

**Meeting of the Central Valley Flood Protection Board
April 27, 2012**

Staff Report – Resolution 2012-20

**Department of Water Resources
Small Erosion Repair Program**

Five Year Pilot Project

1.0 – ITEM

The Department of Water Resources (DWR) is proposing a five-year pilot program for performing minor operation and maintenance activities on federal flood control works within a specifically defined Coverage Area described in Section 3 of this Staff Report. DWR sought the input of and partnership with the Central Valley Flood Protection Board, which would provide the Board with a co-equal role in the decision-making process for projects proposed within the five-year program.

Staff is requesting the Board to consider approval of Resolution 2012-20 (Staff Report Attachment A) which would authorize specific operation and maintenance activities designed and constructed within the scope of a proposed Small Erosion Repair Program (SERP) without the need for Board encroachment permits, and to provide directions to Board staff to continue working with DWR to develop and implement the five-year pilot program.

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 pilot program as a State partner.

2.0 – PROJECT PROPONENT

DWR, Division of Flood Management
Interagency Flood Management Collaborative Program

DWR staff will brief the Board on the purpose, background and proposed implementation of the SERP Program, and will describe how DWR and Board staffs

resolved several issues including geotechnical designs, hydraulic impact analyses, long term vegetation management, and public notification.

3.0 – LOCATION

Attachment C provides a map of the SERP Phase 1 Coverage Area. Orange highlighting is used to depict those portions of the Sacramento River Flood Control Project (SRFCP) maintained by DWR that are proposed for the SERP pilot program. These leveed channels and bypasses include:

- 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 Attachment C)
- East and West Interceptor Canals
- Feather River (portions depicted on Attachment C)
- Putah Creek
- Sacramento Bypass
- Sacramento River (portions depicted on Attachment C)
- Sutter Bypass (portions depicted on Attachment C)
- Tisdale Bypass
- Wadsworth Canal
- Willow Slough Bypass
- Yolo Bypass (portions depicted on Attachment C)

4.0 – APPLICABLE LAWS AND REGULATIONS

4.1 – 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 Operations of Flood Control Works

Pursuant to § 208.10 (b) Levees (1) Maintenance: *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.* (Underlining added for emphasis)

4.2 – U.S. Army Corps of Engineers (USACE), Standard Operations and Maintenance Manual for the SRFCP

Pursuant to § 4.02 Maintenance (page 10): *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. (Note: the sentence on about planting of willows is not included in the reference but is instead replaced by “*****” .)*

Pursuant to § 4.05 Special Instructions (b)(1), (page 13): *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.*

4.3 – California Water Code

Pursuant to § 8708: The Board has given assurances to the USACE that the State will maintain and operate federal flood control works in accordance with federal law.

Pursuant to § 8361 and § 12878 et.seq.: DWR has responsibilities to maintain and operate on behalf of the State portions of the works of the SRFCP.

4.4 – California Code of Regulations, Title 23 (CCR 23)

Pursuant to § 3: Intent. *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 Operations and Maintenance Manuals, and 33 C.F.R. section 208.10.*

Pursuant to § 4: Definitions. *“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.*

Pursuant to § 6 (a): Need for a Permit. *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.*

But also Pursuant to § 6 (d) Need for a Permit: *Permits are not required for maintenance activities as defined in article 2, section 4 of this title.*

5.0 – STAFF ANALYSIS

5.1 – No Encroachment Permits Needed for SERP Sites

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 is included as a component of routine maintenance activities.

5.2 – Geotechnical

Board geotechnical staff has worked closely with DWR geotechnical staff to review and resolve issues related to the geotechnical aspects of the SERP 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.

5.3 – Hydraulic Analysis

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.

5.4 – Long-Term Vegetation Management

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).

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 one to one ratio, the lost vegetation.

In the event that 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.

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.

These vegetation management strategies collectively satisfy the initial concerns Board staff regarding long-term vegetation management, and support staff's recommendation to move forward as a pilot program partner.

5.6 – Annual Review and Noticing of Proposed SERP Sites

On or about July 1 of each year during the five-year pilot program DWR will provide a listing of erosion sites (up to fifteen) proposed for SERP repairs. Board staff and other participating agencies will have one month to review DWR's proposal and to determine whether or not to authorize each site for repair. After consultation with DWR those sites not approved for SERP repair (by one or multiple agencies) will be removed from the SERP proposal by DWR and will be addressed separately outside of the SERP program.

Board staff will review the annual SERP proposal to determine:

- Whether or not each SERP site has been designed according to the SERP Manual,
- That geotechnical designs are consistent with the SERP templates,

- That there are no adverse hydraulic impacts,
- That long-term vegetation management actions have been addressed, and
- That annual public noticing of proposed SERP sites using DWR and Board web sites has been made,

all in conformance with the SERP Manual.

Board staff proposes that based on its review and recommendation the Board's Chief Engineer would then notify DWR on or about August 1 of each year during the five-year pilot program with staff's authorization (or denial) decision for each proposed SERP site.

Board staff proposes 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 Board meeting as soon as practical after the Chief Engineer's annual determination has been provided to DWR.

6.0 – PAST AND FUTURE CEQA ACTIONS

DWR filed a Notice of Preparation pursuant to the California Environmental Quality Act (CEQA) with the State Clearinghouse (No. 2009112088) on November 25, 2009.

Board staff provided comment letters to DWR and its environmental consultant AECOM on December 16, 2009 and May 10, 2010 respectively citing CCR 23 § 6 and § 131 regarding the potential needs for Board encroachment permits, and detailed vegetation planting drawings.

The need for an encroachment permits has since been resolved, and the design templates in the SERP Manual will contain detailed vegetation design drawings and specifications.

Upon completion of the SERP Manual DWR will prepare and circulate a Draft Program Environmental Impact Report (DPEIR) to solicit public comments pursuant to CEQA on the SERP program. Board staff proposes to prepare Responsible Agency comments to the DPEIR, and will report this action to the Board.

DWR plans to prepare and circulate a Final Program Environmental Impact Report at which time Board staff proposes to prepare Responsible Agency findings for Board adoption via Resolution at a future Board meeting.

7.0 – STAFF RECOMMENDATION

Board Staff recommends that the Board approve Resolution 2012-20 to:

1. Deem all SERP program activities to be operations and maintenance activities not requiring Board encroachment permits.
2. Direct 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. Direct Board staff to prepare Responsible Agency comments pursuant to CEQA when DWR's Draft Program Environmental Impact Report is circulated.
4. Direct 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. Direct 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 authorized SERP sites at a regular monthly Board meeting as soon as practical after the Chief Engineer's annual authorization of SERP sites.

8.0 – LIST OF ATTACHMENTS

- A. Resolution 2012-20
- B. SERP Program Proposal (available on the Board website [under April 27, 2012 Board Meeting Agenda Item 11B](#))
- C. SERP Phase 1 Coverage Area, Draft SERP Manual, Figure A1
- D. Notice of Preparation of an Environmental Impact Report and Initial Study, Small Erosion Repair Program, November 25, 2009

Document Preparation: Eric Butler, PE, Projects Branch Chief

Document Review: Len Marino, Chief Engineer

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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.*”; 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

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 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 _____, 2012

William Edgar
President

Jane Dolan
Secretary

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Small Erosion Repair Program

**Department of Water Resources
Division of Flood Management
Flood Maintenance Office**

**Proposal for the
Central Valley Flood Protection Board**

April 2012

Introduction

On January 17, 2007, a Small Erosion Repair Program (SERP) subcommittee was formed at the direction of the Interagency Flood Management Collaborative Program Management Group (referred to here as the Interagency Collaborative Group). The subcommittee consists of federal and State resource and regulatory agency representatives including the Central Valley Flood Protection Board (Board) staff. SERP was formed in an effort 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.

SERP is a 5-year pilot program that covers approximately 300 miles of levees maintained by the Department of Water Resources (DWR) within the Sacramento River Flood Control Project (SRFCP). It is being called a Phase I effort because there is anticipation that with success of this pilot program there is potential to expand the program to other local maintaining agencies throughout the Sacramento-San Joaquin Drainage District.

Currently, issuance of permits is on a project-by-project basis. SERP is a program to change the narrow focus of project-by-project permitting, which is costly and time consuming. It is a proactive, collaborative, multi-agency effort to repair up to 15 erosion sites annually of similar size and with similar impacts through a streamlined regulatory review and authorization process. The SERP subcommittee has worked in concert to craft a program that establishes erosion repair design expectations that adequately maintain the integrity of the existing flood control system and maintain or enhance fish and wildlife resources. Through programmatic authorizations, areas with erosion damage can be repaired in a timely manner to avoid further loss of soil and existing vegetation if not repaired. The current programmatic permits being developed are for the 5-year pilot program only.

Purpose

This proposal was prepared to address Board staff's concerns about the SERP. The program has the support of the resource and other regulatory agencies for what it is trying to accomplish: improving public safety and habitat enhancement. However, some aspects of the program needed further consideration: geotechnical impacts, hydraulic impacts, long-term vegetation management and a public notification plan. These are discussed in Sections 1-4 below. Coordinating agencies are willing to participate in the pilot program knowing that each agency has the opportunity to evaluate every erosion repair design and can choose to reject those they feel are not in line with the SERP provisions or can offer additional provisions that would allow the design to work under SERP.

Background

Project Area/Location

SERP covers a subset of the SRFCP, which consists of federally constructed flood control features that include approximately 900–1,000 miles of levees within approximately 620 miles of waterways (including rivers, creeks, streams, sloughs, and bypasses). SERP covers only those levees maintained by DWR (roughly 300 miles) along the waterways identified below and shown in Figure A1, “Phase 1 SERP Coverage Area”:

- ▶ 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 Figure A1
- ▶ Portions of Feather River as identified in Figure A1
- ▶ Putah Creek
- ▶ Sacramento Bypass
- ▶ Portions of Sacramento River as identified in Figure A1
- ▶ Sutter Bypass
- ▶ Tisdale Bypass
- ▶ Wadsworth Canal
- ▶ Willow Slough Bypass
- ▶ Portions of Yolo Bypass as identified in Figure A1
- ▶ East and West Interceptor Canals

Project Size

A two-tiered definition for SERP sites has been developed 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:

The Tier 1 site definition is as follows:

A site can be considered for Tier 1 if the footprint of new bank protection materials and including any additional vegetated area that will be disturbed by equipment during construction is 0.1 acre (4,356 square feet) or less with a maximum linear foot limit of 264 feet. This equates to a 264

feet long by 16.5 feet wide strip of land). A separation of 500 feet between sites repaired in the same year is required.

The Tier 2 site definition is as follows:

A site can be considered for Tier 2 if the footprint of new bank protection materials and including any additional vegetated area that will be disturbed by equipment during construction is 0.5 acre (21,780 square feet) or less with a maximum linear foot limit of 1,000 feet. This equates to a 1,000 foot long by 21.8 feet wide strip of land).

Design Templates

Seven design templates (SERP Manual, Section C) were selected as generalized program-level diagrams that describe and outline the repair techniques: bank fill rock slope with live pole planting, willow wattle with rock toe, branch-layering, rock toe with live pole planting, soil and rock fill at the base of a fallen tree (with rootwad revetment option), bank fill rock slope with native grass planting, and bank fill rock slope with emergent vegetation planting. The design templates are intended to be used as a guide in developing the project-specific cross-section and site plan-view diagrams.

For each project site, DWR will provide the rationale for selecting a particular design template as guidance. The project design figures (cross-section and plan-view diagrams) created for each SERP project site will describe the planting specifications and detailed installation methodologies best suited for the site-specific repairs. **The project-specific diagrams will be submitted to all agencies with the project notification package.**

Section 1: Geotechnical Evaluation

Board Staff Concerns

The Board staff (Curt Taras and Michael Wright) offered comments, and they marked up the SERP design templates to aid in addressing a concern that the design templates do not clearly detail the geotechnical impacts of excavation and fill. The following concerns need to be addressed according to the Board staff:

1. SERP design templates should conform to Title 23, Article 8 levee standards. Comments on the design templates are as follows:
 - a. Show typical 3:1 slope
 - b. Key for erosion fabric
 - c. Typical temporary erosion control silt curtain
 - d. Provide specifications for impervious levee fill material and compaction requirements
2. It is unclear if SERP repairs involve a significant excavation of the levee.

3. SERP repairs should use impervious fill to backfill erosion sites, then protect the surface with rock.
4. The surface rock should have a maximum thickness of 30 inches plus or minus 12 inches.

DWR's Response

DWR (Eric McGrath) had follow up meetings regarding Board staff's comments and added some changes to the templates as deemed appropriate for SERP. The following changes to the templates are proposed by DWR in response to Board staff's concern:

- Added a 3:1 "typical" slope visual
- Added in the notes: erosion fabric keyed-in per manufacturers specification
- Added in the notes: compaction and impermeable fill requirements as defined by Title 23, and noted use will be determined by an engineer on as-needed basis
- Added silt curtain visual with "as-needed" note

There are three concerns (2, 3, and 4 identified above) where consensus with Board staff and DWR could not be reached:

1. Although maintenance is not regulated (exempt) by the Board, Board staff do provide oversight for maintenance activity. The definition of maintenance provided in Title 23, Division 1, Article 2 only loosely defines maintenance as not involving a significant excavation. The standard procedure for maintenance repairs is to stabilize the eroded bank slope by grading the surface before placing erosion protection materials. Both parties acknowledge that grading of an erosion site is needed to prepare for any maintenance work related to levee repair, but no progress has been made in determining the definition of significant excavation.

DWR's Flood Maintenance Office (FMO) is offering an interpretation of what would be a significant excavation: an excavation that may cause slope failure, may undermine the levee, or may cause a loss of freeboard. SERP maintenance repairs do not involve significant excavation under this definition. Maintenance only involves surface preparation to prepare the slope for protective materials (riprap) as a standard best management practice. DWR has offered that a typical maintenance repair of an erosion site is to prepare for riprap by clearing the site of loose materials and creating a stable slope for the riprap to be placed upon. This may include creating a working bench mid-slope to accommodate constructability needs.

2. Board staff emphasize that erosion voids should be filled with impervious material to reduce seepage potential. DWR agrees with the concept, but the

reality is that many levees are not built with impervious material, and filling voids with impervious material will not provide any significant increase in seepage control where the remaining areas of the levee are pervious.

Placing the clay backfill material and compacting to 95% density is not always feasible and practicable on existing slopes, saturated soils, or below the water elevation. Additionally, importing specified impervious material will add to the project cost, schedule, and complexity of the project, thereby reducing the effectiveness of SERP. A key point concerning the SERP program is that it provides for erosion repairs and prevention of future erosion. SERP is not designed to stop or prevent seepage.

3. Board staff wants to see that a maximum riprap thickness of 30-inches is used on SERP sites. DWR believes this requirement is too restrictive.

The 30-inch maximum riprap thickness proposed by the Board staff appears to be arbitrary. This restriction would limit the maximum riprap size to 24-inches. In areas where flow velocities are high, larger riprap may be needed to properly stabilize the site. The SERP manual states "The size of rip rap will be determined by the design engineer and is based on peak velocities and slope ratio." DWR anticipates erosion repairs will require thicker riprap to fill deeper erosion voids, especially near the toe or at the water line where launch rock is required to stabilize the repair.

DWR's Proposal

DWR can include language in the SERP manual that requires DWR to provide the site specific engineering summary design assumptions and construction drawing templates as part of the notification package. If issues are discovered during the engineering evaluation, they will be brought to the appropriate authority so that they can be addressed. DWR is currently developing a database for information on a variety of levee issues (seepage, slope stability, erosion, insufficient geometry, etc.), and all SERP repairs will be entered into this database. The Board staff engineers will have an opportunity to review each project package and may request modification to a project before authorizing the repair proposal. Board staff can also identify projects they believe should not be constructed under the SERP.

