SERP has been performed.

The modeled[1] worst-case construction-generated emissions of carbon dioxide would be 132.3 metric tons per year. This worst-case scenario evaluates potential emissions from the maximum number of sites (15) at the maximum size and intensity allowed under the program.

The GGERP framework allows for projects that emit less than 12,500 $mtCO_2e$ per year to be considered part of DWR's regular on-going construction and maintenance activities, which have been analyzed and accounted for in DWR's long-term GHG emissions trajectory. The SERP projects individually and in aggregate would necessarily fall under this classification.

The GGERP has already provided programmatic GHG emissions reduction measures for activities that fall into the "regular on-going construction and maintenance activities" category. Those measures are therefore incorporated as Mitigation Measure 5-1.

In order to track actual emissions levels from future SERP projects and ensure that emissions from the projects are accurately accounted for in DWR's Department-wide annual GHG reporting required under the GGERP, the SERP will provide an annual

[1] URBEMIS 2007 version 9.2.4. (Rimpo and Associates 2008).

report to the DWR CEQA Climate Change Committee which contains the following information:

- Total number of projects undertaken
- Number of projects undertaken using only DWR Labor and Equipment
- Number of projects undertaken using Outside Contract Labor and Equipment
- For each project undertaken using outside contract labor and equipment, an inventory and calculation of GHG emissions from the project

Because DWR has prepared a Greenhouse Gas Emissions Reduction Plan that quantifies existing and future emissions, has established an emissions reduction target below which the contribution to GHG emissions impacts would be less than cumulatively considerable, and has identified measures that would collectively achieve the emissions reduction targets, and because the project complies with relevant GHG reduction measures, including those measures identified in Mitigation Measure 5.1, DWR as the lead agency has determined that the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable and, therefore, less than significant. In addition, the summary of projections in the CVFPP PEIR concluded that the net climate change effects of flood protection activities would be beneficial because the GHG emissions from those activities would be more than compensated, most likely by orders of magnitude, by the avoided emissions that would occur from repair of larger erosion sites or reconstruction following a flood.

Mitigation Measure 5-1: Implement Pre-Construction, Final Design, and Construction BMPs.

Pre-construction and Final Design BMPs are designed to ensure that individual projects are evaluated and their unique characteristics are taken into consideration when determining whether specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from a project. In addition to mitigation measures defined in the various sections of this DEIR, the following BMPs will be applied ~~as applicable and appropriate~~:

- **BMP 1**. Evaluate project characteristics, including location, project work flow, site locations, and equipment performance requirements, to determine whether specifications for the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.
- **BMP 2**. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.

- **BMP 3**. Coordinate opportunities to carpool to the construction site.
- **BMP 4**. Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.
- **BMP 5**. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible.
- **BMP 6**. Recycle construction debris to reduce construction waste.
- **BMP 7.** Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.
- **BMP 8.** Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.

Construction BMPs would apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All the SERP projects are expected to implement all construction BMPs.

~~Following completion of individual erosion repairs, all construction emissions would cease. Additionally, the effort to repair small erosion sites before they become larger erosion sites has the benefit of reducing emissions that would result when repairing the larger sites.~~

~~In addition, DWR has specified a series of steps to demonstrate consistency with the Greenhouse Gas Emissions Reduction Plan:~~

~~1. Identify, quantify, and analyze the GHG emissions from the proposed program and alternatives using a method consistent with that described in DWR internal guidance, "Guidance for Quantifying Greenhouse Gas Emissions and Determining~~

the Significance of their Contribution to Global Climate Change for CEQA Purposes," as such guidance document may be revised.

2. Determine that construction emissions levels would not exceed the Extraordinary Construction Project threshold of 25,000 metric tons of CO2e for the entire construction phase of the SERP, nor would they exceed 12,500 metric tons of CO2e in any single year of construction.

3. Incorporate into the design or implementation plan for the SERP all project-level GHG emissions reduction measures listed in Section VII or explain why measures that were not incorporated did not apply.

4. Determine that the proposed program does not conflict with DWR's ability to implement any of the specific project GHG Emissions reduction measures listed in Section VII.

5. If implementation of the proposed program would result in additional energy demands on the SWP system of 15 gigawatt hours per year (GWh/yr) or greater, the SERP would get written confirmation from the DWR SWP Power and Risk Office stating that the Renewable Power Procurement Plan would be updated to accommodate the additional load resulting from the proposed program at such time as it ultimately was implemented.

As required under #1, emissions from the proposed program have been quantified and alternatives assessed. Construction emissions would be well below the Extraordinary Construction Project threshold (#2). Applicable reduction measures from the Greenhouse Gas Emissions Reduction Plan have been incorporated (#3). The proposed program would not conflict with DWR's ability to implement any of the reduction measures (#4). The Phase 1 SERP would not result in additional energy demands approaching the threshold included in #5.

Because DWR has prepared a Greenhouse Gas Emissions Reduction Plan that quantifies existing and future emissions, has established an emissions reduction target below which the contribution to GHG emissions impacts would be less than cumulatively considerable, and has identified measures that would collectively achieve the emissions reduction targets, and because the project complies with relevant GHG reduction measures, project-related GHG emissions would not result in a cumulatively considerable incremental contribution to a significant cumulative impact related to global climate change. In addition, the summary of projections in the CVFPP PEIR concluded that the net climate change effects of flood protection activities would be beneficial because the GHG emissions from those activities would be more than compensated,

most likely by orders of magnitude, by the avoided emissions that would occur from repair of larger erosion sites or reconstruction following a flood.

Operation-Related Greenhouse Gas Emissions

Operational GHG emissions would be generated by area and mobile sources during the life of the SERP. Area-source GHG emissions would be associated with landscaping and maintenance largely related to vegetation establishment, employee commute trips, and other miscellaneous activities. No increase in GHG emissions would be associated with off-site electricity generation or water use. Mobile-source GHG emissions would be generated by the slight increase in vehicle trips associated with maintenance activities. Operational emissions, including direct (e.g., landscaping and maintenance) and indirect (e.g., vehicle trips) emissions were calculated using URBEMIS 2007 and are summarized in Table 5-3.

Table 5-3
Summary of Modeled Operational Emissions of Greenhouse Gases[1]

Source	Annual Mass CO_2 Emissions (metric tons/year)
Operational Emissions of the SERP (Year 2013)	
Area Sources[1]	3.4
Mobile Sources[1]	73.9
Electricity Consumption[2,3]	0.0
Municipal Water Use[2,3]	0.0
Total Operational Emissions[4]	77.3

Notes:

[1] Direct operational emissions (i.e., area and mobile sources) were modeled using the URBEMIS 2007 computer model, based on the same assumptions and input parameters used to estimate emissions of criteria air pollutant. URBEMIS also does not estimate GHG emissions other than carbon dioxide (CO_2), such as methane and nitrous oxide because the emission levels of these pollutants are expected to be nominal in comparison to the estimated CO_2 levels despite their higher global warming potential.

[2] No additional substantial electricity consumption is expected.

[3] No additional substantial water consumption is expected.

[4] Assumes maintenance of up to 15 erosion sites per year.

See Appendix C, "Air Quality Modeling Results," for detailed model input, assumptions, and threshold calculations.

Source: Modeling conducted by AECOM in 2009

An increase in carbon sequestration by riparian vegetation at the project sites is anticipated. Because riparian forest sequesters an estimated 53.7 metric tons per acre within 10 years (COLE Development Group 2011), riparian restoration could reduce emissions in the study area during the first decade following completion of construction activities. The amount of carbon sequestered would be dependent on the number of

~~acres allowed to regrow vegetation and the types of vegetation that repopulated the area. Therefore, because the precise restored acreage is unknown, no quantity of sequestered carbon is presented here, but it would take approximately 15 acres of restored vegetation per year to offset the maintenance emissions presented in Table 5-3 below.~~

~~The incremental contribution to climate change by the SERP's construction emissions (132 metric tons) and operational activities (77 metric tons/year) would be minimal and mitigation measures would be implemented to reduce emissions to the extent possible.~~

~~The SERP would not conflict with the implementation of AB 32 or the DWR Climate Action Plan, Phase 1: Greenhouse Gas Emissions Reduction Plan. Implementation of the SERP would not result in the generation of substantial temporary construction or long-term operational emissions of GHGs. The SERP would comply with relevant GHG reduction measures, and project-related GHG emissions would not result in a cumulatively considerable incremental contribution to the significant cumulative impact of global climate change.~~

The text of Section 5.1.5, "Analysis of Cumulative Impacts," Biological Resources on page 5-19 of the DPEIR is hereby revised as follows:

Primary open-water habitats within the Phase 1 SERP coverage area include the active channels of the Sacramento River, Feather River, Cache Creek, ~~Deer Creek~~, and Sutter Bypass.

The text of Section 5.1.5, "Analysis of Cumulative Impacts," Cultural Resources on page 5-21 is hereby clarified as follows:

~~Although it is likely that few if any of the~~ The SERP levees <u>are not listed in the California Register of Historical Resources, a local register of historical resources, or identified in a historical resources survey, and DWR does not regard the levees themselves as historic structures.</u> ~~would be found to meet significance criteria, for purposes of section 106 consultation and this analysis, DWR in coordination with USACE has assumed that the SRFCP levees are historically significant.~~ SERP does not propose the removal of any levee, the construction of any new levee, the alteration of any levee such that land use patterns would change, nor any changes to any land uses in the vicinity of the program. ~~The waterside small erosion repair sites would not adversely affect these levees, and the historically significant characteristics of the levees would be preserved by implementation of SERP; that is, there would be no change to the characteristics of levees that make them historically significant.~~ Minor alterations to SRFCP levees from small erosion repair projects implemented under SERP would not materially ~~impair~~ <u>alter the underlying levees. As a result, even if such levees were deemed to be historically significant, the impact of the project</u> ~~therefore, the SERP~~ would not make a cumulatively considerable incremental contribution to a significant cumulative impact on historic levees.

