

Final Environmental Impact Statement/Final Environmental Impact Report on the
American River Watershed Common Features Project/
Natomas Post-authorization Change Report/Natomas Levee
Improvement Program, Phase 4b Landside Improvements Project



State Clearinghouse No. 2009112025

Executive Summary

Prepared for:



**US Army Corps
of Engineers**®
Sacramento District



**Sacramento
Area Flood
Control
Agency**



October 22, 2010

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This environmental impact statement/environmental impact report (EIS/EIR) has been prepared by the U.S. Army Corps of Engineers (USACE), Sacramento District and the Sacramento Area Flood Control Agency (SAFCA) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively. This EIS/EIR evaluates the potential significant environmental impacts of the Natomas Levee Improvement Program (NLIP), Phase 4b Landside Improvements Project (Phase 4b Project), and will be submitted to Congress in late 2010 to support approval of USACE's American River Watershed Common Features Project/Natomas Post-authorization Change Report (Common Features/Natomas PACR), which is an element of the American River Watershed Common Features Project General Re-evaluation Report (Common Features GRR).

The Common Features/Natomas PACR includes all four project phases (1, 2, 3, and 4a and 4b) of the Landside Improvements Project, which is a component of the NLIP. The overall purpose of the NLIP is to bring the entire 42-mile Natomas Basin perimeter levee system into compliance with applicable Federal and state standards for levees protecting urban areas. The Phase 4b Project is the final subphase of the Landside Improvements Project, and consists of improvements to the remaining portions of the Natomas Basin's perimeter levee system in the City of Sacramento and in Sutter and Sacramento Counties, California, associated landscape and irrigation/drainage infrastructure modifications, and habitat creation and management.

If the Common Features/Natomas PACR is authorized by Congress, USACE would implement the Phase 4b Project. In the event that USACE does not receive authorization to construct the Phase 4b Project, SAFCA could choose to implement the Phase 4b Project. In readiness for the latter scenario, SAFCA is requesting permission from USACE pursuant to Section 14 of the Rivers and Harbors Act of 1899 (33 United States Code [USC] Section 408, hereinafter referred to as "Section 408") for alteration of Federal project levees; Section 404 of the Clean Water Act (33 USC Section 1344, hereinafter referred to as "Section 404") for the placement of fill in jurisdictional waters of the United States; and Section 10 of the Rivers and Harbors Act of 1899 (33 USC Section 403, hereinafter referred to as "Section 10") for work performed in, over, or under navigable waters of the United States (such as excavation of material from or deposition of material into navigable waters). This FEIS/FEIR covers the requested permissions from USACE, if needed.

The project proponent(s) may also need to obtain several state approvals or permits to implement the Phase 4b Project: Central Valley Flood Protection Board encroachment permit, California Surface Mining and Reclamation Act permit or exemption, Clean Water Act Section 401 water quality certification, Clean Water Act Section 402 National Pollutant Discharge Elimination System permit, California Fish and Game Code Section 2081 incidental-take authorization, California Fish and Game Code Section 1602 streambed alteration agreement, California Department of Transportation (Caltrans) encroachment permit, and permits from two local air districts, the Sacramento Metropolitan Air Quality Management District and the Feather River Air Quality Management District.

ES.2 LEAD AGENCIES AND COOPERATING AGENCY

USACE is the Federal lead agency for NEPA, and SAFCA is the California lead agency for CEQA.

The Federal Aviation Administration (FAA) is serving as a cooperating agency for NEPA. In the event that SAFCA and USACE select an alternative that requires the Sacramento International Airport (Airport) to change its Airport Layout Plan or seek a release from Federal Airport Improvement Grant assurances, the FAA would use this EIS/EIR in exercising its decision-making authority under 49 USC Section 47107 regarding whether to approve those actions. The CVFPB is serving as a non-Federal sponsor of USACE's Common Features GRR and

Common Features/Natomas PACR, and is concerned about integrating overall flood damage reduction in Sacramento.

ES.3 PURPOSE AND INTENDED USES OF THIS EIS/EIR

The purpose of this EIS/EIR is to evaluate the potential significant environmental impacts of the Phase 4b Project.

This EIS/EIR will be used to support Congressional approval of USACE's Common Features/Natomas PACR. In the event Congress does not authorize USACE to construct the Phase 4b Project, and SAFCA chooses to proceed with the Phase 4b Project without additional Federal participation, this EIS/EIR will be used to support USACE's decisions regarding whether to grant or deny permission to SAFCA for the Phase 4b Project pursuant to Sections 408, 404, and 10; and SAFCA's decision regarding whether to approve the Phase 4b Project.

SAFCA will consider whether or not to certify the EIR and approve the Phase 4b Project in fall 2010. This decision will be based on numerous factors, including the potential environmental impacts and mitigation measures addressed in this EIS/EIR, permitting requirements, Federal and state authorizations, funding and financing mechanisms, and implementation schedule.

This EIS/EIR will also be used by CEQA responsible agencies, such as the Central Valley Flood Protection Board (CVFPB) and Central Valley Regional Water Quality Control Board, and trustee agencies, such as the California Department of Fish and Game, to ensure that they have met the requirements of CEQA before deciding whether to issue discretionary permits over which they have authority. It may also be used by other state, regional, and local agencies, which may have an interest in resources that could be affected by the project.

This EIS/EIR is not intended to be used as the environmental clearance document for future development projects proposed in the Natomas Basin.

ES.4 DOCUMENTS INCORPORATED BY REFERENCE

Incorporation by reference is encouraged by both NEPA (40 Code of Federal Regulations [CFR] Section 1500.4, 1502.21) and CEQA (California Code of Regulations [CCR] Section 15150). Both NEPA and CEQA require citation to and a brief summary of the referenced material, as well as information about the public availability of the incorporated material. CEQA also requires citation of the state identification number of the EIRs cited. This EIS/EIR is tiered from, or incorporates by reference, information contained in the following documents:

- ▶ *Environmental Impact Report on Local Funding Mechanisms for Comprehensive Flood Control Improvements for the Sacramento Area*, State Clearinghouse No. 2006072098 (Local Funding EIR) (SAFCA 2007a), which evaluates impacts expected to result from the Phase 1 Project at a project level and the NLIP at a program level;
- ▶ *Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project*, State Clearinghouse No. 2007062016 (Phase 2 EIR) (SAFCA 2007c), which evaluates impacts expected to result from the Phase 2 Project at a project level and the remainder of the NLIP at a program level;
- ▶ *Environmental Impact Statement for 408 Permission and 404 Permit to Sacramento Area Flood Control Agency for the Natomas Levee Improvement Project (Phase 2 EIS)* (USACE 2008), which evaluates impacts expected to result from the Phase 2 Project at a project level and the remainder of the NLIP at a program level;
- ▶ *Supplement to the Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project—Phase 2 Project*, State Clearinghouse No. 2007062016 (Phase 2 SEIR) (SAFCA 2009a), which evaluates impacts expected to result from modifications to the Phase 2 Project at a project level;

- ▶ *Addendum to the Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project—Phase 2 Project*, State Clearinghouse No. 2007062016 (Phase 2 EIR 1st Addendum) (SAFCA 2009c), which evaluates minor changes to the Phase 2 Project;
- ▶ *2nd Addendum to the Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project—Phase 2 Project*, State Clearinghouse No. 2007062016 (Phase 2 EIR 2nd Addendum) (SAFCA 2009d), which evaluates minor changes to the Phase 2 Project;
- ▶ *Environmental Impact Statement and Environmental Impact Report on the Natomas Levee Improvement Program, Phase 3 Landside Improvements Project*, State Clearinghouse No. 2008072060 (Phase 3 EIS and EIR) (USACE 2009 and SAFCA 2009b), which evaluates impacts expected to result from the Phase 3 Project at a project level;
- ▶ *Addendum to the Environmental Impact Report on the Natomas Levee Improvement Program, Phase 3 Landside Improvements Project*, State Clearinghouse No. 2008072060 (Phase 3 EIR Addendum) (SAFCA 2009e), which evaluates minor changes to the Phase 3 Project; and
- ▶ *Environmental Impact Statement and Environmental Impact Report on the Natomas Levee Improvement Program, Phase 4a Landside Improvements Project*, State Clearinghouse No. 2009032097 (Phase 4a EIS and EIR) (USACE 2010 and SAFCA 2009f), which evaluates impacts expected to result from the Phase 4a Project at a project level.

Portions of these documents, where specifically noted, are summarized throughout this EIS/EIR. Printed copies of these documents are available to the public at USACE’s office at 1325 J Street, Sacramento, California and are also available on USACE’s Web site at <http://www.spk.usace.army.mil>. These documents are also available at SAFCA’s office at 1007 7th Street, 7th Floor, Sacramento, California, during normal business hours, and on SAFCA’s Web site, at http://www.safca.org/Programs_Natomas.html.

ES.5 PROJECT LOCATION

The Natomas Basin is located at the confluence of the American and Sacramento Rivers. Encompassing approximately 53,000 acres, the Basin extends northward from the American River and includes portions of the city of Sacramento, Sacramento County, and Sutter County. In addition to the American and Sacramento Rivers to the south and west, respectively, the Natomas Basin is bordered to the north by the Natomas Cross Canal (NCC) and to the east by the Pleasant Grove Creek Canal (PGCC) and the Natomas East Main Drainage Canal (NEMDC) (**Plate 1-1**). The NCC diverts the runoff from a large watershed in western Placer and southern Sutter Counties around the Natomas area and is a major contributor to the flows in the upper reach of the Sacramento River channel in SAFCA’s jurisdiction. The NEMDC is an engineered channel along the southeastern flank of Natomas. Tributaries to the NEMDC include Dry Creek, Arcade Creek, Rio Linda Creek, Robla Creek, and Magpie Creek Diversion Channel. The Natomas Basin is protected from high flows in these tributaries and in the American and Sacramento Rivers by a Federal perimeter levee system.

USACE has divided the flood damage reduction improvements within the Natomas Basin into nine reaches (Reaches A–I), as shown on **Plate 1-3**. USACE’s reach designations differ from SAFCA’s reach designations, which are more finely subdivided than the USACE system for the Sacramento River east levee, American River north levee, and the NCC. In **Plate 1-3**, lettered reaches follow the USACE designation, while numbered reaches follow the SAFCA designations:

- ▶ Sacramento River east levee: Reach A:16–20
- ▶ Sacramento River east levee: Reach B:5A–15
- ▶ Sacramento River east levee: Reach C:1–4B
- ▶ NCC: Reach D:1–7
- ▶ PGCC: Reach E: there are no SAFCA reaches, just station numbers

- ▶ NEMDC North: Reaches F–G
- ▶ NEMDC South: Reach H
- ▶ American River north levee: Reach I:1–4

The Natomas Basin floodplain is occupied by more than 83,000 residents and over \$8.2 billion in damageable property, including the Airport and extensive urban development, primarily in the southern one-third of the Basin. The remaining agricultural lands in the Natomas Basin provide habitat for several important wildlife species. This habitat is protected under Federal and state laws, and expansion of the urban footprint into much of the remaining agricultural areas is governed by the *Natomas Basin Habitat Conservation Plan* (NBHCP), which is aimed at setting aside and conserving tracts of agricultural land that are needed to sustain the affected species.

The Phase 4b Project location primarily includes the Sacramento River east levee Reach A:16–20, American River north levee Reach I:1–4, NEMDC west levee, PGCC west levee, West Drainage Canal, Riego Road Canal, NCC south levee, and various borrow sites within the Natomas Basin (primarily the Fisherman’s Lake Borrow Area, West Lakeside School Site, and Triangle Properties Borrow Area). These areas are shown in the Plates in Chapter 2, “Alternatives,” of this EIS/EIR.

ES.6 PROJECT BACKGROUND AND PHASING

As stated above, the overall purpose of the multi-phase NLIP is to bring the entire 42-mile Natomas Basin perimeter levee system into compliance with applicable Federal and state standards for levees protecting urban areas. The Phase 4b Project is the final phase of the NLIP Landside Improvements Project, and consists of improvements to the remaining portions of the Natomas Basin’s perimeter levee system in the City of Sacramento and in Sutter and Sacramento counties, California, associated landscape and irrigation/drainage infrastructure modifications, and habitat creation and management.

The NLIP addresses identified deficiencies in the Natomas Basin perimeter levee system based on (1) design criteria used to certify levees as providing 100-year flood risk reduction (0.01 AEP) under regulations adopted by the Federal Emergency Management Agency (FEMA), (2) design criteria used by USACE and the State for the levees comprising the Common Features Project, and (3) design 200-year¹ (0.005 AEP) water surface elevations developed by SAFCA in cooperation with the State using hydrologic modeling data developed by USACE and the State as part of the Sacramento–San Joaquin River Basins Comprehensive Study.