Maintenance work includes grading to patch levee erosion, but maintenance work cannot repair the legacy issues of the flood control system. Requiring impervious material and restricting riprap size for small repairs may add significant cost and time to maintenance repairs while providing no overall improvement and may prolong the risk. DWR's maintenance efforts, along with the long-term plan to repair the legacy issues in the system, are described by the Central Valley Flood Protection Plan

Section 2: Hydraulic Evaluation

Board Staff Concerns

Prior to June 2011, SERP development did not include hydraulic analyses to determine the potential for an increase in water surface elevation (WSE) due to the bioengineering component at the toe of the levee. DWR should evaluate the hydraulic impacts for SERP designs. Hydraulic analysis should be conducted to assess the increase in modeled WSE due to construction of a SERP site as follows:

1. Conduct hydraulic modeling to evaluate the impact to WSE of a representative SERP repair design that includes vegetation by selecting a Manning's n value that represents the anticipated maximum roughness (base case). Evaluating this repair design along a narrow cross-section of the stream will give a worst-case hydraulic impact for the design. Also, evaluate a range of n values greater than the base case value to show the sensitivity to n value as vegetation becomes rougher.
2. Conduct further hydraulic modeling to determine the width as the cross-section of the narrow channel is increased (while holding the project design WSE and "n" value constant) at which the WSE increase does not exceed 0.1 foot. The intent here is to establish minimum channel or floodway widths at given "n" values for which we can agree in advance that there are no likely adverse hydraulic impacts beyond said width. For SERP sites with channel or bypass widths less than these thresholds an initial hydraulic analysis would be prepared by DWR as part of the annual SERP repair proposal.

DWR's Response

DWR conducted HEC-RAS (un-calibrated) modeling along a narrow channel (approximately 400 feet wide) using a 2005 erosion repair on Butte Creek that is similar in design to SERP repairs. The repair was bioengineered to include rip-rap with 3 rows of willow pole cuttings installed in layers at the slope along the entire 500 foot length of the repair. The willow cuttings have grown over a 5 year period to cover approximately 16 feet (slope distance) of the slope. Details of the hydraulic analysis can be found in Attachment 1. The model was first run to analyze the SERP repair design that is anticipated to have the greatest hydraulic impact relative to an increase in the WSE. To conduct the evaluation, the model was run under the following repair design conditions applied along 500 feet of the left bank of the stream:

- Rip-rap only (to establish the baseline)
- Mature vegetation (rip-rap and willow along 16 feet of the slope) with an anticipated maximum vegetation roughness that equates to a Manning's "n" value of 0.06 (base case)

- Mature vegetation where the vegetation roughness exceeds the base case: Manning's "n" values of 0.07 and 0.08.

The model was also run to determine the width as the cross-section of the narrow channel is increased (while holding the project design WSE and "n" value constant) at which the WSE increase does not exceed 0.1 foot (Note: the base case (0.06) did not exceed the 0.1 foot threshold under narrow channel conditions, so this value was not evaluated). The effort was to determine at what cross-section width the WSE increase was reduced to 0.1 foot or less. The model was run under the following conditions applied along 500 feet of the left bank of the stream:

- Rip-rap only for extended channel widths to calculate volumetric flow rates that are comparable to the narrow channel flow rates.
- Mature vegetation where the vegetation roughness exceeds the base case: Manning's "n" values of 0.07 and 0.08.

There was early discussion about the need to conduct modeling for each of the seven SERP design guidance templates. The Board staff and DWR agreed that under the limitations of the SERP program—vegetation growth limited by the water line where woody vegetation can't survive and by the vegetation management zone (20 feet from the hinge point of the levee where the vegetation would be cut back)—the current modeling effort provides sufficient worst case information for all templates. An estimate of 16 feet along the slope of vegetation was used in the model, which is representative of the SERP design with the greatest potential for vegetation growth. This is consistent with the planting limitations of SERP where plants are installed 20 feet or more down from the hinge point of the levee, and plant installation is limited by where the plants will actually grow (not drown). The plants need to be able to grow without supplemental irrigation. All other designs are anticipated to result in equal or less of a hydraulic impact relative to increases in WSE.

DWR's Recommendations

DWR will add a hydraulic evaluation section to the SERP manual. Language will be added to this section as follows:

The SERP coverage area includes levees along a wide range and diverse system of canals, streams, channels and rivers. By conducting hydraulic analysis for a representative 'worst case' SERP repair on a narrow stretch of Butte Creek, the modeling results may be extrapolated to other sites within the entire SERP coverage area. The initial hydraulic analysis suggests that most SERP projects are anticipated to result in minor increases to WSEs, generally less than 0.1 feet at project design WSEs during high water events. In addition, where there may be a concern for higher densities of vegetation creating greater roughness, the modeling suggests that for cross-sections greater than approximately 700 feet with n at 0.07 and 1400 feet with n at 0.08) the increase in WSE should not exceed 0.1 feet.

DWR acknowledges that there may be a few cases where Board staff may not recommend authorizing a particular SERP repair. For example, a maintenance repair along a very narrow channel or canal where there is no vegetation downstream or upstream, and it may be unclear whether the current hydraulic analysis is representative of that particular case. At that point, Board staff can offer one of two options:

1. Request specific, additional hydraulic analysis for the maintenance repair before authorizing.
2. Identify that the maintenance repair should not be conducted under the SERP and move forward through the Board's standard encroachment permit application process.

Section 3: Long Term Vegetation Management

Board Staff's Concern's

SERP bioengineering designs include vegetation that is planted at the toe of the levee, and it is not clear in the SERP Manual if there is a plan for long-term management of this vegetation.

DWR's Response

The SERP program is consistent with the vegetation management strategy described in the Central Valley Flood Protection Plan (CVFPP). FMO recognizes that woody vegetation on levees must be appropriately managed to ensure proper functioning of the flood control system. This strategy is focused on improving public safety by providing for levee integrity, visibility, and accessibility for inspections, maintenance and flood fight operations while paying particular focus on protecting and enhancing shaded riverine aquatic habitat. The intent of SERP is to move forward anticipating that the vegetation management strategy proposed in the CVFPP will not change; however, the proposed management language is still draft and changes to the language can still occur. If Board members adopt a different approach for vegetation management, this could affect the original analysis of the SERP designs. If it does, additional analysis and consultation with SERP agencies will be needed.

DWR recognizes that some Board staff has referred to the long-term vegetation management of SERP sites as providing a "Safe Harbor-Like Agreement". DWR would like to clarify that Safe Harbor Agreements are not applicable to this program. This was based on consensus at a meeting held October 18, 2011 with DWR, Board staff, the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). At this meeting, USFWS and NMFS emphasized that the term "long-term management of vegetation" is more applicable to SERP.

DWR's Recommendations

DWR will add a long-term vegetation management section to the SERP manual. Language will be added to this section as follows:

The long-term management language applies to herbaceous and woody vegetation planted in the area that is waterside of the vegetation management zone (VMZ) defined in the conservation framework document (Attachment 2).

In the event subsequent erosion occurs at a SERP site, and the herbaceous and woody vegetation that was planted as part of a SERP bioengineering design is lost due to this erosion, the subsequent repair to the site would use a similar bioengineering design and replace, at a 1:1 ratio, the lost vegetation.

In the event that the herbaceous and woody vegetation planted in zone 2 grows to extend upslope and into the area that is the VMZ, that portion extending into this area 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 CVFPB.

In the event that the portion of herbaceous and woody vegetation waterside of the VMZ, but outside of the area that is 20 feet from the hinge point, grows to impede flow, visibility and accessibility for inspections, and maintenance and flood fight operations, DWR will coordinate with the resource agencies on the best method to correct these impedances.

Section 4: Public Notification

Board staff's Concerns

The Board cannot approve SERP in any manner without making its own CEQA findings on a final publically noticed and reviewed CEQA document.

The SERP process should satisfy public noticing requirements for projects in a manner similar to the encroachment permit process. SERP has no public noticing process beyond the CEQA Programmatic Environmental Impact Report (PEIR) document.

DWR's Response

DWR is preparing a PEIR for the program, as a way to notify the public and to provide the public opportunity to comment. There are two public notification paths that can be evaluated as follows:

1. DWR together with Board staff can establish language in the SERP manual that can provide the necessary level of detail for Board staff to clarify how SERP will proceed when 15 annual packages are delivered for review. Review timelines, public notification process, contingency criteria, opt out options, and other clarifications can be formally written in a section of the manual. DWR will agree to follow additional notification processes (outside of CEQA) as recommended by Board staff.
2. Under an encroachment permit process, the Board would have to authorize the SERP program. In this case, a CEQA document would be presented to the Board, and the Board would conduct their own CEQA findings before adoption of the program. Presentation and authorization by the Board would constitute the public notification process.

DWR's Recommendation

DWR recommends that SERP repairs are maintenance repairs, exempt from an encroachment permit. DWR can provide language to be added to the SERP manual that defines the process for Board staff's review, which can include any additional public notification beyond the CEQA process. SERP is effective only if it streamlines the permit review and authorization process. The first path, where SERP is a maintenance repair, is the only path that will make SERP an effective, viable program.

The alternative path (path 2) would entail the Board forwarding the DWR encroachment permit application to the U.S. Army Corps of Engineers (Corps) for their review. There is no separate Corps "approval" under section 208.10. The Corps will send a recommendation letter to the Board stating that they either have no objection to the Board approving the encroachment permit application or they recommend that the Board deny the permit application. The Board would take the Corps' recommendation into account prior to issuing the encroachment permit. The timeline for the Corps review can be greater than a year, and the bioengineering component of the designs can potentially increase review process, and possibly result in the Corps objecting to the permit.

Conclusion

Efficient and sustainable operations and maintenance practices occur through implementing strategies that adequately and reliably fund maintenance activities and streamline permitting. FMO is managing maintenance with a focus on opportunities to coordinate with the multiple stakeholders along the flood control system that can improve public safety, and enhance the ecosystem. SERP is one of these efforts, one that can also provide a more cost effective approach to maintaining the flood control system. SERP is a 5-year pilot project that in DWR's opinion has insignificant hydraulic and geotechnical impacts over the project's life span. With a monitoring component for each repair, there is opportunity to observe the success of the program and alleviate some of the concerns that Board staff may have about the current designs. Please

consider the DWR recommendations as a feasible approach to addressing Board staff's concerns so that DWR can continue progress toward streamlining the maintenance repair of small levee erosion sites. The recommendations are summarized as follows:

1. Accept changes that DWR made to the existing SERP design templates and accept that SERP repairs are maintenance; therefore, they are exempt from Title 23.
2. Accept the hydraulic analysis as indicating SERP repairs result in allowable increases in WSE, but DWR acknowledges that for some project repairs, the Board staff will request specific, additional hydraulic analysis for a maintenance repair before authorizing the request.
3. Accept the long-term vegetation management language of the bioengineering design component of the repairs.
4. Accept that because maintenance repairs do not require Board approval, the CEQA document is sufficient to notify the general public. Board staff may offer additional public notification processes that DWR can include in the SERP manual such as posting the project to a website.

Attachments

1. Hydraulic Analysis Memo
2. Conservation Framework section 5.4.3

Attachment 1, Hydraulic Analysis Memo

M e m o r a n d u m

Date: April 18, 2012

To: Jeff Schuette
Senior Environmental Scientist
Maintenance Environmental Support Branch
Flood Maintenance Office

cc: Mark List

From: Mathy Mathiyarasan
Engineer, Water Resources
System Integrity Section B
Maintenance Support Branch
Flood Maintenance Office
Department of Water Resources

Subject: Hydraulic Analysis of a bioengineered repair, representative of repairs under the Small Erosion Repair Program (SERP)

Purpose

The purpose of this hydraulic analysis is to evaluate the potential impact of vegetation (shrub species of willow) on water surface elevation (WSE) for a repair site that is representative of a future SERP project with the greatest potential hydraulic impact. This repair site was selected based on its location along a very narrow channel. This analysis also addresses the effects of channel floodplain width on WSE. This effort was conducted to address the Central Valley Flood Protection Board staff's (Board staff) concerns over SERP's possible hydraulic impacts. The various scenarios evaluated were developed with direction from Board staff and included incremental reviews by the Board staff after which additional direction was provided.

Project Location

The repair site is approximately 500 feet long and located on Butte Creek about a half-mile downstream of Oroville-Chico Highway in Butte County.

Project Description

The repair of the left bank occurred in 2005. It was bioengineered to include rip-rap with 3 rows of willow installed in layers at the slope along the entire 500 foot length of the repair. The willows have grown to cover approximately 16 feet (slope distance) of the slope. The width of the channel floodplain (cross section) at the repair site is approximately 400 feet.

Modeling Methodology

An un-calibrated HEC-RAS model was set up for a 3500 foot long reach of Butte Creek. The reach was created by extending the project boundary in the downstream direction by 500 feet and the upstream direction by 2500 feet. A representative cross-section was created from existing LiDAR data and seventeen uniform cross-sections were placed as shown in Table 1.

Table 1: Summary of Cross Section Placement in the Model

Distance along the reach from downstream (feet)	Description
0, 200, 400	Downstream extended portion
500, 600, 700, 800, 900, 1000	Project site
1200, 1400, 1600, 1800, 2000, 2500, 3000, 3500	Upstream extended portion

The project boundary was extended downstream to minimize impact due to the boundary condition assumption of normal depth at the downstream boundary. The project boundary was extended upstream to a sufficient distance where the representative repair would have no impact on WSE.

The value for Manning's "n" for the modeled reach was assumed based on a field visit and best engineering judgment. Typical conditions encountered during the field visit are shown in Figures 1 through 5 below. For mature vegetation conditions at the representative repair site, a Manning's "n" value of 0.06 was used. In addition, evaluations were completed for Manning's "n" values of 0.07 and 0.08 to determine the sensitivity to Manning's "n" and address the Board staff recommended range for mature vegetation conditions.

For the higher Manning's "n" values at the representative repair site, the modeled channel width is increased in 50 foot increments (i.e. channel width is 450', 500', 550'up to 1400') to determine minimum channel width resulting in changes in $WSE \leq 0.1'$ These analyses were completed for an assumed project site roughness of 0.07 and 0.08 while maintaining upstream and downstream roughness at 0.06.

The model was run for the following conditions:

- The rip-rap only condition on the left bank (Assumed Base Condition)
- The mature vegetation condition (rip-rap and matured willow on the left bank) with Manning's "n" values of 0.06, 0.07, and 0.08.
- The rip-rap only condition on the left bank for extended channel widths.
- The mature vegetation condition with Manning's "n" values of 0.07 and 0.08 the for extended channel widths.

(These runs are summarized in Table 2 in the Results Section below.)

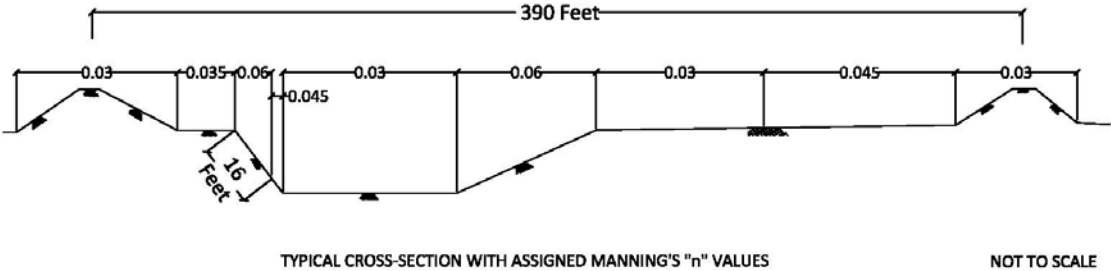


Figure 1: Typical Cross-Section with Assigned Manning's "n" Value





Figure 3: Typical Main Channel ($n_{\text{bottom}} = 0.03$, $n_{\text{banks}} = 0.06$)



Figure 4: Typical Right Over Bank ($n=0.045$ & $n=0.03$ respectively)



Figure 5: Typical Channel Left Bank with willow – Representative Repair Site (n=0.06.)

