Chapter 4  ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

This chapter begins with a description of the general approach to the environmental analysis, followed by the analysis of the significant environmental impacts of the Phase 4a Project, organized by issue area.

4.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS

An environmental document prepared to comply with the National Environmental Policy Act (NEPA) must consider the context and intensity of the environmental effects that would be caused by, or result from, the Proposed Action and other alternatives under evaluation. Under NEPA, the significance of an effect is used to determine whether an environmental impact statement must be prepared. An environmental document prepared to comply with the California Environmental Quality Act (CEQA) must identify the significance of the environmental effects of a proposed project. A “[s]ignificant effect on the environment” means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project (State CEQA Guidelines California Code of Regulations [CCR] Section 15382).

4.1.1 SECTION CONTENTS

Sections 4.2 through 4.16 of this FEIS follow the same general format and are each organized into the following major components:

► **Methodology and Thresholds of Significance:** This subsection describes the methods, process, procedures, and/or assumptions used to formulate and conduct the impact analysis. It also presents the significance criteria (or “thresholds of significance”) used to define the level at which an impact would be considered significant. Thresholds may be quantitative or qualitative; they may be based on agency or professional standards or on legislative or regulatory requirements that are relevant to the impact analysis. Generally, however, the thresholds of significance used are derived from Appendix G of the State CEQA Guidelines, as amended; NEPA, where defined; factual or scientific information and data; and regulatory standards of Federal, state, regional, and local agencies. These thresholds also include the factors taken into account under NEPA to determine the significance of the action in terms of the context and the intensity of its effects.

► **Environmental Impacts and Mitigation Measures:** This analysis examines the impacts that would occur with implementation of the Proposed Action or an alternative under consideration. Impacts and mitigation measures are numbered sequentially in each section, with mitigation measures corresponding to the impact being addressed. For instance, impacts in Section 4.2, “Agricultural Resources,” are numbered Impact 4.2-a, and Mitigation Measure 4.2-a corresponds with Impact 4.2-a. An impact statement precedes the discussion of each impact. The discussion that follows the impact statement includes substantial evidence to support the stated conclusion.

Many of the potential impacts that may result from implementation of the action alternatives would be temporary and short-term effects resulting from construction activities, including hauling of borrow material and the movement of heavy construction equipment. However, impacts related to most agricultural land conversion; modification and loss of habitats, including fill of waters of the United States; and disturbance of cultural resources would be permanent.

The impacts of each alternative are compared to the impacts of the Proposed Action at the end of each impact discussion in this chapter as “similar,” “greater,” “lesser,” or “currently unknown.”
Following each discussion of a significant or potentially significant impact, mitigation measures are provided to avoid, minimize, or reduce the significant or potentially significant impacts to a less-than-significant level, where available and feasible.

Mitigation measures are not required for impacts identified under the No-Action Alternative because no project would be approved and SAFCA would not be required to obtain permits or enter into agreements. Additionally, USACE would not issue permission, permits, or authorizations for the No-Action Alternative. For these reasons, mitigation measures are not provided for the No-Action Alternative in Sections 4.2 through 4.16.

- **Residual Impacts:** This subsection describes which impacts would remain significant following implementation of mitigation measures. For each impact, either the impact would be reduced to a level below the significance threshold (reduced to a less-than-significant level) or it is concluded that feasible mitigation is not available or is insufficient to reduce the impact to a less-than-significant level. When an impact cannot be reduced to a less-than-significant level, it is called a “significant and unavoidable” impact on the environment.

### 4.1.2 TERMINOLOGY USED TO DESCRIBE IMPACTS

#### 4.1.2.1 IMPACT LEVELS

This FEIS uses the following terminology to denote the significance of environmental impacts:

- **No impact** indicates that the construction, operation, and maintenance of the Proposed Action or an alternative would not have any direct or indirect impacts on the environment. It means that no change from existing conditions would result. This impact level does not require mitigation.

- **A less-than-significant impact** is one that would not result in a substantial or potentially substantial adverse change in the physical environment. This impact level does not require mitigation, even if applicable measures are available.

- **A significant impact** is one that would cause a substantial, or potentially substantial, adverse change in the physical conditions within the project area. Mitigation measures or alternatives to the Proposed Action are provided, where applicable and feasible, to avoid or reduce significant impacts.

- **A potentially significant impact** is one that, if it were to occur, would be considered a significant impact as described above; however, the occurrence of the impact cannot be immediately determined with certainty. A potentially significant impact is treated as if it were a significant impact. Therefore, mitigation measures or alternatives to the Proposed Action are provided, where applicable and feasible, to avoid or reduce significant impacts.

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

- An impact may have a level of significance that is too uncertain to be reasonably determined, and would therefore be designated **too speculative for meaningful consideration.** Where some degree of evidence points to the reasonable potential for a significant effect, it may be explained that a determination of significance is uncertain, but is still assumed to be “potentially significant,” as described above. In other circumstances, after thorough investigation, the determination of significance may still be too speculative to be meaningful. This is an effect for which the degree of significance cannot be determined for specific reasons, such as unpredictability of the occurrence or the severity of the impact, lack of methodology to evaluate the impact, or lack of an applicable significance threshold.
It is important to note that under NEPA, there are no specific thresholds of significance and that environmental effects are analyzed based on their context and intensity. Because the Phase 4a DEIS/DEIR was a joint NEPA/CEQA document, the CEQA thresholds were applied because they are more stringent. These thresholds also encompass the factors taken into account under NEPA to determine significance. For consistency with the Phase 4a DEIS/DEIR, the same significance thresholds have been applied in this FEIS.

4.1.2.2 Impact Mechanisms

Mechanisms that could cause impacts are discussed for each issue area. General categories of impact mechanisms are construction of the project and activities related to future operations and maintenance, as described in Chapter 2.0, “Alternatives.”

Under NEPA, the No-Action Alternative (i.e., expected future conditions without the project) is the baseline to which the action alternatives are compared, and the No-Action Alternative is compared to existing conditions. Under CEQA, existing conditions are the baseline to which all alternatives are compared.

Project impacts are effects that are categorized, pursuant to NEPA and CEQA, to describe the intensity or duration of the impact. Project effects fall into the following categories:

- **A temporary impact** would occur only during construction. The environmental analysis addresses potentially significant impacts from the direct impact of construction at the project site, direct impact associated with site development, and indirect construction impacts associated with fill and wetland construction activities and construction traffic.

- **A short-term impact** would last from the time construction ceases to within 3 years following construction.

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

- **A direct impact** is an impact that would be caused by an action and would occur at the same time and place as the action.

- **An indirect impact** is an impact that would be caused by an action but would occur later in time or at a distance that is removed from the project area, but is reasonably foreseeable, such as growth-inducing effects and other changes related to changes in land use patterns and related effects on the physical environment.

- **A residual impact** is an impact that would remain after implementation of mitigation.

- **A cumulative impact** is an impact that is cumulatively considerable, which means the possible effects of a project are individually limited but cumulatively considerable. As used in this paragraph, “cumulatively considerable” means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

4.1.3 Summary of Previous NEPA and CEQA Analyses of Borrow Sites

As noted in Section 2.3.3, “Borrow Sites,” the Fisherman’s Lake Borrow Area is anticipated to be the primary source of soil borrow for Phase 4a Project construction. However, additional borrow sites may be needed, including some that have been fully analyzed in previous environmental documents. The following sites, that could also be used as a source of borrow material for the Phase 4a Project, were identified as potential sources of borrow material for the Phase 2 and/or 3 Projects (these sites are also listed in Table 2-10):
Brookfield (Phase 2, 3, and 4a Projects);
Airport north bufferlands (Phase 2, 3, and 4a Projects);
South Sutter, LLC (Phase 3 Project);
Elkhorn Borrow Area (Phase 3 and 4a Projects);
Novak (Phase 3 and 4a Projects);
Krumenacher (Phase 3 and 4a Projects); and
Twin Rivers Unified School District stockpile (Phase 3 and 4a Projects).

The purpose of this section is to review the environmental analyses for these previously identified borrow sites, and to incorporate relevant impact conclusions by reference. As previously discussed in Section 1.1.1, “Scope of Environmental Analysis,” NEPA encourages incorporation by reference under the Council on Environmental Quality (CEQ) regulations, and the State CEQA Guidelines allow for incorporation by reference where project-specific analysis is tiered from previous analysis. Table 4.1-1 provides a citation to the previous environmental documents that include discussions of these borrow sites. Because these borrow sites have been included in the project description for the overall NLIP Landside Improvement Project (programmatically) and in previous project phases (at a project level), the proposed use of these borrow sites has informed the analysis for appropriate impact topics. Accordingly, analysis of these sites in this FEIS is limited to impacts not previously covered, which are unique to the Phase 4a Project.

<table>
<thead>
<tr>
<th>Borrow Site/Area</th>
<th>Citation</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 2 EIR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brookfield</td>
<td>SAFCA 2007:2-8, 2-9</td>
<td>Described in Section 2.2.2, “Borrow Sites”</td>
</tr>
<tr>
<td>Brookfield</td>
<td>SAFCA 2007:2-28</td>
<td>Identified as a source of borrow material</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>SAFCA 2007:2-8, 2-9</td>
<td>Described in Section 2.2.2, “Borrow Sites”</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>SAFCA 2007:2-33</td>
<td>Identified as a major source of borrow for Sacramento River east levee improvements</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>SAFCA 2007:2-58</td>
<td>Identified as a source of borrow material</td>
</tr>
<tr>
<td>Novak</td>
<td>SAFCA 2007:2-9</td>
<td>Identified as a major source of borrow for Sacramento River east levee improvements</td>
</tr>
<tr>
<td>Novak</td>
<td>SAFCA 2007:2-33</td>
<td>Identified as a major source of borrow for Sacramento River east levee improvements</td>
</tr>
<tr>
<td>Novak</td>
<td>SAFCA 2007:2-54</td>
<td>Identified as a major source of borrow for Sacramento River east levee improvements</td>
</tr>
<tr>
<td><strong>Phase 2 EIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brookfield</td>
<td>USACE 2008:2-15</td>
<td>Identified as a source of borrow for Phase 2–4 Projects</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>USACE 2008:2-14</td>
<td>Identified as a source of borrow for Phase 2–4 Projects</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>USACE 2008:2-34</td>
<td>Identified as a source of borrow for work along Sacramento River east levee</td>
</tr>
<tr>
<td>Novak</td>
<td>USACE 2008:2-14</td>
<td>Identified as a source of borrow for work along Sacramento River east levee</td>
</tr>
<tr>
<td>Novak</td>
<td>USACE 2008:2-22</td>
<td>Identified as a source of borrow for work along the Sacramento River east levee</td>
</tr>
<tr>
<td>Novak</td>
<td>USACE 2008:2-34</td>
<td>Identified as a source of borrow for Phase 2–4 Projects</td>
</tr>
</tbody>
</table>
Table 4.1-1
Borrow Site Project Description Information Contained in Previous NEPA and CEQA Documents

<table>
<thead>
<tr>
<th>Borrow Site/Area</th>
<th>Citation</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 2 SEIR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>SAFCA 2009:2-15</td>
<td>Shown in Exhibit 2-10, “Borrow Sites and Anticipated Haul Routes”</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>SAFCA 2009:2-16</td>
<td>Described as a change in baseline for current land use</td>
</tr>
<tr>
<td><strong>Phase 3 DEIS/DEIR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brookfield</td>
<td>USACE and SAFCA 2009: 2-26</td>
<td>Identified as a source of material for work on the Pleasant Grove Creek Canal</td>
</tr>
<tr>
<td>Brookfield</td>
<td>USACE and SAFCA 2009: 2-30</td>
<td>Presented in Table 2-2, “Potential Borrow Sites”</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>USACE and SAFCA 2009: 2-25</td>
<td>Described in Section 2.3.7.2, “Borrow Quantities and Material Handling;” Airport site identified as source of borrow for work on the Sacramento River east levee for the Phase 3 Project</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>USACE and SAFCA 2009: 2-30</td>
<td>Presented in Table 2-2, “Potential Borrow Sites”</td>
</tr>
<tr>
<td>South Sutter, LLC</td>
<td>USACE and SAFCA 2009: 2-30</td>
<td>Presented in Table 2-2, “Potential Borrow Sites”</td>
</tr>
<tr>
<td>South Sutter, LLC</td>
<td>USACE and SAFCA 2009: 2-31, Appendix J</td>
<td>Contains programmatic NEPA and CEQA analysis of potential sites within this area, checklist provided for determining if additional analysis is required</td>
</tr>
<tr>
<td>Elkhorn Borrow Area</td>
<td>USACE and SAFCA 2009: 2-30</td>
<td>Presented in Table 2-2, “Potential Borrow Sites”</td>
</tr>
<tr>
<td>Elkhorn Borrow Area</td>
<td>USACE and SAFCA 2009: 2-31, Appendix J</td>
<td>Contains programmatic NEPA and CEQA analysis of potential sites within this area, checklist provided for determining if additional analysis is required</td>
</tr>
<tr>
<td>Krumenacher</td>
<td>USACE and SAFCA 2009: 2-30</td>
<td>Presented in Table 2-2, “Potential Borrow Sites”</td>
</tr>
<tr>
<td>Twin Rivers Unified School District stockpile</td>
<td>USACE and SAFCA 2009: 2-30</td>
<td>Presented in Table 2-2, “Potential Borrow Sites”</td>
</tr>
</tbody>
</table>


The Fisherman’s Lake Borrow Area was identified and analyzed at a program level in the Phase 2 EIR. The Novak property within the Fisherman’s Lake Borrow Area was analyzed at a project level in the Phase 3 DEIS/DEIR. The use of the larger Fisherman’s Lake Borrow Area is analyzed at a project level in this FEIS.