Although SAFCA anticipates that all segments of the Natomas perimeter levee system will eventually be improved to meet all of the above design criteria, SAFCA is partnering with the California Department of Water Resources (DWR) using SAFCA’s local assessments and grant funding available through DWR’s FloodSAFE California Program to initiate improvements to segments of the Natomas perimeter levee system in advance of full Federal authorization for the constructed improvements. SAFCA anticipates completion of this “early implementation project”—which includes the Phase 2, 3, and 4a Projects—by 2012. Phase 2 Project construction is underway and is anticipated to be completed by 2010; it is anticipated that construction of the Phase 3 and 4a Projects will be completed by 2012. USACE plans to complete improvements to the remaining segments of the perimeter levee system (i.e., the Phase 4b Project). This will require Congressional authorization to expand the scope of the already authorized Common Features Project based on the information and recommendations provided in the Common Features/Natomas PACR. SAFCA is coordinating with USACE to ensure that the planning and design of the early implementation project are consistent with applicable USACE planning,

¹ Design event analysis results, as a measure of system performance, are given as the expected (mean) frequency of the maximum event that can be safely passed through the reservoir, spillway, and downstream leveed system with a set (e.g., 3 feet) “freeboard” above the computed (expected) water surface profile. Design event analysis is not the same as the analysis procedure used by USACE as a basis for determining Federal interest in a project or for USACE certification for FEMA’s National Flood Insurance Program. USACE defines system performance as containing a specified frequency event (e.g., 0.01 event) with a high level of assurance (i.e., Conditional Non-exceedance Probability = 0.9) and includes consideration of system uncertainties.

engineering, and design guidelines. This EIS/EIR is the environmental compliance document for and will support the Common Features/Natomas PACR. USACE will subsequently prepare the Common Features GRR, which will cover all elements of the American River Common Features Project, and will be a separate report with its own environmental documentation. USACE and SAFCA recognize that Federal actions taken in connection with the early implementation project will need to be appropriately reflected in both Federal reports.

To move forward as quickly as possible to reduce the risk of flooding in the Natomas Basin, SAFCA identified the broad outlines of the early implementation project at a program level of detail and developed an incremental implementation strategy based on carrying out the project in four phases, with each phase contributing independently and cumulatively to reducing flood risk. Each individual project phase would contribute to reduced flood risk for the Natomas Basin, and thus has independent utility. However, no single project phase would achieve the overall flood risk reduction objectives of the NLIP. The NLIP, as a program, has independent utility from the other areas under consideration in the Common Features GRR because the NLIP will provide added flood risk reduction to an entire area (similar to a ring levee), and this increased flood risk reduction is not dependent on the outcome of the Common Features GRR. The four phases of the NLIP are described below.

The **Phase 1 Project** involved improvements to address underseepage deficiencies affecting a 1.9-mile segment of the NCC south levee (Reach D). The environmental impacts of these improvements were evaluated in the Local Funding EIR (SAFCA 2007a), which the SAFCA Board of Directors certified on February 16, 2007. These improvements were constructed in 2007 and 2008.

The **Phase 2 Project** focuses on improvements to address underseepage and levee height deficiencies along the entire 5.3-mile length of the NCC south levee as well as underseepage, erosion, encroachment, and levee height deficiencies along the upper 4.5 miles of the Sacramento River east levee (Reach C:1–4B). The environmental impacts of these improvements were evaluated in detail in the Phase 2 EIR (SAFCA 2007c), which the SAFCA Board of Directors certified on November 29, 2007; and the Phase 2 EIS, for which a record of decision (ROD) was issued by USACE on January 21, 2009 (USACE also issued the 408 permission and 404 permit for the Phase 2 Project in January 2009). Since certification of the Phase 2 EIR, SAFCA made minor modifications to the design of the Phase 2 Project. A supplemental EIR (Phase 2 SEIR) (SAFCA 2009a) was prepared by SAFCA to evaluate these modifications; the SAFCA Board of Directors certified the SEIR on January 29, 2009, at which time the Board also approved the modifications to the Phase 2 Project. Subsequently, two addenda to the Phase 2 EIR were prepared by SAFCA to evaluate additional minor modifications to the Phase 2 Project; the first Addendum to the Phase 2 EIR (SAFCA 2009c) was certified by the SAFCA Board of Directors on June 8, 2009 and the 2nd Addendum to the Phase 2 EIR (SAFCA 2009d) was certified on August 20, 2009.

The Phase 2 Project could be constructed on a stand-alone basis, assuming no further action on the balance of the NLIP is taken. Construction of the Phase 2 Project began in May 2009 and is anticipated to be completed in 2010, assuming receipt of all required environmental clearances and permits. It is clear that a portion of Phase 2 Project construction will likely be complete prior to construction of the Phase 3 Project. However, it is still likely that there will be some overlap in construction schedules between these two phases (see below).

The **Phase 3 Project** focuses on addressing underseepage, riverbank erosion, encroachment, and levee height deficiencies along the Sacramento River east levee Reach B:5A–9B, the PGCC west levee (Reach E), and a portion of the NEMDC west levee (between Elkhorn and Northgate Boulevards) (Reach H). On February 13, 2009, USACE and SAFCA issued the Phase 3 DEIS/DEIR for public review and comment. Following public review, SAFCA prepared a final EIR (FEIR) (SAFCA 2009b) to provide responses to comments on the Phase 3 DEIS/DEIR. The SAFCA Board of Directors certified the FEIR and approved the Phase 3 Project on May 21, 2009. Separately, USACE prepared a final EIS (FEIS) (USACE 2009) that was issued for public review on August 21, 2009. A ROD was issued on April 2, 2010, at which time USACE also issued the 408 permission and 404 permit for the Phase 3 Project.

After the May 21, 2009 certification of the Phase 3 EIR, SAFCA made minor modifications to the design of the Phase 3 Project. An addendum to the Phase 3 EIR (SAFCA 2009e) was prepared by SAFCA to evaluate these modifications; the SAFCA Board of Directors certified the Addendum and approved the modifications to the Phase 3 Project on September 17, 2009.

To construct the Phase 3 Project with minimal interruption of and conflict with drainage/irrigation services and wildlife habitat (specifically, giant garter snake habitat), some Phase 3 Project components were constructed in 2009 in advance of major levee construction that is scheduled to occur in 2010. To facilitate this staged construction, a staged permitting approach was developed for the Phase 3 Project. Specifically, irrigation and drainage infrastructure (termed the Phase 3a Project) was permitted by USACE and the Central Valley RWQCB under Sections 404 and 401, respectively, of the Clean Water Act, on October 7, 2009. Some vegetation encroachments would also occur during the non-nesting season for raptors and other bird species. A separate, but related, set of permits for the Phase 3 Project's levee construction and pumping plant improvements (termed the Phase 3b Project) was issued in spring 2010.

Preliminary construction (canal work, utility relocation, vegetation removal, and demolition of structures) of the Phase 3a Project began in fall 2009, with major levee construction (Phase 3b) planned to begin in 2010, assuming receipt of all required environmental clearances and permits. The potential exists for up to 30% of the Phase 2 Project to also be constructed in 2010, concurrent with major Phase 3 Project levee construction, or even potentially concurrently with the Phase 4a Project, depending on the timing and availability of funding, and environmental clearances and permits.

The **Phase 4a Project** includes levee raising and seepage remediation along the Sacramento River east levee (Reach B:10–15) and in two locations of the NCC south levee (Reach D), relocation and extension of the Riverside Canal, and modifications to the Riverside Pumping Plant and Reclamation District 1000's Pumping Plant Nos. 3 and 5. On August 28, 2009, USACE and SAFCA issued the Phase 4a DEIS/DEIR for public review and comment. Following public review, SAFCA prepared an FEIR (SAFCA 2009f). The SAFCA Board of Directors certified the FEIR and approved the Phase 4a Project on November 13, 2009. Separately, USACE prepared an FEIS (USACE 2010) that was issued for public review in February 2010. USACE will consider whether to grant Section 408 permission and issue permits under Sections 404 and 10, and document its decision in a ROD, expected in fall 2010. The Phase 4a Project could be constructed at the same time as portions of the Phase 3 Project. Construction of the Phase 4a Project is planned to begin in 2011 and to be completed in 2012, assuming receipt of all required environmental clearances and permits.

The **Phase 4b Project** would address underseepage, stability, erosion, penetrations, and levee encroachments along approximately 3.4 miles of the Sacramento River east levee in Reach A:16–20, approximately 1.8 miles of the American River north levee (Reach I:1–4), approximately 6.8 miles of the NEMDC west levee (Reach F–G), approximately 3.3 miles of the PGCC west levee (Reach E), and the gaps left in the improvements of previous phases at levee penetrations and road crossings on the NCC south levee. This EIS/EIR evaluates at a project-level the direct, indirect, and cumulative effects of the Phase 4b Project, which was evaluated at a program level in the Local Funding EIR, Phase 2 EIR, and Phase 2 EIS. Construction of the Phase 4b Project is planned to begin as early as 2012 and anticipated to be completed in 2016, assuming receipt of Congressional authorization, funding (if SAFCA pursues without Federal participation), and all required environmental clearances and permits.

Each of the project phases discussed above also includes associated habitat, drainage, irrigation, related infrastructure improvements, and borrow sites.

ES.7 NEED FOR ACTION

The need for the action is to reduce the flood risk to the Natomas Basin.

The Natomas Basin floodplain is occupied by over 83,000 residents and \$8.5 billion in damageable property. Although improvements to the Natomas Basin perimeter levee system, completed as part of the Sacramento Urban Levee Reconstruction Project and the North Area Local Project (NALP), have significantly reduced flood risk for the area, the Natomas Basin remains vulnerable to flooding in a less than 100-year (0.01 AEP) flood event. Uncontrolled flooding in the Natomas Basin floodplain in a flood exceeding a 100-year (0.01 AEP) event could result in \$7.4 billion in damage (this excludes the Airport facilities) (SAFCA 2007b). Flooding could also release toxic and hazardous materials, contaminate groundwater, and damage the metropolitan power and transportation grids. The disruption in transportation that could result from a major flood could affect the Airport and interstate and state highways. In addition, displacement of residents, businesses, agriculture, and recreational areas could occur. Resulting damage could hinder community growth, stability, and cohesion.

The NLIP was initially outlined in the *Natomas Levee Evaluation Study Final Report Prepared for SAFCA in Support of the Natomas Basin Components of the American River Common Features* (SAFCA 2006). This evaluation was based on the engineering studies and reports that were included as appendices to the above-referenced report, which are available for review at SAFCA's office at 1007 7th Street, 7th Floor, Sacramento, California. These studies and reports indicate that segments of the Natomas perimeter levee system reflect the following problems for both the FEMA 100-year (0.01 AEP) and the 200-year (0.005 AEP) design water surface elevations:

- ▶ inadequate levee height,
- ▶ through-levee seepage and foundation underseepage with excessive hydraulic gradients,
- ▶ embankment instability, and
- ▶ susceptibility to riverbank erosion and scour.

Although not highlighted in the levee evaluation report, portions of the perimeter levee system, particularly along the east levee of the Sacramento River, are also subject to vegetative and structural encroachments into the levee prism.

In January 2008, FEMA remapped the Natomas Basin as an AE zone, and the flood zone designation took effect in December 2008. FEMA defines AE zones as areas with a 0.01 AEP of flooding. The designation requires mandatory flood insurance purchases by homeowners and requires that the bottom floor of all new buildings be constructed at or above base flood elevation—as little as 3 feet above ground level in some of the Natomas Basin but up to 20 feet above ground level in much of the Basin. This designation and the associated constraints effectively stopped all projects that were not issued building permits before the new maps took effect.

ES.8 PROJECT PURPOSE/PROJECT OBJECTIVES

USACE and SAFCA each view the project purpose from the purview of their respective responsibilities, as defined below.

ES.8.1 U.S. ARMY CORPS OF ENGINEERS

The overall purpose of the project is to develop and select an alternative that would reduce the risk of flood damage in the Natomas Basin. Some residual risk will always remain, however, in any flood damage reduction system. Ultimately, Congress must authorize the Common Features/Natomas PACR, which includes the Phase 4b Project. If not authorized by Congress, USACE must make decisions on whether or not to grant permission to SAFCA to alter the Natomas Basin levee system (Federal project levees) under Section 408, and issue permits under Sections 404 and 10, for SAFCA to implement the Phase 4b Project without Federal participation.

ES.8.2 SACRAMENTO AREA FLOOD CONTROL AGENCY

SAFCA's project objectives adopted in connection with the NLIP are: (1) provide at least a 100-year level of flood risk reduction (0.01 AEP) to the Natomas Basin as quickly as possible, (2) provide 200-year flood risk reduction (0.005 AEP) to the Basin over time, and (3) avoid any substantial increase in expected annual damages as new development occurs in the Basin. The first two project objectives would reduce the residual risk of flooding sufficiently to meet the minimum requirements of Federal and state law for urban areas like the Natomas Basin. The third project objective is a long-term objective of SAFCA's.