Model Assumptions

- Flow is one dimensional steady state
- Flow is subcritical
- Roughness (Manning’s “n”) is constant with varying flow (depth and velocity)
- Flow depth at downstream boundary is at normal water surface elevation
- The channel slope is 0.0025 ft/ft with uniform (representative) cross sections
- Flow is 27,000 cfs (the design flow from the US Army Corps of Engineers Operations & Maintenance Manual, Upper Butte Creek – Part 2 from Little Chico Creek Diversion Structure Down Stream 9.3 Miles (Unit 516) and the 1957 design profile).

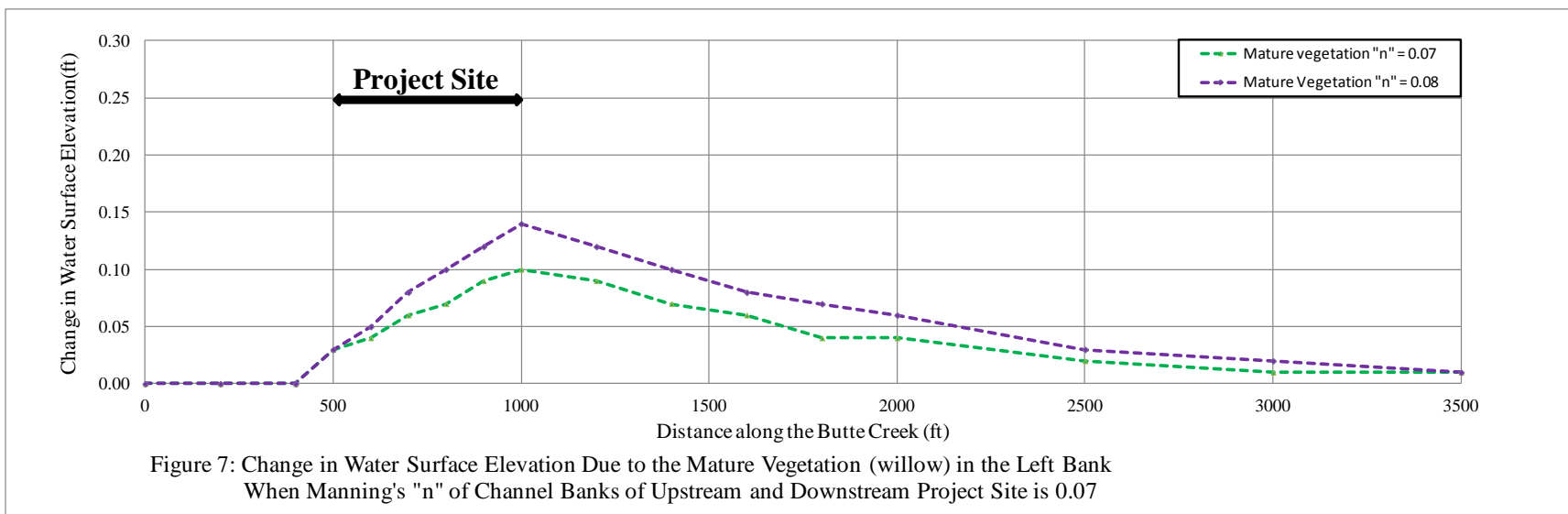
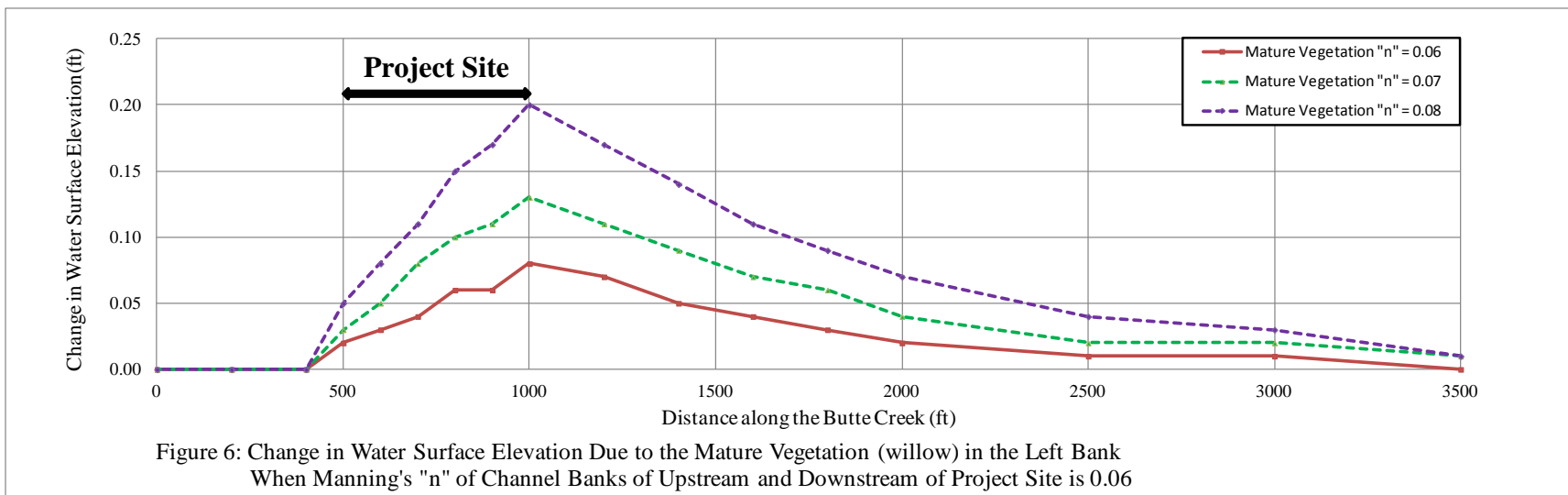
Results

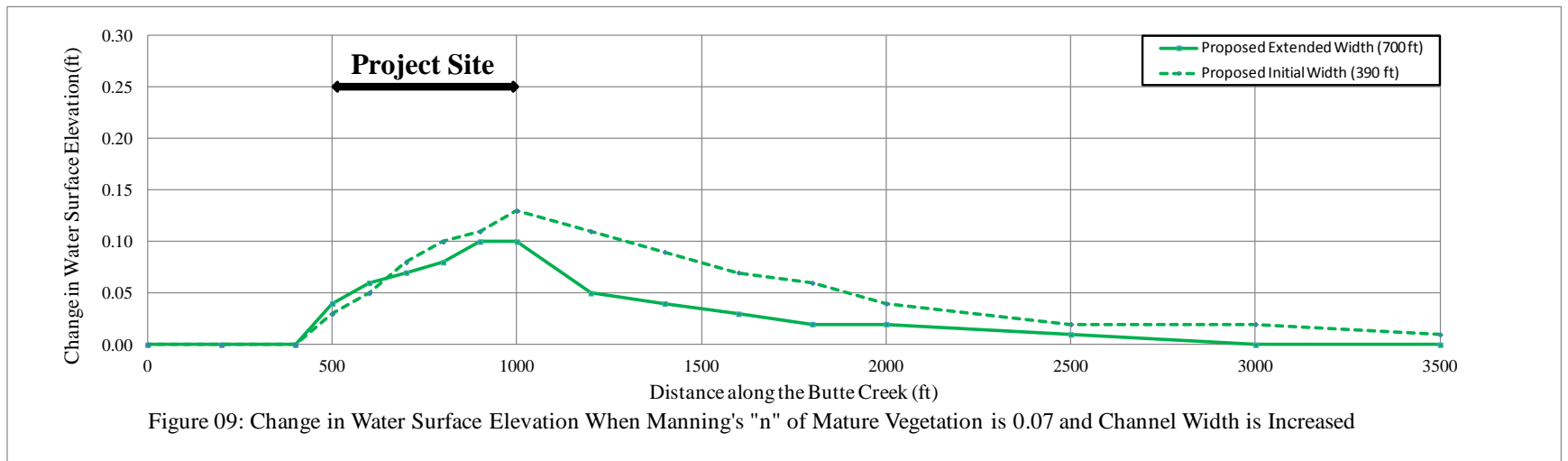
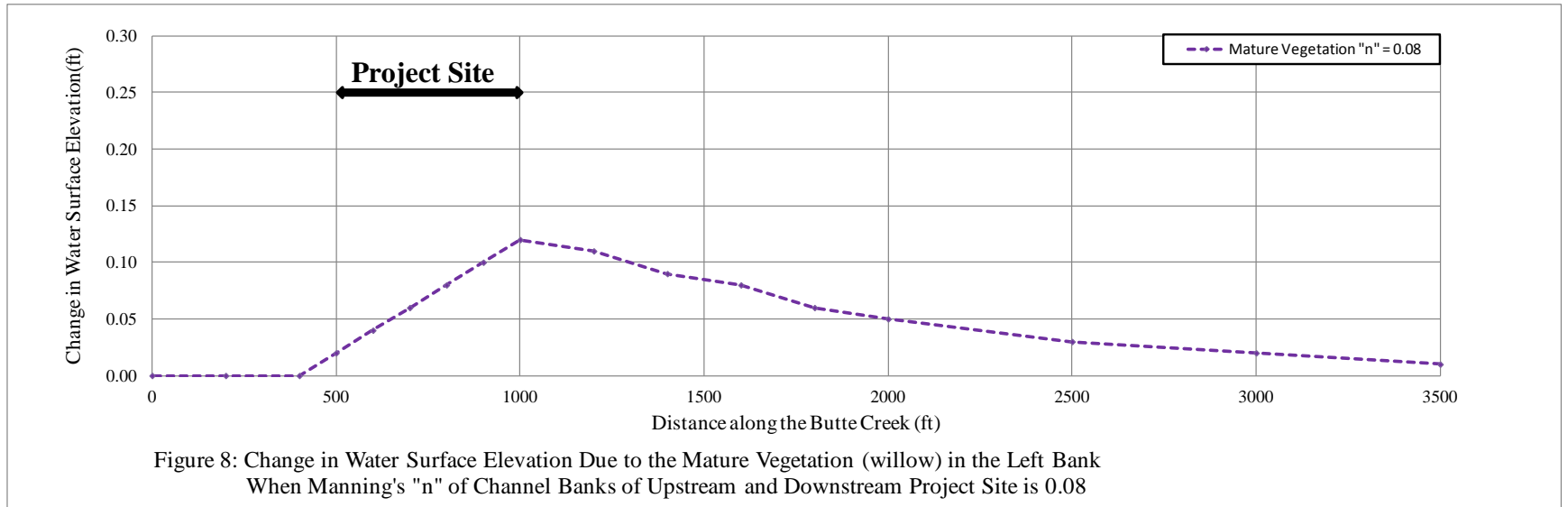
Table 2 summarizes the scenarios that were evaluated with HEC-RAS. Figure 6 summarizes the changes in the WSE between the assumed base condition and mature vegetation condition for Manning’s “n” of 0.06, 0.07, and 0.08). Similarly, Figures 7 and 8 summarize changes in the WSE when Manning’s “n” of channel banks of the upstream and downstream reaches vary (0.07 and 0.08).

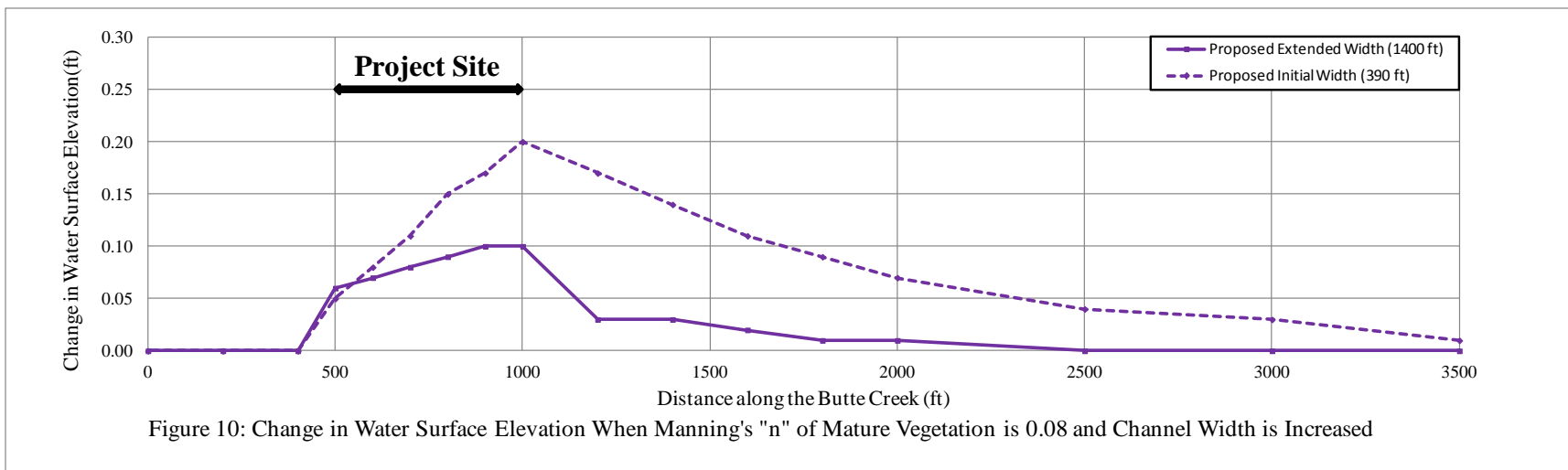
Figures 9 and 10 compare the changes in the WSE for Manning’s “n” of 0.07 and 0.08 for the representative repair site, when channel floodplain width is increased to determine what channel width is required for a change in $WSE \leq 0.1'$ for the assumed Manning’s “n” values.

Table 2: Summary HEC-RAS Scenarios

Run ID	X-Section Width	Upstream "n"	Repair Section "n"	Downstream "n"	Change in WSE < 0.1
Run 1 (Assumed Base Condition)	392	0.06	0.045	0.06	N/A
Base Width with Varying "n" Values					
Run 2	392	0.06	0.06	0.06	Yes (Figure 6)
Run 3		0.06	0.07	0.06	No (Figure 6)
Run 4		0.06	0.08	0.06	No (Figure 6)
Run 5		0.07	0.07	0.07	Yes (Figure 7)
Run 6		0.07	0.08	0.07	No (Figure 7)
Run 7		0.08	0.08	0.08	Yes (Figure 8)
Varying Channel Width and Representative Repair Site "n" Values					
Run 8	450	0.06	0.07	0.06	No
Run 9	500	0.06	0.07	0.06	No
Run 10	550	0.06	0.07	0.06	No
Run 11	600	0.06	0.07	0.06	No
Run 12	650	0.06	0.07	0.06	No
Run 13	700	0.06	0.07	0.06	No
Run 14	700	0.06	0.07	0.06	Yes (Figure 9)
Run 15	750	0.06	0.08	0.06	No
Run 16	800	0.06	0.08	0.06	No
Run 17	850	0.06	0.08	0.06	No
Run 18	900	0.06	0.08	0.06	No
Run 19	950	0.06	0.08	0.06	No
Run 20	1000	0.06	0.08	0.06	No
Run 21	1050	0.06	0.08	0.06	No
Run 22	1100	0.06	0.08	0.06	No
Run 23	1150	0.06	0.08	0.06	No
Run 24	1200	0.06	0.08	0.06	No
Run 25	1250	0.06	0.08	0.06	No
Run 26	1300	0.06	0.08	0.06	No
Run 27	1350	0.06	0.08	0.06	No
Run 28	1400	0.06	0.08	0.06	No
Run 29	1400	0.06	0.08	0.06	Yes (Figure 10)







Discussion

The *Handbook of Hydraulics* by Ernest F. Brater and Horace Williams King shows a range of Manning's "n" values from 0.05 to 0.08 that are applicable for the project site. Manning's "n" of 0.05 was not analyzed since the maximum change in WSE for "n" of 0.06 is already below 0.1'. Figure 6 shows the following results with a Manning's "n" of 0.06 for the representative repair site:

- the maximum change in the WSE is 0.08 feet
- The water surface profile matches the assumed base condition approximately 2500 feet upstream.
- There is no change in downstream WSE.