Because the Phase 4a Project may rely on approved borrow capacity from the additional borrow sites identified above, the Phase 4a Project would indirectly contribute to impacts associated with the Phase 2 and 3 Projects. Accordingly, impacts that were identified as significant after implementation of mitigation in the relevant documents incorporated by reference (see Section 1.1.1, “Scope of Environmental Analysis,” for the full document citations, including the State Clearinghouse numbers) are summarized below:
Phase 2 EIR

- conversion of Important Farmland to nonagricultural uses;
- potential construction impacts on known prehistoric resources, discovery of human remains during construction, and damage to or destruction of previously undiscovered cultural resources;
- temporary increase in traffic on local roadways during construction;
- effects on air quality with respect to short-term construction emissions: temporary emissions of reactive organic gases (ROG), oxides of nitrogen (NOX), and respirable particulate matter less than 10 microns in diameter (PM$_{10}$) (direct and cumulative), and incremental contributions to greenhouse gas emissions;
- generation of short-term construction noise, exposure of sensitive receptors to or generation of excessive groundborne vibration or noise, and exposure of residents to increased traffic noise levels from hauling activity; and
- changes in scenic vistas, scenic resources, and existing visual character of the project area.

Phase 2 EIS

- conversion of Important Farmland to nonagricultural uses;
- potential construction effects on known prehistoric resources;
- damage to or destruction of previously undiscovered cultural resources;
- temporary increase in traffic on local roadways during construction;
- discovery of human remains during construction;
- temporary emissions of ROG, NOX, and PM$_{10}$ (direct and cumulative), and incremental contributions to greenhouse gas emissions;
- generation of short-term construction noise, exposure of sensitive receptors to or generation of excessive groundborne vibration or noise, and exposure of residents to increased traffic noise levels from hauling activity; and
- changes in scenic vistas, scenic resources, and existing visual character of the project area.

Phase 2 SEIR

- potential construction impacts on CA-Sac-485/H, a prehistoric archaeological site along the Sacramento River east levee;
- damage to or destruction of other identified prehistoric cultural resources; and
- generation of temporary, short-term construction noise.
Phase 3 DEIS/DEIR

• conversion of Important Farmland to nonagricultural uses;
• conflicts with lands under Williamson Act contracts;
• potential to physically divide or disrupt an established community;
• impacts on Swainson’s hawk and other special-status birds;
• potential damage or disturbance to known prehistoric resources from ground-disturbance or other construction-related activities;
• potential damage to or destruction of previously undiscovered cultural resources from ground-disturbance or other construction-related activities;
• potential discovery of human remains during construction;
• temporary increase in traffic on local roadways;
• temporary emissions of ROG, NOX, and PM$_{10}$ during construction;
• generation of temporary, short-term construction noise;
• exposure of sensitive receptors to or generation of excessive groundborne vibration;
• temporary, short-term exposure of residents to increased traffic noise levels from hauling activity;
• alteration of scenic vistas, scenic resources, and existing visual character of the project area; and
• new sources of light and glare that adversely affect views.
4.2 AGRICULTURAL RESOURCES

4.2.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.2.1.1 METHODOLOGY

Evaluation of the project’s potential impacts on agricultural resources was based on a review of the planning documents pertaining to the project study area, including goals and policies from the Sutter County General Plan (Sutter County 1996), the Sacramento County General Plan (Sacramento County 1993), Federal plans and regulations relating to the Sacramento County Airport System (SCAS) and Federal Emergency Management Agency (FEMA), the soil surveys of Sutter and Sacramento Counties (National Resources Conservation Service [NRCS] 1988, 1993), and consultation with appropriate agencies. In addition, the California Department of Conservation (DOC) (DOC 2008) Important Farmland maps and California Land Conservation Act (commonly known as the Williamson Act [California Government Code Section 51200 et seq.]) maps for Sutter and Sacramento Counties were used to determine the agricultural significance of the lands on the project area. For purposes of this analysis, it was assumed that reclamation of borrow sites by returning the topsoil layer to the site would not adversely affect a site’s long-term agricultural productivity and, therefore, its status as Important Farmland under the Important Farmland Mapping and Monitoring Program (FMMP) would not be changed permanently. This assumption applies only to those sites that would be converted to non-agricultural habitat (e.g., managed marsh and woodlands, as opposed to row crops that can be used for foraging habitat). Non-agricultural mitigation sites would be preserved as habitat in perpetuity, permanently affecting their long-term agricultural productivity and status as Important Farmland.

4.2.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to agricultural resources if they would do any of the following:

- convert Important Farmland (i.e., Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use;
- conflict with existing zoning for agricultural use or a Williamson Act contract; or
- involve other changes in the existing environment which, due to their location or nature, could result in conversion of Important Farmland to nonagricultural use.

4.2.2 IMPACTS AND MITIGATION MEASURES

Impact 4.2-a: Conversion of Important Farmland to Nonagricultural Uses

Table 4.2-1 summarizes and compares the project’s potential impacts to Important Farmland. Loss and conversion of agricultural lands on a cumulative basis is addressed in Chapter 5.0, “Cumulative and Growth-Inducing Impacts, and Other Statutory Requirements.”
### Table 4.2-1
Important Farmland Conversion

<table>
<thead>
<tr>
<th>Project Component/Location</th>
<th>No-Action Alternative (Acres)</th>
<th>Proposed Action (Acres)</th>
<th>RSLIP Alternative (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Permanent Conversion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento River east levee (adjacent levee footprint)</td>
<td>-</td>
<td>61</td>
<td>0</td>
</tr>
<tr>
<td>Sacramento River east levee (adjacent corridor that would accommodate seepage berms, O&amp;M corridor, utility corridor, and other facilities)</td>
<td>-</td>
<td>386</td>
<td>364</td>
</tr>
<tr>
<td>Riverside Canal relocation and extension</td>
<td>-</td>
<td>109</td>
<td>109</td>
</tr>
<tr>
<td>Habitat Creation at Fisherman’s Lake (marsh)</td>
<td>-</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td><strong>Total Permanent Conversion</strong></td>
<td>-</td>
<td>676</td>
<td>593</td>
</tr>
<tr>
<td><strong>Temporary Conversion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fisherman’s Lake Borrow Area (excluding marsh creation)</td>
<td>-</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>I-5 Borrow Area</td>
<td>-</td>
<td>225</td>
<td>225</td>
</tr>
<tr>
<td><strong>Total Temporary Conversion</strong></td>
<td>-</td>
<td>495</td>
<td>495</td>
</tr>
</tbody>
</table>

Notes: RSLIP = Raise and Strengthen-Levee-in-Place Alternative; O&M = operations and maintenance; I-5 = Interstate 5

1. Temporary conversion of Important Farmland; borrow sites would be reclaimed and returned to agricultural uses.
2. Potential maximum if all borrow sites are excavated over entire acreage available.

Source: Data compiled by AECOM in 2009

### Impact 4.2-a: Conversion of Important Farmland to Nonagricultural Uses

#### No-Action Alternative

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, the project would not convert any Important Farmland. There would be **no impact. (Lesser)**

#### Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of a levee failure would remain high. A levee failure along the Sacramento River east levee could result in scouring of agricultural land and the long-term loss of topsoil in areas near a levee breach. This could result in a long-term loss of Important Farmland in those areas. Such a loss is evident at the locations of past levee failures, for example on the Feather River above Star Bend in Yuba County, where a large dense stand of willow riparian scrub grows in sediments deposited by floodwaters following the scouring of the agricultural soil by the force of in-rushing water. Such losses are typically limited to localized areas within several hundred feet of a levee breach. (The indirect effects of lack of flood protection on urban development and Important Farmland conversion have been addressed as part of the NLIP cumulative and growth-inducing impact analyses (see Chapter 5.0, “Cumulative and Growth-Inducing Impacts, and Other Statutory Requirements”)) The effects of a single or isolated levee failure on the permanent loss of Important Farmland would be localized at the point of the levee breech and would be less than significant. Simultaneous levee failures in more than one location in the perimeter levee system would have a more widespread effect. A precise determination of significance is not possible and cannot be made because the extent
of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action

Important Farmland mapping for the Natomas Basin is shown in Plate 3-1 and Important Farmland classifications are described in detail in Section 3.2, “Agricultural Resources.” Nearly all of the agricultural lands within the footprint of flood damage reduction facilities are classified as Prime Farmland, Farmland of Statewide Importance, or Farmland of Local Importance. Table 4.2-1 shows the potential maximum acreage of Important Farmland that would be permanently converted to nonagricultural uses for the Proposed Action. This conversion includes the levee improvements that would occur within a maximum 660-foot-wide corridor along the Sacramento River east levee (see the description of the Sacramento River east levee improvements in Section 2.3.1.1, “Sacramento River East Levee,” and Plate 2-8). These improvements would include the footprint of the adjacent levee, seepage berms that could be up to 500 feet wide, an O&M corridor, and a utility corridor. As discussed in Chapter 2.0, “Alternatives,” seepage berms would only be required in select locations along the levee, depending upon final project design; therefore, the width of the corridor adjacent to the new adjacent levee may be narrower than assumed here for purposes of worst-case analysis.

In addition to the lands that would be within the footprint of the levee improvements, land required for the relocation and extension of the Riverside Canal, and lands required for creation of non-agricultural habitat (woodland plantings to compensate for loss of woodlands primarily on the landside of the levee and marsh creation) are all classified as Important Farmland. The conversion of these areas to nonagricultural uses would be permanent, and therefore this impact is significant.

Soil borrow for construction would be obtained from the proposed borrow sites described in Section 2.3.3, “Borrow Sites,” and shown in Plate 2-7. Table 4.2-1 shows the total acreage of Important Farmland that would be permanently and temporarily converted to nonagricultural uses, and Table 2-10 lists the potential borrow sites, excavation area and depth, postborrow depth, and proposed postborrow (reclaimed) use. The Fisherman’s Lake Borrow Area is anticipated to be the primary source of soil borrow material for the Phase 4a Project (Plates 2-6-b and 2-7). However, additional borrow sites may be needed, including the I-5 Borrow Area, the Elkhorn Borrow Area, the South Sutter, LLC and Krumenacher borrow sites, the Twin Rivers Unified School District stockpile site, and the Airport north bufferlands. For construction on the NCC south levee, the source of soil borrow would be the Brookfield borrow site. The Fisherman’s Lake and I-5 Borrow Areas are fully analyzed in this FEIS; all other borrow sites were analyzed in previous environmental documents as described in Section 2.3.3.2, “Other Potential Borrow Sites.”