The text of Section 5.1.5, “Analysis of Cumulative Impacts,” Cultural Resources on page 5-21 is hereby revised as follows:

> As described in Section 3.4, “Cultural Resources,” the Phase 1 SERP coverage area encompasses lands that were inhabited for at least the past 10,000 years by prehistoric Native American populations, and the themes of reclamation and flood risk reduction are significant historical themes. Implementation of the SERP would require native soil disturbance at individual repair sites that could result in alteration or destruction of significant prehistoric or historic resources. Mitigation outlined in Section 3.4 requires complying with the programmatic agreement (PA) developed by USACE and the State Historic Preservation Officer (SHPO) and/or section 106, consulting with stakeholders, performing technical studies to identify and evaluate cultural resources, and implementing avoidance or treatment protocols. These measures would substantially reduce the level of impacts on identified cultural resources.

The text of Section 5.1.5, “Analysis of Cumulative Impacts,” Cultural Resources on page 5-22 is hereby revised as follows:

> potentially significant cultural resources are uncovered during construction, all ground-disturbing activities must cease until the extent, character, and potential significance of the find is determined and an appropriate treatment protocol is developed in compliance with section 106, and the PA, as applicable. These mitigation measures would substantially reduce the level of impacts on unidentified cultural resources.

CHAPTER 6, “REFERENCES”

The text references for Section 3.2, “Air Quality and Climate Change,” on pages 6-4 and 6-5 of the DPEIR is hereby revised as follows:

California Department of Water Resources. 2012a (May). Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan. Sacramento, CA.

———. 2012b (March). Initial Study and Negative Declaration for the Department of Water Resources Draft Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan. Sacramento, CA.

U.S. Environmental Protection Agency. 2000. Analysis of Commercial Marine Vessel Emissions and Fuel Consumption Data prepared by Energy and Environmental Analysis, Inc. Available: <http://www.epa.gov/otaq/models/nonrdmdl/c-marine/r00002.pdf>.

~~_____~~ ~~U.S. Environmental Protection Agency~~. 2012. *Green Book Nonattainment Areas for Criteria Air Pollutants.* Available at: http://www.epa.gov/air/oaqps/greenbk/. Updated December 14, 2012. Accessed January 31, 2013.

The text references for Section 3.3, "Biological Resources," on pages 6-5, 6-7, and 6-8 of the DPEIR is hereby revised as follows:

Bergman, P. J. Merz, and B Rook. 2011. Green Sturgeon Observations at Daguerre Point Dam, Yuba River, CA. Memo submitted to Elizabeth Campbell, AFRP, FWS Grant Number 813329G011, prepared by Cramer Fish Sciences, Auburn, CA. 6 pp.

Interagency Ecological Program for the San Francisco Estuary. 2013. S*an Joaquin River Sturgeon Investigations - 2011/12 Season Summary*. IEP Newsletter, 16 (1) 4-5.

Seesholtz, A., M. Manuel, D. Rocheleau, T. Vieira, K. McAllister2, and J. Van Eenennaam. 2013. Feather River Green Sturgeon: In-river Status Currently Up in the Air Instead of in the Water. California Department of Water Resources WebEx/Power Point Presentation, February 13, 2013.

The text references for Chapter 5, "Other CEQA-Required Sections," on page 6-14 of the DPEIR is hereby revised as follows:

California Air Pollution Control Officers Association. 2013. California Emissions Estimator Model. Available: <http://www.caleemod.com/>. Accessed October 2, 2013.

APPENDIX C, "AIR QUALITY MODELING ANALYSIS"

Appendix C in the DPEIR has been revised to include an analysis of emissions for the waterside option. The following is the fully revised Appendix C, which includes the original analysis for the landside option, the additional analysis for the waterside option, and then a summary of the emissions for both options.

APPENDIX C

Air Quality Modeling Analyses

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Area Source Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\SERP 08110038.14\serp urbemis.urb924

Project Name: SERP PEIR Emissions Modeling

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products							
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Changes to Defaults

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\SERP 08110038.14\serp urbemis.urb924

Project Name: SERP PEIR Emissions Modeling

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/3/2010-5/14/2010 Active Days: 10	2.66	26.20	13.12	0.01	2.46	1.19	3.64	0.52	1.09	1.61	3,131.74
Fine Grading 05/01/2010-05/15/2010	2.66	26.20	13.12	0.01	2.46	1.19	3.64	0.52	1.09	1.61	3,131.74
Fine Grading Dust	0.00	0.00	0.00	0.00	2.40	0.00	2.40	0.50	0.00	0.50	0.00
Fine Grading Off Road Diesel	2.01	17.00	8.59	0.00	0.00	0.82	0.82	0.00	0.75	0.75	1,564.77
Fine Grading On Road Diesel	0.62	9.14	3.18	0.01	0.05	0.37	0.42	0.02	0.34	0.35	1,427.40
Fine Grading Worker Trips	0.04	0.06	1.35	0.00	0.01	0.00	0.01	0.00	0.00	0.00	139.56

Phase Assumptions

Phase: Fine Grading 5/1/2010 - 5/15/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 0.5

Maximum Daily Acreage Disturbed: 0.12

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 354.55

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 2 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\SERP 08110038.14\serp urbemis.urb924

Project Name: SERP PEIR Emissions Modeling

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Repair Area	0.03	0.03	0.36	0.00	0.05	0.01	31.79
TOTALS (lbs/day, unmitigated)	0.03	0.03	0.36	0.00	0.05	0.01	31.79

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2011 Temperature (F): 95 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Repair Area		8.00	acres	0.50	4.00	29.48
					4.00	29.48

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.6	1.1	98.7	0.2
Light Truck < 3750 lbs	10.0	2.0	92.0	6.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	22.5	0.9	98.7	0.4
Med Truck 5751-8500 lbs	10.2	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	62.9	37.1	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Repair Area				2.0	1.0	97.0

Operational Changes to Defaults

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\SERP 08110038.14\serp urbemis.urb924

Project Name: SERP PEIR Emissions Modeling

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.01	0.13	0.07	0.00	0.01	0.01	0.02	0.00	0.01	0.01	15.66

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.01	0.00	0.14	0.00	0.00	0.00	0.25

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.01	0.01	0.06	0.00	0.01	0.00	5.43

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.02	0.01	0.20	0.00	0.01	0.00	5.68

SERP Construction
Waterside Option

Route Name	Provided Material	Route Type	Air District	Miles/Trip	Trips	Total Distance Traveled	Total Construction Emissions (lbs)						
							ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	MT CO_2e
SERP 5 Site Water	Material Delivery (Primary-loaded)	Barge-Delivery	SVAB	85.00	1	85	6.53	355.24	55.09	27.39	8.94	8.22	11.31
SERP 5 Site Water	Material Return (Primary-empty)	Barge-Return	SVAB	85.00	1	85	4.69	332.87	43.36	25.86	8.32	7.65	10.47
SERP 1 Site Water	Material/Equip Delivery (Secondary)	Idling	SVAB	0.00	-	-	2.58	38.97	13.77	3.23	1.06	0.97	1.33
SERP 1 Site Water	Material/Equip Delivery (Secondary)	Barge	SVAB	30.00	1	30	3.92	213.14	33.05	16.43	5.36	4.93	6.78
				200.00		170							
	Total Barge Emissions (5 Sites)						13.81	727.08	112.22	56.49	18.31	16.84	23.11
	Total Barge Emissions (Single Site)						2.76	145.42	22.44	11.30	3.66	3.37	4.62

Barge Assumptions

Barge Round Trip Distance	170	miles
Capacity	4400	tons

Rock Density

Range of Rock Density	2400-2800	kg/m3
Average Rock Density	2600	kg/m3
Kg to g conversion	1000	g/kg
Lb to g conversion	453.6	g/lb
Ton to lbs conversion	2000	lb/ton
Meters to yard conversion	1.093	yd/m
Average Rock Density	2.19	ton/cy

SERP Construction (Equipment and Material Delivery)
Tugboat and Barge Emission Factor Derivation and Emissions

Assumptions

Tug Boat Main Generator Engine	2000	bhp
	1491.4	kW
Tug Boat Aux Generator Engine	0	bhp
	0.0	kW
VOC/Total Hydrocarbon Ratio	1.053	
bhp	kW	
1	0.74569	
Diesel Fuel Sulfur Content	15	
	0.0015	ppm

Levee Construction Delivery Barge	Equipment	Pollutant Emissions (lbs) HC	VOC	NO_x	CO	SO_2	PM	PM_{10}	$PM_{2.5}$	CO_2	CO_2e
Round Trip Emissions (per tug)											
One-Way Loaded Trip (lbs/day)	Main	6.20	6.53	355.24	55.09	27.39	8.94	8.94	8.22	24,225.06	24,927.78
One-Way Loaded Trip (lbs/day)	Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
One-Way Empty Trip (lbs/day)	Main	4.46	4.69	332.87	43.36	25.86	8.32	8.32	7.65	22,422.76	23,073.19
One-Way Empty Trip (lbs/day)	Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
Total Round Trip Emissions (lbs/day)	Main & Gen	10.66	11.22	688.11	98.45	53.25	17.25	17.25	15.87	46,647.82	48,000.97
Delivery to Site "Loaded" (lbs)	Main & Gen	6.20	6.53	355.24	55.09	27.39	8.94	8.94	8.22	24225.06	24927.78
Return Trip "Empty" (lbs)	Main & Gen	4.46	4.69	332.87	43.36	25.86	8.32	8.32	7.65	22422.76	23073.19