Figure 6 also shows that impacts to WSE greater than 0.1' occur when other potential "n" values (0.07 and 0.08) are used for the project site with upstream and downstream roughness at 0.06.

Further, in order to evaluate the impact of upstream and downstream roughness on WSE at the representative repair site, the "n" values for upstream and downstream reaches are changed from 0.06 to 0.07 (Figure 7) and to 0.08 (Figure 8). The figures show that the changes in WSE due to the representative repair are relatively less when the upstream and downstream reach "n" values are

As seen in Figure 6, the maximum change in WSE is greater than 0.1' when higher "n" values (0.07 and 0.08) are assumed for the representative repair site. Higher "n" values (0.07 and 0.08) will result in less than 0.1' increase in WSE when the channel width is increased. Figure 9 shows the maximum change in $WSE \leq 0.1'$ for "n"=0.07 when channel width is 700 ft. Similarly, Figure 10 shows the maximum change in $WSE \leq 0.1'$ for "n"=0.08, when channel width is 1400 ft.

Conclusion

The hydraulic modeling results for the assumed base condition ("n" =0.045) and the mature vegetation condition ("n" =0.06) at the representative repair site show that the change in the WSE is $< 0.1'$. For higher "n" values (0.07 and 0.08), the channel should be wider than the representative site for the maximum change in $WSE \leq 0.1'$.

This modeling effort addresses Central Valley Flood Protection Board staff's concerns of potential hydraulic impacts for SERP projects.. When proposed SERP projects are located on wide channels hydraulic impacts are negligible. When proposed SERP projects are located in narrower channels, site specific hydraulic analysis may be required to assess potential impacts to WSE.

Attachment 2, CVFPP, Conservation
Framework, Section 5.4.3

5.4.3 Vegetation Management Strategy

The State will implement a comprehensive, integrated management strategy that meets both public safety goals and protects and enhances sensitive habitats within the Sacramento and San Joaquin valleys. The State's strategy to levee vegetation management will be adaptive and responsive to (1) the results of ongoing and future research, and (2) knowledge gained from levee performance during high-water events. The strategy is built on concepts embodied in *California's Central Valley Flood System Improvement Framework* (Framework Agreement), signed in 2009 by California Levees Roundtable participants, and includes a systemwide risk-informed process to address the requirements of USACE national vegetation policy within the context of multiple levee risk factors. Policies and implementation of these policies regarding removing trees and other woody vegetation on levees are evolving and will be informed by ongoing and future research.

Management of vegetation on Central Valley levees is at the heart of the disagreement between the USACE vegetation policy and resource agency recovery efforts for river corridors. Long-term management of vegetation will generally be accomplished through adaptive management of vegetation on the levee – both within the vegetation management zone and on the lower waterside slope (outside of the vegetation management zone). This strategy allows existing “legacy” trees and other woody vegetation to live out their normal life cycles unless they pose an unacceptable threat, while maintaining visibility for inspection and access for maintenance and floodfight. This strategy allows for the retention of lower waterside vegetation (below the vegetation management zone).

Vegetation Management Zone

The Vegetation Management Zone is the area on and near a levee in which vegetation is managed for visibility and accessibility using a life-cycle management strategy.

The vegetation management zone includes the entire landside levee slope plus 15 feet beyond the landside toe (or less if the existing easement is less than 15 feet), the levee crown, and the top 20 feet (slope length) of the waterside levee slope.

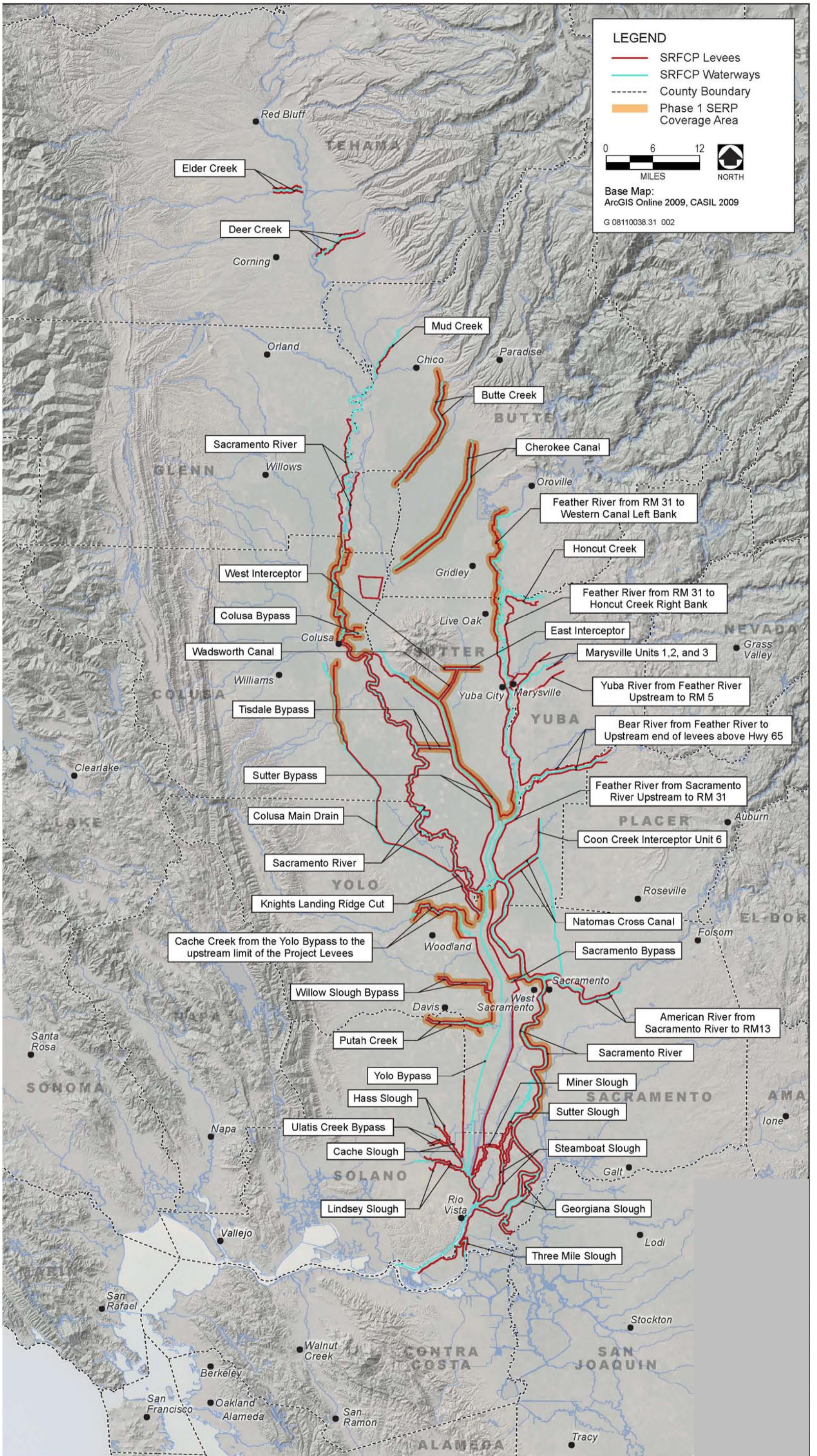
For levees that have a waterside slope of less than 20 feet, the vegetation management zone includes the entire waterside slope plus the extent of berm within 20 feet of the crown as measured along the ground surface.

For levees that have a short waterside slope above the water surface elevation that submerges the lower waterside slope frequently enough to prevent long-term tree establishment, the lower 5 feet (slope distance) of the waterside slope immediately above that water surface elevation is not included in the vegetation management zone and should remain unmanaged.

For levees with a landside berm, the vegetation management zone is determined by using the projected landside levee slope instead of the actual landside levee slope.

The vegetation management zone is illustrated on Figures 5-1 and 5-2.

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SERP Phase 1 Coverage Area

Figure A1

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DEPARTMENT OF WATER RESOURCES

3310 El Camino Avenue, Suite 100
SACRAMENTO, CA 95821
(916) 574-1302



Notice of Preparation of an Environmental Impact Report
and Initial Study

Small Erosion Repair Program

November 25, 2009

Prepared by:
California Department of Water Resources
Division of Flood Management
Flood Maintenance Office
3310 El Camino Avenue, Suite 100
Sacramento, California 95821

DEPARTMENT OF WATER RESOURCES3310 El Camino Avenue, Suite 100
SACRAMENTO, CA 95821
(916) 574-1302**NOTICE OF AVAILABILITY OF A DRAFT NOTICE OF PREPARATION/
INITIAL STUDY FOR PUBLIC REVIEW**

California Department of Water Resources (DWR), Division of Flood Management has released a Notice of Preparation/Initial Study (NOP/IS) for the project listed below:

PROPOSED PROJECT: Small Erosion Repair Program (SERP) for Sites on Levees within the Sacramento River Flood Control Project Area

PUBLIC COMMENT AND REVIEW PERIOD: November 25, 2009 – December 28, 2009

PROJECT DESCRIPTION: 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 Sacramento River Flood Control Project (SRFCP) area. The initial focus (Phase 1) of the SERP approximately 306 miles of levees and represents an initial 5-year effort. After the Phase 1 implementation period, the Interagency Flood Management Collaborative Program Group (Interagency Collaborative Group) intends to 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. The EIR will review environmental effects only for the Phase 1 coverage area.

Implementation of SERP would include DWR maintenance staff conducting annual maintenance surveys each spring to identify small erosion sites for repair within the Phase 1 SERP coverage area. DWR engineering and environmental staff would conduct a baseline assessment at each site.

A maximum of 15 individual repair projects would be implemented annually under the SERP during Phase 1 of the program. Individual repair sites are defined generally as the footprint of new materials to protect a levee bank and additional vegetated area that would be disturbed by equipment during construction, including staging and access routes.

Potential SERP repairs would be categorized into two tiers based on the size of the project disturbance area. A site would be designated "Tier 1" if the footprint of new bank protection materials and construction disturbance area is 0.1 acre or less with a maximum linear footprint of 264 feet. A minimum separation of 500 feet would be required between repairs. A site would be designated "Tier 2" if the footprint of new bank protection materials and construction disturbance area is up to 0.5 acre with a maximum linear footprint of 1,000 feet. Repairs larger than 0.5 acre or 1,000 linear feet would require individual consultation and environmental review and thus would not qualify for authorization under the SERP.

SIGNIFICANT ENVIRONMENTAL EFFECTS ANTICIPATED: The NOP/IS identified potentially significant effects associated with: air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, and noise. These issue areas will be discussed further in the draft Environmental Impact Report (EIR) for the proposed program, and mitigation

measures will be recommended wherever feasible to reduce potentially significant and significant impacts.

WHERE NOP/IS MAY BE OBTAINED: Copies of the NOP/IS are available for viewing at the following locations during business hours or library hours:

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

Sacramento Public Library, Central Library
828 I Street
Sacramento, CA 95814

Chico Branch Library
1108 Sherman Avenue
Chico, CA 95926

Comments on the proposed program or the focus and contents of the upcoming draft EIR must be submitted in writing to:

California Department of Water Resources
Division of Flood Management
3310 El Camino Avenue, Suite 100
Sacramento, CA 95821
Attention: Jeff Schuette, Staff Environmental Scientist
E-mail: jschuett@water.ca.gov

Comments must be received by **5:00 p.m. on December 28, 2009**. To account for the holiday schedule, the comment period is being extended from the required 30 days to end on December 28.

SCOPING MEETING: A scoping meeting will be held to receive written and oral input on the scope and content of the draft EIR. The scoping meeting will be held on **December 15, 2009**, at **1:30 p.m.** at the following location:

California Department of Water Resources
Division of Flood Management
3310 El Camino Avenue
Sacramento, CA 95821

All comments received during the public review period, including oral comments made at the scoping meeting, will be made part of the public record. At the conclusion of the 30-day comment period a draft EIR will be prepared that will address comments received during the review period.

NOTICE OF PREPARATION OF AN EIR

To: Agencies and Interested Parties

From: Jeff Schuette, Staff Environmental Scientist, Division of Flood Management, California Department of Water Resources

Date: November 25, 2009

Subject: Notice of Preparation of an Environmental Impact Report on the Small Erosion Repair Program (SERP) for Sites on Levees within the Sacramento River Flood Control Project Area

In accordance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations [CCR] Section 15000 et seq.), the California Department of Water Resources (DWR) will be preparing an environmental impact report (EIR). The EIR will evaluate the environmental effects associated with the Small Erosion Repair Program (SERP) that would facilitate an initial focus of implementing repairs of small erosion sites on levees maintained by DWR within the Sacramento River Flood Control Project (SRFCP) area. The SERP may be expanded in the future to include sites repaired by the local maintaining agencies throughout the Sacramento-San Joaquin drainage district.

In accordance with Section 15082 of the State CEQA Guidelines, DWR has prepared this notice of preparation (NOP) as notification that a programmatic EIR will be prepared. The purpose of an NOP is to provide sufficient information about the proposed program and its potential environmental impacts so that the State of California's Office of Planning and Research (OPR), responsible and trustee agencies, and interested parties have the opportunity to provide meaningful comments related to the scope and content of the EIR, including the significant environmental issues, reasonable alternatives, and mitigation measures that the responsible or trustee agency, or OPR, will need to explore in the EIR (State CEQA Guidelines Section 15082[b]).

A brief description of the proposed program and its location, along with a listing of environmental effects that may occur under the proposed program, are contained in the attached materials. An initial study, attached hereto, has been prepared in accordance with State CEQA Guidelines Section 15063 and identifies the anticipated environmental effects of the program. The initial study satisfies DWR's obligation under State CEQA Guidelines Section 15082, subdivision (a)(1)(C), to identify the "probable environmental effects of the project."