Only portions of each property and not all of the properties identified may ultimately be used for borrow. The decision as to which borrow sites would be used, and for which construction phase, has not yet been made by SAFCA. The decision would depend on the availability of material at each site; the proximity of the borrow site to the project component (length of haul route); the quality of borrow material; and avoidance and/or minimization of significant environmental effects, such as damage to cultural resources, tree removal, wetlands, and special status species habitat. The lands in the potential borrow sites in Sacramento County are classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. Reclamation of all borrow sites would be performed in compliance with the California Surface Mining and Reclamation Act and would entail preservation and replacement of the topsoil on these parcels, thus retaining their potential use for agriculture.

Sites that SAFCA intends to reclaim and return to agricultural use are listed in Table 4.2-1 under “Temporary Conversion.” These parcels (i.e., the I-5 Borrow Area and portions of the Fisherman’s Lake Borrow Area) would be returned to upland agriculture (field crops not including rice) following the completion of soil borrow removal. South Sutter, LLC and the Elkhorn Borrow Area, which were previously addressed in the Phase 3 DEIS/DEIR, would also provide borrow for the Phase 4a Project, as described in Section 2.3.3, “Borrow Sites.” The use of these sites for borrow would not represent a permanent conversion to nonagricultural uses. The majority of
borrow sites would be returned to agricultural uses, consistent with NLIP habitat conservation objectives to provide upland agriculture as high-quality foraging habitat for Swainson’s hawk, an NBHCP-listed species, as compensation for project impacts. However, sites in the Fisherman’s Lake Borrow Area may be permanently converted to managed, non-agricultural habitat (see Section 4.7, “Biological Resources,” for additional details regarding habitat creation), including managed marsh, to implement the NLIP’s conservation objective of increasing available habitat and habitat connectivity for giant garter snake, another NBHCP-listed species. These habitat improvements are intended to substantially contribute to the emergence of an urban habitat refuge in the Natomas Basin, meeting the NBHCP’s objectives (see Section 2.3.4.1, “Overview of the Landside Improvements Project’s Habitat Conservation Goals and Strategy”).

The temporary and permanent conversion of Important Farmland to flood damage reduction features and habitat and borrow uses would be a significant impact.

**RSLIP Alternative**

The raised portion of the Sacramento River east levee under the RSLIP Alternative would have a smaller footprint than the adjacent levee in Reaches 10–15 under the Proposed Action, and therefore, would result in a smaller amount of permanent conversion of Important Farmland than under the Proposed Action, as shown in Table 4.2-1. However, the temporary conversion of Important Farmland under this alternative would be the same as under the Proposed Action, as shown in Table 4.2-1.

This alternative would result in the same conversion of Important Farmland as the Proposed Action in the footprint of the relocated and extended Riverside Canal. Because of the narrower levee footprint under the RSLIP Alternative, the overall impact to Important Farmland would be approximately 80 acres less than that of the Proposed Action. However, because of greater impacts to waterside riparian woodlands, as described in Impact 4.7-a, “Loss of Woodland Habitats,” habitat creation and preservation components of this alternative would require planting of substantial woodland habitat along the landside of the adjacent Sacramento River east levee. Approximately 75 additional acres of habitat compensation sites would need to be located in the Basin or credits would need to be purchased from a local mitigation bank to offset the removal of trees from the waterside of the existing levee. A substantial amount of Important Farmland could be converted for woodland habitat creation (see Section 2.3.4, “Habitat Improvements”) under the RSLIP Alternative. As described above under the Proposed Action, the creation of habitat would be consistent with the intent of the NBHCP.

Important Farmlands permanently and temporarily converted at borrow sites would be the same as under the Proposed Action. SAFCA intends to reclaim the majority of borrow sites and return these sites to agricultural use.

The temporary and permanent conversion of Important Farmland to flood damage reduction features and habitat and borrow uses under the RSLIP Alternative would be a significant impact. *(Similar)*

**Mitigation Measure 4.2-a: Minimize Important Farmland Conversion to the Extent Practicable and Feasible**

<table>
<thead>
<tr>
<th>Proposed Action</th>
<th>SAFCA shall implement the measures listed below with regard to Prime Farmland, Unique Farmland, and Farmland of Statewide Importance to minimize impacts on these lands.</th>
</tr>
</thead>
<tbody>
<tr>
<td>and RSLIP Alternative</td>
<td>(a) Borrow sites shall be configured to minimize the fragmentation of lands that are to remain in agricultural use. Contiguous parcels of agricultural land of sufficient size to support their efficient use for continued agricultural production shall be retained to the extent practicable and feasible.</td>
</tr>
<tr>
<td></td>
<td>(b) To the extent practicable and feasible, when expanding the footprint of a flood damage reduction facility (e.g., levee or berm) onto agricultural land, the most productive topsoil from the construction footprint shall be salvaged and redistributed to less-productive agricultural lands in the vicinity of the construction area that could benefit from the</td>
</tr>
</tbody>
</table>
introduction of good-quality soil. By agreement between the implementing agencies or landowners of affected properties and the recipient(s) of the topsoil, the recipient(s) shall be required to use the topsoil for agricultural purposes. SAFCA shall implement all terms and conditions of agreements.

(c) During project construction, use of utilities that are needed for agricultural purposes (including wells, pipelines, and power lines) and of agricultural drainage systems shall be minimized so that agricultural uses are not substantially disrupted.

(d) Disturbance of agricultural land and agricultural operations during construction shall be minimized by locating construction staging areas on sites that are fallow, that are already developed or disturbed, or that are to be discontinued for use as agricultural land, and by using existing roads to access construction areas to the extent possible.

(e) To the extent feasible, lands acquired for flood damage reduction purposes shall also be used as mitigation land for NBHCP programs so that agricultural land conversion is minimized.

Implementation of this mitigation measure would reduce the impact of permanent conversion of Important Farmland to habitat uses under the Proposed Action and the RSLIP Alternative, but not to a less-than-significant level because no new farmland would be made available, and the productivity of existing farmland would not resume or be improved. Conservation of 1,660 acres of Important Farmland in the Elkhorn Basin of Yolo County across the Sacramento River from the Natomas Basin as described in Section 3.2, “Agricultural Resources,” would partially offset the permanent conversion of agricultural lands resulting from the Proposed Action and the RSLIP Alternative. However, because no feasible mitigation is available to fully reduce the impact of permanent conversion of Important Farmland to flood damage reduction features and habitat uses, this impact would remain significant and unavoidable for the Proposed Action and the RSLIP Alternative. (Similar)

Implementation of these measures for borrow sites that are returned to agricultural use would reduce the impacts of temporary conversion of Important Farmland under the Proposed Action and the RSLIP Alternative, but not to a less-than-significant level. Temporary conversion of Important Farmland for borrow use is considered a significant and unavoidable impact in the short term, but a less-than-significant impact in the long term because the topsoil layer to the site would be reclaimed. Reclamation thus would not adversely affect a site’s long-term agricultural productivity and, therefore, its status as Important Farmland under the FMMP would not be changed permanently. (Similar)

Impact 4.2-b: Conflict with Lands under Williamson Act Contracts

Table 4.2-2 summarizes and compares the project’s potential impacts on Williamson Act contracted lands.

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, the project would not cause Williamson Act contracts to be terminated as a result of levee construction or borrow activities. There would be no impact. (Lesser)
Table 4.2-2
Williamson Act Contracted Land Conversion

<table>
<thead>
<tr>
<th>Project Component/Location</th>
<th>No-Action Alternative</th>
<th>Proposed Action (Acres)</th>
<th>RSLIP Alternative (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Permanent Conversion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento River east levee</td>
<td>-</td>
<td>156</td>
<td>124</td>
</tr>
<tr>
<td>Riverside Canal relocation and extension</td>
<td>-</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Habitat Creation at Fisherman’s Lake Borrow Area (marsh)</td>
<td>-</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total Permanent Conversion</strong></td>
<td>-</td>
<td>216</td>
<td>184</td>
</tr>
<tr>
<td><strong>Temporary Conversion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-5 Borrow Area</td>
<td>-</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total Temporary Conversion</strong></td>
<td>-</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

Notes: RSLIP = Raise and Strengthen-Levee-in-Place Alternative; I-5 = Interstate 5
1 Potential maximum if all borrow sites are excavated over entire acreage available.
Source: Data compiled by AECOM in 2009

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Flooding in the Basin, resulting in destruction of agricultural land, would have no impact related to cancellation of Williamson Act contracts. *(Lesser)*

Proposed Action

In Sacramento County, the Proposed Action would affect properties under Williamson Act contract in Reaches 10, 12A, 12B, and 15 along the Sacramento River east levee and along the alignment of the relocated and extended Riverside Canal. If the Proposed Action does not require acquisition of an entire parcel, the contract only on the portion of the parcel required for the Phase 4a Project would be terminated; the remainder of the parcel unaffected by the Proposed Action would remain under contract. Table 4.2-2 shows the acreage lands under Williamson Act contract that would be taken out of contract.

The use of Williamson Act contracted lands as borrow sites would require cancellation of Williamson Act contracts. For lands that would be permanently converted to nonagricultural uses or acquired in fee by SAFCA, notice to DOC is required under the Act, as described under Mitigation Measure 4.2-b, below. Those contracted lands that would be returned to agricultural use, could potentially be reenrolled, providing compatibility standards contained in Government Code Sections 51238–51238.3 are met. Properties that would be converted to flood damage reduction features (lands along the Sacramento River east levee, the Riverside Canal relocation and extension) or managed habitat would no longer be eligible for Williamson Act contracting.

The temporary and permanent cancellation of lands under Williamson Act contract for flood damage reduction features and habitat and borrow uses would be a significant impact.

RSLIP Alternative

The RSLIP Alternative would have the same impacts on Williamson Act contracted lands as the Proposed Action with respect to borrow sites, habitat creation, and the canal relocation and extension. However, it would not have as
great an impact on Williamson Act contracted lands adjacent to the Sacramento River east levee, because the levee footprint would not be expanded onto adjacent properties to the same extent as the Proposed Action (see Table 4.2-2). The temporary and permanent cancellation of lands under Williamson Act contract for flood damage reduction features, habitat and borrow uses under the RSLIP Alternative would be a significant impact. (Lesser)

Mitigation Measure 4.2-b: Minimize Impacts on Agricultural Preserve Land and Williamson Act–Contracted Land; Comply with Government Code Sections 51290–51293; and Coordinate with Landowners and Agricultural Operators

Proposed Action and RSLIP Alternative

To reduce impacts on under Williamson Act contracts, SAFCA shall implement the measures described below.

(a) SAFCA shall comply with California Government Code Sections 51290–51295 with regard to acquisition of Williamson Act contracted lands as follows:

- The policy of the state, consistent with the purpose of the Williamson Act to preserve and protect agricultural land, is to avoid, whenever practicable, locating public improvements and any public utilities improvements in agricultural preserves. If it is necessary to locate within a preserve, it shall be on land that is not under contract (Government Code Section 51290[a][b]). More specifically, the basic requirements are:
  - Whenever it appears that land within a preserve or under contract may be required for a public improvement, the public agency or person shall notify the DOC and the city or county responsible for administering the preserve (Government Code Section 51291[b]).
  - Within 30 days of being notified, DOC and the city or county shall forward comments, which shall be considered by the public agency or person (Section 51291[b]).

- The contract shall be terminated when land is acquired by eminent domain or in lieu of eminent domain (Government Code Section 51295).

- DOC and the city or county shall be notified before project completion of any proposed substantial changes to the public improvement (Government Code Section 51291[d]).

- DOC shall be notified within 10 working days upon completion of the acquisition (Section 51291[c]).