Engineer Fill - SMAQMD Activity Level	Distance (mi)	Speed (mph)	Time (hr)	Load Factor (LF) Main	Load Factor (LF) Gen	Weighted LF Main	Weighted LF Gen
Loaded Barge	85.00	6	10.000	50.0%	50.0%	50.0%	50.0%
Idling			0.000	5.0%	50.0%	0.0%	0.0%
Total			10.000			50.0%	50.0%
Empty Barge	85.00	9	9.444	60.0%	50.0%		
Tugs/trip	1						
Total Trips/Day							

Pollutant	Emission Factor (g/kW-hr) Cons (loaded)	Cons (empty)	Main Loaded	Main Empty	Gen
PM	na	na	0.27	0.27	0.27
NO_x	na	na	10.80	10.72	10.80
SO_2	0.35	0.35	0.83	0.83	0.83
CO	na	na	1.68	1.40	1.68
HC	na	na	0.19	0.14	0.19
CO_2	na	na	736.80	722.10	736.80

Daily Tug Construction Activities	Equipment	Pollutant Emissions (lbs) HC	VOC	NO_x	CO	SO_2	PM	PM_{10}	$PM_{2.5}$	CO_2	CO_2e
Round Trip Emissions (per tug)											
One-Way Loaded Trip (lbs/day)	Main	2.45	2.58	38.97	13.77	3.23	1.06	1.06	0.97	2,857.49	2,940.38
One-Way Loaded Trip (lbs/day)	Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
One-Way Empty Trip (lbs/day)	Main	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
One-Way Empty Trip (lbs/day)	Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
Total Round Trip Emissions (lbs/day)	Main & Gen	2.45	2.58	38.97	13.77	3.23	1.06	1.06	0.97	2,857.49	2,940.38
Delivery to Site "Loaded" (lbs)	Main & Gen	2.45	2.58	38.97	13.77	3.23	1.06	1.06	0.97	2857.49	2940.38
Return Trip "Loaded" (lbs)	Main & Gen	2.45	2.58	38.97	13.77	3.23	1.06	1.06	0.97	2857.49	2940.38

Engineer Fill - BAAQMD Activity Level	Distance (mi)	Speed (mph)	Time (hr)	Load Factor (LF) Main	Load Factor (LF) Gen	Weighted LF Main	Weighted LF Gen
Loaded Barge	0.00	5	0.000	50.0%	50.0%	0.0%	0.0%
Idling			1.000	20.0%	50.0%	20.0%	50.0%
Total			1.000			20.0%	50.0%
Empty Barge	0.00	9	0.000	60.0%	50.0%		
Tugs/trip	1						
Total Trips/Day							

Pollutant	Emission Factor (g/kW-hr) Cons (loaded)	Cons (empty)	Main Loaded	Main Empty	Gen
PM	na	na	0.32	0.27	0.27
NO_x	na	na	11.85	10.72	10.80
SO_2	0.41	0.35	0.98	0.83	0.83
CO	na	na	4.19	1.40	1.68
HC	na	na	0.75	0.14	0.19
CO_2	na	na	869.10	722.10	736.80

Moving Between Construction Sites	Equipment	Pollutant Emissions (lbs) HC	VOC	NO_x	CO	SO_2	PM	PM_{10}	$PM_{2.5}$	CO_2	CO_2e
Round Trip Emissions (per tug)											
One-Way Loaded Trip (lbs/day)	Main	3.72	3.92	213.14	33.05	16.43	5.36	5.36	4.93	14,535.04	14,956.67
One-Way Loaded Trip (lbs/day)	Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
One-Way Empty Trip (lbs/day)	Main	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
One-Way Empty Trip (lbs/day)	Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
Total Round Trip Emissions (lbs/day)	Main & Gen	3.72	3.92	213.14	33.05	16.43	5.36	5.36	4.93	14,535.04	14,956.67
Barge Moving Between Sites (lbs per site change)	Main & Gen	3.72	3.92	213.14	33.05	16.43	5.36	5.36	4.93	14535.04	14956.67
Total Daily Barge Delivery Emissions (lbs/day)	Main & Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00

Rock Drain/Agg Base - SMAQMD Activity Level	Distance (mi)	Speed (mph)	Time (hr)	Load Factor (LF) Main	Load Factor (LF) Gen	Weighted LF Main	Weighted LF Gen
Loaded Barge	30.00	6	6.000	50.0%	50.0%	50.0%	50.0%
Idling			0.000	5.0%	50.0%	0.0%	0.0%
Total			6.000			50.0%	50.0%
Empty Barge	0.00	9	0.000	60.0%	50.0%		
Tugs/trip	2						
Total Trips/Day	6						

Pollutant	Emission Factor (g/kW-hr) Fuel Cons (loaded)	Fuel Cons (empty)	Main Loaded	Main Empty	Gen
PM	na	na	0.27	0.27	0.27
NO_x	na	na	10.80	10.72	10.80
SO_2	0.35	0.35	0.83	0.83	0.83
CO	na	na	1.68	1.40	1.68
HC	na	na	0.19	0.14	0.19
CO_2	na	na	736.80	722.10	736.80

Source:
South Coast Air Quality Management District. 2006 (October). Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds. Available: <http://aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html>
USEPA. 2003. Conversion Factor for Hydrocarbon Emission Components. Available: <http://www.epa.gov/otaq/models/nonrdmdl/p03002.pdf>

SERP Construction Emissions
Emissions Summary

	Pollutants (lbs/day)				
Construction Source	**ROG**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**	**MT CO_2e**
LANDSIDE OPTION					
Building Construction	3	26	4	2	1.42
Maximum Daily	**3**	**26**	**4**	**2**	-
Mitigated Maximum Daily	**2**	**21**	**1**	**0**	
Annual Emissions (tons/yr)	**0.2**	**2.0**	**0.3**	**0.2**	**498.27**

	Pollutants (lbs/day)				
Construction Activity/Sources	**ROG**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**	**MT CO_2e**
WATERSIDE OPTION					
Initial Barge Delivery	*7*	*355*	*9*	*8*	
Barge Delivery Trip (**5 Sites**)	7	355	9	8	11.31
Barge Delivery Trip (**1 Site**)	1	71	2	2	2.26
Waterside Option Construction Work Day	*5*	*65*	*5*	*3*	
Barge Idling Emissions	3	39	1	1	1.33
Building Construction	3	26	4	2	1.42
Building Construction (mitigated)	2	21	1	0	
Between Site Barge Movement	*4*	*213*	*5*	*5*	
Barge Moving Trip	4	213	5	5	6.78
Barge Return Delivery (Completion)	*5*	*333*	*8*	*8*	
Barge Return Trip (**5 Sites**)	5	333	8	8	10.47
Barge Return Trip (**1 Site**)	1	67	2	2	2.09
Maximum Daily	**7**	**355**	**9**	**8**	-
Annual Emissions (tons/yr)	**0.8**	**12.1**	**0.8**	**0.4**	**973.01**
Mitigated Annual Emissions (tons/yr)	**0.7**	**11.3**	**0.4**	**0.3**	-

APPENDIX H, "DWR GHG EMISSIONS REDUCTION PLAN CONSISTENCY DETERMINATION FORM"

The following DWR GHG Emissions Reduction Plan Consistency Determination Form is hereby added to the DPEIR as Appendix H:

APPENDIX H

DWR GHG Emissions Reduction Plan Consistency Determination Form

Print Form

DWR GHG Emissions Reduction Plan Consistency Determination Form

For Projects Using Only DWR Staff and Equipment

This form is to be used by DWR project managers to document a DWR CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan. This form is to be used only when DWR is the Lead Agency and when only DWR staff and equipment are used to implement the project.

Additional Guidance on filling out this form can be found at:
dwrclimatecange.water.ca.gov/guidance_resources.cfm

The DWR Greenhouse Gas Emissions Reduction Plan can be accessed at:
http://www.water.ca.gov/climatechange/CAP.cfm

California Department of Water Resources
1416 9th Steet
Sacramento, CA
95814
dwrclimatechange.water.ca.gov
www.water.ca.gov/climatechange

Project Name:	Small Erosion Repair Program
Environmental Document type:	Program EIR
Manager's Name:	Jeff Schuette
Manager's email:	Schuette, Jeff@DWR
Division:	Division of Flood Management
Office, Branch, or Field Division	Flood Maintenance Office

Short Project Description: The Small Erosion Repair Program (SERP) is a collaborative interagency effort to develop a streamlined regulatory review and authorization process that will facilitate implementation of annual repairs of small erosion sites on levees within the Sacramento River Flood Control Project (SRFCP) area. The SRFCP contains approximately 900 to 1,000 miles of levees. For the initial 5-year (Phase 1) SERP effort, the coverage area is a subset of the SRFCP and represents approximately 300 miles of levees maintained by the California Department of Water Resources (DWR)

Project GHG Emissions Summary

☒ All emissions from the project will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP. (This box must be checked if you are using this form. If you cannot check this box you must use the form at this link)

Project GHG Reduction Plan Checklist

☒ All Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project. (Project Level GHG Emissions Reduction Measures)

Or

☐ All feasible Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project and and Measures not incorporated have been listed and determined not be apply to the proposed project (include as an attachment)

☒ Project does not conflict with any of the Specific Action GHG Emissions Reduction Measures (Specific Action GHG Emissions Reduction Measures)

Would implementation of the project result in additional energy demands on the SWP system of 15 GWh/yr or greater?