Additional project objectives that have informed SAFCA's project design are to:

- (1) use flood damage reduction projects in the vicinity of the Airport to facilitate management of Airport lands in accordance with the Airport's *Wildlife Hazard Management Plan* (WHMP); and
- (2) use flood damage reduction projects to increase the extent and connectivity of the lands in the Natomas Basin being managed to provide habitat for giant garter snake, Swainson's hawk, and other special-status species.

SAFCA's approach to defining flood risk reduction accomplishments (system performance) differs from that of USACE; however, the method for determining hydraulic impacts is the same. The hydraulic impact analysis contained in this EIS/EIR evaluates hydraulics impacts based on upstream levees failing when overtopped along with the condition of allowing upstream levees to overtop without failing (see Section 4.5, "Hydrology and Hydraulics"). References in this EIS/EIR to levels of flood risk reduction are based on SAFCA's "best estimate" approach (FEMA's and the State's current method), and should not be taken as USACE concurrence that such levels would be achieved based on USACE's approach of incorporating risk and uncertainty in the estimate of system performance. In any case, flood risk to the Natomas Basin would be considerably reduced by the project.

ES.9 ALTERNATIVES SCREENING

USACE and SAFCA formulated the project and a reasonable range of alternatives that would achieve the specific project objectives through the following steps:

- ▶ identification of the deficiencies in the Natomas levee system that must be addressed to provide at least 100-year (0.01 AEP) flood risk reduction as quickly as possible;
- ▶ identification of the deficiencies in the Natomas levee system that must be addressed to provide 200-year (0.005 AEP) flood risk reduction,
- ▶ identification of feasible remedial measures to address the deficiencies,
- ▶ determination of the likely environmental impacts of the remedial measures,
- ▶ development of a reasonable range of flood damage reduction alternatives for implementing the remedial measures; and
- ▶ identification of measures to ensure that each alternative would improve aviation safety, minimize impacts on significant cultural resource sites, and enhance habitat values.

Alternatives screening for the overall NLIP has been undertaken in a systematic manner through several environmental documents as summarized in Chapter 2, "Alternatives," and detailed in **Appendix B1**.

ES.10 ALTERNATIVES

ES.10.1 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Numerous alternatives have been considered by USACE and SAFCA to reduce flood risk in the Natomas Basin. Many alternatives have been evaluated and eliminated from further consideration during completion of the previous NLIP environmental documents (see ES.2, “Purpose and Intended Uses of This Document”). A summary of the alternatives considered but eliminated from further consideration is provided in Chapter 2, “Alternatives,” and **Appendix B1**.

ES.10.2 ALTERNATIVES CARRIED FORWARD FOR EVALUATION IN THIS EIS/EIR

Three alternatives, one no-action and two action alternatives, were carried forward for detailed analysis in this EIS/EIR: No-Action Alternative (which includes two scenarios: No Phase 4b Project Construction and Potential Levee Failure), Adjacent Levee Alternative (Proposed Action), and Fix-in-Place Alternative. These alternatives are summarized below and described in detail in Chapter 2, “Alternatives.” The major project elements of the action alternatives are summarized in **Table ES-1**.

The No-Action Alternative, under NEPA, is the expected future without-project conditions. Under CEQA, the No-Action Alternative is the existing condition at the time the notice of preparation was published (November 5, 2009) as modified by what would be reasonably expected to occur in the foreseeable future if the project were not approved. The Phase 4b Project **No-Action Alternative** assumes the Phase 1, 2, 3, and 4a Projects are implemented. This alternative consists of the conditions that would be reasonably expected to occur in the foreseeable future if no additional permissions to alter the existing levees or discharge dredged or fill material into waters of the United States would be granted. Different scenarios are possible under this circumstance. Under one scenario, no project construction would occur and, thus, no construction-related impacts would occur under this alternative (this scenario is referred to in this EIS/EIR as “No-Action Alternative: No Phase 4b Project Construction”). Without improvements to the Natomas perimeter levee system (e.g., implementation of one of the action alternatives, described below), the Natomas area would continue to be designated as a special flood hazard area; new development would be effectively precluded in most areas of the Natomas Basin; and existing residential, commercial, and industrial developments in the Natomas Basin would remain subject to a significant risk of flooding. Under the second scenario, a levee failure and subsequent flooding would be considered reasonably foreseeable, if the project were not approved. Therefore, this EIS/EIR includes an analysis of the resulting potential impacts (this scenario is referred to in this EIS/EIR as “No-Action Alternative: Potential Levee Failure”); however, because impacts associated with a potential levee failure are largely unknown and would depend on the location and extent of flooding, many of these potential impacts are considered too speculative for meaningful consideration. A general, qualitative discussion of the likely impacts is nonetheless provided in this EIS/EIR.

Under the **Adjacent Levee Alternative (Proposed Action)**, an adjacent levee would be constructed along the Sacramento River east levee Reach A:16–20; and, where required for this levee, cutoff walls, seepage berms, and relief wells would be installed for seepage remediation. A cutoff wall would be installed in the American River north levee east of Gateway Oaks Drive to Northgate Boulevard, and the landside slope would be flattened. The NEMDC west levee would be raised in place or widened from just south of Elkhorn Boulevard to Sankey Road, and the landside slope would be flattened and seepage remediation would be constructed as necessary. Waterside erosion protection would be constructed in locations along the PGCC and NEMDC (south of Elkhorn Boulevard). Culverts located beneath the PGCC would be upgraded or removed, and replacement flood storage would be provided as needed. At the SR 99 crossing of the NCC, seepage remediation would be installed and a moveable barrier system would be constructed to prevent overflow from reaching the landside of the NCC south levee. The western portion of the West Drainage Canal would be realigned to the south, and the remaining portion of the existing canal would be improved to reduce bank erosion and sloughing, decrease aquatic weed infiltration, improve RD 1000 maintenance access, and enhance giant garter snake habitat connectivity. Irrigation canals and

Table ES-1		
Summary of the Major Project Elements of the Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative		
Major Project Elements	Adjacent Levee Alternative (Proposed Action)	Fix-in-Place Alternative
Sacramento River east levee (Reach A:16–20): Levee widening/rehabilitation and seepage remediation	Construct an adjacent levee with flattened landside slope and cutoff walls, seepage berms, and relief wells, where required, to reduce potential underseepage and seepage through the levee (Plates 2-7a and 2-7b). Cutoff wall construction may be conducted 24 hours per day, 7 days per week (24/7), except in the urbanized area east of the Interstate 80 (I-80) overcrossing, where it would be restricted to daytime hours.	Same as the Adjacent Levee Alternative (Proposed Action), <i>except that the levee crown would not be widened by 15 feet, necessitating waterside vegetation removal to comply with USACE guidance criteria.</i>
Sacramento River east levee (Reach B:10–15): Levee raise extension	Extend levee raise within Phase 4a Project footprint from Station 635+00 to 680+00 to address levee height requirements.	Same as the Adjacent Levee Alternative (Proposed Action)
American River north levee (Reach I:1–4): Slope flattening and seepage remediation	Flatten the slope and install cutoff walls in the American River north levee from just east of Gateway Oaks Drive to Northgate Boulevard (Plate 2-9). Cutoff wall construction would be restricted to daytime hours.	Same as the Adjacent Levee Alternative (Proposed Action)
NEMDC North (Reaches F–G): Levee raising, slope flattening, and seepage remediation	Raise the levee in place or construct an adjacent levee, flatten slopes, and install cutoff walls from Sankey Road to Elkhorn Boulevard. Cutoff wall construction may be conducted 24/7.	Same as the Adjacent Levee Alternative (Proposed Action)
PGCC (Reach E) and NEMDC South (Reach H): Levee raising and slope flattening	Raise the levee in place or construct a raised adjacent levee and flatten slopes from Howsley Road to Sankey Road on the PGCC west levee (Plate 2-13). On the NEMDC South, install a cutoff wall, flatten the slope, and raise the levee in place or construct an adjacent levee for approximately 500 feet south of Elkhorn Boulevard (Plate 2-14). Cutoff wall construction may be conducted 24/7.	Same as the Adjacent Levee Alternative (Proposed Action)
PGCC (Reach E) and NEMDC South (Reach H): Waterside improvements	Erosion repair and rock slope protection at locations where erosion around the outfall structures penetrating the levee has been observed. Construct additional remediation to protect against damage caused by beavers and burrowing animals (Plates 2-13 and 2-14).	Same as the Adjacent Levee Alternative (Proposed Action)
PGCC (Reach E) culvert remediation	Upgrade or remove five culverts that currently drain the area east of the PGCC by passing water under the canal to drainage ditches along the landside of the PGCC west levee (Plate 2-13). Under the culvert removal option, construct detention basins east of the PGCC levee to provide replacement storage for drainage. Depending on the design of the detention basins, pumping stations may be needed to discharge water out of the basins and into the PGCC. Installation of culverts under Pierce-Roberts drain, Pleasant Grove Creek, and Curry Creek may also be needed to interconnect drainage subbasins.	Same as the Adjacent Levee Alternative (Proposed Action)
SR 99 NCC Bridge remediation (Reach D:6)	Construct a moveable barrier system or a stop log gap at the south end of the SR 99 bridges to be used at high river stages to prevent overflow from reaching the landside of the NCC south levee. Modify the bridge deck connections to the supporting piers and abutments as needed to resist uplift pressure during high water stages. Install additional seepage remediation consisting of seepage cutoff walls where the bridges cross the NCC south levee (Reach D:6). Cutoff wall construction may be conducted 24/7.	Same as the Adjacent Levee Alternative (Proposed Action)

<p align="center">Table ES-1 Summary of the Major Project Elements of the Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative</p>		
Major Project Elements	Adjacent Levee Alternative (Proposed Action)	Fix-in-Place Alternative
West Drainage Canal	Realign the West Drainage Canal to shift an approximately 1-mile portion, starting at I-5, to an alignment farther south of the Airport Operations Area. Modify the existing canal east of the alignment to reduce bank erosion and sloughing, decrease aquatic weed infiltration, improve RD 1000 maintenance access, and enhance giant garter snake habitat connectivity.	Same as the Adjacent Levee Alternative (Proposed Action)
Riego Road Canal (highline irrigation canal) relocation	Relocate approximately 4,000 feet of irrigation canal, approximately 250 feet of buried irrigation piping and culverts, and several irrigation turn-out structures away from the proposed levee footprint for the northern segment of the NEMDC west levee (Reaches F–G).	Same as the Adjacent Levee Alternative (Proposed Action)
NCC south levee ditch relocations	Relocate the Vestal Drain ditch and Morrison Irrigation Canal landward to reduce underseepage potential at the NCC south levee (Reach D:2, 5, and 6).	Same as the Adjacent Levee Alternative (Proposed Action)
Modifications to RD 1000 Pumping Plants	Raise and/or replace the discharge pipes for Pumping Plant Nos. 1A and 1B along the Sacramento River east levee and Pumping Plant Nos. 6 and 8 along the NEMDC west levee (Reaches G–H). Construct new outfall structures for Pumping Plant Nos. 6 and 8, requiring dewatering of portions of the NEMDC. Construction for Pumping Plant Nos. 6 and 8 may be conducted 24/7.	Same as the Adjacent Levee Alternative (Proposed Action)
Modifications to City of Sacramento Sump Pumps	Raise and/or replace the discharge pipes for City Sump 160 (Sacramento River east levee Reach A:19B), City Sump 58 (American River north levee [Reach I:3]), and City Sump 102 (NEMDC west levee at Gardenland Park [Reach H]). Construct new outfall structures, requiring dewatering of portions of the Sacramento River, the low-flow channel of the NEMDC along the waterside of the American River north levee, and the NEMDC. Relocate pump stations as needed to accommodate the proposed levee improvements. Construction City Sump 102 may be conducted 24/7.	Same as the Adjacent Levee Alternative (Proposed Action)
Borrow site excavation and reclamation	Excavate earthen material at the borrow sites and then return the sites to preconstruction uses or suitable replacement habitat. For levee improvements along the Sacramento River east levee (Reach A:16–20) and the American River north levee (Reach I:1–4), the proposed South Fisherman’s Lake Borrow Area (Plate 2-7a) and the West Lakeside School Site (Plate 2-17) are anticipated to be the primary source of soil borrow material. A portion of the Fisherman’s Lake Borrow Area (identified on Plate 2-6), which was fully analyzed in the Phase 4a EIS/EIR, could provide additional borrow material for these improvements. The proposed Triangle Properties Borrow Area (Plate 2-13) would be the primary source of borrow material for levee improvements along the PGCC (Reach E) and NEMDC North (Reach F–G). The Krumenacher borrow site and Twin Rivers Unified School District stockpile site (Plate 2-14), which were fully analyzed in previous environmental documents, would be the source of borrow material for improvements to NEMDC South and back-up sources for NEMDC North (Reach F–G). The South Fisherman’s Lake Borrow Area, the West Lakeside School Site, and the Triangle Properties Borrow Area are fully analyzed in this EIS/EIR.	Same as the Adjacent Levee Alternative (Proposed Action)