- If, after acquisition, the acquiring public agency determines that the property will not be used for the proposed public improvement, before returning the land to private ownership, DOC and the city or county administering the involved preserve shall be notified. The land shall be reenrolled in a new contract or encumbered by an enforceable restriction at least as restrictive as that provided by the Williamson Act (Government Code Section 51295).

(b) SAFCA shall coordinate with landowners and agricultural operators to sustain existing agricultural operations, at the landowners’ discretion, within the project area until the individual agricultural parcels are needed for project construction.

(c) Properties that were under Williamson Act contract prior to conversion for borrow use and that are owned by SAFCA or are acquired by SAFCA shall be reenrolled under
Williamson Act contract upon reclamation to agricultural use if those properties can be covered by the Williamson Act.

Implementation of this mitigation measure would potentially reduce the impacts from temporary conversion of Williamson Act–contracted lands used as borrow sources under the Proposed Action and the RSLIP Alternative, but not to a less-than-significant level because SAFCA has no regulatory authority over ensuring that parcels are reenrolled. No feasible mitigation is available to lessen or avoid the permanent loss of land under Williamson Act contracts converted to nonagricultural use within the flood damage reduction features footprint and for habitat creation. For these reasons, this impact would remain significant and unavoidable. (Similar)

4.2.3 Residual Significant Impacts

Under the No-Action Alternative; impacts of permanent agricultural land loss due to levee failure would remain uncertain, depending on the location and number of levee breeches. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration.

The implementation of mitigation measures required in this section would partially reduce the impacts of permanent and temporary conversion of Important Farmland to nonagricultural uses, temporary conversion of lands in Agricultural Preserves, and loss of lands under Williamson Act contracts. However, there is no feasible mitigation available that would lessen or avoid these losses; therefore, residual significant and unavoidable impacts would occur under both the Proposed Action and the RSLIP Alternative.
4.3 LAND USE, SOCIOECONOMICS, AND POPULATION AND HOUSING

4.3.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.3.1.1 METHODOLOGY

The Proposed Action and alternatives under consideration were evaluated in the context of adopted land use plans and policies. State, regional, and local land use plans and policies contained in adopted planning documents pertaining to the project site were reviewed, including the Sutter County General Plan (Sutter County 1996) and zoning code, Sacramento County General Plan (Sacramento County 1993) and zoning code, the Sacramento International Airport Master Plan (Airport Master Plan) (Sacramento County Airport System 2007), the Sacramento International Airport Land Use Compatibility Plan (ALUCP), the Natomas Basin Habitat Conservation Plan (NBHCP), and field review and consultation with appropriate agencies. There are no Federal land use plans or policies that would apply to the project. SAFCA, acting as a joint powers authority pursuant to the Joint Exercise of Power Act (California Government Code Section 6500 et seq.) and the SAFCA Act (Water Code App. Section 130-1 et seq.), must consider relevant Federal and state land use policies, but is immune from compliance with local laws and regulations.

The Proposed Action and alternatives under consideration were also evaluated for potential impacts related to socioeconomics (required under NEPA) and population and housing using data from the 2000 U.S. Census and a review of land use surveys of the Phase 4a Project area.

4.3.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to land use, socioeconomics, and population and housing if they would do any of the following:

► conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental impact;

► conflict with any applicable habitat conservation plan or natural community conservation plan;

► physically divide an established community;

► displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or

► displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

The project’s potential to physically divide or disrupt an established community also relates to the socioeconomic impact of removal of existing residences and structures, if unavoidable, to accommodate the Phase 4a Project under either the Proposed Action or the RSLIP Alternative. The potential removal of existing residences would require relocation of residents.

As stated in Section 2.3.8, “Lands, Easements, Relocations, and Rights-of-Way,” under the Proposed Action and RSLIP Alternative, approximately 12 residences and associated structures may need to be removed from the landside of the Sacramento River east levee during implementation of the Phase 4a Project. SAFCA would minimize the project footprint to avoid these residences to the extent feasible (see the sixth bullet in Section 2.3.1.1, “Sacramento River East Levee”). All relocations of residents would be conducted in compliance with
Federal and state relocation law. Acquisition and relocation services would be accomplished in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 United States Code [USC] 4601 et seq.), and implementing regulation, 49 Code of Federal Regulations [CFR] Part 24; and California Government Code Section 7267 et seq., California Code of Civil Procedure Sections 1263.010 to 1263.620 and 1255.010 to 1255.060, California Community and Housing Development Title 25, and State and Caltrans Right of Way Manual, Chapter 10. These laws require that appropriate compensation be provided to displaced landowners and tenants, and residents would be relocated to comparable replacement housing. Refer to Section 3.3, “Land Use, Socioeconomics, and Population and Housing,” and Chapter 6.0, “Compliance with Federal Environmental Laws and Regulations,” for more details regarding these regulations. The existing housing stock in the project vicinity has sufficient available housing for rent and purchase to accommodate displaced residents from these residences. Therefore, no new construction would be required to accommodate the relocation of residences and no further discussion of the permanent displacement of housing or persons is necessary in this FEIS.

4.3.2 IMPACTS AND MITIGATION MEASURES

Impact 4.3-a: Inconsistency with Airport Master Plan, Airport Land Use Compatibility Plan, and Airport Wildlife Hazard Management Plans

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly conflict with adopted Airport plans. This alternative would be consistent with adopted Airport plans. (Lesser)

Potential Levee Failure

Without improvements to the Natoma perimeter levee system, the risk of levee failure would remain high. In the event that a major flood event affects Airport operations, the Sacramento County Board of Supervisors has approved a Continuity of Airport Operations Flood Contingency Plan that would transfer limited commercial transport operations to Mather Field (Sacramento County Board of Supervisors 2008). Consistency of the No-Action Alternative with the continued implementation of Airport plans would depend on the location of any future levee failure and the extent of subsequent flooding. Assuming that the Airport is still operational after levee failure, Airport north bufferlands could be temporarily altered from managed grassland and idle fields to marsh conditions, a land use considered to be incompatible near airports. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential inconsistency is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

The Airport’s Critical Zone would overlap the proposed Phase 4a Project levee footprint in Reaches 10–11A of the Sacramento River east levee and the I-5 Borrow Area. The proposed flood damage reduction improvements would not modify intended land uses within those areas or include components such as the creation of water features that could attract waterfowl and thereby introduce hazards into the Critical Zone (see Section 4.15, “Hazards and Hazardous Materials”). The I-5 Borrow Area within the Airport Critical Zone would be returned to agricultural purposes following excavation activities. Therefore, the Proposed Action and RSLIP Alternative would not conflict with implementation of the adopted Airport Master Plan, ALUCP, or Airport Wildlife Hazard Management Plans. The Proposed Action and RSLIP Alternative would be consistent with adopted Airport plans. (Similar)
Mitigation Measure: No mitigation is required.

Impact 4.3-b: Inconsistency with the Natomas Basin Habitat Conservation Plan

Consistency of the Proposed Action and the RSLIP Alternative with the NBHCP is summarized below. Refer to Impact 4.7-k in Section 4.7, “Biological Resources,” for a detailed discussion of the project’s potential impacts to biological resources related to implementation of the NBHCP.

No-Action Alternative

No Project Construction

Under the No-Action Alternative, without levee improvements, vegetation removal from the waterside of the levee would be required to conform to USACE guidance regarding levee encroachments, eliminating habitat for several species covered by the NBHCP, including Swainson’s hawk. This habitat supports the majority of Swainson’s hawk nest sites in the Natomas Basin. However, the NBHCP was put in place to promote biological conservation to compensate for habitat loss largely brought about by urban development in the Natomas Basin. Without flood risk reduction provided by the project, restrictions would be placed on new urban development and remaining habitat would not be at risk for conversion due to development. For these reasons, the No-Action Alternative would not directly conflict with implementation of the NBHCP. This alternative would be generally consistent with the NBHCP. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee, the risk of levee failure would remain high. The Natomas Basin Conservancy’s (TNBC’s) reserve infrastructure would be subject to damage in the event of levee failure; however, the extent of such damage is uncertain. Without flood protection provided by the levee improvements, restrictions would be placed on new urban development and remaining habitat would not be at risk for conversion due to development. Because there would be no habitat loss due to urban development, implementation of this alternative would not directly conflict with the implementation of the NBHCP. Impacts of the No-Action Alternative on special-status species are addressed in Section 4.7, “Biological Resources.” This alternative would be generally consistent with the NBHCP. (Lesser)

Proposed Action

The Proposed Action could encroach onto TNBC reserves and the potential for the Proposed Action to threaten the viability of populations of certain covered species, reduce the effectiveness of the NBHCP’s conservation strategy, and adversely affect attainment of the goals and objectives of the NBHCP, which could jeopardize successful implementation of the NBHCP. The Proposed Action would not result in the development of land outside the NBHCP permit area, but it would result in land use conversions within the permit area. Land use conversion, however, would not cause a net loss in the habitat values provided by these lands for NBHCP-covered species in the Natomas Basin. Habitat impacts of the Proposed Action are described in Section 4.7, “Biological Resources.” Although there would be a temporal loss of woodlands in the project area as the replacement woodland plantings mature within 10–15 years, the retention of the extensive mature waterside riparian woodlands coupled with the creation and preservation of landside woodlands would protect potential nesting habitat for special-status birds. The conversion of cropland to grassland would be offset through the preservation of field crops with the highest foraging value. This increase in overall habitat quality is anticipated to compensate for the loss associated with land conversions.

Compensatory habitat creation included in the Phase 4a Project is also part of SAFCA’s overall programmatic conservation strategy that aims to reconfigure habitat and connective corridors in the Basin at a landscape scale to help achieve NBHCP objectives (see Section 2.3.4, “Habitat Conservation Improvements”). The collective
elements of SAFCA’s conservation strategy would aid in NBHCP implementation and provide TNBC with an opportunity to improve its overall performance towards the goals of the NBHCP.

However, without proper implementation of habitat creation/preservation and creation of a management plan in consultation with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (DFG), the Proposed Action would have the potential to reduce the effectiveness of the NBHCP conservation strategy and adversely affect attainment of its goals and objectives. The Proposed Action would be potentially inconsistent with the NBHCP.

RSLIP Alternative

The impacts of the Proposed Action on successful implementation of the NBHCP would also occur under the RSLIP Alternative, with the exception that under this alternative, there would also be extensive removal of riparian vegetation on the waterside of the Sacramento River east levee to conform with USACE guidance regarding levee encroachments. This habitat is used by a variety of species covered by the NBHCP, and supports the majority of Swainson’s hawk nest sites in the Natoma Basin. As described under Impact 4.7-f in Section 4.7, “Biological Resources,” the impact of the loss of this vegetation on Swainson’s hawks would be significant and may not be mitigable. Impacts on nesting habitat for Swainson’s hawks in the near term (i.e., before compensation woodland plantings have matured sufficiently to provide replacement nesting habitat) could substantially affect the successful implementation of the NBHCP. Impacts of the RSLIP Alternative on biological resources, and mitigation measures required to reduce those impacts, are addressed in Section 4.7, “Biological Resources.” The RSLIP Alternative would be inconsistent with the NBHCP. (Greater)

Mitigation Measure 4.3-b: Implement Mitigation Measure 4.7-k, “Ensure that Project Encroachment Does Not Jeopardize Successful Implementation of the NBHCP and Implement Mitigation Measures 4.7-a, 4.7-c, and 4.7-e through 4.7-h”

| Proposed Action and RSLIP Alternative | SAFCA shall implement Mitigation Measure 4.7-k, “Ensure that Project Encroachment Does Not Jeopardize Successful Implementation of the NBHCP and Implement Mitigation Measures 4.7-a, 4.7-c, and 4.7-e through 4.7-h,” set forth in Section 4.7, “Biological Resources.” In summary, this mitigation measure requires SAFCA to coordinate with TNBC, USFWS, and DFG to identify and implement actions to ensure that the project’s small encroachment onto TNBC reserves does not jeopardize successful implementation of the NBHCP. With implementation of this mitigation measure, the Proposed Action would be consistent with the NBHCP.