Responses to this NOP must be sent no later than **5 p.m. on December 28, 2009**. CEQA requires that public comments be accepted for 30 days after receipt of this notice (State CEQA Guidelines, Section 15082 [b]); however, to account for the holiday

schedule, the comment period is being extended to December 28. If you wish to comment on the proposed program or the focus and contents of the upcoming draft EIR, please send your written comments to:

California Department of Water Resources
Division of Flood Management
3310 El Camino Avenue, Suite 100
Sacramento, CA 95821
Attention: Jeff Schuette, Staff Environmental Scientist
E-mail: jschuett@water.ca.gov

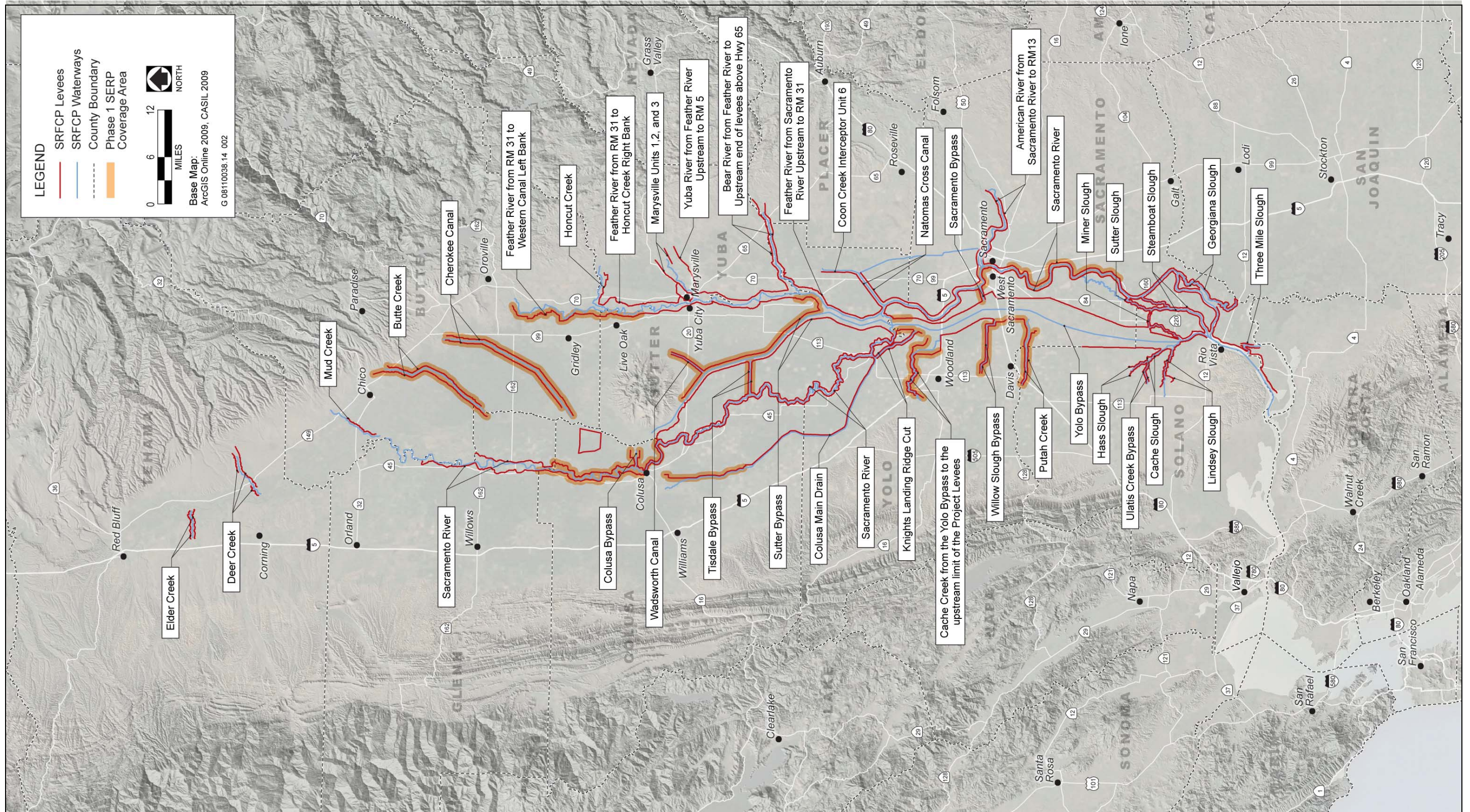
A scoping meeting will be held to receive written and oral input on the scope and content of the EIR. The scoping meeting will be held on December 15, 2009, at 1:30 p.m. at the following location:

California Department of Water Resources
Division of Flood Management
3310 El Camino Avenue
Sacramento, CA 95821

PROGRAM LOCATION

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. The initial focus (Phase 1) of the SERP represents approximately 306 miles of levees (Exhibit 1, "Phase 1 SERP Coverage Area") and represents an initial 5-year effort. After the Phase 1 implementation period, the Interagency Flood Management Collaborative Program Group (Interagency Collaborative Group) intends to 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. The EIR will review environmental effects only for the Phase 1 coverage area.

The Sacramento River's hydrology has been altered by dam, weir, and levee construction. The flood control facilities that DWR maintains are located within the valley floor of the watershed. The valley drainages include the upper Colusa and Cache Creek watersheds on the west side of the valley and the Feather River and American River watersheds on the east side of the valley (SVWQC 2004, p. 1). DWR's maintenance yards maintain the levees along the waterways listed below, all of which would be eligible for inclusion in the SERP (See Exhibit 1, "Phase 1 SERP Coverage Area"). It should be noted that the term "levees" as used in this document is broadly defined to include levees and associated waterside slopes within the levee prism that are part of the flood control system and addressed in operations and maintenance manuals for identified flood control facilities maintained by DWR or other local maintaining agencies. Only the waterways identified in the Phase 1 waterways section below are included in the SERP for Phase 1. After Phase 1 of the program the Interagency Collaborative Group intends to evaluate the program's success, whereby the SERP may be expanded



Source: Adapted by AECOM in 2009

Phase 1 Small Erosion Repair Program Coverage Area

Exhibit 1

in the future to include sites repaired by the local maintaining agencies throughout the Sacramento-San Joaquin drainage district.

Phase 1 Waterways:

- ▶ 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 Exhibit 1
- ▶ Portions of Feather River as identified in Exhibit 1
- ▶ Putah Creek
- ▶ Sacramento Bypass
- ▶ Portions of Sacramento River as identified in Exhibit 1
- ▶ Sutter Bypass
- ▶ Tisdale Bypass
- ▶ Wadsworth Canal
- ▶ Willow Slough Bypass
- ▶ Portions of Yolo Bypass as identified in Exhibit 1

Waterways covered under the expanded SERP coverage area could include the rest of the SRFCP area and the San Joaquin River included in the Sacramento-San Joaquin Drainage District.

PROGRAM BACKGROUND AND NEED

Levees that sustain erosion damage during winter periods of high flows may undergo further loss of soil or potential failure over time that could lead to levee failure and significant adverse effects on the surrounding fish and wildlife resources. Such erosion sites need to be repaired in a timely manner to maintain the flood control integrity of the existing flood management system and to repair, maintain, or enhance environmental conditions at the site. Currently, small erosion repair projects require issuance of permits on a project-by-project basis. The multiple authorizations and level of interagency coordination required for individual repairs (e.g., Clean Water Act permits from the U.S. Army Corps of Engineers [USACE]; Endangered Species Act compliance with U.S. Fish and Wildlife Service [USFWS]; and National Marine Fisheries Service [NMFS]; streambed alteration agreements from the California Department of Fish and Game [DFG]; water quality certification with the local regional water quality control board [RWQCB]) has often resulted in delays, during which time the eroded areas have been susceptible to further damage and loss of riparian vegetation, posing a potential public safety hazard.

To address this problem, the SERP subcommittee was formed at the direction of the Interagency Collaborative Group on January 17, 2007. The SERP subcommittee is a group of federal and state resource agency representatives charged with defining what constitutes a small erosion repair and determining appropriate repair techniques that will adequately protect the levee system while avoiding substantial adverse effects on

environmental resources. The SERP subcommittee has worked in concert to craft a program intended to improve current erosion repair practices and thus achieve a cumulative net benefit to fish and wildlife resources and habitat for native species while maintaining the necessary level of flood protection.

PROGRAM OBJECTIVES

The purpose of the SERP is to ensure the continued flood control 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 would use programmatic authorizations issued by federal, state, and local regulatory agencies to streamline the process for implementing small erosion repairs in accordance with conservation strategy–based design and monitoring standards established by the SERP subcommittee. Repairs that qualify under the SERP would be eligible to receive authorization to proceed within a shortened time frame because they are designed to minimize effects on fish and wildlife resources, including listed species, and to protect and enhance the existing aquatic and riparian habitats comprising the riverine corridor.

The program sets apart similar small erosion repair sites and develops a streamlined permitting process for these sites with the following goals:

- ▶ Provide for a quicker response to small erosion sites, thereby preventing the erosion from expanding.
- ▶ Foster consistent regulatory compliance efforts for similar repairs, from the standpoint of both environmental protection and operations and maintenance activities.
- ▶ Develop a comprehensive approach to facilitate program-level review of small erosion sites and streamline permitting.
- ▶ Obtain measurable data with which to evaluate the success of the program through an ongoing, consistently applied monitoring effort.

The identified objectives of the SERP are to:

- (1) maintain the flood control integrity of the SRFCP,
- (2) prevent further erosion so that the loss of riparian and nearshore aquatic habitat is less likely to occur,
- (3) minimize the loss of riparian vegetation and endangered species habitat resulting from construction activities, and
- (4) enhance the existing riparian vegetation corridor at the erosion sites, where applicable.

PROGRAM DESCRIPTION

DWR is proposing to develop and implement a collaborative program to improve current erosion repair practices and thus achieve a greater level of flood protection while providing a cumulative net benefit to fish and wildlife resources and habitat for native species. As part of the program, DWR and the SERP subcommittee of the Interagency Collaborative Group are developing the SERP Manual, which describes the various elements of the program. Programmatic permits and project approvals are being requested from USACE, USFWS, NMFS, DFG, and the Central Valley RWQCB.

SERP PROJECT IDENTIFICATION AND IMPLEMENTATION PROCESS

Project Identification and Characterization

Implementation of SERP would include DWR maintenance staff conducting annual maintenance surveys each spring to identify small erosion sites for repair within the Phase 1 SERP coverage area. DWR engineering and environmental staff would conduct a baseline assessment at each site.

A maximum of 15 individual repair projects would be implemented annually under the SERP during Phase 1 of the program. Individual repair sites are defined generally as the footprint of new materials to protect a levee bank and additional vegetated area that would be disturbed by equipment during construction, including staging and access routes.

Potential SERP repairs would be categorized into two tiers based on the size of the project disturbance area. A site would be designated “Tier 1” if the footprint of new bank protection materials and construction disturbance area is 0.1 acre or less with a maximum linear footprint of 264 feet. A minimum separation of 500 feet would be required between repairs. A site would be designated “Tier 2” if the footprint of new bank protection materials and construction disturbance area is up to 0.5 acre with a maximum linear footprint of 1,000 feet. Repairs larger than 0.5 acre or 1,000 linear feet would require individual consultation and environmental review and thus would not qualify for authorization under the SERP.

For each proposed site, DWR would identify the appropriate SERP design template to apply to the site. The program design templates are described in more detail below.

DWR would notify the applicable permitting agencies— USACE, USFWS, NMFS, DFG, and RWQCB—of the proposed small erosion repair projects by bundling and submitting all of the required notification materials for up to 15 projects to the agencies as a package each spring. The notification packet would include documentation that each site is consistent with the findings and parameters of the CEQA document prepared for the SERP. Upon receipt of the annual SERP notification package, the agencies would review the projects and respond to DWR within 30 days with written response of whether the projects are acceptable under the programmatic SERP authorizations, including any additional terms or conditions for approval in their response. Upon receiving the agencies’ verification of SERP authorization, DWR may proceed with the

repairs in accordance with the applicable conservation measures and best management practices (BMPs). This process would thereby result in a considerably shortened permitting time frame for those projects qualifying for SERP authorization, allowing the necessary repairs to be implemented in a timely manner while fully considering and protecting environmental resources.

To ensure SERP repairs are unconnected single and complete actions and not part of a larger action that would exceed the SERP size and placement limits (several small repairs becoming one large repair), each project must demonstrate independent utility. A SERP repair would have independent utility if it would be a useful and reasonable expenditure if constructed absent the construction of other projects in the coverage area.

Each repair would also be entered into a GIS database developed by DWR to enable tracking of cumulative SERP effects. The database would be made available to the agencies involved.

Site Repairs

Construction Process and Staging, Sequencing, and Equipment

Construction activities would take place at individual sites throughout the summer and fall. Each site would require no more than 2 weeks of active construction, not including revegetation (e.g., willow stakes). All work would take place during daylight hours, and no nighttime lighting would be required. Equipment used during construction may include the following:

- ▶ large bulldozer(s),
- ▶ trucks,
- ▶ small bulldozer(s),
- ▶ barge, and
- ▶ excavator.

Revetment would be placed from cranes mounted on barges or, in locations where this is not possible, from adjacent landside areas using excavators. Waterside construction would occur where it minimizes noise, traffic, and vegetation disturbances. The construction contractor (in Phase 1, this would always be the DWR maintenance yards) would use adjacent landside areas, maintenance toe roads, or the crown roads for staging of vehicles, plant materials, and other associated construction equipment, as necessary.

Bank reconstruction would incorporate plantings into the revetment in accordance with the bioengineering techniques outlined in the program design templates (Appendix A). The upper bank may also be hydroseeded and covered with biodegradable materials to control erosion and stabilize the bank while plantings become established. Willow cuttings and other native vegetation would be installed during placement of the revetment or after construction during the appropriate planting season. Precise planting

timelines would be determined upon the availability of planting materials and in coordination with relevant SERP-authorizing agencies.

Maintenance

The templates have been designed with the intent that once repaired, the erosion sites would require limited maintenance. The limited maintenance may include removing invasive vegetation detrimental to project success. DWR intends to monitor individual sites for 5 years.

PROGRAM ELEMENTS

As stated above, the SERP is being developed through the Interagency Collaborative Group and, more directly, through more than 2 years of meetings and collaboration by the SERP Subcommittee. The SERP subcommittee is currently developing the SERP Manual, which will provide the general guidelines under which the program will operate. The SERP subcommittee is developing guidelines in several areas such as project design, conservation measures, and monitoring and reporting requirements to ensure that, for each project site, DWR complies with all applicable federal, state, and local regulations. Because sections of the SERP Manual are in development, the sections below provide the best available information about the content of each section at the time this NOP is being prepared. More complete information will be provided about each section in the draft EIR.

The SERP is intended to be a self-mitigating program and individual projects would be allowed to move forward under programmatic permit conditions following agency review and approval of the annual project notification packages.

Design Alternatives

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 utilize seven design templates:

1. Bank fill rock slope with live pole planting
2. Willow wattle with rock toe
3. Branch layering
4. Rock toe with live pole planting
5. Soil and rock fill at the base of a fallen tree
6. Bank fill rock slope with grasses (in development)
7. Low slope with tule plantings (in development)

Draft versions of the seven design templates are included in Appendix A of this NOP; Design Templates 6 and 7 are still in development, and text descriptions will be provided for them in the EIR.

A site-specific cross section, plan view, and planting plan/vegetation species list would be developed for each SERP project based on the design template selected for the repair. This information would be provided to the agencies along with the project

notification materials in the annual SERP notification packages. The project design plans would be prepared as a coordinated effort by DWR maintenance, engineering and environmental staff, and would show plan view details (e.g., spacing, location, depth). Minor changes to the program design templates may be recommended for specific projects based on detailed knowledge of the sites.

Monitoring and Success Criteria

Monitoring and reporting requirements and success criteria for SERP projects will be developed by the SERP subcommittee and presented in the SERP Manual. Monitoring of individual sites for a minimum 5-year period is anticipated.

The annual monitoring reports would include an evaluation of project success in meeting the established performance criteria and a protocol for implementing remedial actions should any success criteria not be met.

Annual monitoring reports that evaluate how the site meets the success criteria would be submitted to the regulatory agencies each year. Pre and postconstruction site visits from regulatory agency personnel may occur at any time to determine the effectiveness of this program and whether contingency actions and/or adjustments to the established success criteria should be made.

Conservation Measures

General conservation measures are being developed in coordination with the agencies represented on the SERP subcommittee. As part of the project notification materials, DWR would select and include a list of those conservation measures that are applicable to a specific location, and the agencies would have an opportunity to revise the list for each project. Species-specific conservation measures are also being developed by the SERP Subcommittee for the following species and habitats:

- ▶ Giant garter snake habitat
- ▶ Valley elderberry longhorn beetle
- ▶ Delta smelt
- ▶ Salmonids
- ▶ Bank swallow
- ▶ Raptors

POTENTIAL ENVIRONMENTAL IMPACTS

The draft EIR will be focused on several potentially significant environmental impacts associated with implementation of the proposed project. Mitigation measures will be recommended wherever feasible to reduce potentially significant and significant impacts. The attached initial study checklist discusses issue areas that will not be carried forward for further analysis in the draft EIR. Issues to be addressed in the focused EIR are air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, and noise, as discussed below.