Table ES-1 Summary of the Major Project Elements of the Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative		
Major Project Elements	Adjacent Levee Alternative (Proposed Action)	Fix-in-Place Alternative
Habitat creation and management	Enhance connectivity between northern and southern populations of giant garter snake in the Natomas Basin by improving habitat conditions along the West Drainage Canal; establish woodlands consisting of native riparian and woodland species in the vicinity of the American River Parkway as compensation for woodland impacts along the Sacramento River east levee (Reach A:16–20), American River north levee (Reach I:1–4), PGCC (Reach E), and NEMDC (Reaches F–H); and create up to 200 acres of managed marsh from Brookfield Borrow Site to compensate for impacts to giant garter snake habitat as a result of loss of rice from levee and canal improvements, widen and extend the Chappell Ditch south of the borrow site to enhance delivery of surface water, and improve the adjacent Chappell Drain.	Same as the Adjacent Levee Alternative (Proposed Action), <i>except landside woodland compensation would be up to 70 acres.</i>
Infrastructure relocation and realignment	Relocate and realign private irrigation and drainage infrastructure (wells, pumps, canals, and pipes) and water and sanitary sewer lines, and relocate utility infrastructure (power poles) as needed to accommodate the levee improvements and canal relocations. Well construction may be conducted 24/7.	Same as the Adjacent Levee Alternative (Proposed Action)
Landside vegetation removal	In Sacramento River east levee Reach A:16–20, American River north levee Reach I:1–4, and NEMDC South (Reach H), vegetation would be cleared to prepare for Phase 4b Project levee and canal improvement work. To comply with USACE vegetation guidance, all vegetation would be cleared at least 15 feet from the landside toes of the improved levees (Sacramento River east levee Reach A:16–20 and American River north levee Reach I:1–4).	Same as the Adjacent Levee Alternative (Proposed Action), <i>except maximum extent of removal would be reduced by approximately 1 acre.</i>
Waterside Vegetation Removal	Waterside vegetation would be removed due to erosion control measures and modifications to pumping plants along the Sacramento River east levee (Reach A:16–20), NEMDC west levee (Reaches F–H), and PGCC west levee (Reach E). However, it is assumed that construction of an adjacent levee (the Adjacent Levee Alternative [Proposed Action]) in Sacramento River east levee Reach A:16–20 would allow the levee to qualify for a variance from USACE vegetation guidance criteria such that removal of waterside vegetation would not be necessary. Along the American River north levee Reach I:1–4, the levee is already considered overbuilt, and therefore it is assumed that it would also qualify for a variance from USACE vegetation guidance, allowing waterside vegetation to remain. Like the American River north levee, a section of NEMDC South from Northgate Boulevard to the Arden-Garden Connector is also assumed to be overbuilt enough that clearance of waterside vegetation would also not be necessary under a variance request to USACE. Along the west levee of NEMDC South north of the Arden-Garden Connector (Reach G), at a minimum, if a variance request is granted by USACE, vegetation removal would be required for all non-native trees from within the vegetation-free zone, all native trees that have a dbh of four inches or less, and all larger native trees that are located in the upper third of the waterside slope, the crown, or within 15 feet of the landside toe (or within the right-of-way, if less than 15 feet). Under a worst-case scenario, vegetation with stem widths that have a dbh greater than two inches would be cleared to the water’s edge of the NEMDC.	Same as the Adjacent Levee Alternative (Proposed Action) for modifications to RD 1000 pump stations and for the NEMDC west levee south of the NEMDC Stormwater Pumping Station. <i>In Reach A:16–20 of the Sacramento River east levee, it is assumed that because of the uncertainty of how USACE levee vegetation guidance criteria would be applied where the levee is not widened by an additional 15 feet (as under the Adjacent Levee Alternative [Proposed Action]), approximately 19 acres of waterside vegetation would need to be removed from the waterside hinge point of the levee crown to the water’s edge as a worst-case scenario.</i>

Table ES-1		
Summary of the Major Project Elements of the Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative		
Major Project Elements	Adjacent Levee Alternative (Proposed Action)	Fix-in-Place Alternative
Bank protection	Bank protection would be constructed along the NEMDC South (Reach H) and PGCC (Reach E) to address the waterside erosion sites because, as noted above, the adjacent levee would be constructed in Sacramento River east levee Reaches A–C:1–20 under the NLIP; no erosion protection is needed along the left bank of the Sacramento River. The distance from the projected levee slope of the new adjacent levee to the current bank location is sufficient to guarantee that bank erosion would not intrude into the projected levee slope in the near future.	Same as the Adjacent Levee Alternative (Proposed Action)
Right-of-way acquisition	Acquire lands within the Phase 4b Project footprint along the Sacramento River east levee (Reach A:16–20), American River north levee (Reach I:1–4), NEMDC west levee (Reaches F–G), PGCC west levee (Reach E), and at associated borrow sites.	Same as the Adjacent Levee Alternative (Proposed Action)
Encroachment management	Remove encroachments as required to meet the criteria of USACE, CVFPB, and FEMA. SAFCA would be required to submit a variance request to CVFPB, and then ultimately to USACE, requesting confirmation that SAFCA’s adjacent levee design for the Sacramento River east levee (Reach A–C:1–20), American River north levee (Reach I:1–4), and NEMDC west levee (Reach F–G) sufficiently addresses USACE’s guidance regarding vegetation on levees, if SAFCA chooses to implement the project without Federal participation.	Same as the Adjacent Levee Alternative (Proposed Action), <i>except in Reach A:16–20 of the Sacramento River east levee, it is assumed, as stated above, that the levee would not be in compliance with levee vegetation requirements on the waterside.</i>
Natomas Levee Class 1 Bike Trail Project	Construct a bicycle and pedestrian trail along the 42-mile loop of the Natomas Basin levee perimeter in the northwestern portion of the County of Sacramento, southern portion of Sutter County, and a portion of the City of Sacramento (program-level analysis only, because site-specific details are not available).	Same as the Adjacent Levee Alternative (Proposed Action)
<p>Notes: 24/7 = 24 hours per day/7 days per week; CVFPB = Central Valley Flood Protection Board; dbh = diameter in breast height; FEMA= Federal Emergency Management Agency; I-80 = Interstate 80; NCC = Natomas Cross Canal; NEMDC = Natomas East Main Drainage Canal; PGCC = Pleasant Grove Creek Canal; RD = Reclamation District; SR = State Route; USACE = U.S. Army Corps of Engineers; SAFCA = Sacramento Area Flood Control Agency</p> <p>Source: Compiled by AECOM in 2010</p>		

ditches would be relocated either to make room for expanded levee sections or to reduce underseepage potential. Discharge pipes for RD 1000 pumping plants and City of Sacramento sump pumps would be raised to cross the levee above design flood water surface elevation. Parcels in the South Fisherman’s Lake and Triangle Properties Borrow Areas and at the West Lakeside School Site would be excavated and reclaimed as agricultural land. Woodland groves would be established to compensate for impacts along the Sacramento River east levee Reach A:16–20, American River north levee Reach I:1-4, and NEMDC.

Under the **Fix-in-Place Alternative**, the Sacramento River east levee would be improved in place in Sacramento River east levee Reach A:16–20 and seepage remediation would be implemented. The Fix-in-Place Alternative would be the same as described for the Adjacent Levee Alternative (Proposed Action) except that the crown of the Sacramento River east levee would not be widened. This type of levee improvement would narrow the overall landside footprint by 15 feet but would require a greater extent of levee degrade to construct cutoff walls and a greater extent of encroachment removal along the Sacramento River east levee compared to the Adjacent Levee Alternative (Proposed Action). Differences from the Adjacent Levee Alternative (Proposed Action), including encroachment removal and reduced footprint impacts, are shown in italicized text in **Table ES-1**.

ES.11 MAJOR CONCLUSIONS OF THE ENVIRONMENTAL ANALYSIS

The potential environmental impacts of the Adjacent Levee Alternative (Proposed Action) and alternatives under consideration, and mitigation measures to avoid, eliminate, minimize, or reduce the significant and potentially significant impacts to less-than-significant levels, are summarized in **Table ES-2** (presented at the end of this executive summary). This table also presents additional information on the impacts, including duration and quantification, where available, to provide a comparison among the alternatives.

ES.11.1 SUMMARY OF PROJECT MITIGATION AND CONSULTATION

Project mitigation needs have been coordinated with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the California Department of Fish and Game (DFG) over the past four years as the NLIP Landside Improvement Project has gone through the Section 408/404 permit process. During the previous three project phases, project-induced impacts have been sufficiently compensated for through Section 7 consultation at the Federal level and the 2081 permit process at the State level. No additional compensation was recommended under the Fish and Wildlife Coordination Act. Although Federal agencies are not required to mitigate for State-listed species, mitigation for these species is required for species that are also Federally listed (e.g., fish, giant garter snake) or as recommended under the Fish and Wildlife Coordination Act. The non-Federal sponsor is required to comply with the California Endangered Species Act (CESA) and these compliance measures are included as part of the project. During project planning, steps were taken to avoid, minimize, reduce, and compensate for impacts to endangered species. Compensatory mitigation was first evaluated within the project area, and if these steps were not sufficient, mitigation banks were then considered.

In 1997, the NBHCP was approved under Section 10 of the Federal Endangered Species Act (ESA) by USFWS and Section 2081 of the California Fish and Game Code by DFG. The NBHCP established a multiple-species conservation program for the Natomas Basin that is managed by The Natomas Basin Conservancy (TNBC), a private, non-profit organization that serves as “plan operator” of the NBHCP. To avoid conflict with NBHCP lands, the resource agencies requested that the NLIP be coordinated with TNBC. In the programmatic biological opinion for the NLIP (**Appendix D1**), USFWS analyzed the cumulative effects of the project on the NBHCP, specifically stating that:

“...while SAFCA is not a signatory to the NBHCP, the plan sets forth a regional conservation strategy that covers the entire basin. The NBHCP’s efficacy in maintaining a viable population of giant garter snakes in the Basin depends, in a significant part, on the retention of a sufficient amount of undeveloped acreage throughout the Basin, to ... provide habitat for all 22 of the

NBHCP covered species, including the giant garter snake [and Swainson's hawk]" (**Appendix D1:53**).

Another purpose of this coordination was to enhance the existing lands under jurisdiction of the NBHCP and increase connectivity between core habitat reserves that are distributed throughout the Basin.

Overall, the NLIP is an opportunity to employ a landscape-scale vision, helping to advance the goals and objectives of the NBHCP. Rather than a piecemeal approach to habitat protection, the NLIP secures and expands the amount of habitat protection in the Basin, establishes the components that tie the NBHCP preserves and disparate mitigation sites together in perpetuity under public ownership, and increases the quality and viability of this area. The following goals were considered when developing the mitigation plan:

- ▶ increase the amount of protected habitat;
- ▶ expand and consolidate the protected habitat in the Natomas Basin;
- ▶ strengthen connectivity between the NBHCP reserves;
- ▶ avoid significant habitat impacts, particularly to Swainson's hawks and special-status fish, through careful project design and construction phasing;
- ▶ develop a mitigation and monitoring plan and a long-term management plan; and
- ▶ utilize disturbed area to mitigate impacts.

The Natomas Basin is a unique ecological system separated from other systems by a circular levee system. Regional watershed boundaries, such as found in the Natomas Basin, may act as partial gene flow barriers (Paquin et al. 2006), resulting in defined population sets with unique adaptive characteristics. Biologists are conducting population dynamics studies of the giant garter snake in the middle-American Basin, which lies north of the NCC (Hansen 2003, 2004, 2006). However, no snakes have been found to move across the NCC itself, suggesting that snakes are not moving between the middle-American Basin and the Natomas Basin. If the NCC represents a barrier to movement within the greater American Basin, then giant garter snakes may be present in two separate and genetically isolated sub-populations, requiring separate conservation and management.

HABITAT CREATION AND MANAGEMENT

New GGS/Drainage Canal

All of the habitat being created for giant garter snakes is required as part of ESA Section 7 consultation. The new GGS/Drainage Canal would provide connectivity of aquatic habitat in the northern and southern Natomas Basin and to managed marsh lands and rice fields. The GGS/Drainage Canal will also function as a movement corridor for the snake to areas that have been isolated from larger habitat areas. This connectivity will increase habitat values for the snake, and make the entire system more functional as water will flow through areas instead of standing areas.

The material excavated to create the new GGS/Drainage Canal will be used to construct the adjacent levee and will be completed prior to filling of the existing canal habitat. This construction sequencing prevents any temporal loss of habitat for the snake. The new canal will also be maintained for the sole purpose of habitat for the giant garter snake, which will increase the value from the current canal, which is operated as an irrigation canal.