○ Yes ◉ No

If you answered Yes, attach a Renewable Power Procurement Plan update approval letter from the DWR SWP Power and Risk Office.

Is there substantial evidence that the effects of the proposed project may be cumulatively considerable notwithstanding the proposed project's compliance with the requirements of the DWR GHG Reduction Plan?

○ Yes ◉ No

If you answered Yes, the project is not eligible for streamlined analysis of GHG emissions using the DWR GHG Emissions Reduction Plan. (See CEQA Guidelines, section 15183.5, subdivision (b)(2).)

Based on the information provided above and information provided in associated environmental documentation completed pursuant to the above referenced project, the DWR CEQA Climate Change Committee has determined that the proposed project is consistent with the DWR Greenhouse Gas Reduction Plan and the greenhouse gasses emitted by the project are covered by the plan's analysis.

Project Manager Signature: Date: 11/4/2013

C4 Approval Signature: Date: 11/14/13

Attachments:

☒ List and Explanation of excluded Project Level GHG Emissions Reduction Measures

☐ Plan to update Renewable Energy Procurement Plan from DWR SWP Power and Risk Office

Pre-Construction and Final Design BMPs

BMP 1: Adopted in SERP DPEIR.

Located in the SERP DPEIR Mitigation Measure 5-1: Implement Pre construction, Final Design, and Construction BMPs as BMP 1.

BMP2: Adopted in SERP DPEIR.

Located in the SERP DPEIR Mitigation Measure 5-1: Implement Pre construction, Final Design, and Construction BMPs as BMP 2.

BMP3: Not feasible.

For SERP projects, generator use is minimal, and when required, the performance specs of alternative generators doesn't allow for substitution.

BMP 4, 5, and 13: Not applicable

For SERP projects, concrete or cement will not be used.

BMP 6 and 15: Incorporated similar version in to SERP DPEIR. Located in Mitigation Measure 3.2-1 as a one of six measures to reduce particulate matter and exhaust emissions. The language reads as follows:

"Schedule construction trips during nonpeak traffic hours to reduce peak-hour emissions and traffic congestion to the extent feasible."

Construction BMPs

BMP 7: Incorporated similar version in to SERP DPEIR. Located in Mitigation Measure 3.2-1 as one of six measures to reduce particulate matter and exhaust emissions. The language reads as follows:

"Follow air pollution regulations, which includes the use of diesel-powered construction equipment and equipment idle times, that meet CARB's 1996 or newer certification standard for in-use off-road heavy-duty diesel engines [California Code of Regulations:(article 4.8, chapter 9, division 3 of title 13)]"

The following language from BMP 7 was excluded because sign posting is not feasible as sites are very small and do not have a specific entrance:

"Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement."

BMP 8: BMP 8 will be incorporated as BMP 7 into Final SERP PEIR in Mitigation Measure 5-1.

BMP 9: BMP 9 will be incorporated as BMP 8 into Final SERP PEIR in Mitigation Measure 5-1.

BMP 10: Incorporated similar version in to SERP DPEIR under Mitigation Measure 5-1: Implement Pre construction, Final Design, and Construction BMPs as BMP 3. The language reads as follows:

"Coordinate opportunities to carpool to the construction site."

The following language from BMP 10 was excluded because biking is not feasible; generally project sites are not within biking distance, or accessible to public transit. Maintenance Yard Crews meet at the yard and already carpool to projects sites:

"Develop specific ride share program to encourage... transit passes and/or secure bicycle parking for construction worker commutes."

BMP 11: Adopted in SERP DPEIR .

Located in the SERP DPEIR Mitigation Measure 5-1: Implement Pre construction, Final Design, and Construction BMPs as BMP 4.

BMP 12: Adopted in SERP DPEIR .

Located in the SERP DPEIR Mitigation Measure 5-1: Implement Pre construction, Final Design, and Construction BMPs as BMP 5.

BMP 14: Not applicable

SERP projects will not generate construction waste. Debris generated will primarily be organic, and will be chipped and redistributed on site. This equates to 100 percent recycling of organic waste.

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4 REFERENCES

4.1 CHAPTER 1, "INTRODUCTION"

No references cited.

4.2 CHAPTER 2, "INDIVIDUAL COMMENTS AND REPONSES"

California Department of Water Resources. 2012 (July). Central Valley Flood Protection Plan Consolidated Final Program Environmental Impact Report. State Clearinghouse #2010102044. Sacramento, CA.

DWR. *See* California Department of Water Resources.

4.3 CHAPTER 3, "REVISIONS TO THE DPEIR"

California Department of Water Resources. 2012a (May). Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan. Sacramento, CA.

———. 2012b (March). Initial Study and Negative Declaration for the Department of Water Resources Draft Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan. Sacramento, CA.

DWR. *See* California Department of Water Resources.

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5 LIST OF PREPARERS

California Department of Water Resources, Flood Maintenance Office

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APPENDIX A

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM
SMALL EROSION REPAIR PROGRAM

INTRODUCTION

The California Department of Water Resources (DWR) prepared a program environmental impact report (PEIR) to provide the public and responsible and trustee agencies with information about the potential environmental effects associated with the construction and operation of the Small Erosion Repair Program (SERP). The PEIR concludes that implementation of the SERP would generate potentially significant adverse environmental impacts to the physical environment. For all potentially significant impacts, the PEIR prescribes feasible mitigation that would reduce these impacts to less-than-significant levels.

The California Environmental Quality Act Guidelines (CEQA Guidelines) Section 21081.6(a) requires public agencies "to adopt a reporting and monitoring program for changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." A Mitigation Monitoring and Reporting Program (MMRP) is required for the proposed project because the PEIR identifies potentially significant adverse impacts related to project implementation, and mitigation measures have been identified to reduce those impacts. Adoption of the MMRP would occur along with certification of the PEIR and approval of the proposed project.

MITIGATION MONITORING AND REPORTING PROGRAM

This MMRP has been prepared to ensure that all required mitigation measures are implemented and completed in a satisfactory manner before, during, and after project construction. The MMRP may be modified by DWR during project implementation, as necessary, in response to changing conditions or other project, engineering, and design refinements. Table B-1 has been prepared to assist the responsible parties in implementing the mitigation measures. The table lists the applicable mitigation measures that will be subject to mitigation monitoring and reporting and includes the responsible party and implementation timing for each measure. The numbering of mitigation measures follows the numbering sequence found in the PEIR. Generally, construction projects will be monitored before, during, and after construction. Reports compiling this information will be prepared periodically.

In addition, conservation measures for the SERP have been developed in coordination with the agencies represented on the SERP Subcommittee (see Section I of the SERP Manual). Measures have been identified that would be applicable to all SERP project sites, including timing restrictions to avoid work during important times for various special-status species, measures to avoid vegetation and habitat disturbance, hazard prevention measures, erosion control measures, and other mandatory construction measures. The conservation (avoidance and minimization) measures in the SERP Manual are mandatory and will be included as conditions of approval for SERP repairs. The conservation measures are a critical component

of the proposed project analyzed under CEQA in the PEIR, and are intended to function as mitigation measures under CEQA. Table B-2 lists the conservation measures that will also be subject to mitigation monitoring and reporting, and includes the responsible party and implementation timing for each of these measures.

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
3.2 Air Quality and Climate Change			
Impact 3.2-1: Construction-Related Emissions that Could Exceed Local Thresholds of Significance	Mitigation Measure 3.2-1: Implement Applicable Air District–Recommended Mitigation Measures for Particulate Matter and Exhaust Emissions. DWR will incorporate the following measures to reduce exhaust emissions and emissions of fugitive dust (PM_{10} and $PM_{2.5}$) during construction activities: • Comply with applicable air district rules and regulations that pertain to construction activities (e.g., asphalt reactive organic gases [ROG] requirements, administrative requirements, and fugitive dust management practices). As applicable, implement construction-related requirements from air districts or local governments with authority over the project at the commencement of and during each construction activity. • When using barges to deliver materials to a project site, DWR will enter into an agreement with SMAQMD to pay an off-site mitigation fee for the portion of construction-generated emissions of NO_X that exceed SMAQMD's daily emissions threshold of 85 lbs/day. The calculation of the fee shall be determined annually in coordination with the SMAQMD and paid within 30 days (or a different time that might be negotiated) of the occurrence of construction-related activities. • Do not use open burning to dispose of any excess	DWR and contractors	During construction

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	materials generated during site preparation or other project activities. • Schedule construction truck trips during nonpeak traffic hours to reduce peak-hour emissions and traffic congestion to the extent feasible. • Follow air pollution regulations, which includes the use of diesel-powered construction equipment and equipment idle times, that meet CARB's 1996 or newer certification standard for in-use off-road heavy-duty diesel engines [California Code of Regulations: (article 4.8, chapter 9, division 3 of title 13)]. • Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. • Check all tires and maintain for proper inflation.		
3.4 Cultural Resources			
Impact 3.4-1: Potential Impacts on Identified Cultural Resources	Mitigation Measure 3.4-1: Comply with the PA Prepared by USACE, SHPO, and DWR and/or Otherwise Comply with Section 106; Consult with Stakeholders as Required under Section 106 and/or a PA; Perform Site-specific Technical Studies to Identify and Evaluate Cultural Resources; and Implement Avoidance or Treatment Protocols as Necessary to the Extent Feasible.	DWR and contractors	Prior to construction