- ▶ **Air Quality:** Implementation of the proposed program would result in little to no operational emissions that could degrade air quality. However, during construction of the erosion repairs trucks would be required to haul materials to the sites, construction workers would commute to the sites, and construction equipment would be needed to perform the work, which would increase emissions of various criteria air pollutants.
- ▶ **Biological Resources:** Sensitive resources, including special-status species and riparian habitats occur along levees and banks within the coverage area could be affected during project construction.
- ▶ **Cultural Resources:** Implementation of the proposed program would include construction, excavation, and earth moving that could disturb known or undiscovered cultural resources.
- ▶ **Geology and Soils:** Construction of the erosion repair projects could result in increased erosion or could be located on expansive or unstable soils.
- ▶ **Hydrology and Water Quality:** The proposed program would require work within the floodplain, could have an effect (although likely beneficial) on flood hazards, and could result in water quality impacts during construction.
- ▶ **Noise:** Construction activities under the proposed program could involve pieces of heavy equipment and multiple trips by haul trucks, potentially resulting in increases in ambient noise levels and exceedances of local noise standards.

ALTERNATIVES

Consistent with the requirements of State CEQA Guidelines Section 15126.6, the draft EIR will examine a range of reasonable alternatives to the proposed project that are potentially feasible. The alternatives must feasibly attain most of the project objectives of the proposed program while also avoiding or substantially lessening at least one of the significant environmental effects of the proposed project. CEQA does not require alternatives to be evaluated at the same level of detail as the proposed project (State CEQA Guidelines Section 15126.6[d]). As a result of scoping and agency consultation efforts conducted to date, the alternatives currently proposed for evaluation in the draft EIR include:

- ▶ **No-Project Alternative:** CEQA requires analysis of a No-Project Alternative (State CEQA Guidelines 15126.6[e]). This alternative is essentially the “status quo” alternative; the SERP would not be initiated, and no collaborative programmatic repair program would be put in place by DWR. Instead, erosion repairs would continue to be identified by DWR, permitted individually by the applicable regulatory agencies, and implemented when permits have been obtained.
- ▶ **Traditional Engineered Repairs Alternative:** This alternative would include development and implementation of a streamlined programmatic repair program.

Rather than emphasizing a repair approach that would achieve a cumulative net benefit to fish and wildlife resources and habitat for native species, this alternative would rely on an approach to implement repairs and maintain the necessary level of flood management using traditional engineering techniques. Compensatory mitigation required with this alternative would be implemented off-site.

- ▶ **Large-scale Erosion Repair Alternative:** This alternative would propose a collaborative programmatic repair program that would be limited to larger projects than those deemed eligible under the SERP. This program would allow DWR to streamline some permit reviews; however, because USFWS and NMFS would not allow approval of a programmatic biological opinion for projects larger than the Tier 2 project size identified under the SERP, each project site would require individual review and permitting under Section 7 of the ESA.

One of the purposes of the NOP is to solicit input from responsible and trustee agencies and the public and interested organizations regarding potential alternatives to the proposed program. Therefore, DWR welcomes comments during the public scoping process regarding these alternatives or suggestions for other alternatives to be examined in the draft EIR.

SUBMISSION OF COMMENTS

To ensure that the full range of program issues of interest to responsible and trustee agencies and the public are addressed, comments and suggestions are invited from all interested parties. Written comments or questions concerning the scope of the draft EIR should be directed to DWR at the address provided on the first page of this NOP by **5:00 p.m. on December 28, 2009**. To account for the holiday schedule, the comment period is being extended from the required 30 days to end on December 28. Please provide the name and address of a contact person who should receive future correspondence regarding the project.

ENVIRONMENTAL CHECKLIST

AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL SETTING

The Phase 1 SERP coverage area includes the levees and banks of the Sacramento River and its tributary streams and channels, in the Sacramento Valley (Exhibit 1). These waterways are generally characterized by a streambed confined between constructed levees, which are lined with a narrow corridor of riparian vegetation. The riparian corridor varies in width and can be dense and extensive in some locations along the rivers, especially north of Sacramento where the rivers meander. To the south as these rivers become more confined by levees, riparian vegetation is less dense to nonexistent. The character of the riparian vegetation varies from an open to dense, broadleafed, streamside willow scrub community to dense, broadleafed, forest communities (Great Valley Cottonwood Forest, Great Valley Mixed Riparian Forest, and Great Valley Oak Riparian Forest). The riparian corridors provide moderate- to high-quality scenic views; however, the waterside of the levees is not generally visible from the landside. Adjacent lands include agricultural, rural, and urbanized areas, some of which are developed with commercial, industrial, recreational, or residential uses. Viewer groups of the waterside of the levee consist of residents living near the rivers or on the waterside of the levees; recreational river users (boating and fishing); visitors to

state and local parks and recreational facilities located on or adjacent to the river levees; motorists using roadways that are located on the levees or that cross the levees on bridges, and recreational users of bicycle and walking paths located on the levees. The only officially designated state scenic highway within the Phase 1 SERP coverage area is State Route (SR) 160, which extends along the Sacramento River between the City of Sacramento and the Contra Costa County line.

DISCUSSION

Would the project:

a) Have a substantial adverse effect on a scenic vista?

Less than Significant. The repair sites would be a maximum of 0.5 acre of disturbed area and would be no longer than 1,000 linear feet. In any given year, adjacent repair sites or sites with recent repairs could be located no closer than 500 feet to one another. Larger sites would not be part of SERP. The erosion repair design templates, described in the NOP and depicted in Appendix A, would include vegetation plans designed through collaborative efforts between environmental scientists, landscape architects, DWR engineers, and resource agency staff. The repairs would not have a significant impact on any scenic vistas because of the small size of the repair sites, the limited visibility of the sites from adjacent landside areas, and the incorporation of revegetation plans for disturbed areas as part of the design. This impact would be less than significant; no mitigation is required.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less than Significant. The only scenic highway that could potentially have views of erosion repair sites would be SR 160. However, the repair sites would be small, would be located on the waterside of the levees, and would be similar in character to the existing levees and repair sites. Because the size of the sites would be small and not result in substantial changes to the visual character of the Phase 1 SERP coverage area, the erosion repair work would not have a significant adverse impact on scenic resources visible from roadways, including state scenic highways. This impact would be less than significant; no mitigation is required.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less than Significant. The SERP would not degrade the existing visual character or quality of the repair sites or surroundings because the size of the repair sites would be small and because revegetation plans for disturbed areas would be part of the design. The purpose of the SERP is to repair small areas of erosion damage before they can become larger; sites would be restored to their pre-repair condition or habitat would be enhanced where appropriate. Neither construction activities nor the repaired sites would

degrade the existing visual character or quality of the site and its surroundings. This impact would be less than significant; no mitigation is required.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less than Significant. All erosion repair work under the SERP would take place during daylight hours; therefore, no lighting would be used. Equipment used during the repairs may create some glare; however, because this would be a temporary effect (on the order of 1–2 weeks) and the amount of equipment needed would be minor, this would not create a substantial source of glare that would affect views of the area. This impact would be less than significant; no mitigation is required.

AGRICULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agricultural Resources.				
<p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.</p> <p>Would the project:</p>				
<p>a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>b) Conflict with existing zoning for agricultural use or a Williamson Act contract?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ENVIRONMENTAL SETTING

The California Department of Conservation (DOC), Office of Land Conservation, maintains a statewide inventory of farmlands. These lands are mapped by the Division of Land Resource Protection as part of the Farmland Mapping and Monitoring Program (FMMP). The maps are updated every 2 years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance. Farmlands

classified under one of the following five categories, based on their suitability for agriculture, are sometimes collectively referred to as Important Farmland.

- ▶ **Prime Farmland**—land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.
- ▶ **Farmland of Statewide Importance**—land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.
- ▶ **Unique Farmland**—land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but that has been used for the production of specific crops with high economic value.
- ▶ **Farmland of Local Importance**—land that either is currently producing crops or has the capability of production, but that does not meet the criteria of the categories above.
- ▶ **Grazing Land**—land on which the vegetation is suited to the grazing of livestock.

Other categories used in the FMMP mapping system, for land not considered Important Farmland, include “urban and built-up lands,” “lands committed to nonagricultural use,” and “other lands” (land that does not meet the criteria of any of the other categories).

The Phase 1 SERP coverage area extends south from Butte County to Sacramento County along the Sacramento River Watershed (Exhibit 1). The alluvial plain associated with the Sacramento River Watershed creates excellent conditions for agricultural land uses. The associated waterways provide a reliable source of water for irrigation. Consequently, land surrounding the Phase 1 SERP coverage area is generally designated as Important Farmland, consisting primarily of Prime Farmland. Agricultural uses include rice crops, other grain crops, vineyards, pasture, field crops, and orchards. The largest agricultural crop in the Phase 1 SERP coverage area, as determined by acreage, is rice, which has historically been the most prominent crop in the Sacramento River Watershed.

DISCUSSION

Would the project:

- a) **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

Less than Significant. Levees and banks, including those within the Phase 1 SERP coverage area, are not considered to be Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Because repairs associated with SERP would be

limited to the levees and banks of waterways in the Phase 1 coverage area, none of the repairs would occur within Important Farmland. In addition, sites repaired under the SERP would not be converted from their existing use to another use. If landside staging and access areas are necessary at individual project sites, the construction contractor (in Phase 1, this would always be the DWR maintenance yards) would use adjacent landside areas, maintenance toe roads, or the crown roads for staging of vehicles, plant materials, and other associated construction equipment. Thus, none of the SERP repairs would convert Important Farmland to a non-agricultural use. There would be no impact.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

No Impact. The Phase 1 SERP coverage area is used for flood risk reduction purposes, and is not zoned for agricultural use or subject to a Williamson Act contract. Thus, none of the SERP repairs would conflict with agricultural or Williamson Act zoning. There would be no impact.

c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?

No Impact. Small erosion repairs would provide reduced risk of flooding to areas along the waterways covered by SERP. None of the repairs would occur on agricultural lands, and landside staging and access areas (when necessary for individual project sites) would be in place for no more than 1–2 weeks. For these reasons, implementation of the SERP would not involve changes to the existing environment that could result in conversion of Farmland to non-agricultural uses. Therefore, there would be no impact.

AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Potentially Significant Impact. Implementation of the SERP would result in little to no operational emissions that could degrade air quality. However, during construction of the repair sites, trucks would be required to haul materials to the sites, construction workers would commute to the sites, and construction equipment would be needed to perform the work, which would increase emissions of various criteria air pollutants. Environmental impacts associated with air quality will be discussed in the EIR, and mitigation, if necessary, will be identified for each significant impact. The potential for the SERP to result in increased levels of greenhouse gas emissions will also be evaluated in the cumulative impacts analysis of the EIR.

BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources.				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Potentially Significant Impact. Sensitive resources, including special-status species and riparian habitats, may occur along levees and banks within the Phase 1 SERP coverage area and could be affected during construction. Therefore, the SERP could substantially degrade the quality of the environment during construction activities.

The following programmatic permits are being requested as part of SERP:

- ▶ U.S. Army Corps of Engineers – Regional General Permit under Section 404 of the Clean Water Act
- ▶ U.S. Fish and Wildlife Service – Incidental Take Permit under Section 7 of the Endangered Species Act
- ▶ National Marine Fisheries Service – Incidental Take Permit under Section 7 of the Endangered Species Act
- ▶ California Department of Fish and Game – Streambed Alteration Agreement under Section 1602 of the Fish and Game Code and Section 2081 Incidental Take Permit under the California Endangered Species Act
- ▶ Central Valley Regional Water Quality Control Board – Water Quality Certification under Section 401 of the Clean Water Act

Environmental impacts associated with biological resources will be discussed in the EIR, and mitigation, if necessary, will be identified for each significant impact. Information about conditions of approval for the permits listed above will also be provided in the EIR and incorporated into the SERP program description.

CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Potentially Significant Impact. Implementation of the SERP would include construction, excavation, and earthmoving that could disturb known or undiscovered cultural resources. In some cases, the levee itself may be considered a historical resource.

Because the SERP requires federal discretionary permits and approvals (i.e., Section 404 permit from the U.S. Army Corps of Engineers [USACE]), cultural resource impacts will be evaluated under Section 106 of the National Historic Preservation Act. DWR will collaborate with the relevant federal agencies such as USACE to develop an appropriate management strategy for Section 106. USACE may develop a Programmatic Agreement in cooperation with DWR and other relevant federal and state agencies to ensure the appropriate treatment of historic and archaeological resources that may be identified at the repair sites.

Environmental impacts associated with cultural resources will be discussed in the EIR, and mitigation, if necessary, will be identified for each significant impact. The EIR will integrate management of cultural resources required under CEQA with Section 106 polices and the protocols developed under an agreement document so that state and federal management activities are coordinated to the maximum extent feasible.

GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Potentially Significant Impact. Implementation of the SERP would not include any new septic tanks or other methods of waste disposal; however, construction of the repairs could result in erosion or could be located on expansive or unstable soils. Environmental impacts associated with geology and soils will be discussed in the EIR, as well as best management practices typically implemented by DWR maintenance yards to avoid such impacts. Mitigation, if necessary, will be identified for each significant impact.

HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Hazards and Hazardous Materials.				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL SETTING

POTENTIAL SOURCES OF HAZARDOUS MATERIALS

The Hazardous Waste and Substances Sites List, commonly referred to as the Cortese List, provides information related to the location of hazardous materials release sites within the state of California (Government Code Section 65962.5). The Secretary for Environmental Protection compiles the Cortese List from reports prepared by the California Department of Toxic Substances Control (DTSC), California Department of Health Services (DHS), State Water Resources Control Board (SWRCB), and California Integrated Waste Management Board (CIWMB). Cortese-listed sites include hazardous waste facilities subject to corrective actions under Section 25187.5 of the Health and Safety Code, public drinking water wells that contain detectable levels of organic contaminants, leaking underground storage tanks, and sites with known migration of hazardous waste from solid waste facilities. While there are no Cortese-listed sites on the waterside of levees in the Phase 1 SERP coverage area, there are numerous nearby sites where migration of hazardous materials may have caused soil contamination. In some instances, monitoring wells associated with hazardous waste spills are located within the levee prism where construction activities could occur.

AIRPORTS

CEQA Statute Section 21096 requires a lead agency to consider safety hazards for people using an airport or people residing or working in the vicinity of an airport. Airports within 2 miles of the Phase 1 SERP coverage area include:

- ▶ Colusa County Airport, Colusa (public airport);
- ▶ Davis Airport, Colusa (private airport);
- ▶ Vanderford Ranch Airport, Yuba City (private airport); and
- ▶ Borges-Clarksburg Airport, Clarksburg (private airport).

SCHOOLS WITHIN ONE-QUARTER MILE OF THE COVERAGE AREA

CEQA requires special consideration for schools located within 0.25 mile of a repair site. Schools located within 0.25 mile of the Phase 1 SERP coverage area include:

- ▶ Delta Elementary Charter School, 346 W Grant Line Road, Clarksburg;
- ▶ Clarksburg Middle School, 52870 Netherlands Road, Clarksburg;
- ▶ Delta High School, 52810 Netherlands Road, Clarksburg;
- ▶ William Elementary School, 222 11th Street, Colusa;
- ▶ Gridley State Preschool, 11567 Booth Drive, Gridley;
- ▶ Grafton Elementary School, 9544 Mill Street, Knights Landing;
- ▶ Princeton High School, 473 State Street, Princeton;
- ▶ Princeton Elementary School, 428 Norman Road, Princeton;
- ▶ Bergamo Preparatory School, 8200 Pocket Road, Sacramento;
- ▶ Genevieve Didion School, 6940 Harmon Drive, Sacramento;
- ▶ Land Park Academy, Riverside Campus, 6011 Riverside Boulevard, Sacramento;
- ▶ Brookfield School, 3600 Riverside Boulevard, Sacramento;
- ▶ Arthur A. Benjamin Health Professions High School, 451 McClatchy Drive, Sacramento;
- ▶ Jedediah Smith Elementary School, 401 McClatchy Way, Sacramento;
- ▶ Lincoln Plaza Montessori, 400 P Street, Sacramento;
- ▶ Discovery Preschool, 205 Stone Boulevard, West Sacramento;
- ▶ Golden State Middle School, 1100 Carrie Street, West Sacramento; and
- ▶ Cache Creek (Continuation) High School, 145 Second Street, Yolo.