Under the RSLIP Alternative, because of the likely loss of a substantial amount of nesting habitat for Swainson’s hawk, the mitigation measures described above could be insufficient to ensure that the project would not jeopardize the successful implementation of the NBHCP. This Alternative would remain inconsistent with the NBHCP. (Greater)

Impact 4.3-c Potential to Physically Divide or Disrupt an Established Community

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to divide or disrupt an established community. There would be no impact. (Lesser)
Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Levee failure would have the potential to destroy houses located on or adjacent to the levee, and to isolate residents from nearby communities. The magnitude of the impact cannot be predicted and would depend upon the location of the levee breach, severity of the storm, and river flows at the time of flooding. Therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. *(Currently Unknown)*

Proposed Action

The primary concentration of urban development in the Natomas Basin lies in the city of Sacramento’s communities of North and South Natomas, southeast of the Phase 4a Project area. The Proposed Action would have no direct impacts related to these established communities.

Within the Phase 4a Project area, approximately 91 residences are located along the Sacramento River east levee in Reaches 10–15. On the landside of the levee, approximately 12 rural residences and associated structures, and on the waterside of the levee, approximately 79 residences are located in these reaches. There are also scattered rural residences located near the I-5 and Fisherman’s Lake Borrow Areas, and a residential subdivision is located to the immediate east of the Fisherman’s Lake Borrow Area. The Phase 4a Project would use borrow material from the South Sutter, LLC borrow site, which was evaluated under the Phase 3 Project (see Section 4.1.3, “Summary of Previous NEPA and CEQA Analyses of Borrow Sites”). Two rural residences in Reach 8 of the Sacramento River east levee are located adjacent to this borrow site. In Reaches 12B and 13, three residences are situated between the levee (and planned haul route) and the Riverside Canal alignment and approximately 500 feet from the Fisherman’s Lake Borrow Area. Approximately 27 residences are located on the landside of the levee in Reaches 15–18B where the alignment of the Riverside Canal would veer to the east to avoid these residences. Residents living along Garden Highway in the Phase 4a Project area are reliant upon the South Natomas community for some public services, such as schools, and for commerce. Garden Highway provides the only access to the nearby community for residents in this area.

The Proposed Action may require single-lane closures along portions of Garden Highway south of Powerline Road for 8–12 weeks for construction of cutoff walls. One-way traffic would be maintained during cutoff-wall construction to provide access to properties along the work area. Lane closures on the landside of Garden Highway may also be necessary in this area for installation of underground utilities. These lane closures would be minimal in duration and extent, and measures would be taken to provide access outside of construction work hours for residents on the landside of Garden Highway. Temporary pipes would be installed under Garden Highway at the Riverside Pumping Plant and Pumping Plants Nos. 3 and 5 (see Plate 2-6a) concurrent with cutoff wall construction. At Pumping Plant No. 5, a section of Garden Highway would be closed for 8–12 weeks to accommodate a raise of the existing levee. This raise, which is designed to reduce widening of the levee on the landside to avoid encroachment on the pumping plant, would affect approximately 600 feet of Garden Highway north and south of the pumping plant. No residential driveways would be affected by the closure. In the following construction year, permanent pipes would be installed after the levee has settled. Garden Highway would be closed to through traffic for up to 60 days in three locations for replacement of the temporary pipes; except for these closure points, Garden Highway would remain open and traffic detours would be located between Powerline Road and San Juan Road for the Riverside Pumping Plant, between Bayou Road and Powerline Road for Pumping Plant No. 5, and between Powerline Road and San Juan Road for Pumping Plant No. 3.

Although the Proposed Action would not require full closure or demolition of Garden Highway, intermittent short-duration road closures and detours would disrupt residents’ access to the nearby community and would cause a temporary physical disruption to the community. Construction of the adjacent levee would also temporarily alter access to landside residences with driveways connecting to Garden Highway. These disruptions, however, would not require residents to permanently relocate. Multiple construction activities (borrow excavation
and hauling, borrow site reclamation, canal construction, cutoff wall installation and/or seepage berm or levee construction) could prolong access restrictions and disturbances at the previously-mentioned residences in Reaches 8, 12B, and 13 because of their proximity to these construction areas. The duration of construction activities near these residences would range from several weeks to several months, depending upon the extent to which the schedules are staggered over the construction season.

Relocation and extension of the Riverside Canal to the east side of the rural residences in Reaches 15–18B would not affect access for landside residences. However, construction of the parallel underground pipeline branch of the Riverside Canal near the toe of the new adjacent levee, which is needed to maintain the canal water supply for the landside rural residences, would temporarily interrupt access to landside residences. Because the Garden Highway provides the only access to residences on the watershed and the landside of the levee in this area, intermittent road closures and detours for levee construction and pipeline construction would disrupt residents’ access to the nearby community (see Section 4.10, “Transportation and Circulation”). Temporary disruptions to access for residents would be a significant impact.

**RSLIP Alternative**

As with the Proposed Action, this alternative would have no direct impacts related to the established communities in North and South Natomas.

The RSLIP Alternative would not physically divide an established community; however, raising the levee in Reaches 10–11B and constructing cutoff walls in the existing levee would require full closure and demolition of Garden Highway, which provides primary access to the watershed residences in Reaches 10–15. Closures would affect 1.5- to 2-mile segments of Garden Highway at any one time, and the duration of closure for each segment would be approximately 8–12 weeks to allow for degrading the levee, installing the cutoff wall, reconstructing the levee, and reconstructing Garden Highway. These closures would eliminate access to residences along the watershed of Garden Highway in this area and would require that residents relocate until access is restored. Although some residents with docks may be able to obtain access to their properties from the watershed of the levee, this would not constitute a feasible means of maintaining access for an extended period. As with the Proposed Action, residents on the landside of the levee in Reaches 15–18B would potentially experience temporary access disruptions caused by construction of the irrigation water pipeline near the toe of the new adjacent levee. Temporary pipes would be installed under Garden Highway at the Riverside Pumping Plant and Pumping Plants Nos. 3 and 5 (see Plate 2-6a) concurrent with cutoff wall construction. In the following construction year permanent pipes would be installed after the levee has settled. Garden Highway would be closed to through traffic for up to 60 days in three locations for replacement of the temporary pipes; except for these closure points, Garden Highway would remain open and traffic detours would be located between Powerline Road and San Juan Road for the Riverside Pumping Plant, between Bayou Road and Powerline Road for Pumping Plant No. 5, and between Powerline Road and San Juan Road for Pumping Plant No. 3. The temporary access disruption and the full closure of Garden Highway in Reaches 10–15 would be a significant impact.

**Mitigation Measure 4.3-c: Notify Residents and Businesses of Project Construction and Road Closure Schedules; Comply with the Garden Highway Settlement Agreement; and 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”**

**Proposed Action**

Providers,” set forth in full in Section 4.10, “Transportation and Circulation.” Additionally, the following measures shall be implemented:

a) SAFCA shall provide residents and business owners located adjacent to the construction areas with information regarding construction activities including contact information and complaint procedures, and with a construction timeline and shall post its construction schedule on the SAFCA Web site. Information shall include road closures and detour information. The schedule shall be updated on a regular basis.

b) SAFCA shall apply the following measures to power line relocations: To the extent that the main electrical power transmission lines and poles serving the Garden Highway must be relocated or replaced to accommodate the project, the relocation or replacement shall occur east of the new adjacent levee and in a manner that appropriately accommodates private landside improvements and properties. Existing main electrical power transmission lines and poles on the waterside of the existing Garden Highway levee that do not need to be relocated or replaced to accommodate the project may be left in place. No new main electrical power transmission lines and poles shall be installed on the waterside of the Garden Highway levee. Consistent with sound engineering practices that prioritize the following, individual services shall: (1) use existing configurations and facilities, and (2) any new poles shall be placed on the landside of Garden Highway, subject to the approval of USACE, the Central Valley Flood Protection Board (CVFPB), and any other regulatory public agencies and utility companies. If the affected property owner and SAFCA cannot agree on a location of an individual service line pole from among locations that are otherwise acceptable to USACE, CVFPB, other regulatory agencies, and the utility provider, SAFCA shall pay the cost of a referee, who is a qualified registered civil engineer and agreeable to both the affected property owner and SAFCA, to decide the dispute over the location of the individual service line pole.

c) SAFCA shall apply the following measure to encroachments: Once SAFCA determines that the Sacramento River east levee is certifiable for the Federal Emergency Management Agency’s (FEMA’s) flood protection purposes, SAFCA shall make its best efforts to get written agreement from USACE, CVFPB, and RD 1000 that no additional encroachments on the waterside of the Garden Highway levee need to be removed.

d) SAFCA shall implement the following measures before and during construction:

(i) SAFCA shall give property owners within the project area an informational package advising the property owners that preproject inspections of their properties are important and that SAFCA will conduct a free preconstruction inspection of the property, but only if requested by the affected property owner. The scope of the inspection and documentation shall be determined by SAFCA in consultation with the property owner. For property owners who request prior inspections/documentation, the inspection/documentation must be scheduled prior to the start of construction within the specified reach of the Sacramento River east levee where project construction will commence.

(ii) If requested by a property owner within the project area, SAFCA shall test the owner’s domestic well water before and after project construction for the presence of bentonite, concrete, and cement.

(iii) SAFCA shall cooperate with a construction monitoring committee established by local residents and businesses to resolve reasonable complaints regarding SAFCA
or its contractors’ construction activities for the projects improvements in accordance with this provision. A complaint procedure and hierarchy shall be developed by the committee and SAFCA’s Ombudsperson in time to be included in the informational packet referenced in subsection (i), above. In addition, the information packet shall include SAFCA’s instructions to its contractors regarding appropriate use of the Garden Highway. SAFCA agrees to resolve all complaints pertaining to dangerous activities immediately and to resolve all other reasonable complaints in an expeditious manner.

(iv) SAFCA shall prohibit the use of earth-moving equipment or haul trucks on the Garden Highway in conjunction with project construction.

(v) SAFCA shall provide local residents and businesses with a timeline for the phased completion of the project that indicates the role of the various agencies involved in implementing or permitting the project. SAFCA shall post its construction schedule for the project on the SAFCA Web site. The schedule shall be updated on a monthly basis. In addition, SAFCA shall post a “60-day notice” of Planned Construction on the SAFCA Web site. “Planned Construction” shall not include construction in the event of an emergency or construction necessary to remedy a condition discovered after completion of the project. However, SAFCA shall provide whatever notice is possible under the circumstances to affected, adjacent landowners prior to any emergency or remedial work.

e) SAFCA shall apply the following measures to drainage line location and relocation: No roadside swales shall be included in the design of the new adjacent levee downstream of Powerline Road. Consistent with sound engineering practices, and subject to the approval of USACE, CVFPC, and the Regional Water Quality Control Board (RWQCB), any new drainage outfall lines required by the project shall be buried pipes, located along property lines, and drain to the river. If a property owner does not want a new drain line located along the property line, he or she may request that the drain line be placed elsewhere on his or her property. If the property owner and SAFCA cannot agree on a location for a new drain line from among locations that are otherwise acceptable to USACE, CVFPC, and Central Valley RWQCB, SAFCA shall pay the cost of a referee, who is a qualified registered civil engineer and agreeable to both parties, to decide the dispute over the location of the drain line.

f) Where a property owner occupies a residence on property to be acquired for the project, SAFCA shall allow up to 12 months, rather than the statutory allowance of 3 months, for the owner to relocate off the property. The 12-month period shall be counted from the first written offer.

g) SAFCA shall provide notice as feasible for emergency construction or remedial construction.

Implementation of these mitigation measures would reduce the impact, but not to a less-than-significant level. Because no other feasible mitigation measures are available to fully reduce this impact to a less-than-significant level, therefore, this impact would remain significant and unavoidable under the Proposed Action.