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	Management of cultural resources for the SERP would be performed under a Programmatic Agreement (PA) prepared by the U.S. Army Corps of Engineers (USACE), and/or otherwise in compliance with the standard section 106 process. DWR will perform technical studies and treatment required to identify and manage impacts on cultural resources subject to the input of stakeholders and the approval of USACE and the State Historic Preservation Officer (SHPO). Management of cultural resources required under CEQA would be combined with the management protocols stipulated in the PA and/or otherwise during section 106 consultation. Prior to implementation of individual small erosion repair activities, DWR will perform the following steps: • conduct an inventory of the individual small erosion repair site and define an area of potential effects as required under Section 106 of the National Historic Preservation Act (NHPA); • evaluate identified resources eligible for listing in the National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR); • consult with Senior Staff Counsel at the California State Lands Commission (CSLC) should any cultural resources on state lands be discovered during construction of any of the SERP projects; • determine if the proposed activity would result in significant impacts on resources eligible for the CRHR or adverse effects on historic properties		

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	within the meaning of section 106; • resolve significant impacts either by developing resource-specific treatment protocols or by selecting and implementing treatment measures from a palette of treatment protocols developed pursuant to the PA; and • consult with stakeholders and consulting parties in accordance with section 106 requirements and/or the PA, as applicable, such as the SHPO. The inventory, evaluation, and selection of treatment will include a review of relevant local land use policies regarding cultural resources. DWR will employ methods for inventory efforts and consultation that are appropriate for the sensitivity of the individual small erosion repair site and the probable resources that may occur. Such methods may include geomorphological studies, subsurface testing, and consultation with appropriate Native American organizations and representatives (for example in the identification of traditional cultural properties [TCPs]). Inventory efforts shall include consulting CSLC's shipwreck database to gather information on known and potential vessels located on the State's tide and submerged lands. Abandoned shipwrecks, archaeological sites and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and is under the jurisdiction of CSLC, although CSLC's jurisdiction does not negate the responsibilities of DWR or the USACE for compliance		

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	with CEQA and with section 106, respectively. As necessary, specific technical studies prepared for individual small erosion repairs will define important historic themes relevant to individual repair sites. Mitigation efforts will include, when feasible, avoidance of the resource rather than data recovery excavations or other work that would require disturbance of the deposit.		
3.4-3: Impacts on Previously Unidentified Cultural Resources	Mitigation Measure 3.4-3: Train Construction Workers before Construction Begins, Monitor Construction Activities, Stop Potentially Damaging Activities, Evaluate Discovery(ies), and Resolve Adverse Effects on Significant Resources. DWR will implement the following measures to minimize potential impacts on previously undiscovered cultural resources: • Every 2 years or before construction begins, construction crews will be given a presentation and training session incorporated into the environmental awareness training before performing work in areas sensitive for previously unidentified resources so that they can assist with identifying undiscovered cultural resource materials and avoid them where possible. • A DWR archaeologist, where appropriate, will monitor all ground-disturbing construction activities at locations determined to be sensitive for unidentified cultural resources. If a previously unidentified archaeological resource is uncovered during construction, construction activities will be	DWR and contractors	Prior to and during construction

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	halted within 100 feet of the find and USACE, and other appropriate parties, will be notified regarding the discovery. • Consult with Senior Staff Counsel at CSLC should any cultural resources on state lands be discovered during construction of any of the SERP projects. • DWR will then consult with USACE and the SHPO to determine the eligibility of the resource for listing in the NRHP or qualification as a unique archaeological resource. If DWR and USACE, in consultation with the SHPO, concur that the resource is eligible for listing and the project may result in adverse effects or significant impacts on the resource, DWR either will implement one of the treatment protocols developed under the PA for the resource or will prepare a resource-specific treatment plan. • Work may only resume when either all necessary treatment has been performed under the treatment method selected, or approved by the appropriate entity, or construction in the vicinity of the resource will not result in adverse effects or encroach within an appropriate distance from the known boundaries of the resource or the boundaries of the resource.		
3.4-4: Impacts on Previously Unidentified Human Remains	Mitigation Measure 3.4-4: Stop Work in the Event of a Discovery of Human Remains, Notify the Applicable County Coroner and Most Likely Descendant, and Treat Remains in Accordance with	DWR and contractors	During construction

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	State Law and Measures Stipulated in the Programmatic Agreement Prepared by USACE and the SHPO. DWR will ensure that the following measures are implemented to address the potential discovery of human remains during construction: • If human remains are uncovered during ground-disturbing activities, all ground-disturbing activities will cease within an appropriate radius of the find. DWR will notify the county coroner of the county in which the remains are uncovered and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she will contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code section 7050[c]). The NAHC will designate a most likely descendant (MLD) to dispose of the remains with appropriate dignity (California Public Resources Code section 5097.98). • After a determination that the remains are of prehistoric Native American origin, DWR will coordinate with the MLD for reburial of the remains and associated grave goods in an appropriate location. If, within 48 hours, the MLD fails to make		

Table B-1 Mitigation Monitoring and Reporting Program for SERP Mitigation Measures			
DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	a recommendation or reinter the remains, DWR will coordinate with the landowner to reinter the remains in a location not subject to further disturbance as provided for in California Public Resources Code section 5097.98. • The discovery of prehistoric burials often reveals locations sensitive for the occurrence of additional archaeological material. After the initial discovery and management of human remains, a professional archaeologist working on behalf of DWR will record the site with the NAHC and the appropriate information center and, if possible, use project features to protect the site from future disturbance.		
3.7 Noise			
3.7-1: Increase in Temporary Noise Levels from Construction Activities	Mitigation Measure 3.7-1: Implement Measures to Reduce Temporary Noise Levels from SERP Construction. DWR will implement the following measures during construction activities: • DWR will require construction contractors, and/or DWR maintenance yard crews to properly maintain and equip construction equipment with noise controls, such as mufflers, in accordance with manufacturers' specifications. • To the greatest extent feasible, construction outside of normal construction hours will be minimized or avoided completely when located in the vicinity of noise-sensitive receptors. Except	DWR and contractors	During construction

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	under extreme circumstances (as in the case where a repair must be completed within a specific work window due to species or flood season requirements), construction activities will be limited to normal construction hours or hours identified in applicable local noise regulations. In locations where the erosion site would have a direct line of sight to sensitive receptors, on-site equipment and stockpiles will be strategically placed where feasible to block the line of sight (and thus the direct transmission of noise) from noise source to receptor.		
Chapter 5 Other CEQA-Required Sections			
Construction-Generated Greenhouse Gas Emissions	Mitigation Measure 5-1: Implement Pre-Construction, Final Design, and Construction BMPs. Pre-construction and final design best management practices (BMPs) are designed to ensure that individual projects are evaluated and their unique characteristics are taken into consideration when determining whether specific equipment, procedures, or material requirements are feasible and efficacious for reducing greenhouse gas (GHG) emissions from a project. In addition to mitigation measures defined above, the following BMPs will be applied as applicable and appropriate: • **BMP 1**. Evaluate project characteristics, including location, project work flow, site locations, and equipment performance requirements, to determine whether specifications for the use of equipment with repowered engines, electric drive	DWR and contractors	Prior to and during construction

Table B-1
Mitigation Monitoring and Reporting Program for SERP Mitigation Measures

DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project. • **BMP 2**. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines. • **BMP 3**. Coordinate opportunities to carpool to the construction site. • **BMP 4**. Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business. • **BMP 5**. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible. • **BMP 6**. Recycle construction debris to reduce construction waste. • **BMP 7.** Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and		

Table B-1 Mitigation Monitoring and Reporting Program for SERP Mitigation Measures			
DPEIR Section and Impact(s)	Mitigation Measure	Responsible Party	Implementation Timing
	maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction. • **BMP 8.** Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.		