FIRE HAZARDS

Public Resources Code 4201–4204 and Government Code 51175–51189 require identification of fire hazard severity zones within the State of California. Fire hazard severity zones are measured qualitatively as moderate, high, or very high, based on vegetation, topography, weather, crown fire potential (based on a fire’s tendency to burn upwards into trees and tall brush), and potential ember production and movement within the area. Fire prevention areas considered to be under state jurisdiction are referred to as “state responsibility areas.” “Local responsibility areas” are under the jurisdiction of local entities such as cities and counties. The Phase 1 SERP coverage area is in a local responsibility area that is generally unzoned for fire hazard severity. The small areas that are zoned are considered to have only a moderate fire hazard severity risk, which is the lowest rating available.

DISCUSSION

Would the project:

- a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Less than Significant. Repairs of erosion sites under Phase 1 of the SERP would involve the routine transport and handling of hazardous substances such as diesel fuels, lubricants, and solvents. Handling and transport of these materials could result in the exposure of workers to hazardous materials. However, the SERP would be in compliance with applicable federal, state, and local laws pertaining to the handling and transport of hazardous materials, including the California Occupational Health and Safety Administration requirements. Because the repairs would comply with applicable laws, this impact would be less than significant; no mitigation is required.

- b) **Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?**

Less than Significant. As discussed above, small erosion repairs would involve the use of heavy construction equipment, which uses small amounts of hazardous materials such as oils and fuels. However, DWR would work with the contractor (during Phase 1, DWR maintenance yards) to establish construction staging areas where hazardous materials would be stored during construction, and would require that any spills be cleaned up and reported to the appropriate agencies within 24 hours. If a spill were to occur, it would be minor (involving very small amounts of construction equipment-related materials) and therefore would have a less-than-significant impact; no mitigation is required.

- c) **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

Less than Significant. Approximately 18 schools are located within 0.25 mile of levees where construction might occur. The handling and transportation of hazardous materials used during construction would be regulated under applicable federal, state, and local laws. Because the hazardous materials used during construction, such as equipment lubricants and diesel fuels, would be present for a short period (no more than 1–2 weeks) and would occur in small amounts, and because transport of these materials is regulated by local, state, and federal law, the potential for a large enough spill to adversely affect nearby schools is considered extremely low. Therefore, this impact would be less than significant; no mitigation is required.

- d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

Less than Significant with Mitigation. There are no Cortese-listed sites within the Phase 1 SERP coverage area; however, in some instances, monitoring wells associated with hazardous materials sites could be located near repair sites associated with the SERP. In such circumstances, construction activities in hazardous materials sites or damage to monitoring wells could physically harm construction workers or release hazardous substances into the air and waterways, potentially exposing construction workers, the general public, and the environment to a substantial hazard. Some of the Cortese-listed sites have an associated land use restriction such as a deed notice or deed restriction that could affect implementation of a small erosion repair. Therefore, this impact would be potentially significant. Implementation of Mitigation Measure HAZ-1, described below, would reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-1: Coordinate with Regulatory Agencies to Preserve, Modify, Close, or Avoid Existing Groundwater Monitoring Wells during SERP Repairs.

For individual repair sites located near or adjacent to Cortese-listed sites, DWR will submit engineering plans and specifications to applicable regulatory agencies to determine whether groundwater monitoring wells are located on or near the repair site. If monitoring wells are identified, DWR and the applicable agencies will establish appropriate methods for preservation, modification, closure, or avoidance of the wells during repair of the repair site. Repair plans and specifications will be modified where necessary to accommodate land use restrictions to the satisfaction of DWR and the appropriate regulatory agency.

Implementation of Mitigation Measure HAZ-1 will reduce the potentially significant impact of land use constraints associated with Cortese-listed sites to a less-than-significant level because relevant land use restrictions will be followed in accordance with the appropriate regulatory agency.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

Less than Significant with Mitigation. There are four airports within 2 miles of the Phase 1 SERP coverage area. Safety hazards associated with airports are generally related to construction of tall structures and the creation of wildlife attractants (e.g., wetlands, golf courses, and waste disposal operations) that could interfere with airplane flight paths. While repairs associated with SERP would not result in the construction of tall buildings or the creation of hazardous wildlife attractants, cranes used in unloading from barges could. However, FAR Part 77 of the Code of Federal Regulations provides guidance for determining obstructions to air navigation and establishes the slope and

dimensions of the horizontal surface, conical surface, primary surface, approach surface, and transitional, as follows:

- (a) *Horizontal surface.* A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:
- (1) 5,000 feet for all runways designated as utility or visual;
 - (2) 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.
- (b) *Conical surface.* A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.
- (c) *Primary surface.* A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of a primary surface is:
- (1) 250 feet for utility runways having only visual approaches.
 - (2) 500 feet for utility runways having nonprecision instrument approaches.
 - (3) For other than utility runways the width is:
 - (i) 500 feet for visual runways having only visual approaches.
 - (ii) 500 feet for nonprecision instrument runways having visibility minimums greater than three-fourths statute mile.
 - (iii) 1,000 feet for a nonprecision instrument runway having a nonprecision instrument approach with visibility minimums as

low as three-fourths of a statute mile, and for precision instrument runways.

The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) *Approach surface.* A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

- (1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:
 - (i) 1,250 feet for that end of a utility runway with only visual approaches;
 - (ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;
 - (iii) 2,000 feet for that end of a utility runway with a nonprecision instrument approach;
 - (iv) 3,500 feet for that end of a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile;
 - (v) 4,000 feet for that end of a nonprecision instrument runway, other than utility, having a nonprecision instrument approach with visibility minimums as low as three-fourths statute mile; and
 - (vi) 16,000 feet for precision instrument runways.
- (2) The approach surface extends for a horizontal distance of:
 - (i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;
 - (ii) 10,000 feet at a slope of 34 to 1 for all nonprecision instrument runways other than utility; and,
 - (iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

(3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) *Transitional surface.* These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

Because there are several airports within 5,000 feet of the Phase 1 SERP coverage area, there is a possibility that a crane greater than 150 feet in height could violate these requirements. This impact would be potentially significant.

Mitigation Measure HAZ-2: Coordinate with Airports to Avoid Potential Hazards Associated with Height Requirements in Navigable Airspace.

For individual repair sites located near or adjacent to airports, DWR shall submit engineering plans and specifications, including a list of all construction equipment height to applicable airport management. Repair plans, specifications, and/or construction equipment will be modified where necessary to accommodate land use restrictions to the satisfaction of DWR and the appropriate regulatory agency.

Implementation of Mitigation Measure HAZ-2 will reduce the potentially significant impact of land use constraints associated with airport height requirements in navigable airspace to a less-than-significant level because relevant land use restrictions will be followed in accordance with FAR part 77.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Less than Significant with Mitigation. As discussed in item e), although several private airports are located within the vicinity of the Phase 1 SERP coverage area, construction activities associated with small erosion repairs could result in airport safety hazards. Therefore, this impact would be potentially significant.

Mitigation Measure: Implement Mitigation Measure HAZ-2: Coordinate with Airports to Avoid Potential Hazards Associated with Height Requirements in Navigable Airspace.

Implementation of Mitigation Measure HAZ-2 will reduce the potentially significant impact of land use constraints associated with airport height requirements in navigable airspace to a less-than-significant level because relevant land use restrictions will be followed in accordance with FAR part 77.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than Significant. The Phase 1 SERP coverage area is located within existing levees and waterways. These areas are maintained by DWR as part of the state's flood risk reduction infrastructure and are not directly affected by or involved with emergency response plans or emergency evacuation plans. While staging areas may not be located on flood risk reduction structures, sites for staging areas would be selected to ensure that they do not interfere with emergency response evacuation routes. The individual erosion repair activities would take no more than 1–2 weeks; many repairs would be managed from barges on the waterside, and for those managed from the landside, equipment would be staged off of access roads. The potential for these small-scale, short-term, temporary activities to conflict with an adopted emergency response plan or emergency evacuation plan is minimal. Thus, the impact would be less than significant; no mitigation is required.

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

Less than Significant. The Phase 1 SERP coverage area is located in local responsibility areas that are either unzoned or present only a moderate fire hazard severity risk. Though sparks from construction equipment could ignite a fire, the risk is considered to be very low with the use of properly maintained and operated equipment. Small erosion repairs would be located within existing levees and waterways, which are not considered wildlands or urbanized areas. Thus, this impact would be less than significant; no mitigation is required.

HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hydrology and Water Quality.				
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Result in inundation by seiche, tsunami, or mudflow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Potentially Significant Impact. Implementation of the SERP would not deplete groundwater resources or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. However, the repairs would require work within the floodplain and possibly waterbodies, could have an effect (although likely beneficial) on flood hazards, and could result in water quality impacts during construction. No housing would be constructed or affected by the SERP, so the repairs would have no impact on housing within a 100-year flood hazard area. Environmental impacts associated with hydrology and water quality will be discussed in the EIR, and mitigation, if necessary, will be identified for each significant impact.

LAND USE AND PLANNING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. Land Use and Planning. Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL SETTING

The Phase 1 SERP coverage area is located within Butte, Colusa, Glenn, Sacramento, Solano, Sutter, and Yolo Counties. The primary land uses adjacent to the Phase 1 SERP coverage area include agricultural, urban, silvicultural, and open space. Land use within the Phase 1 SERP coverage area is limited to flood control structures, consisting of banks and levees adjacent to waterways. These banks and levees generally protect agricultural land; however, some urban areas are located nearby, including Sacramento, Yuba City, Woodland, and Davis.

Numerous public lands are located adjacent to the Sacramento River and its tributaries within the coverage area. These include several wildlife refuges managed by the U.S. Fish and Wildlife Service (USFWS) such as the Sacramento River Wildlife Refuge, North Central Valley Wildlife Management Area, Sutter National Wildlife Refuge, Stone Lakes National Wildlife Refuge, and Vic Fazio Yolo Wildlife Area. The Sacramento metropolitan area contains more than a dozen parks adjacent to the Sacramento River and American River. Some of the larger parks include the American River Parkway and Discovery Park.

The coverage area is subject to numerous conservation plans, including:

- ▶ Comprehensive Conservation Plan for the Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges
- ▶ Comprehensive Conservation Plan for the Sacramento River National Wildlife Refuge
- ▶ Natomas Basin Habitat Conservation Plan
- ▶ Solano County Habitat Conservation Plan
- ▶ Yolo Natural Heritage Program

In addition, several conservation plans are currently in preparation. Future SERP repairs may be subject to the three plans listed below:

- ▶ South Sacramento Habitat Conservation Plan
- ▶ Yuba-Sutter Habitat Conservation Plan
- ▶ Butte Regional Habitat Conservation Plan/Natural Community Conservation Plan

DISCUSSION

Would the project:

a) Physically divide an established community?

No Impact. The Phase 1 SERP coverage area is located along banks and levees of waterways and would not create additional divisions within existing communities. Therefore, implementation of repairs would not physically divide an established community and there would be no impact.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. Small erosion repairs would be limited to areas used for flood control. Implementation of repairs would not adversely affect current land uses, and would not cause changes at the repair sites that would conflict with any applicable land use plan, policy, or regulation. There would be no impact.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

Potentially Significant Impact. Impacts related to applicable habitat conservation plans or natural community conservation plans will be discussed in the biological resources section of the EIR, as discussed in item IV(f). See the discussion there for more information.

MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ENVIRONMENTAL SETTING

The primary mineral resources found along waterways in California are sand and gravel. In California, sand and gravel have an economic value many times larger than that of all other minerals mined statewide, including gold (Butte County 2007:11-3). Sand and gravel deposits within the Phase 1 SERP coverage area are found primarily along the larger waterways, including the Sacramento, Yuba, American, Feather, and Bear Rivers. However, gravel along many of the rivers is not extensively mined, because of environmental constraints, high water tables, and the ease of using other supplies. Other areas of mineral deposits in the coverage area include Stony Creek in Glenn County, Cache Creek in Yolo County, and the Cosumnes River in Sacramento County (Sacramento County 1993:33; Glenn County 1993:22).

DISCUSSION

Would the project:

a), b) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or is a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. There are known mineral resources located along many of the waterways within the Phase 1 SERP coverage area. However, the SERP repairs would be small (i.e., no more than 0.5 acre or 1,000 feet in length) and would not occur in areas being actively mined. In addition, the proposed repairs would be limited to levees and banks,

which would not be mined for mineral resources because of regulatory restrictions protecting their role in flood management. Because of the small size and limited location of the SERP repairs, it is unlikely that implementation would result in the loss of any known mineral resources. No impact would occur.

NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Noise. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Potentially Significant Impact. The SERP would include repair of small erosion sites within the program coverage area. Implementation of the SERP would involve construction activities, including use of heavy equipment and multiple trips by haul trucks, that could result in temporary increases in ambient noise levels and possibly exceedances of noise standards at some locations. Environmental impacts associated with noise will be discussed in the EIR, and mitigation, if necessary, will be identified for each significant impact.

POPULATION AND HOUSING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Population and Housing. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ENVIRONMENTAL SETTING

The Phase 1 SERP coverage area extends through seven counties that cover most of the northern portion of the Central Valley of California: Butte, Colusa, Glenn, Sacramento, Solano, Sutter, and Yolo Counties. In 2009, approximately 2.5 million people lived in this seven-county coverage area, giving it approximately 6% of the total population of the state of California (38 million). Of the seven counties, Colusa County is the smallest, with approximately 22,000 residents, and Sacramento County is the largest, with over 1.4 million residents (U.S. Department of Finance [DOF] 2009).

Housing characteristics in the seven-county coverage area are generally similar to those at the state level. In 2009, the seven-county coverage area had approximately 950,000 housing units, which is approximately 7% of the total housing stock for the state (approximately 14 million houses) (DOF 2009).

DISCUSSION

Would the project:

- a) **Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

No Impact. The SERP would not involve residential, commercial, or industrial development that could induce population growth. The SERP would repair erosion damage to existing levee facilities and would not extend roads or construct other new infrastructure that could indirectly induce population growth. The SERP would include only minor (up to 0.5 acre or 1,000 linear feet) erosion repairs to existing levees and banks, and would not include major levee repairs or upgrades that could allow additional development in the areas protected by those levees. Any larger levee repairs would undergo separate environmental review. Construction of each repair would require 3–10 construction workers who would work at each site for approximately 1–2 weeks. During Phase 1, all work would be conducted by the DWR maintenance yards; no new employees would be hired and no outside contractors would be used. No more than 15 small erosion repairs would be completed per year. Because the repairs would produce construction work for existing DWR employees, implementation would not induce substantial population growth. No impact would occur.

- b) **Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?**

No Impact. The SERP would repair small erosion sites within the Phase 1 SERP coverage area and would not displace any existing homes. Therefore, the SERP would have no impact on existing houses.

- c) **Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?**

No Impact. As discussed in item b), the SERP would involve repairs to small erosion sites within the Phase 1 SERP coverage area and would not displace any homes or people. No replacement housing would be required; thus, there would be no impact.

PUBLIC SERVICES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ENVIRONMENTAL SETTING

The repair sites selected within the Phase 1 SERP coverage area would be located on the waterside of the levees of the Sacramento River and its tributary streams and channels. Public services are provided to adjacent land uses on the landside of the levees by the counties, cities, school districts, and other special districts in which the repair sites would be located.

DISCUSSION

Would the project:

- a) **Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:**

Fire and Police Protection?

No Impact. The SERP would not result in new development or any population increase that would create the need for additional fire or police protection services (see discussion in Section XII, "Population and Housing," item [a]). Construction of the individual repairs would not interfere with any emergency response plans (see discussion in Section VII, "Hazards and Hazardous Materials," item [g]). Because the SERP would not increase the demand for fire or police services, there would be no impact.