RSLIP

Alternative

SAFCA and its primary contractors for engineering design and construction shall 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

In addition to the measures listed under the Proposed Action, above, the following additional measures shall be implemented:

h) SAFCA shall provide assistance for residents who are required to relocate during the construction period. SAFCA shall compensate residents for reasonable rent and living expenses incurred due to relocation. Residents will have the right to decent, safe, and sanitary housing in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act.

i) SAFCA shall provide 24-hour security patrols for residences that must be vacated during the construction period.

Implementation of these mitigation measures would reduce the impact, but not to a less-than-significant level due to the potential for temporary dislocation of residents as a result of road closures of approximately 8 to 12 weeks. Therefore, this impact would remain significant and unavoidable under the RSLIP Alternative because no other feasible mitigation measures are available to fully reduce this impact. (Greater)

4.3.3 Residual Significant Impacts

Under the No-Action Alternative, there would be no direct conflict with implementation of adopted Airport plans. In the event of a levee failure, continued implementation of Airport plans would depend on the location of any future levee failure and the extent of subsequent flooding. Consistency with Airport plans is considered too speculative for meaningful consideration. Additionally, under the No-Action Alternative, significance determinations for potential impacts due to community disruption are considered too speculative for meaningful consideration, given the uncertainties involved as a result of a levee failure.

Under the RSLIP Alternative, because of the likely loss of a substantial amount of nesting habitat for Swainson’s hawk, this alternative would remain potentially inconsistent with implementation of the NBHCP, following mitigation.

With respect to disruption of communities and residences located along the Sacramento River east levee, following mitigation, significant and unavoidable impacts related to short-term and temporary access restrictions and construction disturbance under the Proposed Action and the RSLIP Alternative would remain. These impacts would be greater for the RSLIP Alternative because it would require full closures of Garden Highway for extended periods of time.
4.4 GEOLOGY, SOILS, AND MINERAL RESOURCES

4.4.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.4.1.1 METHODOLOGY

This section addresses issues related to geologic hazards, specifically seismicity and soil erosion, soils, and mineral resources. Impacts associated with geology, soils, and mineral resources that could result from project-related activities were evaluated based on expected construction practices, materials used to construct the proposed improvements, general locations of improvements, and the nature of proposed operations.

This analysis relies on review of the Soil Survey of Sutter County, California (NRCS 1988), the Soil Survey of Sacramento County (NRCS 1993), Mineral Land Classification: Portland Cement Concrete-Grade Aggregate and Kaolin Clay Resources in Sacramento County, California (Dupras 1999), as well as published geologic maps and literature.

4.4.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to geology, soils, and mineral resources if they would do any of the following:

► expose people or structures to potential substantial adverse impacts, including risk of loss, injury, or death through the rupture of a known earthquake fault, strong seismic shaking, seismic-related ground failure, soil liquefaction, or landslides;

► result in substantial soil erosion or the loss of topsoil;

► locate project facilities on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed action, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;

► locate project facilities on expansive soil, creating substantial risks to property;

► have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater;

► create a substantial flooding risk as a result of a seismic seiche;

► destroy a unique geologic feature;

► result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or

► result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Because the project area is not located within an Alquist-Priolo Earthquake Fault Zone, fault ground rupture is highly unlikely, and therefore this issue is not addressed further in this FEIS.
All levee and canal improvements and borrow site excavation and reclamation would be designed based on the results of detailed geotechnical engineering studies performed previously (summarized in Kleinfelder 2008) and would be required to comply with standard engineering practices for levee design. The Central Valley Flood Protection Board’s (CVFPB’s) standards are the primary state standards applicable to the proposed levee improvements; these are stated in Title 23, Division 1, Article 8, Sections 111–137 of the California Code of Regulations. CVFPB’s standards direct that levee design and construction be in accordance with USACE’s Engineering Design and Construction of Levees (USACE 2000), the primary Federal standards applicable to levee improvements. Because the design, construction, and maintenance of levee improvements must comply with the regulatory standards of USACE and CVFPB, it is assumed that the design and construction of all levee modifications under the Proposed Action or RSLIP Alternative would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, and seepage.

Because the project area is relatively flat, there would be no adverse impacts related to landslides. Therefore, this issue is not addressed further in this FEIS.

Because the project would not involve the use of wastewater disposal systems of any kind, there would be no impact related to the ability of project area soils to support the use of septic systems. Therefore, this issue is not addressed further in this FEIS.

While a seiche in the project area could be damaging, the risk of seiches is low, given the distance from active faults and the anticipated short duration of any seismic ground shaking in the area. Therefore, this issue is not addressed further in this FEIS.

There are no unique geologic features in the project area. Therefore, the project would not destroy such features, and this issue is not discussed further in this FEIS.

4.4.2 IMPACTS AND MITIGATION MEASURES

Impact 4.4-a: Potential Temporary and Permanent Localized Soil Erosion during Construction and Operation

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for construction-related soil erosion. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Any levee failures would likely result in soil scouring and permanent loss of topsoil in localized areas within several hundred feet of a levee breach; simultaneous levee failures in more than one location in the perimeter levee system would have an even more widespread impact. The magnitude of the impacts would depend upon the location of the levee breach, severity of the storm, and river flows at the time of flooding. Therefore, a precise determination of significance is not possible and cannot be made. This impact could be offset by soil deposition resulting from inundation of the Natomas Basin by sediment-laden flood waters. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Implementation of the Proposed Action and the RSLIP Alternative would include a substantial amount of construction activity along the Sacramento River east levee, at proposed borrow sites, and at two locations along
the NCC south levee. Construction activities would be conducted continuously, to the extent feasible, between April and November.

Borrow activity is subject to regulation under the California Surface Mining and Reclamation Act (SMARA), which is administered by the county in which the borrow site is located (i.e., Sacramento and Sutter Counties) (see “California Surface Mining and Reclamation Act” under Section 3.4.1, “Regulatory Setting”). The excavation of soil from borrow sites would entail the preservation and replacement of the topsoil on these parcels. Upon completion of soil excavation, the area would be reclaimed as agricultural land, grassland, or managed marsh (See Section 2.3.3, “Borrow Sites”).

Table 2-10 lists the borrow sites that would potentially be used for the Phase 4a Project and shows the depth of excavation, depth upon reclamation, and final postreclamation use. As part of the borrow operations, the upper 6–12 inches of topsoil from the borrow sites would be set aside and replaced on-site after project construction in each construction season. After the project is complete, the borrow sites would be recontoured and reclaimed. These borrow operations would support levee construction involving soil stripping and site grading in the footprint of the adjacent levee and seepage berms along the Sacramento River east levee and in the two locations where cutoff wall construction and levee raising would take place on the NCC south levee.

Structures and trees would need to be removed from a portion of the footprint of the adjacent levee and berms along the Sacramento River east levee, and power poles would need to be removed and relocated.

Borrow activities and levee improvement activities would result in the temporary disturbance of soil and could expose disturbed areas to erosion due to wind or early-season rainfall events. Wind or rainfall of sufficient intensity could dislodge soil particles from the soil surface. Once particles are dislodged, substantial localized erosion could occur. The potential for substantial erosion or loss of topsoil during construction of the Proposed Action and RSLIP Alternative is considered a potentially significant impact. (Similar)

**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”**

| Proposed Action and RSLIP Alternative | SAFCA shall 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,” set forth in full in Section 4.6, “Water Quality.” SAFCA’s final design and construction specifications for all project components, including borrow sites, shall include implementation of standard erosion, siltation, and soil stabilization Best Management Practices (BMPs). In summary, this mitigation measure requires filing a Notice of Intent (NOI) with the Central Valley Regional Water Quality Control Board (RWQCB); implementing standard erosion, siltation, and BMP measures; preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP); and complying with the conditions of the National Pollutant Discharge Elimination System (NPDES) general stormwater permit for construction activity. Implementing this mitigation measure would reduce the impacts related to erosion from construction activities to a less-than-significant level because a SWPPP and BMPs to prevent erosion and siltation would be implemented. (Similar) |
Mitigation Measure 4.4-a(2): Secure and Implement the Conditions of the California Surface Mining and Reclamation Act Permit or Exemption

Proposed Action and RSLIP Alternative

In the event that any borrow site activity is determined to be subject to SMARA, SAFCA shall secure and implement the conditions contained in the SMARA permit or exemption as administered and issued by the local agency (applicable county). Implementing this mitigation measure would reduce the impacts related to erosion from construction activities on borrow sites to a less-than-significant level because SAFCA would secure a SMARA permit (if required) and implement its conditions, or would seek an exemption, if applicable.

Impact 4.4-b: Potential Loss of Mineral Resources

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for loss of mineral resources. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Within those areas of the Natomas Basin that are zoned MRZ-1, where no mineral resources are present, there would be no impact as a result of a flood event. For those areas that are zoned MRZ-3, where it is unknown whether or not mineral resources exist, a precise determination of significance is not possible. Because of this uncertainty, this potential impact to areas of the Natomas Basin that are zoned MRZ-3 is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Implementation of the Proposed Action and the RSLIP Alternative would include excavation of soil from the eastern edge of the Fisherman’s Lake Borrow Area, which is zoned MRZ-3 by DOC’s Division of Mines and Geology. As discussed in Section 3.4, “Geology and Soils,” the MRZ-3 designation indicates that the significance of mineral deposits in that area cannot be evaluated from existing data.

The easternmost parcels of the Fisherman’s Lake Borrow Area, where the MRZ-3 designation is located, are currently used for agricultural purposes. As with other parcels that would be used for borrow material, the upper 6–12 inches of topsoil from these borrow sites would be set aside and graded back onto these sites after project construction in each construction season to allow them to be returned to agricultural production. Aggregates are not desired to be used as borrow material for any phase of the NLIP; however, they could become disturbed and accidentally removed during borrow material activities, if they are present. Excavation in these parcels would not exceed 3 feet, including topsoil removal, which could contain an economically viable source of aggregate.

Because economically valuable minerals, if present, could be removed from a portion of the Fisherman’s Lake Borrow Area, this impact is considered to be potentially significant.
Mitigation Measure 4.4-b: Conduct Soil Core Sampling in Areas of the Phase 4a Project Footprint Designated as MRZ-3

Proposed Action and RSLIP Alternative

SAFCA shall retain a qualified geologist to analyze soil core samples extracted from proposed borrow sites, to depth of at least 3 feet, in areas that are designated as MRZ-3. In the event that a clean layer of economically viable aggregate is discovered, Sacramento County, DOC, and other appropriate agencies shall be notified. In addition, the horizontal extent of available aggregate shall be delineated by a qualified geologist.

While implementing this mitigation measure would provide data that would allow SAFCA to determine whether or not economically valuable mineral resources are present in the designated MRZ-3 area of the Fisherman’s Lake Borrow Area, if economically valuable mineral resources were found to be present, they would be removed as part of project activities. Therefore, this potential impact is considered significant and unavoidable.

(Similar)

4.4.3 Residual Significant Impacts

In the event of levee failure under the No-Action Alternative, the magnitude of impacts due to temporary and permanent soil erosion is uncertain. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

Implementation of Mitigation Measures 4.4-a(1) and 4.4-a(2) would reduce the temporary potentially significant impacts associated with soil erosion due to construction activities under the Proposed Action and the RSLIP Alternative to a less-than-significant level. Because implementation of Mitigation Measure 4.4-b would not prevent the possible removal or disturbance of economically valuable mineral resources (if found), the potential loss of mineral resources would remain significant and unavoidable.
4.5 HYDROLOGY AND HYDRAULICS

4.5.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.5.1.1 METHODOLOGY

This analysis relies on information provided by various public agencies, as well as the following site-specific technical planning studies generated to support the Proposed Action and alternatives under consideration in this FEIS:

- Sacramento Area Flood Control Agency, Natomas Levee Improvement Program, Summary Report on Hydraulic Impact Analyses, MBK Engineers 2009 (Appendix C1);
- Evaluation of Potential Groundwater Impacts Due to Proposed Construction for Natomas Levee Improvement Program, Luhdorff & Scalmanini Consulting Engineers 2009 (Appendix C2);
- Evaluation of Cutoff Walls Impacts on Groundwater Recharge, Sacramento East Levee, Natomas Levee Improvement Program, Kleinfelder 2007 (Appendix C3);
- Potential Impacts of Proposed Slurry Cutoff Walls Along Reach 4B of the Sacramento River East Levee, Luhdorff & Scalmanini Consulting Engineers 2009 (Appendix C4); and
- Potential Impacts of Proposed Phase 4A Habitat Mitigation Wells, Luhdorff & Scalmanini Consulting Engineers 2009 (Appendix C5).