Managed Marsh Creation and Rice Preservation

Several soil borrow sites would be finished, graded, and planted with native riparian and marsh vegetation after the completion of borrow activities to create managed seasonal and perennial marsh habitat that would benefit the giant garter snake. Marsh design would follow the templates established by the NBHCP. These design templates feature a combination of uplands and shallow water bodies, sinuosity of swales, and good water control structures to manage precise water levels at different times of the year. Marsh design and management would optimize the value of giant garter snake habitat, but minimize the attraction to wildlife species considered to be potentially hazardous to aircraft at low elevations approaching or departing from runways. An essential component of the managed marshes would be procurement of a firm, reliable water supply and good water quality throughout the giant garter snake active season of April–October. Many marsh areas would be created adjacent to existing NBHCP marsh preserves, thereby providing for greater contiguous management areas and enhancing the overall habitat value of the adjacent preserves.

Large areas of property obtained for the NLIP will also be retained in rice cultivation through an arrangement with a grower or TNBC. Rice fields have become important habitat for giant garter snake, particularly associated canals and their banks for both spring and summer active behavior and winter hibernation. While within the rice fields, snakes forage in the shallow water for prey, utilizing rice plants and vegetated berms dividing rice checks for shelter and basking sites.

Managed Grasslands

Managed grasslands provide foraging habitat for Swainson's hawk (a State listed species). The proposed levee improvements would result in landside slopes that are less steep than the existing slopes, and several reaches of the Sacramento River east levee would have adjoining 100- to 300-foot-wide earthen seepage berms with nearly flat slopes. Grasslands not on levee slopes include those borrow sites on the airport north bufferlands. The primary management objective on managed grasslands would be to reduce hazardous wildlife populations to the extent necessary to comply with Title 14, CFR Part 139 and FAA advisory circulars that address hazardous wildlife. While the grasslands provide habitat for Swainson's hawk, they are an incidental benefit of the slopes, berms, and compliance with the CFR and FAA advisory.

Woodlands

As part of the Fish and Wildlife Coordination Act Report (CAR), woodlands consisting of native species would be established at several sites as a component of the proposed project. These woodlands will provide habitat for Swainson's hawk as well as several birds protected under the Migratory Bird Treaty Act.

Woodland groves would be established throughout the project area, and would generally be at least 50 feet wide and several 100 feet long, depending on location constraints. Portions of the created woodlands would be at least 100 feet wide or wider to promote successful nesting birds deeper within the grove canopy, where nest parasitism by crows, cowbirds, and starlings is less of a factor in breeding success.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle is a Federally listed threatened species, protected under ESA. The species is nearly always found on or close to its host plant, elderberry shrub. Many of the shrubs are found throughout the project area. The preferred conservation measure for these shrubs is to transplant them and plant additional seedlings along with associated native plants. All elderberry shrubs located within the project area will be transplanted to the woodland groves or corridor. Additional seedlings will be planted along with the transplants and the woodlands will provide the associated native requirement. This method of planting will meet two requirements: compliance with the biological opinion and compensation recommended in the CAR for woodlands.

ENVIRONMENTAL CONSIDERATIONS OF ALTERNATIVES

The Adjacent Levee Alternative (Proposed Action) was designed to minimize impacts to shaded riverine aquatic (SRA) habitat along the Sacramento River. The SRA is habitat for many State- and Federally-listed fish species and State-listed Swainson's hawk. Although mitigation for State listed species is not necessarily required for a Federal project, these impacts also affect Federally listed species and would be required under Section 7 consultation with NMFS. Construction of the Adjacent Levee alternative (Proposed Action) would allow waterside vegetation to remain due to the shift landward of the levee prism.

Mitigation for the Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative is very similar, with the exception of loss of riparian habitat due to the removal of waterside trees required under the Fix-in-Place Alternative. This is because the Fix-in-Place Alternative would require the replacement of Garden Highway on top of the levee being brought up to current road standards. The new standards require widening the existing highway to about the same width as the adjacent levee.

During evaluation of borrow sites, consideration was given to using the sites for mitigation once the material was extracted. This allowed the project to be limited to one land purchase, eliminating the need to haul material from a commercial source into the Basin. The sites were evaluated for quality of borrow material, proximity to TNBC lands, connectivity to other habitat, and proximity to placement location. The end result is that material is only handled once, borrow sites are used to mitigate for fish and wildlife impacts, air quality impacts are minimized, and the overall project cost is reduced.

SECTION 7 CONSULTATION AND FISH AND WILDLIFE COORDINATION ACT

A biological assessment has been prepared and coordinated with the resource agencies. ESA Section 7 consultation has been on-going as part of the NLIP. A biological opinion was issued by USFWS (see **Appendix D1**) and a Letter of Concurrence of Determination of Not Likely to Adversely Affect is expected to be issued by NMFS for the Phase 4b Project.

This project will be coordinated with USFWS under the Fish and Wildlife Coordination Act (the Fish and Wildlife Coordination Act Report is included as **Appendix D5**). It is anticipated that all mitigation covered under ESA and CESA consultation will also mitigate any impacts to fish and wildlife resources, and no additional compliance with the biological opinion and 2081 permit would be required.

Table ES-3 displays the potential impacts and mitigation proposed for the Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative. This mitigation reflects what is currently in the biological assessment and has been coordinated with USFWS, NMFS, and DFG.

ES.11.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS OF THE ACTION ALTERNATIVES

A significant and unavoidable impact is one that would result in a substantial or potentially substantial adverse effect on the environment and that could not be reduced to a less-than-significant level even with implementation of applicable feasible mitigation.

The following impacts of the Adjacent Levee Alternative (Proposed Action) were found to be significant and unavoidable. Most of these impacts would be temporary and related to construction activities. Where feasible mitigation exists, it has been included to reduce these impacts; however, the mitigation would not be sufficient to reduce the impacts to a less-than-significant level. The following impacts are presented in the order they appear in Chapter 4, "Environmental Consequences and Mitigation Measures."

**Table ES-3
Environmental Impacts of and Proposed Mitigation for the
NLIP Landside Improvements Project Phase 2–4b Projects**

Habitat Type	Potential Impacts (Acres)	Mitigation Ratio	Mitigation Needed (Acres)
Adjacent Levee Alternative (Proposed Action)			
Permanently affected aquatic and rice habitats/managed marsh	201	1:1	201
Woodland (Swainson’s hawk)	104	2.6:1	270.4
Upland agriculture (Swainson’s hawk) ¹	224.7	1:1	224.7
Shaded riverine aquatic habitat (ESA fish species)	6.21 ²	3:1	18.63
Lower GGS/Drainage Canal ³	32.8	1:1	32.8
Fix-in-Place Alternative			
Permanently affected aquatic and rice habitats/managed marsh	201	1:1	201
Woodland (Swainson’s hawk)	103	2.6:1	267.8
Upland agriculture (Swainson’s hawk) ¹	277	1:1	277
Shaded riverine aquatic habitat (ESA fish species)	42.84 ²	3:1	128.52
Lower GGS/Drainage Canal ³	32.8	1:1	32.8
Notes:			
¹ Represents approximate acres of affected alfalfa, which is considered high quality foraging habitat and has to be mitigated for on a 1:1 ratio.			
² Assumes variance from USACE’s vegetation guidance is not granted.			
³ Mitigates for impacts to aquatic and upland habitat and Section 404 impacts.			
Source: Compiled by AECOM in 2010			

- ▶ conversion of Important Farmland to nonagricultural uses;
- ▶ conflicts with lands under Williamson Act² contracts;
- ▶ inconsistency with Airport Master Plan, Airport Comprehensive Land Use Plan, and Airport Wildlife Hazard Management Plans;
- ▶ inconsistency with the American River Parkway Plan and Wild and Scenic Rivers Act;
- ▶ potential to physically divide or disrupt an established community;
- ▶ loss of landside and waterside woodland and shaded riverine aquatic habitats;
- ▶ disruption to and loss of existing wildlife corridors;
- ▶ impacts on Swainson’s hawk and other special-status birds;

² The California Land Conservation Act of 1965 is commonly known as the Williamson Act (California Government Code Section 51200 et seq.).

- ▶ potential damage or disturbance to known archaeological or architectural resources from ground-disturbance or other construction-related activities;
- ▶ potential damage to or destruction of previously unidentified or undiscovered cultural resources from ground-disturbance or other construction-related activities;
- ▶ potential discovery of human remains during construction;
- ▶ temporary and short-term increases in traffic on local roadways;
- ▶ temporary and short-term increases in traffic hazards on local roadways;
- ▶ generation of temporary and short-term construction noise;
- ▶ temporary and short-term exposure of residents to increased traffic noise levels from truck hauling associated with borrow activity;
- ▶ effects related to the proposed Natomas Levee Class 1 Bike Trail Project (short-term: significant and unavoidable; long-term: less than significant [beneficial]);
- ▶ permanent disruption of recreational activities and facilities;
- ▶ alteration of scenic vistas, scenic resources, and existing visual character of the project area;
- ▶ new sources of light and glare that adversely affect views; and
- ▶ aircraft safety hazards resulting from project implementation.

Significant and unavoidable impacts associated with the Fix-in-Place Alternative would be the same as those for the Adjacent Levee Alternative (Proposed Action) with the following additional significant and unavoidable impacts:

- ▶ inconsistency with the Natomas Basin Habitat Conservation Plan;
- ▶ impacts on Successful Implementation of Habitat Conservation Plans; and
- ▶ temporary and short-term exposure of sensitive receptors to, or temporary and short-term generation of, excessive groundborne vibration.

ES.11.3 CUMULATIVE IMPACTS OF THE ACTION ALTERNATIVES

Significant cumulative impacts in which no feasible mitigation measures are available to fully reduce significant impacts associated with the Adjacent Levee Alternative (Proposed Action) would be as follows:

- ▶ **Agricultural Resources:** Implementation of the Phase 4b Project would involve the permanent conversion of large acreages of Important Farmland (Prime Farmland and Farmland of Statewide Importance), which cannot feasibly be replaced. Historically, agricultural land in the Natomas Basin, much of it Prime Farmland and other categories of Important Farmland, has been converted to residential and commercial development. The Phase 4b Project would contribute to this loss.
- ▶ **Fisheries:** The Adjacent Levee Alternative (Proposed Action) would involve removal of a less than of an acre of SRA habitat for pumping plant modifications and as part of raising the west levee of NEMDC North. A variance would be requested for removal of waterside vegetation (including SRA habitat) along NEMDC

South, which would avoid loss of SRA habitat in this area. However, if full compliance with USACE vegetation guidance is required, approximately 11 acres of waterside vegetation (including SRA habitat) would have to be removed from the NEMDC South in a worst-case scenario. Mitigation Measure 4.7-a would require replacement of SRA habitat; however, it may not be possible to create enough suitable SRA habitat to fully compensate for this loss. Historic channel alterations have resulted in marginal habitat conditions that provide only limited habitat functions for most native fish species and other aquatic organisms.

- ▶ **Cultural Resources:** Known or unknown archaeological resources could be disturbed, and cultural resources could be potentially damaged or destroyed during construction activities. Although mitigation would be implemented to reduce impacts on potentially significant cultural resources, adverse impacts, particularly on prehistoric archaeological resources, may still occur. This would contribute to a historical trend in the loss of these resources as artifacts of cultural significance and as objects of research importance.
- ▶ **Transportation and Circulation:** The Phase 4b Project's construction-related traffic impacts would be temporary, short-term, and intermittent; however, cumulative traffic impacts could be significant if portions of the Phase 4a and 4b Projects are constructed in the same locations during the same time periods.
- ▶ **Air Quality:** With implementation of mitigation measures, construction of the Phase 4b Project would result in less-than-significant temporary and short-term construction-related air quality impacts associated with generation of oxides of nitrogen (NO_x), respirable particulate matter less than 10 microns in diameter (PM₁₀) (including fine particulate matter less than 2.5 microns in diameter [PM_{2.5}]), and volatile organic compounds (VOC), even. However, other medium-sized and large reasonably foreseeable projects, such as the anticipated developments in the Natomas area, would contribute substantially to air quality impacts. Taken together, the Phase 4b Project would contribute to air pollutant emissions in Sutter and Sacramento Counties, and to the nonattainment status of the Feather River Air Quality Management District (FRAQMD) and the Sacramento Metropolitan Air Quality Management District (SMAQMD) for ozone and PM₁₀.
- ▶ **Noise:** The Phase 4b Project would have a significant and unavoidable project-level impact on noise levels experienced by the occupants of residences that are near sites of construction activity or haul routes for construction traffic. This impact would be further exacerbated by the potential overlap in construction of the Phase 4a and 4b Projects.
- ▶ **Visual Resources:** The Phase 4b Project would include the removal of trees, including Heritage oaks, other vegetation, and structures from the landside of the Sacramento River east levee within the footprint of the adjacent levee and berms, and may include the removal of some vegetation from the waterside of the Sacramento River east levee. These changes would contribute to the substantial degradation of scenic resources in the Natomas Basin that are expected to result with various development projects and expansion of Airport facilities, as the area's visual character changes from rural agricultural landscape to urban/suburban setting. Although the Phase 4b Project includes the establishment of a substantial acreage of woodland plantings around the Basin to offset the significant effect of the project on scenic resources (oak and other native trees), the plantings would require decades to become well established and up to 100 years to replace Heritage oaks. Construction of an adjacent levee, in combination with removal of woodlands along the landside of the Sacramento River east levee, would substantially alter the existing visual character of the Natomas Basin and surrounding areas. Not only would the setback levee result in a physical barrier to the existing viewshed, tree removal would degrade the visual coherence of the project area.