Schools?

No Impact. There are approximately 18 schools within 0.25 mile of the coverage area (see discussion in Section VII, "Hazards and Hazardous Materials," item [c]). However, the individual repairs would not have a direct impact on schools and would not include new development or population increases that would increase the demand for schools.

Parks or Other Public Facilities?

No Impact. As described in item a) above, the SERP would not result in new development or population increases that would increase the demand for parks or other public facilities.

RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ENVIRONMENTAL SETTING

A number of state and local parks are located adjacent to the rivers throughout the Phase 1 SERP coverage area (e.g., Colusa-Sacramento River State Recreation Area in Colusa County and Discovery Park in the City of Sacramento). Numerous public boat launch facilities, private marinas, RV parks, and resorts are located within the Phase 1 SERP coverage area along the Sacramento River.

DISCUSSION

Would the project:

- a) **Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

Less than Significant. Implementation of SERP would not result in new development or population increases, and thus would not result in increased use of existing parks or other recreational facilities. However, erosion repair work could potentially cause disruption to recreational uses of nearby facilities and of the river, depending on the location of the repair site. Therefore, during construction of any erosion repairs near recreational facilities, construction signage would be posted, and closures or detours would be posted. Construction is expected to last approximately 1–2 weeks at any one site, and therefore any disruptions to recreation would be minor and temporary. This impact would be less than significant; and therefore, no mitigation is required.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No Impact. Implementation of SERP would not include any recreational facilities, nor would they require expansion of recreational facilities. Therefore, SERP would have no impact on recreational facilities.

TRANSPORTATION/TRAFFIC

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Transportation/Traffic.				
Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ENVIRONMENTAL SETTING

The Phase 1 SERP coverage area is located on the waterside of the levees of the Sacramento River, Feather River, American River, and of tributary streams and channels. Regional access to the coverage area would be provided via Interstate 5, State Route (SR) 99, and SR 160, which run in a north-south direction, and Interstate 80, which runs in an east-west direction. Local access to the specific repair sites would be provided via existing roadways and operations and maintenance routes. Adjacent landside areas, maintenance toe roads, and levee crown roads would be used for staging of vehicles, plant materials, and other associated construction equipment.

DISCUSSION

Would the project:

- a) **Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?**

Less than Significant with Mitigation. Construction activities would cause a temporary traffic increase on haul routes used to access individual repair sites (i.e., haul routes). Construction equipment (e.g., crane, dozer, back hoe) would be transported either by barges along waterways or on trucks along Interstate 5, Interstate 80, SR 99, or SR 160, and urban or rural roadways near each repair site. The repairs would require the use of rocks, vegetation, and soil, which would be transported to repair sites on trucks or barges. Barges would be used to the extent possible to minimize traffic; however, some repair sites may not be accessible by barge and all materials would then need to be trucked to the site. It is anticipated that Tier 1 repairs would require approximately 300–600 tons of material, and Tier 2 repairs would require approximately 1,600–2,600 tons of material. Assuming that each truckload could transfer either 12 or 25 cubic yards of material, up to 75 truck trips for a Tier 1 repair, and 325 truck trips for a Tier 2 repair could be required for repair sites that are not accessible by barge. These truck trips would occur on rural roadways, where this could constitute a substantial increase in vehicle trips and potentially cause congestion at intersections. In addition, it is anticipated that each small erosion repair would require between 3 and 10 construction workers each day. It is not expected that individual repairs would take more than two weeks to complete. However, this impact would be potentially significant because truck trips associated with repairs could substantially increase traffic in relation to the existing loads.

Mitigation Measure T-1: Prepare and Implement a Traffic Management Plan for Construction-Related Truck Trips.

Before the start of construction at any repair site, DWR shall develop a coordinated construction traffic safety and control plan to minimize the simultaneous use of haul

routes for material hauling and equipment delivery during construction. The traffic management plan will include, as appropriate:

- ▶ advance warning signs to be installed on affected haul routes advising motorists of the construction zone ahead to minimize hazards associated with potential conflict with construction vehicles and to notify motorists of any closure;
- ▶ either flaggers, illuminated signs, a temporary stoplight, a flashing yellow light, or a combination of these methods to slow approaching traffic at the repair sites when truck traffic may impede traffic flow; and
- ▶ placing and maintaining barriers and installing traffic control devices necessary for safety, as specified in The California Department of Transportation's *Manual of Traffic Controls for Construction and Maintenance Works Zone* (California Department of Transportation 2006) and in accordance with city/county requirements.

Implementation of Mitigation Measure T-1 would reduce impacts related to increased traffic load to a less-than-significant level because a traffic management plan would control traffic flow.

b) Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Less than Significant with Mitigation. Because the specific small erosion repair locations are not known at this time, it is not possible to determine if a level of service standard would be exceeded. However, as discussed above, a maximum of 325 truck trips could occur over a 5-day period. Thus, this impact is considered potentially significant.

Mitigation Measure T-1: Prepare and Implement a Traffic Management Plan for Construction-Related Truck Trips.

Implementation of Mitigation Measure T-1 would reduce impacts related to potentially exceeding LOS standards to a less-than-significant level because a traffic management plan would control traffic flow.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. Repair of erosion sites along levees and banks would not include any changes that could have any effect on air traffic patterns. Therefore, there would be no impact.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less than Significant with Mitigation. Implementation of repairs would not include design features such as sharp curves or dangerous intersections that would increase hazards, nor would it result in incompatible land uses. However, the use of 30 to 130 large trucks per individual repair to transport equipment and materials to the work area could affect road conditions on haul routes in the vicinity of the repair site by increasing the rate of road wear and could damage the haul route. Damage to the haul routes would require motorists to reduce speeds or potentially use alternate routes, which could increase vehicle trips and cause congestion in affected areas. This impact would be significant. Implementing Mitigation Measure T-2 would reduce this impact to a less-than-significant level.

Mitigation Measure T-2: Restore Damaged Haul Routes to Their Preconstruction Conditions.

DWR shall require that, as part of the individual repair, all haul routes used to access individual repair sites be restored to their preconstruction conditions upon completion of construction. DWR's primary contractor (for Phase 1, the DWR maintenance yards) will inspect and document the condition of haul routes prior to and after completion of each repair. Also before construction begins, DWR will coordinate with the applicable county regarding a post-construction haul route repair/rehabilitation program. If damage to haul routes is detected, repairs will be completed immediately; at a minimum, routes damaged as a result of construction will be repaired to a structural condition equal to that which existed prior to the start of construction activities.

Implementation of Mitigation Measure T-1 would reduce this impact to a less-than-significant level because it would require repair of any haul route segment(s) damaged by construction activities to a structural condition equal to that which existed prior to the start of construction activities.

e) Result in inadequate emergency access?

No Impact. The repair sites would be located on the waterside of the levees of the Sacramento River, Feather River, American River, and of tributary streams and channels. Construction staging areas would be located within adjacent landside areas, maintenance toe roads, and the levee crown roads, and would not be located within emergency access routes.

f) Result in inadequate parking capacity?

No Impact. Construction staging areas would be located on adjacent landside areas, maintenance toe roads, and levee crown roads and would include areas for construction-related parking; existing parking areas would not be affected.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

No Impact. Implementation of SERP would affect the waterside of levees and would therefore not conflict with policies or programs supporting alternative transportation. While construction-related traffic would use Interstate 5, Interstate 80, SR 99, and SR 160, the increase would not be sufficient to disrupt or conflict with programs supporting alternative transportation.

UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Utilities and Service Systems.				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL SETTING

Utilities and public services are provided to adjacent land uses on the landside of the levees by the counties or cities, community service districts, or utility districts in which the repair sites would be located. The seven-county Phase 1 SERP coverage area is under the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB). In addition, all seven counties within the coverage area are serviced by Pacific Gas & Electric (PG&E).

DISCUSSION

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. Implementation of SERP would not involve new residential, commercial, or industrial development that would generate additional wastewater, so wastewater treatment requirements would not be exceeded. Erosion repairs would be designed to prevent further erosion, which would reduce the amount of sediment entering the affected waterway and thus improve the localized water quality. A programmatic Section 401 water quality certification is being requested for the SERP, with conditions to be identified by the CVRWQCB. Therefore, there would be no impact on wastewater treatment requirements.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. Implementation of SERP would not involve new residential, commercial, or industrial development that would result in additional demand for wastewater treatment facilities or the expansion of existing facilities. The purpose of the SERP is to repair, maintain, and restore levees to their pre-erosion condition.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. Implementation of SERP would not involve new residential, commercial, or industrial development that would result in additional need for storm water drainage facilities or the expansion of existing facilities. All of the erosion repairs would be designed to allow proper drainage.

- d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?**

Less than Significant. The SERP would not involve new residential, commercial, or industrial development that would result in additional demand for water supplies. Some of the erosion repairs would include plantings as part of the design. However, plantings would be designed to survive without supplemental watering because plantings would be installed along the waterline of the repair site or planting would be delayed until the most appropriate season to avoid the need for watering. Therefore, this impact would be less than significant and therefore, no mitigation is required.

- e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?**

No Impact. See item b) above.

- f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

Less than Significant. The SERP would not likely result in generation of solid waste that would require disposal at a landfill. In addition, any excess materials generated from the repairs (e.g., soil, rock, plant) would be incorporated into the site if possible. The potential exists for small amounts of construction waste or on-site materials to be transported to a nearby landfill. Therefore, this impact would be less than significant.

- g) Comply with federal, state, and local statutes and regulations related to solid waste?**

Less than Significant. As discussed in f) above, the SERP would not likely generate solid waste. Any excess materials generated from the repairs (e.g., soil, rock, plant) would be incorporated into the site and all excess materials would be handled in compliance with federal, state, and local statutes and regulations related to solid waste. Therefore, this impact would be less than significant.

MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Mandatory Findings of Significance.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Authority: Public Resources Code Sections 21083 and 21087.
 Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151;
 Sundstrom v. County of Mendocino, 202 Cal.App.3d 296 (1988); Leonoff v. Monterey Board of Supervisors, 222 Cal.App.3d 1337 (1990).

DISCUSSION

- a) **Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?**

Potentially Significant Impact. Sensitive resources, including special-status species and riparian habitats, occur along levees and river banks within the coverage area and could be affected during project construction. Therefore, the SERP could substantially degrade the quality of the environment. Impacts on biological resources will be fully addressed in the EIR.

- b) **Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**

Potentially Significant Impact. While the erosion repair work would be limited to the waterside of the levees and river banks within the coverage area and each erosion repair site would be small (i.e., 0.5 acre or less), construction of numerous erosion repairs within the Phase 1 SERP coverage area (up to 15 per year over a 5-year period) could contribute incrementally to regional impacts relating to air quality, biological resources, hydrology and water quality, geology and soils, or cultural resources. Direct, indirect, and cumulative impacts related to these issue areas are currently unknown and will be fully analyzed in the EIR. For this reason, the proposed repairs would have potentially significant cumulatively considerable impacts on air quality (including greenhouse gas emissions), biological resources, noise, hydrology and water quality, geology and soils, and cultural resources.

- c) **Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?**

Potentially Significant Impact. The SERP could result in impacts related to air quality, biological resources, noise, hydrology and water quality, geology and soils, and cultural resources, which could cause substantial adverse effects on human beings. Impacts on these issue areas will be fully addressed in the EIR.

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APPENDIX A

Draft SERP Design Templates

The following descriptions and exhibits are draft versions of the proposed design templates for each of the seven basic levee repair scenarios anticipated to be needed. (Design Templates 6 and 7 are still in development and will be provided in the draft EIR.)

DESIGN TEMPLATE 1: BANK FILL ROCK SLOPE WITH LIVE POLE PLANTING

This design entails installing revetment along the levee slope from the levee's toe to the upper extent of the erosion or 1–2 feet above the summer/fall average water level (whichever is higher up the slope) (Exhibit A-1). The revetment size is determined by engineering judgment based on peak flow velocities, bank slope, and other factors. The revetment would be placed at a constant slope dependent on the existing upstream and downstream slope angles. The rocks can be placed on top of existing groundcover vegetation if the vegetation does not interfere with rock placement. Larger vegetation, such as shrubs and stumps, should be removed to provide contact between the placed rock and soil slope. Stable, healthy trees should remain and rock hand-placed around them (consistent with USACE's Interim Vegetation Inspection Criteria for Standard Levees [October 2007]). In addition, downed trees that act as instream woody debris may remain in place if deemed not detrimental to the repair. The uppermost bank (Zone 1) would be planted with vegetation that provides resistance to erosion, such as native grasses. Above the summer/fall average water level (Zone 2), the revetment will be blended with soil at a 70:30 mix to provide a growth medium for vegetation. Below the summer/fall average water level, only rock revetment would be used. Vegetation plugs or live pole cuttings would be installed within the rock revetment above the summer/fall average water level and buried at least 2/3 of their length to penetrate the capillary fringe (moist soil above the water table) of the bank or levee.

After project construction, vegetation coverage is expected to expand, as growth of new plantings and regeneration of disturbed plants continues. Plants and pole cuttings would be established along the summer/fall average water level with the long-term goal of providing riparian and shaded riverine aquatic (SRA) cover habitat as defined by NMFS. The upper bank areas (Zones 1 and 2) would be seeded and covered with mulch to control erosion during the first rain events following planting.

DESIGN TEMPLATE 2: WILLOW WATTLE WITH ROCK TOE

This design would be useful for sites where erosion has occurred above the summer/fall average water level from an extremely high water event or runoff on the slope (Exhibit A-2). The benefit of this repair compared to Design Template 1 is that revetment may be unnecessary because the upper slope would only occasionally be exposed to erosive forces. This design is identical to Design Template 1 from the toe to the summer/fall average water level. Above that level, the bank would be graded to the desired slope angle with soil. To help stabilize the soil and provide for additional vegetative growth, 12-inch-diameter bundles of live cuttings (willow wattles) would be placed into excavated trenches parallel to the flow. The willow wattles would be placed in rows spaced 3–5 feet apart, providing a terrace effect above the water level. The willow wattles would be secured to the slope using live pole cuttings. The area above

the summer/fall average water level (Zones 1 and 2) would be seeded with native grasses and mulched for erosion control. Live willow wattle and pole plantings would require water, so the live pole cuttings should be at least 2/3 buried to penetrate the capillary fringe (moist soil above the water table) of the bank or levee.

DESIGN TEMPLATE 3: BRUSH LAYERING

Design Template 3 would involve layering live woody cuttings with lifts of compacted soil to reestablish a stable, vegetated slope (Exhibit A-3). This design is limited to sites where the difference in elevation from the summer/fall average water level to the design high water elevation is less than 4 feet. This repair is for small, isolated scallops or slumps that should be filled before further damage occurs. The live woody cuttings protect slopes from erosion caused by runoff or waves on the levee slope. The live branches are 0.5–3 inches in diameter and of a length that the cut end of the branch touches the undisturbed slope and protrudes about 1 foot from the face of the final slope.

DESIGN TEMPLATE 4: ROCK TOE WITH LIVE POLE PLANTING

This design is similar to Design Template 1 with the following differences: (1) pole cuttings would be placed both in the riprap just above the summer/fall average water level and in the native soil just above the riprap and (2) soil would not be mixed in with the riprap (Exhibit A-4). This design is useful for repairing slopes that experience frequent erosion at the toe of the bank. This design is best suited to river systems with consistent flows and low velocities.

DESIGN TEMPLATE 5: SOIL AND ROCK FILL AT THE BASE OF A FALLEN TREE

This design would be used to repair small voids created by a local scour or downed tree. The eroded bank would be filled with rock riprap and planted with live pole cuttings (Exhibit A-5). Soil above the summer/fall average water level would be mixed with the rock riprap. In some cases, such as outside bends, the fallen tree can be used as revetment to deflect flows. This design would not be used in areas with high water flows where water could erode the soil behind the tree's root fan.