These reports have been updated. The updates primarily consist of a datum conversion from National Geodetic Vertical Datum of 1929 (NGVD29) to North American Vertical Datum of 1988 (NAVD88) in accordance with USACE’s requirement that all vertical datum for USACE inland levee projects and Federal levees within USACE’s Inspection of Completed Works be in NAVD88.

This section addresses seasonal flooding and flood management as defining elements of the physical environment in the project area and evaluates the potential hydraulic impacts of the Proposed Action and alternatives under consideration on the operations of the Sacramento River Flood Control Project (SRFCP) and interior drainage within the Natomas Basin. It also evaluates the potential impact of seepage cutoff walls on groundwater recharge.

Impacts associated with hydrology and hydraulics that could result from construction and operation activities related to the project site were evaluated based on expected construction practice, on the materials to be used, and on the locations and duration of the activities. A review of published literature included maps, books, and the primary-source documents cited above.

The surface hydrology analysis evaluated the potential flood-related impacts of the action alternatives on water surface elevations in the stream and river channels in the project area and in the larger watershed within which the project is situated. Specifically, a UNET hydraulic computer model was used to compare existing conditions in the waterways surrounding the Natomas Basin and in the larger SRFCP with and without the Proposed Action (With Project and Without Project [i.e., No-Action Alternative], respectively) and other reasonably foreseeable improvements to Folsom Dam and the urban levees outside the Natomas Basin.

Table 4.5-1 summarizes the conditions and assumptions associated with each of the model runs. The modeling outputs generated by these conditions under the targeted flood scenarios are displayed in Tables 4.5-2 through 4.5-8. A description of these conditions is provided below in Table 4.5-1.
### Table 4.5-1
Definition of Model Assumptions for Various Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Top of Levee Assumption</th>
<th>Levee Failure Assumption</th>
<th>Reservoir Operations Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>Existing top of levee grade April 2008</td>
<td>Levee fails when water reaches the top of the levee</td>
<td>Existing reservoirs and current (2008) operation criteria</td>
</tr>
<tr>
<td>Without Project</td>
<td>Same as Existing with the following changes: Federally authorized improvements to Folsom Dam are implemented and urban area levees outside the Natomas Basin are assumed to have levees at 200-year water surface + 3 feet of levee height; NLIP levees same as Existing</td>
<td>Levee fails when water reaches the top of levee</td>
<td>Same as Existing except Folsom Dam would be operated in accordance with the Joint Federal Project currently under construction</td>
</tr>
<tr>
<td>With Project¹</td>
<td>Same as Without Project except NLIP levees raised to design level</td>
<td>Same as Without Project</td>
<td>Same as Without Project</td>
</tr>
<tr>
<td>Without Project</td>
<td>Same as Without Project except that SRFCP levees with top elevations below SRFCP design standard are assumed to be raised to meet this standard</td>
<td>No levee failures</td>
<td>Same as Without Project</td>
</tr>
<tr>
<td>Sensitivity Analysis</td>
<td>Same as With Project except that SRFCP levees with top elevations below SRFCP design standard are assumed to be raised to meet this standard</td>
<td>No levee failures</td>
<td>Same as Without Project</td>
</tr>
</tbody>
</table>

Notes: NLIP = Natomas Levee Improvement Program; SRFCP = Sacramento River Flood Control Project

¹ With-Project condition adds the improvements proposed as part of the NLIP regardless of levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) to the Without-Project condition, including levee raises on the Sacramento River, NCC, PGCC, and NEMDC in the locations shown in Figure 3 of Appendix C1.

Source: Appendix C1

### Table 4.5-2
Levee Failure Summary in the Sacramento River Flood Control Project (Predicted Number of Levee Failures)

<table>
<thead>
<tr>
<th>Condition</th>
<th>SRFCP (1957)</th>
<th>100-Year (1% AEP)</th>
<th>200-Year (0.5% AEP)</th>
<th>500-Year (0.2% AEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>0</td>
<td>3</td>
<td>26</td>
<td>62</td>
</tr>
<tr>
<td>Without Project</td>
<td>0</td>
<td>3</td>
<td>18</td>
<td>80</td>
</tr>
<tr>
<td>With Project</td>
<td>0</td>
<td>3</td>
<td>18</td>
<td>77</td>
</tr>
</tbody>
</table>

Notes: SRFCP = Sacramento River Flood Control Project; AEP = Annual Exceedance Probability

Source: Appendix C1
### Table 4.5-3

100-Year (1% AEP) Maximum Water Surface Elevation Summary
(Levees Fail When Water Reaches Top of Levee)

<table>
<thead>
<tr>
<th>Location (Comprehensive Study River Mile)</th>
<th>Maximum Water Surface Elevation (Feet NAVD88)</th>
<th>Change (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
<td>Without-Project</td>
</tr>
<tr>
<td>Sacramento River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Knight’s Landing (90.22)</td>
<td>43.77</td>
<td>43.75</td>
</tr>
<tr>
<td>at Fremont Weir, west end (84.75)</td>
<td>42.46</td>
<td>42.45</td>
</tr>
<tr>
<td>at Natomas Cross Canal (79.21)</td>
<td>42.52</td>
<td>42.48</td>
</tr>
<tr>
<td>at I-5 (71.00)</td>
<td>38.10</td>
<td>38.01</td>
</tr>
<tr>
<td>at Sacramento Bypass (63.82)</td>
<td>33.46</td>
<td>33.09</td>
</tr>
<tr>
<td>at NEMDC (61.0)</td>
<td>33.96</td>
<td>33.58</td>
</tr>
<tr>
<td>at I Street (59.695)</td>
<td>33.68</td>
<td>33.31</td>
</tr>
<tr>
<td>at Freeport Bridge (46.432)</td>
<td>27.31</td>
<td>27.19</td>
</tr>
<tr>
<td>Natomas Cross Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at SR 99/70 (4.82)</td>
<td>42.64</td>
<td>42.66</td>
</tr>
<tr>
<td>Pleasant Grove Creek Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Sankey Road (3.65)</td>
<td>42.64</td>
<td>42.66</td>
</tr>
<tr>
<td>at Fifield Road (1.49)</td>
<td>42.72</td>
<td>42.74</td>
</tr>
<tr>
<td>at Howsley Road (0.40)</td>
<td>42.71</td>
<td>42.73</td>
</tr>
<tr>
<td>Natomas East Main Drainage Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Elverta Road (10.35)</td>
<td>30.52</td>
<td>30.52</td>
</tr>
<tr>
<td>at Elkhorn Boulevard (8.35)</td>
<td>30.30</td>
<td>30.30</td>
</tr>
<tr>
<td>at Main Avenue (6.09)</td>
<td>38.75</td>
<td>38.21</td>
</tr>
<tr>
<td>at West El Camino Avenue (2.96)</td>
<td>36.93</td>
<td>36.08</td>
</tr>
<tr>
<td>Feather River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Nicolaus Gage (8.00)</td>
<td>50.82</td>
<td>50.81</td>
</tr>
<tr>
<td>Yolo Bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Woodland Gage (51.10)</td>
<td>34.90</td>
<td>34.88</td>
</tr>
<tr>
<td>American River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at H Street (6.471)</td>
<td>45.27</td>
<td>42.99</td>
</tr>
</tbody>
</table>

Notes: I-5 = Interstate 5; NEMDC = Natomas East Main Drainage Canal; NAVD88 = North American Vertical Datum of 1988; SR = State Route

1 Water surface elevations originally calculated in National Geodetic Vertical Datum of 1929 (NGVD29). Converted to NAVD88 by adding 2.28 feet (0 NGVD29 = 2.28 NAVD88).
2 With-Project condition adds the improvements proposed as part of the NLIP regardless of levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) to the Without-Project condition.

Source: Appendix C1
<table>
<thead>
<tr>
<th>Location (Comprehensive Study River Mile)</th>
<th>Maximum Water Surface Elevation (Feet NAVD88)</th>
<th>Change (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
<td>Without-Project</td>
</tr>
<tr>
<td>Sacramento River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Knight’s Landing (90.22)</td>
<td>43.97</td>
<td>43.97</td>
</tr>
<tr>
<td>at Fremont Weir, west end (84.75)</td>
<td>43.22</td>
<td>43.23</td>
</tr>
<tr>
<td>at Natomas Cross Canal (79.21)</td>
<td>43.28</td>
<td>43.28</td>
</tr>
<tr>
<td>at I-5 (71.00)</td>
<td>39.00</td>
<td>38.47</td>
</tr>
<tr>
<td>at Sacramento Bypass (63.82)</td>
<td>36.70</td>
<td>34.58</td>
</tr>
<tr>
<td>at NEMDC (61.0)</td>
<td>37.68</td>
<td>35.13</td>
</tr>
<tr>
<td>at I Street (59.695)</td>
<td>37.41</td>
<td>34.85</td>
</tr>
<tr>
<td>at Freeport Bridge (46.432)</td>
<td>30.29</td>
<td>28.31</td>
</tr>
<tr>
<td>Natomas Cross Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at SR 99/70 (4.82)</td>
<td>43.32</td>
<td>43.32</td>
</tr>
<tr>
<td>Pleasant Grove Creek Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Sankey Road (3.65)</td>
<td>43.31</td>
<td>43.32</td>
</tr>
<tr>
<td>at Fifield Road (1.49)</td>
<td>43.38</td>
<td>43.40</td>
</tr>
<tr>
<td>at Howsley Road (0.40)</td>
<td>43.35</td>
<td>43.35</td>
</tr>
<tr>
<td>Natomas East Main Drainage Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Elverta Road (10.35)</td>
<td>32.49</td>
<td>32.53</td>
</tr>
<tr>
<td>at Elkhorn Boulevard (8.35)</td>
<td>31.78</td>
<td>31.84</td>
</tr>
<tr>
<td>at Main Avenue (6.09)</td>
<td>42.28</td>
<td>40.00</td>
</tr>
<tr>
<td>at West El Camino Avenue (2.96)</td>
<td>41.31</td>
<td>38.33</td>
</tr>
<tr>
<td>Feather River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Nicolaus Gage (8.00)</td>
<td>52.44</td>
<td>52.44</td>
</tr>
<tr>
<td>Yolo Bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Woodland Gage (51.10)</td>
<td>35.76</td>
<td>35.75</td>
</tr>
<tr>
<td>American River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at H Street (6.471)</td>
<td>48.79</td>
<td>46.53</td>
</tr>
</tbody>
</table>

Notes: AEP = Annual Exceedance Probability; I-5 = Interstate 5; NEMDC = Natomas East Main Drainage Canal; NAVD88 = North American Vertical Datum of 1988; SR = State Route

1 Water surface elevations originally calculated in National Geodetic Vertical Datum of 1929 (NGVD29). Converted to NAVD88 by adding 2.28 feet (0 NGVD29 = 2.28 NAVD88).

2 With-Project condition adds the improvements proposed as part of the NLIP regardless of levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) to the Without-Project condition.