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
Mandatory Conservation Measures to be Applied to all SERP Projects			
Timing			
CM-1	The following timing restrictions apply to SERP projects within Regions 1–4 as defined below: **Region 1: Delta-Sacramento River and Major Tributaries, River Mile (RM) 0 to RM 60** Major tributaries include: • Putah Creek • Sacramento Bypass • Portions of Sacramento River downstream of RM 60 • Yolo Bypass, as identified in Figure A1 **Region 2: Mainstem Sacramento River and major tributaries, RM 60 to RM 143** Major tributaries include: • Butte Creek • Cherokee Canal • Colusa Bypass • Northern portion of Colusa Main Drain, as identified in Figure A1 • Portions of Feather River, as identified in Figure A1 • Portions of Sacramento River between RM 60 and 143 • Sutter Bypass • Tisdale Bypass • Wadsworth Canal • East and West Interceptor Canals	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
	Region 3: Upper Sacramento and major tributaries, RM 143 to RM 194 Major tributaries include: • Portions of Sacramento River between RM 143 and RM 194 **Region 4: Non-anadromous SERP waterways, including:** • Willow Slough Bypass • Cache Creek, from the Yolo Bypass to the upstream limit of the Sacramento River Flood Control Project levees		
CM-1(a)	**Region 1 Timing Restrictions:** All in-water construction will occur from August 1 to November 30. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration).	DWR and contractors	During construction
CM-1(b)	**Region 2 Timing Restrictions:** All in-water construction will occur from July 1 to October 15. With rare exception, no extensions will be granted on this timing window. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration).	DWR and contractors	During construction
CM-1(c)	**Region 3 Timing Restrictions:** All in-water construction will occur from July 1 to August 31. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration).	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-1(d)	**Region 4 Timing Restrictions:** All in-water construction will occur from April 15 to October 1. The time period for completing work outside the active stream channel is April 15 to October 15 (dates determined by SERP agency collaboration). Note: For projects occurring within 200 feet of drainage or irrigation canals that may support giant garter snake (GGS), conservation measure GGS-6, which stipulates that ***all*** project work be completed May 1 to October 1, may be applicable, as determined through coordination with U.S. Fish and Wildlife Service (USFWS).	DWR and contractors	During construction
CM-1(e)	**Flood Season Timing Restrictions:** All work within the floodway will occur from April 15 to November 1. The Board, on prior written request, may allow work to be done during flood season, within the floodway, provided that in the judgment of the Board, forecasts for weather and river conditions are favorable. For the SERP, this written request may be in the form of an e-mail request. Revegetation and erosion control work that do not involve the use of heavy equipment are not confined to the above timing windows.	DWR, Board, and contractors	Prior to and during construction
CM-2	**Timing Extensions for CM-1(a)–(d):** Requests for extensions on the above timing windows may be considered by the SERP agencies on a project-by-project basis upon written request from DWR. Requests for timing extensions must include a justification for the request, and any additional information deemed necessary by the agencies. Modifications to the established timing windows may be made only with written concurrence from the SERP agencies.	DWR, SERP agencies, and contractors	Prior to construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-3	Construction activities will be timed to avoid precipitation and increases in stream flow. If there is a chance of rain within 48 hours, the project site will be prepared with adequate erosion control measures to protect against wind and water erosion. Within 24 hours of any predicted storm event, construction activities within the stream zone will cease until all reasonable erosion control measures, inside and outside of the stream zone, have been implemented.	DWR and contractors	Prior to and during construction
Vegetation Disturbance			
CM-4	Disturbance to existing grades and vegetation will be limited to the actual site of the project, necessary access routes, and staging areas. The number of access routes, the size of staging areas, and the total area of the project activity will be limited to the minimum necessary to achieve the project goal. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to stream bank or stream channel habitat as much as possible. When possible, existing ingress or egress points will be used and/or work will be performed from the top of the creek banks or from barges on the waterside of the project levee. Following completion of the work, the contours of the creek bed and creek flows will be returned to preconstruction conditions, or improved to provide increased biological functions.	DWR and contractors	Prior to and during construction
CM-5	If vegetation removal is required within project access or staging areas, the disturbed areas will be replanted with native species and monitored and maintained to ensure the revegetation effort is successful.	DWR and contractors	Following construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-6	If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations as necessary to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used.	DWR and contractors	During construction
CM-7	To minimize ground and vegetation disturbance during project construction prior to beginning project activities, DWR will establish and clearly mark the project limits, including the boundaries of designated equipment staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones.	DWR	Prior to construction
CM-8	Disturbance or removal of vegetation will not exceed the minimum necessary to complete operations. Except for the trees specifically identified for removal in the notification, no native trees with a trunk diameter at breast height in excess of 3 inches will be removed or damaged without prior consultation with and approval by a California Department of Fish and Wildlife (CDFW), USFWS, and National Marine Fisheries Service (NMFS) representative. Using hand tools (e.g., clippers, chainsaw), trees may be trimmed to the extent necessary to gain access to the work sites. Work will be done in a manner that ensures that, to the extent feasible, living native riparian vegetation within the vegetation-clearing zones is avoided and left undisturbed where this can reasonably be accomplished without compromising basic engineering design and safety.	DWR, SERP agencies, and contractors	During construction
CM-9	The amount of rock riprap and other materials used for bank protection will be limited to the minimum needed for erosion protection.	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-10	All invasive species (e.g., giant reed, *Arundo donax*) will be completely removed from the project site, destroyed using approved protocols, and disposed of in an appropriate upland disposal area.	DWR and contractors	Prior to and during construction
CM-11	All pesticides/herbicides (pesticides) used to control nonnative vegetation will be used in accordance with label directions. Methods and materials used for herbicide application will be in accordance with DWR's most current guidelines on herbicide use and with laws and regulations administered by the Department of Pesticide Regulation. Note: Improper application of any pesticides near water can affect fish species and may result in "take" of protected fish as defined under the federal Endangered Species Act. To aid in protection of these species, NMFS emphasizes caution and awareness of the following when working near water: • Label is the law: read and follow the pesticide label. • Check wind/weather conditions hourly (minimum) or at any observed change. • Avoid drift: wind can cause drift; adhere to label requirements for wind speed. • Do not allow spray to drift off target. • Avoid spraying over or in the water. • When spraying near the water's edge, spray should be directed away from the water toward the targeted plant. • Keep all sprayed materials out of the water. Use caution and be aware of adjoining areas with potential liability as listed on any attachments.	DWR and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
Construction Equipment Staging			
CM-12	Construction materials such as portable equipment, vehicles, and supplies, including chemicals, will be stored at designated construction staging areas and on barges, exclusive of any riparian or wetland areas.	DWR and contractors	During construction
CM-13	Barges will be used to stage equipment and construct the project when practical to minimize noise and traffic disturbances and effects on existing landside vegetation. When barge use is not practical, construction equipment and plant materials will be staged in designated landside areas adjacent to the project sites. Existing staging sites, maintenance toe roads, and crown roads will be used to the maximum extent possible for project staging and access to avoid affecting previously undisturbed areas.	DWR and contractors	During construction
Material Stockpiling			
CM-14	Stockpiling of soil and grading spoils will occur in designated areas on the landside of the levee reaches or on offshore barges. Sediment barriers (e.g., silt fences, fiber rolls, and straw bales) will be installed around the base of stockpiles to intercept runoff and sediment during storm events. If necessary, stockpiles will be covered to provide further protection against wind and water erosion.	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
Erosion Control During Construction			
CM-15	There will be no site dewatering activities, including temporary diversion of flows around the work area, unless deemed necessary by CDFW and USFWS to avoid impacts to GGS (NOTE: If dewatering is deemed necessary by CDFW and USFWS, dewatering activities must be conducted in a manner that does not result in the discharge of fill material into waters of the United States or waters of the state).	DWR, USFWS, CDFW, and contractors	Prior to and during construction
CM-16	Erosion control measures (best management practices) that minimize soil or sediment from entering waterways and wetlands will be installed, monitored for effectiveness, and maintained throughout construction operations.	DWR and contractors	During construction
CM-17	If use of erosion control fabrics is necessary, only non-monofilament, wildlife-safe fabrics will be used.	DWR and contractors	During construction
CM-18	DWR will ensure sand, sediment, or sediment-water slurry does not enter the stream channel.	DWR and contractors	During construction
CM-19	No material will be placed in a manner or location where it can be eroded by normal or expected high flows. Jute netting or another non-monofilament erosion control fabric will be used to cover soil that is placed over or mixed into riprap or other revetment materials.	DWR and contractors	During construction
CM-20	Adequate erosion control supplies (e.g., gravel, straw bales, shovels) will be kept at all construction sites during all construction and maintenance activities to ensure that sand and sediments are kept out of any water bodies.	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-21	Precautions to minimize turbidity/siltation will be taken into account during project planning and will be implemented at the time of construction. This may require placing silt fencing, well-anchored sandbag cofferdams, coir logs, coir rolls, straw bale dikes, or other siltation barriers so that silt and/or other deleterious materials are not allowed to erode into downstream reaches. These barriers will be placed at all locations where the likelihood of sediment input exists and will be in place during construction activities, and afterward if necessary. If any sediment barrier fails to retain sediment, corrective measures will be taken immediately. The sediment barrier(s) will be maintained in good operating condition throughout the construction period and, if necessary, the following rainy season. Maintenance includes, but is not limited to, removing or replacing these barriers. DWR is responsible for removing nonbiodegradable silt barriers (such as plastic silt fencing) after the disturbed areas have been stabilized with vegetation (usually after the first growing season). Upon determination by any of the SERP agencies that turbidity/siltation levels resulting from project-related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation will be halted until effective control devices approved by the determining agency are installed or abatement procedures are initiated.	DWR and contractors	During and following construction
CM-22	DWR will inspect performance of sediment control barriers at least once each day during construction to they are functioning properly. Should a control barrier not function effectively, it will be immediately repaired or replaced. Additional controls will be installed as necessary.	DWR	During construction