In addition to the above significant cumulative impacts, implementation of the Fix-in-Place Alternative would also result in the following significant cumulative impacts:

- ▶ **Fisheries:** As noted above for the Adjacent Levee Alternative (Proposed Action) a variance would be requested for removal of waterside vegetation (including SRA habitat) along NEMDC South, which would avoid loss of SRA habitat in this area. However, if full compliance with USACE vegetation guidance is

required, approximately 11 acres of waterside vegetation (including SRA habitat) would have to be removed from the NEMDC South in a worst-case scenario. The Fix-in-Place Alternative would involve removal of 19 additional acres of vegetation (including SRA habitat) along the waterside of Sacramento River east levee Reach A:16–20 to comply with USACE vegetation guidance (for a total of 30 acres removed). Mitigation Measure 4.7-a would require replacement of SRA habitat; however, it may not be possible to create enough suitable SRA habitat to compensate for this loss. Historic channel alterations have resulted in marginal habitat conditions that provide only limited habitat functions for most native fish species and other aquatic organisms.

- ▶ **Terrestrial Biological Resources:** The narrower landside levee footprint of the Fix-in-Place Alternative would avoid some losses of woodland and grassland habitat that would be unavoidable under the Adjacent Levee Alternative (Proposed Action); however, under the Fix-in-Place Alternative, as much as 21 acres of riparian woodland on the waterside of the levee in Reaches B:10–15 of the Sacramento River east levee could be removed to conform with USACE guidance regarding levee encroachments. In addition to its overall value as habitat for various species, this woodland supports active Swainson’s hawk nests, elderberry shrubs, and other important biological resources. Adverse impacts on these resources on the waterside of the levee would be more difficult to mitigate than the adverse impacts from the adjacent levee footprint on the landside of the levee under the Adjacent Levee Alternative (Proposed Action), both in terms of the acreage of habitat lost and the quality of that habitat. Implementation of this alternative would include minimization, avoidance, and compensation measures in accordance with ESA and CESA requirements, and other relevant regulatory requirements; however, it is uncertain whether adequate compensation could be developed for the extensive loss of mature waterside vegetation under this alternative.
- ▶ **Visual Resources:** The Fix-in-Place Alternative would result in similar impacts to visual resources as the Adjacent Levee Alternative (Proposed Action) except that the Sacramento River east levee would be widened in place, requiring greater removal of riparian woodlands on the waterside of these levee reaches to conform with USACE guidance regarding levee encroachments. Therefore, the Fix-in-Place Alternative would result in the loss of high-aesthetic-value woodlands along the waterside of the levee. Because the replacement plantings that are part of the Phase 4b Project would be planted along the landside of the levee, and mitigation is not available to fully compensate for the loss of waterside vegetation (including SRA habitat).

ES.12 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

ES.12.1 AREAS OF CONTROVERSY

Based on the comments received during the scoping period and the history of the NEPA and CEQA processes undertaken by USACE and SAFCA, respectively, the major areas of public controversy associated with the project are:

- ▶ temporary, construction-related effects (especially noise and access issues) on residents and businesses adjacent to the project levees (including the potential for construction to continue 24 hours per day, 7 days per week [24/7 construction]);
- ▶ the hydraulic modeling used to analyze the project’s hydraulic impacts;
- ▶ construction-related impacts on cultural and biological resources;
- ▶ vegetation and tree removal and relocation of utilities, including power poles;
- ▶ removal of agricultural lands and loss of opportunity for future development; and
- ▶ SAFCA’s ability to fund mitigation measures.

The first two issues were the subject of a lawsuit, filed in December 2007, by the Garden Highway Community Association challenging the Phase 2 EIR prepared by SAFCA, which was settled. A copy of the settlement agreement is included as **Appendix A3**, and applies to all affected Garden Highway residents. Many of the agreements made by SAFCA in this settlement agreement regarding construction practices also have been incorporated into the Phase 3–4a Projects or, as appropriate, in the mitigation measures for those project phases. SAFCA intends to voluntarily apply the design and construction provisions in the agreement to all Sacramento River east levee components of the Phase 4b Project in the event that SAFCA chooses to implement the Phase 4b Project without Federal participation. While USACE is not bound by the settlement agreement, USACE nevertheless plans to implement some of the measures contained therein; these measures are incorporated into the project or reflected, as appropriate, in the mitigation measures in this EIS/EIR.

Other issues, including potential 24/7 construction, vegetation and tree removal, relocation of utilities (including power poles), and impacts to agricultural lands have been raised in comment letters by affected property owners. USACE and SAFCA have and will continue to respond to these issues, most recently in responses to comments on the Phase 4a FEIS and FEIR. Additionally, USACE and SAFCA continue to work individually with these property owners to respond to concerns.

Allegations regarding construction-related impacts on cultural and biological resources and SAFCA's ability to fund mitigation measures were the subject of a Petition for Writ of Mandate and Complaint for Injunctive Relief (Petition) filed in March 2009 by the Garden Highway Community Association challenging the adequacy of the Phase 2 Supplemental EIR under CEQA. This suit was voluntarily dismissed on October 22, 2009. In June 2009, both the Garden Highway Community Association and the Association for the Environmental Preservation of the Garden Highway filed Petitions challenging certification of the Phase 3 EIR. Both petitions made allegations similar to those contained in the 2007 and March 2009 lawsuits, including the issues described above. In July 2009, the Association for the Environmental Preservation of the Garden Highway dismissed its lawsuit challenging the Phase 3 EIR.

In December 2009, both the Garden Highway Community Association and the Association for the Environmental Preservation of the Garden Highway filed Petitions challenging certification of the Phase 4a EIR.

If USACE receives Congressional authorization and implements the Phase 4b Project, the issue of SAFCA's ability to fund proposed mitigation measures would no longer be an issue.

ES.12.2 ISSUES TO BE RESOLVED

Congress will consider approval of USACE's Common Features/Natomas PACR, which includes authorization for USACE to construct the Phase 4b Project.

In the event Congress does not authorize USACE to construct the Phase 4b Project, and SAFCA chooses to proceed with the Phase 4b Project without additional Federal participation, USACE will consider the Adjacent Levee Alternative (Proposed Action) and either grant or deny permission for the Phase 4b Project pursuant to Sections 408, 404, and 10.

SAFCA will consider whether or not to certify the EIR and approve the Phase 4b Project. This decision will be based on numerous factors, including the potential environmental impacts and mitigation measures addressed in this EIS/EIR, permitting requirements, Federal and state authorizations, funding and financing mechanisms, and implementation schedule.

ES.13 HISTORY OF AND NEXT STEPS IN THE NEPA/CEQA PROCESS

USACE published a notice of intent (NOI) to prepare the American River Common Features GRR in the *Federal Register* (Vol. 73, No. 41) on February 29, 2008. Because the Common Features/Natomas PACR/Phase 4b Project is a component of the Common Features GRR, a separate NOI for the Common Features/Natomas PACR/Phase 4b Project does not need to be published.

On November 5, 2009, SAFCA filed a notice of preparation (NOP) for this EIS/EIR with the State Clearinghouse, and distributed copies of the NOP to approximately 900 recipients. A joint NEPA/CEQA public scoping meeting was held on November 18, 2009 from 4:30 to 6:30 p.m. at the South Natomas Community Center in Sacramento, California, to brief interested parties on the Common Features/Natomas PACR/Phase 4b Project and obtain the views of agency representatives and the public on the scope and content of this EIS/EIR.

The DEIS/DEIR was distributed for public and agency review and comment, in accordance with NEPA and CEQA requirements. The review period began on July 2, 2010 and closed on August 16, 2010. Four public meetings were held during the review period. In addition, written comments from the public, reviewing agencies, and stakeholders were accepted throughout the public comment period. These comments, along with the written responses to those comments, are contained in **Appendix I**, “Responses to Comments on the DEIS/DEIR,” of this FEIS/FEIR. Corrections, revisions, additions, and/or deletions to the text of the DEIS/DEIR are provided in **Appendix I**. Deleted text is shown in ~~strikeout~~ and added text is shown in underline. These text revisions are not shown in the FEIS/FEIR as changes; the FEIS/FEIR contains a clean reprint of the document.

This FEIS/FEIR will be distributed for public and agency review and comment, in accordance with NEPA and CEQA requirements. NEPA requires a 30-day public review for an FEIS, whereas CEQA requires a 10-day (for commenting agencies only) review for an FEIR. For this FEIS/FEIR, the NEPA and CEQA review periods will run concurrently, with the CEQA review period ending before the NEPA review period.

After the CEQA review period, the SAFCA Board of Directors will consider certifying the EIR if it is determined to be in compliance with CEQA, and will rely on the certified EIR when considering project approval.

After the NEPA review period, USACE will consider the Phase 4b Project and issue its ROD. The ROD will identify USACE’s decision regarding the alternatives considered, address substantive comments received on the FEIS, and determine whether the Adjacent Levee Alternative (Proposed Action) complies with Sections 408, 404, and 10.

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Agricultural Resources						
Impact 4.2-a: Conversion of Important Farmland to Non-agricultural Uses	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action)	Permanent and Temporary	Permanent: 851.70 acres Temporary: 355.65 acres	Significant	Mitigation Measure 4.2-a: Minimize Important Farmland Conversion to the Extent Practicable and Feasible	Significant and Unavoidable
	Fix-in-Place Alternative	Permanent and Temporary	Permanent: 849.92 acres Temporary: 355.65 acres	Significant	Implement Mitigation Measure 4.2-a	Significant and Unavoidable
Impact 4.2-b: Conflict with Lands under Williamson Act Contracts	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	42.14 active acres and 22.57 non-renewal acres	Significant	Mitigation Measure 4.2-b: Minimize Impacts on Agricultural Preserve Land and Williamson Act-Contracted Land; Comply with California Government Code Sections 51290-51293; and Coordinate with Landowners and Agricultural Operators	Significant and Unavoidable

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Land Use, Socioeconomics, and Population and Housing						
Impact 4.3-a: Inconsistency with Airport Master Plan, Airport Comprehensive Land Use Plan, and Airport Wildlife Hazard Management Plans	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	Consistent	No mitigation is required	Consistent
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Not Applicable	Not Applicable	Potentially Inconsistent	Mitigation Measure 4.3-a: Implement Mitigation Measure 4.16-g, “Consult with SCAS and the FAA during Design of the Proposed Natomas Levee Class I Bike Trail to Implement Appropriate Airport Safety Precautions”	Significant and Unavoidable
Impact 4.3-b: Inconsistency with the Natomas Basin Habitat Conservation Plan	No-Action Alternative: No Phase 4b Project Construction and Potential Levee Failure	Not Applicable	Not Applicable	Consistent	No mitigation is required	Consistent
	Adjacent Levee Alternative (Proposed Action)	Permanent	See quantified impacts under “Biological Resources”	Potentially Inconsistent	Mitigation Measure 4.3-b: Implement Mitigation Measure 4.7-1, “Ensure that Project Encroachment Does Not Jeopardize Successful Implementation of the NBHCP and Implement Mitigation Measures 4.7-a and 4.7-c through 4.7-h”	Consistent
	Fix-in-Place Alternative	Permanent	See quantified impacts under “Biological Resources”	Inconsistent	Implement Mitigation Measure 4.3-b	Significant and Unavoidable