Table B-2 Mitigation Monitoring and Reporting Program for SERP Conservation Measures			
Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-23	Sediment will be removed from sediment controls once the sediment has reached one-third of the exposed height of the control. Sediment collected in these devices will be disposed of away from the collection site at designated upland disposal sites. The location of the sediment disposal site for the project will be shown on the site plan diagram submitted to the SERP agencies with the project notification.	DWR and contractors	During and following construction
CM-24	All disturbed soils will undergo appropriate erosion control treatment (e.g., sterile straw mulching, seeding, planting) prior to the end of the construction season, or prior to October 15, whichever comes first.	DWR and contractors	During and following construction
CM-25	All debris, sediment, rubbish, vegetation, or other material removed from the project site or access or staging areas will be disposed of at an approved disposal site. There will be no sidecasting of material into any waterway.	DWR and contractors	During and following construction
CM-26	All work pads and other construction items will be removed upon project completion.	DWR and contractors	Following construction
CM-27	Upon completion of the construction phase and installation of erosion control materials, the work area within the stream zone will be digitally photographed to document the completed state of the repair site.	DWR and contractors	Following construction
Hazardous Materials			
CM-28	DWR will exercise every reasonable precaution to protect streams and other waters from pollution with fuels, oils, bitumens, calcium chloride, and other harmful materials.	DWR and contractors	Prior to, during, and following construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-29	Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials will not be allowed to enter flowing waters and will be collected and transported to an authorized upland disposal area. DWR will identify the location of the hazardous materials disposal site as part of the project description information contained in the project notification.	DWR and contractors	During and following construction
CM-30	Gas, oil, or other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, will be prevented from contaminating the soil and/or entering waters of the state and/or waters of the United States. Any of these materials placed by DWR or any party working under contract or with the permission of DWR below the OHWM or within the adjacent riparian zone, or where they may enter these areas, will be removed immediately. In the event of a spill, work will stop immediately and CDFW, USFWS, the Regional Water Quality Control, NMFS, and USACE will be notified within 24 hours. DWR will implement the spill prevention and control plan (CM-32) and consult with these agencies regarding any additional cleanup procedures. Any such spills and the cleanup efforts will be reported in an incident report and submitted to the SERP agencies.	DWR and contractors	During and following construction
CM-31	Safer alternative products (such as biodegradable hydraulic fluids) will be used where feasible.	DWR and contractors	During construction
CM-32	A written spill prevention and control plan (SPCP) will be prepared, and the SPCP and all material necessary for its implementation will be accessible on-site prior to initiation of project construction and throughout the construction period. The SPCP will include a plan for the emergency cleanup of any	DWR and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
	spills of fuel or other material. Employees will be provided the necessary information from the SPCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur.		
CM-33	No solid petroleum products such as asphalt will be used.	DWR and contractors	During construction
CM-34	No concrete or similar rubble will be used.	DWR and contractors	During construction
CM-35	Construction vehicles and equipment will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease.	DWR and contractors	Prior to and during construction
CM-36	Heavy equipment will be checked daily for leaks. If leaks are found, the equipment will be removed from the site and will not be used until the leaks are repaired.	DWR and contractors	Prior to and during construction
CM-37	Equipment other than barges will be refueled and serviced at designated refueling and staging sites located on the crown or landside of the levee and at least 50 feet from active stream channels or other water bodies. All refueling, maintenance, and staging of equipment and vehicles will be conducted in a location where a spill will not drain directly toward aquatic habitat. Appropriate containment materials will be installed to collect any discharge, and adequate materials for spill cleanup will be maintained on-site throughout the construction period.	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-38	Storage areas for construction material that contains hazardous or potentially toxic materials will have an impermeable membrane between the ground and the hazardous material and will be bermed to prevent the discharge of pollutants to groundwater and runoff water.	DWR and contractors	During construction
Other Mandatory Conservation Measures			
CM-39	Water (e.g., trucks, portable pumps with hoses, etc.) will be used to control fugitive dust during temporary access road construction.	DWR and contractors	During construction
CM-40	All materials placed in streams, rivers, or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.	DWR and contractors	During construction
CM-41	No materials will be placed in any location or in any manner that will impair the flow of surface water into or out of any wetland area.	DWR and contractors	During construction
CM-42	No fill material other than silt-free gravel or riprap will be allowed to enter the live stream.	DWR and contractors	During construction
CM-43	Water containing mud or silt from construction activities will be treated by filtration, or retention in a settling pond, adequate to prevent muddy water from entering live streams.	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
CM-44	Screens will be installed on water pump intakes as directed by NMFS salmonid-screening specifications. Where Delta smelt may be present, the intake for water pumps must meet a 0.2 feet per second approach velocity standard.	DWR and contractors	Prior to and during construction
CM-45	All litter, debris, unused materials, equipment, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All trash and construction debris will be removed from the work area immediately upon project completion.	DWR and contractors	During and following construction
Resource-Specific Conservation Measures to be Applied as Necessary to SERP Projects			
Sensitive Biological Resources			
SBR-1	A qualified biologist will provide environmental awareness training to workers before project activities begin and will appoint a crew member to act as an on-site biological monitor. The awareness training will include a description of the relevant species and their habitats that are known to occur in the project vicinity and will describe the guidelines that will be followed by all construction personnel to avoid impacts to the species during project activities. A set of guidelines will be provided by DWR to the maintenance crew foreman or contractor(s) participating in the project, and the crew foreman will be responsible for ensuring that crew members comply with the guidelines.	DWR and contractors	Prior to and during construction
SBR-2	Construction barrier fencing or stakes and flags will be placed around sensitive biological resources located in and within the project site boundaries and will remain in place until all project work involving heavy equipment is complete to ensure that construction activities avoid disturbing these resources. The	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
	size of the fenced buffer area will be determined on a project-specific basis through coordination with CDFW and/or other relevant resource or regulatory agencies.		
SBR-3	A qualified biologist will monitor all construction activities in and within 100 feet of the project site boundaries to ensure that no unauthorized activities occur within the project area. The 100-foot distance may be increased at the direction of a CDFW or other agency representative. The biological monitor will be empowered to stop construction activities that threaten to cause unanticipated and/or unpermitted project impacts. Project activity will not resume until the conflict has been resolved. DWR will notify the relevant agency(ies) if the stopped project activity is related to a provision of any SERP permit/authorization.	DWR and contractors	During construction
Giant Garter Snake			
GGS-1	To the extent possible, construction activities will be avoided within 200 feet from the banks of GGS aquatic habitat, including marshes, sloughs, ponds, irrigation canals, drainage ditches, and flooded rice fields. Movement of heavy equipment in these areas will be confined to existing roadways, where feasible, to minimize habitat disturbance.	DWR and contractors	During construction
GGS-2	Vegetation clearing will be confined to the minimal area necessary to facilitate construction activities. GGS habitat, including marshes, sloughs, ponds, irrigation canals, drainage ditches, and flooded rice fields, within or adjacent to the project site will be flagged and designated as environmentally sensitive areas. These areas will be avoided by all construction personnel.	DWR and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
GGS-3	Work crews and contractors will be given environmental awareness training before beginning work on the project site. This training will instruct workers to recognize GGS and its habitats and explain the possible penalties of noncompliance.	DWR and contractors	Prior to construction
GGS-4	No more than 24 hours prior to construction activities, the project area will be surveyed for GGS by a qualified biologist. Surveys will cover all upland habitat within 200 feet of GGS aquatic habitat and will be repeated if a lapse in construction activity of 2 weeks or greater occurs. If construction activities are proposed within aquatic habitat, the qualified biologist will determine if the habitat could support GGS, and if so, implement measures to exclude GGS from the work area. A GGS-exclusion plan could include measures such as installation of a snake exclusion fence or dewatering the work area (NOTE: Dewatering must be conducted in a manner that does not result in the discharge of fill material into waters of the United States or waters of the state). Any proposed GGS-exclusion plan will be reviewed and approved by CDFW, USFWS and NMFS prior to implementation. If a GGS is encountered during construction, activities will cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. DWR will report any sighting and any incidental take to USFWS immediately by telephone at (916) 414-6600 and to CDFW at (916) 358-4353.	DWR, SERP agencies, and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
GGS-5	Any temporary fill and construction debris will be removed after completion of construction activities, and, wherever feasible, disturbed areas will be restored to pre-project conditions. Restoration work may include such activities as replanting banks or emergent vegetation in the active channel. Restoration work beyond what is approved under the SERP must be approved by USFWS prior to implementation.	DWR, USFWS, and contractors	Following construction
GGS-6	All construction activity within GGS habitat, including marshes, sloughs, ponds, irrigation canals, drainage ditches, and flooded rice fields, will occur from May 1 to October 1. This includes in-water construction and work outside the active stream channel.	DWR and contractors	During construction
Valley Elderberry Longhorn Beetle			
VELB-1	DWR work crews and contractors will be given environmental awareness training that will emphasize the identification of elderberry shrubs, the need to avoid damaging the elderberry shrubs, and the possible penalties of noncompliance.	DWR and contractors	Prior to construction
VELB-2	Signs will be erected every 50 feet along the edge of elderberry avoidance areas. The signs will include the following information: “This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the federal Endangered Species Act. Violators are subject to prosecution, fines, and imprisonment.” The signs must be clearly readable from a distance of 20 feet and will be maintained throughout the construction period.	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
VELB-3	Avoidance areas for valley elderberry longhorn beetle will be temporarily fenced or flagged to serve as a visual boundary and keep people, vehicles, and other sources of disturbance from crossing into the area.	DWR and contractors	During construction
VELB-4	No insecticides, herbicides, fertilizers, or other chemicals that might harm the elderberry shrub or beetle will be used within 100 feet of any elderberry shrub having one or more stems measuring 1.0 inch or greater in diameter at ground level unless written approval for encroachment within the 100-foot buffer has been secured from USFWS. For projects where the application of insecticides, herbicides, fertilizers, or other chemicals may encroach upon the 100-foot buffer from an elderberry shrub, a description of that encroachment, including methods of application and chemicals to be used, will be specified in the project description section of the project notification form (see Section F, “Notification Requirements”) for USFWS review and approval.	DWR, USFWS, and contractors	During construction
VELB-5	When a 100-foot (or wider) buffer is established and maintained around elderberry plants, complete avoidance (i.e., no adverse effects) will be assumed. Where encroachment on the 100-foot buffer has been approved by USFWS, a setback of 20 feet from the dripline of each elderberry plant will be maintained whenever possible. In areas where work will need to occur within the 20-foot setback, a biological monitor will be on site to ensure that no unauthorized take of the beetle or damage to its habitat occurs. Erosion controls will be installed and revegetation with appropriate native seed or plants will be completed on the disturbed areas.	DWR, USFWS, and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
VELB-6	DWR will secure the approval of USFWS prior to working within 100 feet of an elderberry shrub during the flight season of the valley elderberry longhorn beetle (March 15 and June 15).	DWR, USFWS, and contractors	Prior to construction
Delta Smelt			
DS-1	DWR work crews and contractors will be given environmental awareness training that will emphasize the identification of Delta smelt, its habitat needs, and the possible penalties of noncompliance.	DWR and contractors	Prior to construction
Swainson's Hawk			
SWH-1	DWR will initiate nest site surveys by March 15 for all projects that are scheduled between March 15 and September 1. All nest sites within 0.5 mile of the project site will be noted and reported to CDFW.	DWR and CDFW	Prior to construction
SWH-2	DWR will conduct a preconstruction breeding-season (approximately February 1 through August 30) survey of the project site. The survey will be conducted by a qualified biologist and must conform to the Swainson's Hawk Technical Advisory Committee (2000) guidelines. If the protocol-level surveys do not identify any nesting raptor species within the survey area, no further mitigation is required. If nesting raptors are detected, DWR will ensure avoidance by project activities of all active bird nest sites located in the survey area during the breeding season (approximately February 1 through August 30). This avoidance may require a delay of construction to avoid the nesting season. Any occupied nest will be monitored by a qualified biologist to determine when the nest is no longer in use. If construction cannot be delayed, avoidance will include the establishment of a non-disturbance buffer zone around the	DWR, CDFW, and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
	nest site. The size of the buffer zone will be determined in consultation with CDFW.		
Burrowing Owl			
BO-1	Prior to any ground-disturbing project-related construction activity, a focused survey for burrowing owls will be conducted by a qualified biologist in accordance with CDFW protocol (DFG 1995) to identify active burrows on and within 250 feet of the project site. The surveys will be conducted no more than 30 days prior to the beginning of construction. If no occupied burrows are found in the survey area, no further mitigation is required. If an occupied burrow is found, a buffer will be established—165 feet during the nonbreeding season (September 1 through January 31) or 250 feet during the breeding season (February 1 through August 31)—for all project-related construction activities. The size of the buffer area may be adjusted if a qualified biologist and CDFW determine project-related construction activities are not likely to have adverse effects. No project-related construction activity will commence within the buffer area until a qualified biologist confirms that the burrow is no longer occupied, or until consultation with CDFW specifically allows certain construction activities to continue. If avoidance of occupied burrows is infeasible for project-related construction activities, on-site passive relocation techniques approved by CDFW will be used to encourage owls to move to alternative burrows outside of the project site. However, no occupied burrows will be disturbed by project-related construction activities during the nesting season unless a qualified biologist verifies through noninvasive methods that the burrow is no longer occupied.	DWR, CDFW, and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
Bank Swallow			
BS-1	For any SERP project located above (north of) Knights Landing, the project site must be evaluated for its impacts on occupied and potential bank swallow habitat. A pre-project bank swallow survey will be conducted by a CDFW-approved biologist. The survey will include mapping of known and existing bank swallow colonies within a 500-foot radius of the disturbance boundaries of the project. The survey will also include mapping of any suitable breeding colony habitat within the same 500-foot radius. Suitable breeding colony habitat is herein defined by the habitat suitability index model developed to evaluate habitat for bank swallow breeding colonies within the continental United States (Garrison 1989). Based on that model, it is assumed that a bank suitable for a nesting colony must be at least 5 meters (m) (16.7 feet) long; that suitable foraging habitat occurs within 10 kilometers (km) (6 miles) of the colony; that insect prey are not limited; and that optimal colony locations are in vertical banks, greater than 1 m (3.3 feet) tall, greater than 25 m (83 feet) long, and consisting of suitable soft soils (i.e., sand, loamy sand, sandy loam, loam, and silt loam) in strata greater than 0.25 m (0.8 feet) wide. The pre-project bank swallow survey information will be submitted to CDFW in a written report accompanying the project notification materials.	DWR, CDFW, and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
BS-2	Projects at sites containing occupied and/or potential bank swallow habitat within the proposed disturbance boundaries will not be authorized under the SERP. Project sites that contain suitable nesting colony habitat outside the project disturbance limits, but within the 500-foot survey radius, may be authorized under SERP at the discretion of CDFW with implementation of additional, site-specific protective measures. However, no project that will affect an existing bank swallow colony will be authorized under the SERP. Any project that would result in take of bank swallow, as defined in California Fish and Game Code section 2081, will require issuance of an incidental take permit from CDFW and does not qualify for authorization under the SERP.	DWR, CDFW, and contractors	During construction
Nesting Birds/Migratory Birds			
NB-1	It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by the Fish and Game Code. Without prior consultation and approval of a CDFW representative, no trees that contain active nests of birds will be disturbed until all eggs have hatched and young birds have fledged. Under the Migratory Bird Treaty Act (MBTA), it is unlawful to pursue, hunt, take, capture, kill, attempt to take capture, or kill, possess any migratory bird, any part, nest, or eggs of any such bird. Because incidental take coverage is not authorized under the MBTA, incidental take of a migratory bird should be avoided. If it is necessary to remove trees for purposes of the project, it is recommended that the trees that are identified for removal be removed during the non-nesting period of August 31 to February 1. If tree removal must occur during the period of February 1 to August 31, a qualified	DWR, USFWS, CDFW, and contractors	Prior to and during construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
	biologist will conduct a preconstruction survey for bird nests or nesting activity within 500 feet of the project boundaries. If any active nests or nesting behaviors are found, CDFW and USFWS must be notified prior to further action. DWR may be required to create exclusion zones of between 75 feet and 0.25 mile depending on the species observed. The exclusion zone must be maintained until birds have fledged or the nest is abandoned. The survey results will be provided to CDFW prior to removal of any trees.		
Raptors			
R-1	If project work will occur during the raptor nesting season (February 1 to August 31), a focused survey for raptor nests will be conducted by a qualified biologist during the nesting season to identify active nests within 500 feet of the project site. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting raptors are found within 500 feet 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 approved by CDFW.	DWR, CDFW, and contractors	Prior to and during construction
Woody Shaded Riverine Habitat			
WSRH-1	All remaining, natural woody riparian or shaded riverine aquatic (SRA) habitat will be avoided or preserved to the maximum extent practicable.	DWR and contractors	During construction