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.3-c: Inconsistency with the American River Parkway Plan and Wild and Scenic Rivers Act	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	Potentially Inconsistent	No mitigation is required	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Not Applicable	Not Applicable	Potentially Inconsistent (if USACE requires removal of waterside vegetation from the American River north levee)	No mitigation is available	Significant and Unavoidable
Impact 4.3-d: Potential to Physically Divide or Disrupt an Established Community	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary and Permanent	Temporary construction-related access issues and traffic impacts; and permanent acquisition of 30 residences (23 residences under the Fix-in-Place Alternative), 3 mobile homes, 2 farm residences, and 1 business (partial acquisition)	Significant	Mitigation Measure 4.3-d: Notify Residents and Businesses of Project Construction and Road Closure Schedules; and Implement Mitigation Measures 4.10-a, “Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips,” and 4.10-c, “Notify Emergency Service Providers about Project Construction and Maintain Emergency Access or Coordinate Detours with Providers”	Significant and Unavoidable
Impact 4.3-e: Displacement of Residences and Businesses	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Not Applicable	Not Applicable	Less than Significant	No mitigation is required	Less than Significant
Geology, Soils, and Mineral Resources						
Impact 4.4-a: Potential Temporary Localized Soil Erosion during Construction	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Propose Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.4-a(1): Implement Mitigation Measure 4.6-a, “Implement Standard Best Management Practices, Prepare and Implement a Stormwater Pollution Prevention Plan, and Comply with National Pollutant Discharge Elimination System Permit Conditions” Mitigation Measure 4.4-a(2): Secure and Implement the Conditions of the California Surface Mining and Reclamation Act Permit or Exemption	Less than Significant
Impact 4.4-b: Potential Soil Erosion During Project Operations	No-Action Alternative: No Phase 4b Project Construction and Potential Levee Failure	Not Applicable	Not Applicable	Potentially Significant	No mitigation is required	Significant and Unavoidable
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Unquantifiable	Less than Significant (Beneficial)	No mitigation is required	Less than Significant (Beneficial)
Impact 4.4-c: Potential Loss of Mineral Resources	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Hydrology and Hydraulics						
Impact 4.5-a: Hydraulic Impacts on Other Areas and Exposure to Flood Risk	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Temporary or Permanent	Continued high risk of flooding	Significant	No feasible mitigation is available	Significant and Unavoidable
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Substantially reduced risk of flooding; no hydraulic impacts	Less than Significant (Beneficial)	No mitigation is required	Less than Significant (Beneficial)
Impact 4.5-b: Alteration of Local Drainage	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary or Permanent	Unknown	Potentially Significant	Mitigation Measure 4.5-b(1): Coordinate with Landowners and Drainage Infrastructure Operators, Prepare Final Drainage Studies as Needed, and Implement Proper Project Design Mitigation Measure 4.5-b(2): Prepare Hydraulic Study, and Design and Implement Lower Dry Creek Woodland Planting Areas to Avoid Adverse Hydraulic Effects	Less than Significant

<p align="center">Table ES-2 Summary of Impacts and Mitigation Measures</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.5-c: Effects on Groundwater	No-Action Alternative: No Phase 4b Project Construction and Potential Levee Failure	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	No substantial decrease in groundwater levels or well yields or increase in pumping costs is expected	Less than Significant	No mitigation is required	Less than Significant
Water Quality						
Impact 4.6-a: Temporary Impacts on Water Quality from Stormwater Runoff, Erosion, or Spills	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.6-a: Implement Standard Best Management Practices, Prepare and Implement a Stormwater Pollution Prevention Plan, and Comply with National Pollutant Discharge Elimination System Permit Conditions	Less than Significant
Impact 4.6-b: Impacts to Sacramento River Water Quality from Pleasant Grove Creek Canal Detention Basin Discharges	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.6-b: Implement Best Management Practices and Comply with NPDES Permit Conditions for a Point-Source Discharge	Less than Significant
Impact 4.6-c: Effects on Water Quality from Groundwater Discharged by Relief Wells	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Temporary	Unquantifiable	Too Speculative	No feasible mitigation is available	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.6-c: Conduct Groundwater Quality Tests, Notify the Central Valley RWQCB, and Comply with the Central Valley RWQCB's Waste Discharge Requirements and NPDES Permit	Less than Significant
Biological Resources						
Impact 4.7-a: Loss of Landside and Waterside Woodland and Shaded Riverine Aquatic Habitats	No-Action Alternative: No Phase 4b Project Construction	Permanent	Loss of approximately 35 acres (9.05 landside acres and 25.89 waterside acres) to conform with USACE guidance regarding levee encroachments	Potentially Significant	No feasible mitigation is available	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action)	Temporary and Permanent	Loss of approximately 43 acres (35.99 landside acres and 7.32 waterside acres)	Significant	Mitigation Measure 4.7-a: Minimize Effects on Woodland Habitat; Implement Woodland Habitat Improvements and Management Agreements; Compensate for Loss of Habitat; and Comply with Section 7 of the Federal Endangered Species Act, Section 2081 of the California Endangered Species Act, and Section 1602 of the California Fish and Game Code	Significant and Unavoidable (short-term) Less than Significant (long-term)
	Fix-in-Place Alternative	Temporary and Permanent	Loss of approximately 61 acres (34.79 landside acres and 26.52 waterside acres)	Significant	Implement Mitigation Measure 4.7-a	Significant and Unavoidable
Impact 4.7-b: Disruption to and Loss of Existing Wildlife Corridors	No-Action Alternative: No Phase 4b Project Construction	Permanent	Loss of approximately 35 acres (9.05 landside acres and 25.89 waterside acres) to conform with USACE guidance regarding levee encroachments	Potentially Significant	No feasible mitigation is available	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Temporary disturbance and permanent loss of canals, ditches, and their associated habitat values	Significant	Mitigation Measure 4.7-b: Implement Mitigation Measures 4.7-a, “Minimize Effects on Woodland Habitat; Implement Woodland Habitat Improvements and Management Agreements; Compensate for Loss of Habitat; and Comply with Section 7 of the Federal Endangered Species Act, Section 2081 of the California Endangered Species Act, and Section 1602 of the California Fish and Game Code,” and 4.7-e, “Minimize the Potential for Direct Loss of Giant Garter Snake Individuals, Implement All Upland and Aquatic Habitat Improvements and Management Agreements to Ensure Adequate Compensation for Loss of Habitat, and Obtain Incidental Take Authorization”	Significant and Unavoidable
4.7-c: Direct and Indirect Impacts to Jurisdictional Waters of the United States	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action)	Temporary and Permanent	Temporary: 324 acres Permanent: 199 acres	Potentially Significant	Mitigation Measure 4.7-c: Minimize Effects on Jurisdictional Waters of the United States; Complete Detailed Design of Habitat Creation Components and Secure Management Agreements to Ensure Compensation of Waters Filled or Dewatered; and Comply with Section 404, Section 401, Section 10, and Section 1602 Permit Processes	Less than Significant (Beneficial)
	Fix-in-Place Alternative	Temporary and Permanent	Temporary: 324 acres Permanent: 199 acres	Potentially Significant	Implement Mitigation Measure 4.7-c	Less than Significant (Beneficial)

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
4.7-d: Potential Loss of or Disturbance to Special-Status Plant Species and Their Habitats	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	No special-status plant species found; however additional surveys are needed	Potentially Significant	Mitigation Measure 4.7-d: Minimize Impacts on Special-Status Plant Species	Less than Significant
4.7-e: Giant Garter Snake Mortality, Injury, and/or Disturbance to Habitat	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Approximately 23 acres of canal/ditch and 259 acres of rice	Potentially Significant	Mitigation Measure 4.7-e: Minimize the Potential for Direct Loss of Giant Garter Snake Individuals, Implement All Upland and Aquatic Habitat Improvements and Management Agreements to Ensure Adequate Compensation for Loss of Habitat, and Obtain Incidental Take Authorization	Less than Significant
4.7-f: Impacts on Swainson's Hawk and Other Special Status Birds	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Foraging impacts: unknown, but potentially substantial Nesting impacts: 110.77 acres	Potentially Significant	No feasible mitigation is available	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action)	Permanent	Foraging impacts: 253 acres Nesting impacts: 91.21 acres	Potentially Significant	Mitigation Measure 4.7-f: Minimize Potential Impacts on Swainson’s Hawk and Other Special-Status Birds Foraging and Nesting Habitat, Monitor Active Nests during Construction, Implement All Upland and Agricultural Habitat Improvements and Management Agreements to Compensate for Loss of Quantity and Quality of Foraging Habitat, Obtain Incidental Take Authorization; and Implement Mitigation Measure 4.7-a, “Minimize Effects on Woodland Habitat, Implement all Woodland Habitat Improvements and Management Agreements, Compensate for Loss of Habitat, and Comply with Section 7 of the Federal Endangered Species Act, Section 2081 of the California Endangered Species Act, and Section 1602 of the California Fish and Game Code”	Significant and Unavoidable
	Fix-in-Place Alternative	Permanent	Foraging impacts: 251 acres Nesting impacts: 145.52 acres	Potentially Significant	Implement Mitigation Measure 4.7-f	Significant and Unavoidable
4.7-g: Potential Loss and/or Direct Impact of Elderberry Shrubs and/or Potential Loss of Valley Elderberry Longhorn Beetle	No-Action Alternative: No Phase 4b Project Construction	Permanent	Unknown	Potentially Significant	No feasible mitigation is available	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not applicable	Unquantifiable	Too Speculative	No mitigation is required	Significant and Unavoidable

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action)	Permanent	Unknown	Potentially Significant	Mitigation Measure 4.7-g: Conduct Focused Surveys for Elderberry Shrubs as Needed, Implement All Woodland Habitat Improvements and All Management Agreements, Ensure Adequate Compensation for Loss of Shrubs, and Obtain Incidental Take Authorization	Less than Significant
4.7-h: Impacts on Northwestern Pond Turtle and Burrowing Owl	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Approximately 23 acres of canal/ditch	Potentially Significant	Mitigation Measure 4.7-h: Conduct Focused Surveys for Northwestern Pond Turtles, Relocate Turtles, Minimize Potential Impacts on Burrowing Owls, and Relocate Owls as Needed	Less than Significant
4.7-i: Disturbance to Special-Status Vernal Pool Crustaceans	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary and Permanent	Unquantifiable	Potentially Significant	Mitigation Measure 4.7-i: Survey for Presence or Absence of Vernal Pool Invertebrates, Avoid Disrupting Vernal Pool Habitat, and Implement Measures to Mitigate Loss of Habitat	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
4.7-j: Temporary Construction-related Impacts to Fish and Aquatic Habitats	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary and Permanent	Unquantifiable	Potentially Significant	Mitigation Measure 4.7-j: Implement Mitigation Measure 4.6-a, "Implement Standard Best Management Practices, Prepare and Implement a Stormwater Pollution Prevention Plan, Prepare and Implement a Spill Containment Plan, and Comply with National Pollutant Discharge Elimination System Permit Conditions;" Implement a Feasible Construction Work Window that Minimizes Impacts to Special-Status Fish Species for Any In-Water Activities; and Implement Operational Controls and a Fish Rescue Plan that Minimizes Impacts to Fish Associated with Cofferdam Construction and Dewatering	Less than Significant
4.7-k: Impacts to Fish Species Associated with Operation of Pumping Plants and Surface Drains	No-Action Alternative: No Phase 4b Project Construction	Temporary or Permanent	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Temporary or Permanent	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
4.7-l: Impacts on Successful Implementation of Habitat Conservation Plans	No-Action Alternative: No Phase 4b Project Construction	Permanent	See Impacts 4.7-a and 4.7-c through 4.7-h	Significant	No feasible mitigation is available	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Not Applicable	Less than Significant	No mitigation is required	Less than Significant
	Adjacent Levee Alternative (Proposed Action)	Permanent	See Impacts 4.7-a and 4.7-c through 4.7-h	Significant	Mitigation Measure 4.7-l: Ensure that Project Encroachment Does Not Jeopardize Successful Implementation of the NBHCP and Implement Mitigation Measures 4.7-a and 4.7-c through 4.7-h	Less than Significant
	Fix-in-Place Alternative	Permanent	See Impacts 4.7-a and 4.7-c through 4.7-h	Significant	Implement Mitigation Measure 4.7-l	Significant and Unavoidable
Cultural Resources						
Impact 4.8-a: Potential Changes to Elements of Reclamation District 1000 and the Rural Landscape District	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Permanent	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Unquantifiable	Potentially Significant	Mitigation Measure 4.8-a: Incorporate Mitigation Measures to Documents Regarding Any Elements Contributing to RD 1000 and Rural Landscape District and Distribute the Information to the Appropriate Repositories	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.8-b: Potential Damage or Disturbance to Known Archaeological or Architectural Resources from Ground-Disturbance or Other Construction-Related Activities	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Permanent	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Two prehistoric archaeological deposits, an historic farmstead, and an historic archaeological deposit	Potentially Significant	Mitigation Measure 4.8-b: Avoid Ground Disturbance Near Eligible and Listed Resources to the Extent Feasible, Prepare a Finding of Effect, and Resolve Any Adverse Effects through Preparation of an HPTP	Significant and Unavoidable
Impact 4.8-c: Potential Damage to or Destruction of Previously Unidentified or Undiscovered Cultural Resources from Ground-Disturbance or Other Construction-Related Activities	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Unquantifiable	Potentially Significant	Mitigation Measure 4.8-c: Train Construction Workers before Construction, Monitor Construction Activities, Stop Potentially Damaging Activities, Evaluate Any Discoveries, and Resolve Adverse Effects on Eligible Resources, if Encountered	Significant and Unavoidable

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.8-d: Potential Discovery of Human Remains during Construction	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.8-d: Stop Work Within An Appropriate Radius Around the Find, Notify the Applicable County Coroner and Most Likely Descendant, and Treat Remains in Accordance with State Law and Measures Stipulated in an HPTP Developed in Consultation between the Project Proponent(s) and the SHPO	Significant and Unavoidable
Paleontological Resources						
Impact 4.9-a: Disturbance of Unknown Unique Paleontological Resources during Earthmoving Activities	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Permanent	Not Applicable	Less than Significant	No mitigation is required	Less than Significant
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Unquantifiable	Potentially Significant	Mitigation Measure 4.9-a: Conduct Construction Personnel Training and, if Paleontological Resources are Found, Stop Work Near the Find and Implement Mitigation in Coordination with a Professional Paleontologist	Less than Significant

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Transportation and Circulation						
Impact 4.10-a: Temporary and Short-Term Increases in Traffic on Local Roadways	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action)	Temporary	Haul trips per day: 540 for Sacramento River east levee Reach A:16–19A, 360 for Sacramento River east levee Reach A:19B–20, 120 for American River north levee Reach I:1–4, 810 for west levee of NEMDC North (Reaches F–G), and 566 for west levee of PGCC (Reach E); temporary and short-term road closures, lane closures, and traffic controls, specifically closure of Garden Highway and the Arden-Garden Connector	Significant	Mitigation Measure 4.10-a: Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips	Significant and Unavoidable

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Fix-in-Place Alternative	Temporary	Same as the Proposed Action except 960 haul trips for Sacramento River east levee (7% greater than the Proposed Action)	Significant	Implement Mitigation Measure 4.10-a	Significant and Unavoidable
Impact 4.10-b: Temporary and Short-Term Increases in Traffic Hazards on Local Roadways	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Reconstruction of multiple Garden Highway intersections and private parcel ramps; slowed traffic due to haul truck traffic; and road and lane closures (see Impact 4.10-a)	Significant	Mitigation Measure 4.10-b: Implement Mitigation Measure 4.10-a, "Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips"	Potentially Significant and Unavoidable
Impact 4.10-c: Temporary and Short-Term Disruption of Emergency Service Response Times and Access	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Numerous temporary road closures and detours; and road and lane closures (see Impact 4.10-a)	Potentially Significant	Mitigation Measure 4.10-c: Implement Mitigation Measure 4.10-a, "Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips"	Less than Significant
Impact 4.10-d: Conflict with Adopted Policies, Plans, or Programs Supporting Alternative Transportation	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Multiple road and lane closures (see Impact 4.10-a) affecting existing and planned bicycle routes	Significant	Mitigation Measure 4.10-d: Prepare and Implement a Bicycle Detour Plan for Project Area Roadways and Bike Trails, Including Garden Highway and the NEMDC Levees	Less than Significant
Air Quality						
Impact 4.11-a: Temporary and Short-Term Emissions of ROG, NO _x , and PM ₁₀ during Construction	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action)	Temporary	Total maximum mitigated emissions (combined Phase 4a and 4b Projects) in Sacramento County: ROG 78 lb/day NO _x 530 lb/day	Significant	Mitigation Measure 4.11-a: Implement Applicable District-Recommended Control Measures to Minimize Temporary Emissions of ROG, NO _x , and PM ₁₀ during Construction	Less than Significant

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Fix-in-Place Alternative	Temporary	<p>PM₁₀ 99 lb/day</p> <p>Sutter County: ROG 317 lb/day NO_x 114 lb/day PM₁₀ 26 lb/day</p> <p>Total maximum mitigated emissions (combined Phase 4a and 4b Projects) in Sacramento County: ROG 78 lb/day NO_x 530 lb/day PM₁₀ 81 lb/day</p> <p>Sutter County: ROG 17 lb/day NO_x 114 lb/day PM₁₀ 26 lb/day</p>	Significant	Implement Mitigation Measure 4.11-a	Less than Significant
Impact 4.11-b: General Conformity with the Applicable Air Quality Plan	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Mitigation would reduce impacts to the Federal <i>de minimis</i> thresholds	Less than Significant	No mitigation is required	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.11-c: Long-Term Changes in Emissions of ROG, NO _x , and PM ₁₀ Associated with Project Implementation	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Temporary	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant
Impact 4.11-d: Exposure of Sensitive Receptors to Toxic Air Emissions	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant
Noise						
Impact 4.12-a: Generation of Temporary and Short-Term Construction Noise	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Temporary	Unquantifiable	Less than Significant	No feasible mitigation is available	Less than Significant

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	79–90 dBA without feasible noise control (50 feet from nearest noise source); highest noise level would be 77.9 dBA L _{eq} (100 feet from construction activities)	Significant	Mitigation Measure 4.12-a: Implement Noise-Reducing Construction Practices, Prepare and Implement a Noise Control Plan, and Monitor and Record Construction Noise Near Sensitive Receptors	Significant and Unavoidable
Impact 4.12-b: Temporary and Short-term Exposure of Sensitive Receptors to, or Temporary and Short-term Generation of, Excessive Groundborne Vibration	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Temporary	Unquantifiable	Less than Significant	No feasible mitigation is available	Less than Significant
	Adjacent Levee Alternative (Proposed Action)	Temporary	0.089 in/sec PPV or 87 VdB (for bulldozers)	Significant	Mitigation Measure 4.12-b: Implement Vibration-Reducing Construction Practices, Prepare and Implement a Groundborne Vibration Control Plan, and Monitor and Record Construction Groundborne Vibration Near Sensitive Receptors	Less than Significant
	Fix-in-Place Alternative	Temporary	0.089 in/sec PPV or 87 VdB (for bulldozers)	Significant	Implement Mitigation Measure 4.12-b	Significant and Unavoidable
Impact 4.12-c: Temporary and Short-term Exposure of Residents to Increased Traffic Noise Levels from Truck Hauling Associated With Borrow Activity	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	66.4 dBA L _{eq} (50 feet from roadway centerline), resulting in interior noise levels of 41.4 dBA L _{eq}	Potentially Significant	Mitigation Measure 4.12-c: Implement Noise-Reduction Measures to Reduce the Impacts of Haul Truck Traffic Noise	Significant and Unavoidable
Impact 4.12-d: Long-Term Increases in Project-Generated Noise	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	78–88 dBA 3–5 feet away; meets compliance standards	Less than Significant	No mitigation is required	Less than Significant
Impact 4.12-e: Temporary and Short-Term Exposure of People Working in the Project Area to Excessive Airport Noise Levels	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Temporary	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Would not exceed Airport noise threshold levels	Less than Significant	No mitigation is required	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Recreation						
Impact 4.13-a: Effects Related to the Proposed Natomas Levee Class 1 Bike Trail Project	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary and Permanent	Unquantifiable	Significant	No feasible mitigation is available	Short-Term: Significant and Unavoidable Long-Term: Less than Significant (Beneficial)
Impact 4.13-b: Permanent Disruption of Recreational Activities and Facilities	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	Significant	No mitigation is required	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Permanent encroachment on City parks, nature preserves, a private golf course, and an off-street bikeway	Significant	Mitigation Measure 4.13-b: Compensate City of Sacramento Department of Parks and Recreation for Loss of Parkland and Park Amenities	Significant and Unavoidable

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.13-c: Temporary Changes in Recreational Opportunities during Project Construction Activities	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Temporary encroachment on City parks, nature preserves, a private golf course, and an off-street bikeway	Significant	Mitigation Measure 4.13-c(1): Prepare and Implement a Bicycle Detour Plan for All Bicycle Trails and On-Street Bicycle Routes, Provide Detours for Bicycle Facilities, and Coordinate with City and/or County Departments of Parks and Recreation to Repair of Damage to Recreational Facilities Mitigation Measure 4.13-c(2): Provide Construction Period Information on Recreational Facility Closures and Detours and Provide Detours for Alternate Routes to Marinas	Less than Significant
Visual Resources						
Impact 4.14-a: Alteration of Scenic Vistas, Scenic Resources, and Existing Visual Character of the Project Area	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	Potentially Significant	No mitigation is required	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Permanent	Tree removal is quantified under “Biological Resources”; other visual impacts are unquantifiable	Significant	Mitigation Measure 4.14-a: Implement Mitigation Measures 4.7-a, “Minimize Effects on Woodland Habitat; Implement all Woodland Habitat Improvements and Management Agreements; Compensate for Loss of Habitat; and Comply with Section 7 of the Federal Endangered Species Act,	Significant and Unavoidable

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
					Section 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act Permit Conditions,” and 4.13-b, “Compensate City of Sacramento Department of Parks and Recreation for Loss of Parkland and Park Amenities”	
Impact 4.14-b: New Sources of Light and Glare that Adversely Affect Views	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Significant	Mitigation Measure 4.14-b: Direct Lighting Away from Adjacent Properties	Significant and Unavoidable
Utilities and Service Systems						
Impact 4.15-a: Potential Temporary Disruption of Irrigation Water Supply	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.15-a: Coordinate with Irrigation Water Supply Users Before and During All Irrigation Infrastructure Modifications and Implement Measures to Minimize Interruptions of Supply	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.15-b: Potential Disruption of Utility Service	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.15-b: Verify Utility Locations, Coordinate with Utility Providers, Prepare and Implement a Response Plan, and Conduct Worker Training with Respect to Accidental Utility Damage	Less than Significant
Impact 4.15-c: Increases in Solid Waste Generation	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Up to 100,000 cy solid waste; would not exceed remaining capacity	Less than Significant	No mitigation is required	Less than Significant
Hazards and Hazardous Materials						
Impact 4.16-a: Accidental Spills of Hazardous Materials	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary or Permanent	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant
Impact 4.16-b: Potential Land Use Constraints Due to Contamination within the Pumping Plant No. 8 Footprint and Potential Exposure of Construction Workers and the General Public to Contaminated Groundwater	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.16-b: Cooperate with Olympian Oil and Regulatory Agencies to Preserve, Modify, or Close Existing Groundwater Monitoring Wells at the Olympian Oil Site	Less than Significant
Impact 4.16-c: Potential Exposure of Construction Workers and the General Public to Hazardous Materials Encountered at Project Sites	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	Potentially Significant	No mitigation is required	Significant and Unavoidable
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.16-c(1): Complete Recommendations Included in Phase I and/or II ESAs and Implement Required Measures Mitigation Measure 4.16-c(2): Complete Phase I and/or II ESAs, Soil, and/or Groundwater Investigations in Phase 4b Project Footprint Areas	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
					Not Covered by the Existing Phase I and/or II ESAs, and Implement Required Measures (e.g., Site Management and/or Other Contingency Plans)	
Impact 4.16-d: Interference with an Adopted Emergency Evacuation Plan	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Significant	Mitigation Measure 4.16-d: Implement Mitigation Measure 4.10-a, "Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips," and Mitigation Measure 4.10-c, "Notify Emergency Service Providers about Project Construction and Maintain Emergency Access or Coordinate Detours with Providers"	Less than Significant
Impact 4.16-e: Possible Hazardous Emissions or Handling of Hazardous or Acutely Hazardous Materials, Substances, or Waste within One-Quarter Mile of an Existing or Proposed School	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Seven schools are located within one-quarter mile of the Phase 4b Project footprint	Significant	Mitigation Measure 4.16-e: Notify the Natomas Unified School District and Affected Schools within One-Quarter Mile of Project Construction Activities	Less than Significant

Table ES-2 Summary of Impacts and Mitigation Measures						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.16-f: Potential for Higher Frequency of Collisions between Aircraft and Wildlife at Sacramento International Airport	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant
Impact 4.16-g: Aircraft Safety Hazards Resulting from Project Implementation	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.16-g: Consult with SCAS and the FAA during Design of the Proposed Natomas Levee Class I Bike Trail to Implement Appropriate Airport Safety Precautions	Significant and Unavoidable
Impact 4.16-h: Potential Exposure to Wildland Fires	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative

**Table ES-2
Summary of Impacts and Mitigation Measures**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact (Where Applicable)	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary	Unquantifiable	Potentially Significant	Mitigation Measure 4.16-h: Prepare and Implement a Fire Management Plan to Minimize Potential for Wildland Fires	Less than Significant
Environmental Justice						
Impact 4.17-a: Potential to Have a Disproportionate High and Adverse Environmental Impact on any Minority or Low-Income Populations	No-Action Alternative: No Phase 4b Project Construction	Not Applicable	Not Applicable	No Impact	No mitigation is required	No Impact
	No-Action Alternative: Potential Levee Failure	Not Applicable	Unquantifiable	Too Speculative	No mitigation is required	Too Speculative
	Adjacent Levee Alternative (Proposed Action) and Fix-in-Place Alternative	Temporary and Permanent	Unquantifiable	Significant	Mitigation Measure 4.17-a: Increase the Direct Benefits of the Project for the Ancestors of the Native American Tribes	Less than Significant