Table B-2
Mitigation Monitoring and Reporting Program for SERP Conservation Measures

Conservation Measure No.	Description	Responsible Party	Implementation Timing
WSRH-2	Woody riparian and SRA habitat will be replaced at a 3:1 ratio on an area or linear-foot basis, as determined appropriate by DWR in coordination with NMFS.	DWR and NMFS	Following construction
WSRH-3	Species chosen for replanting will reflect native species lost during the permitted activity or native species usually found in the riparian and SRA zones of the project location.	DWR and contractors	Following construction
WSRH-4	Plantings will be installed during the optimal season for the species being planted. Therefore, completion of the planting effort may not occur at the same time as the remainder of the permitted activity.	DWR and contractors	Following construction
WSRH-5	Maintenance of revegetated sites will continue for at least three growing seasons to allow the vegetation to establish. Maintenance will be continued as necessary until the final performance criteria are met.	DWR and contractors	Following construction
Cultural Resources			
CR-1	DWR will ensure that SERP project activities near any historic property do not approach closer to the property than identified and allowed for in the resource-specific historic properties treatment plan (HPTP) and the construction monitoring and inadvertent discovery plan in accordance with requirements of the PA.	DWR and contractors	Prior to and during construction
CR-2	DWR will ensure that an archaeological monitor is present during any ground-disturbing activities in areas where monitoring of construction is necessary to prevent or reduce adverse effects. Specific situations requiring archaeological monitoring and the methods and procedures for archaeological monitoring will be described in the *Construction Monitoring and*	DWR, USACE, and contractors	During construction

Table B-2 Mitigation Monitoring and Reporting Program for SERP Conservation Measures			
Conservation Measure No.	Description	Responsible Party	Implementation Timing
	Inadvertent Discovery Plan as stipulated by the PA. In situations other than those described in the *Construction Monitoring and Inadvertent Discovery Plan* which specifically require archaeological monitoring, an archaeologist will be available on an on-call basis. If suspected archaeological materials are discovered during ground-disturbing activities, work will stop at that location and within 50 feet of the find until the archaeologist can inspect and assess the find and provide recommendations to DWR and USACE. Work may not resume at that location until DWR and USACE authorize resumption of work.		

References

California Department of Fish and Game. 1995. Staff Report on Burrowing Owl Mitigation.

DFG. *See* California Department of Fish and Game.

Garrison, B. A. 1989. Habitat Suitability Index Model: Bank Swallow (*Riparia riparia*). U.S. Fish and Wildlife Service, Region One, Division of Ecological Services, Sacramento, CA.

Swainson's Hawk Technical Advisory Committee, 2000. *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California/s Central Valley*.

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