Source: Appendix C1
### Table 4.5-5

500-Year (0.2% AEP) Maximum Water Surface Elevation Summary

(Levees Fail When Water Reaches Top of Levee)

<table>
<thead>
<tr>
<th>Location (Comprehensive Study River Mile)</th>
<th>Maximum Water Surface Elevation (Feet NAVD88)</th>
<th>Change (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
<td>Without-Project</td>
</tr>
<tr>
<td>Sacramento River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Knight’s Landing (90.22)</td>
<td>43.88</td>
<td>43.92</td>
</tr>
<tr>
<td>at Fremont Weir, west end (84.75)</td>
<td>43.07</td>
<td>43.13</td>
</tr>
<tr>
<td>at Natomas Cross Canal (79.21)</td>
<td>43.14</td>
<td>43.14</td>
</tr>
<tr>
<td>at I-5 (71.00)</td>
<td>39.58</td>
<td>39.40</td>
</tr>
<tr>
<td>at Sacramento Bypass (63.82)</td>
<td>37.58</td>
<td>37.34</td>
</tr>
<tr>
<td>at NEMDC (61.0)</td>
<td>38.73</td>
<td>38.50</td>
</tr>
<tr>
<td>at I Street (59.695)</td>
<td>38.44</td>
<td>38.21</td>
</tr>
<tr>
<td>at Freeport Bridge (46.432)</td>
<td>30.83</td>
<td>30.68</td>
</tr>
<tr>
<td>Natomas Cross Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at SR 99/70 (4.82)</td>
<td>43.53</td>
<td>43.65</td>
</tr>
<tr>
<td>Pleasant Grove Creek Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Sankey Road (3.65)</td>
<td>44.03</td>
<td>44.08</td>
</tr>
<tr>
<td>at Fifield Road (1.49)</td>
<td>44.05</td>
<td>44.13</td>
</tr>
<tr>
<td>at Howsley Road (0.40)</td>
<td>43.77</td>
<td>43.93</td>
</tr>
<tr>
<td>Natomas East Main Drainage Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Elverta Road (10.35)</td>
<td>34.58</td>
<td>34.51</td>
</tr>
<tr>
<td>at Elkhorn Boulevard (8.35)</td>
<td>34.06</td>
<td>34.04</td>
</tr>
<tr>
<td>at Main Avenue (6.09)</td>
<td>43.32</td>
<td>43.40</td>
</tr>
<tr>
<td>at West El Camino Avenue (2.96)</td>
<td>42.65</td>
<td>42.57</td>
</tr>
<tr>
<td>Feather River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Nicolaus Gage (8.00)</td>
<td>52.40</td>
<td>52.40</td>
</tr>
<tr>
<td>Yolo Bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Woodland Gage (51.10)</td>
<td>35.53</td>
<td>35.81</td>
</tr>
<tr>
<td>American River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at H Street (6.471)</td>
<td>48.84</td>
<td>49.94</td>
</tr>
</tbody>
</table>

Notes: AEP = Annual Exceedance Probability; I-5 = Interstate 5; NEMDC = Natomas East Main Drainage Canal; NAVD88 = North American Vertical Datum of 1988; SR = State Route

1 Water surface elevations originally calculated in National Geodetic Vertical Datum of 1929 (NGVD29). Converted to NAVD88 by adding 2.28 feet (0 NGVD29 = 2.28 NAVD88).

2 With-Project condition adds the improvements proposed as part of the NLIP regardless of levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) to the Without-Project condition.

3 The computed 500-year “With Project” water surface elevations of 35.33 feet at Elverta Road and 34.68 feet at Elkhorn Boulevard are significantly lower than the SRFCP Design Flood Plane elevations of 39.2 feet at Elverta Road and 39.1 feet Elkhorn Boulevard. The project water surface elevation is also significantly less than the elevation of 39.1 feet that was experienced in the February 1986 flood at both of these locations. The water surface is lower as a result of construction of the NEMDC Stormwater Pump Station north of Dry Creek. The NEMDC upstream of Elkhorn Boulevard is in the Phase 4b Project Area and will be evaluated in more detail as part of a future separate EIS/EIR.

Source: Appendix C1
<table>
<thead>
<tr>
<th>Location (Comprehensive Study River Mile)</th>
<th>Maximum Water Surface Elevation (Feet NAVD88)</th>
<th>Change (Feet) Without-Project to With-Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without-Project</td>
<td>With-Project</td>
</tr>
<tr>
<td>Sacramento River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Knight’s Landing (90.22)</td>
<td>44.38</td>
<td>44.38</td>
</tr>
<tr>
<td>at Fremont Weir, west end (84.75)</td>
<td>43.18</td>
<td>43.18</td>
</tr>
<tr>
<td>at Natomas Cross Canal (79.21)</td>
<td>43.73</td>
<td>43.73</td>
</tr>
<tr>
<td>at I-5 (71.00)</td>
<td>39.18</td>
<td>39.18</td>
</tr>
<tr>
<td>at Sacramento Bypass (63.82)</td>
<td>33.73</td>
<td>33.73</td>
</tr>
<tr>
<td>at NEMDC (61.0)</td>
<td>34.30</td>
<td>34.30</td>
</tr>
<tr>
<td>at I Street (59.695)</td>
<td>34.02</td>
<td>34.02</td>
</tr>
<tr>
<td>at Freeport Bridge (46.432)</td>
<td>27.82</td>
<td>27.82</td>
</tr>
<tr>
<td>Natomas Cross Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at SR 99/70 (4.82)</td>
<td>43.78</td>
<td>43.78</td>
</tr>
<tr>
<td>Pleasant Grove Creek Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Sankey Road (3.65)</td>
<td>43.65</td>
<td>43.65</td>
</tr>
<tr>
<td>at Fifield Road (1.49)</td>
<td>43.78</td>
<td>43.78</td>
</tr>
<tr>
<td>at Howsley Road (0.40)</td>
<td>43.79</td>
<td>43.79</td>
</tr>
<tr>
<td>Natomas East Main Drainage Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Elverta Road (10.35)</td>
<td>33.48</td>
<td>33.49</td>
</tr>
<tr>
<td>at Elkhorn Boulevard (8.35)</td>
<td>32.57</td>
<td>32.58</td>
</tr>
<tr>
<td>at Main Avenue (6.09)</td>
<td>38.13</td>
<td>38.13</td>
</tr>
<tr>
<td>at West El Camino Avenue (2.96)</td>
<td>35.98</td>
<td>35.98</td>
</tr>
<tr>
<td>Feather River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Nicolaus Gage (8.00)</td>
<td>51.18</td>
<td>51.18</td>
</tr>
<tr>
<td>Yolo Bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Woodland Gage (51.10)</td>
<td>35.49</td>
<td>35.49</td>
</tr>
<tr>
<td>American River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at H Street (6.471)</td>
<td>43.09</td>
<td>43.09</td>
</tr>
</tbody>
</table>

Notes: AEP = Annual Exceedance Probability; I-5 = Interstate 5; NEMDC = Natomas East Main Drainage Canal; NAVD88 = North American Vertical Datum of 1988; SR = State Route
1 Water surface elevations originally calculated in National Geodetic Vertical Datum of 1929 (NGVD29). Converted to NAVD88 by adding 2.28 feet (0 NGVD29 = 2.28 NAVD88).
2 With-Project condition adds the improvements proposed as part of the NLIP regardless of levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) to the Without-Project condition.

Source: Appendix C1
### Table 4.5-7
200-Year (0.5% AEP) Maximum Water Surface Elevation Summary
(No Levee Failures—Sensitivity Analysis)

<table>
<thead>
<tr>
<th>Location (Comprehensive Study River Mile)</th>
<th>Maximum Water Surface Elevation (Feet NAVD88(^1))</th>
<th>Change (Feet) Without-Project to With-Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without-Project</td>
<td>With-Project</td>
</tr>
<tr>
<td>Sacramento River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Knight’s Landing (90.22)</td>
<td>45.67</td>
<td>45.67</td>
</tr>
<tr>
<td>at Fremont Weir, west end (84.75)</td>
<td>44.75</td>
<td>44.76</td>
</tr>
<tr>
<td>at Natomas Cross Canal (79.21)</td>
<td>45.18</td>
<td>45.20</td>
</tr>
<tr>
<td>at I-5 (71.00)</td>
<td>40.52</td>
<td>40.52</td>
</tr>
<tr>
<td>at Sacramento Bypass (63.82)</td>
<td>35.76</td>
<td>35.76</td>
</tr>
<tr>
<td>at NEMDC (61.0)</td>
<td>36.34</td>
<td>36.35</td>
</tr>
<tr>
<td>at I Street (59.695)</td>
<td>36.06</td>
<td>36.06</td>
</tr>
<tr>
<td>at Freeport Bridge (46.432)</td>
<td>29.68</td>
<td>29.69</td>
</tr>
<tr>
<td>Natomas East Main Drainage Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Elverta Road (10.35)</td>
<td>37.38</td>
<td>37.77</td>
</tr>
<tr>
<td>at Elkhorn Boulevard (8.35)</td>
<td>37.17</td>
<td>37.58</td>
</tr>
<tr>
<td>at Main Avenue (6.09)</td>
<td>38.87</td>
<td>38.87</td>
</tr>
<tr>
<td>at West El Camino Avenue (2.96)</td>
<td>38.13</td>
<td>38.13</td>
</tr>
<tr>
<td>Feather River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Nicolaus Gauge (8.00)</td>
<td>53.47</td>
<td>53.48</td>
</tr>
<tr>
<td>Yolo Bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Woodland Gauge (51.10)</td>
<td>36.84</td>
<td>36.85</td>
</tr>
<tr>
<td>American River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at H Street (6.471)</td>
<td>46.68</td>
<td>46.68</td>
</tr>
</tbody>
</table>

Notes: AEP = Annual Exceedance Probability; I-5 = Interstate 5; NEMDC = Natomas East Main Drainage Canal; NAVD88 = North American Vertical Datum of 1988; SR = State Route

\(^1\) Water surface elevations originally calculated in National Geodetic Vertical Datum of 1929 (NGVD29). Converted to NAVD88 by adding 2.28 feet (0 NGVD29 = 2.28 NAVD88).

\(^2\) With-Project condition adds the improvements proposed as part of the NLIP regardless of levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) to the Without-Project condition.

Source: Appendix C1
Table 4.5-8
500-Year (0.2% AEP) Maximum Water Surface Elevation Summary
(No Levee Failures—Sensitivity Analysis)

<table>
<thead>
<tr>
<th>Location (Comprehensive Study River Mile)</th>
<th>Maximum Water Surface Elevation (Feet NAVD88)</th>
<th>Change (Feet) Without-Project to With-Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without-Project</td>
<td>With-Project</td>
</tr>
<tr>
<td>Sacramento River</td>
<td>Without-Project</td>
<td>With-Project</td>
</tr>
<tr>
<td>at Knight’s Landing (90.22)</td>
<td>46.55</td>
<td>46.59</td>
</tr>
<tr>
<td>at Fremont Weir, west end (84.75)</td>
<td>46.07</td>
<td>46.13</td>
</tr>
<tr>
<td>at Natomas Cross Canal (79.21)</td>
<td>45.96</td>
<td>46.13</td>
</tr>
<tr>
<td>at I-5 (71.00)</td>
<td>42.04</td>
<td>42.13</td>
</tr>
<tr>
<td>at Sacramento Bypass (63.82)</td>
<td>40.25</td>
<td>40.28</td>
</tr>
<tr>
<td>at NEMDC (61.0)</td>
<td>40.25</td>
<td>40.28</td>
</tr>
<tr>
<td>at I Street (59.695)</td>
<td>39.95</td>
<td>39.97</td>
</tr>
<tr>
<td>at Freeport Bridge (46.432)</td>
<td>32.56</td>
<td>32.58</td>
</tr>
<tr>
<td>Natomas Cross Canal</td>
<td>45.73</td>
<td>45.99</td>
</tr>
<tr>
<td>at SR 99/70 (4.82)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasant Grove Creek Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Sankey Road (3.65)</td>
<td>45.33</td>
<td>45.70</td>
</tr>
<tr>
<td>at Fifield Road (1.49)</td>
<td>45.78</td>
<td>45.99</td>
</tr>
<tr>
<td>at Howsley Road (0.40)</td>
<td>45.76</td>
<td>46.01</td>
</tr>
<tr>
<td>Natomas East Main Drainage Canal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Elverta Road (10.35)</td>
<td>42.64</td>
<td>44.00</td>
</tr>
<tr>
<td>at Elkhorn Boulevard (8.35)</td>
<td>42.63</td>
<td>43.99</td>
</tr>
<tr>
<td>at Main Avenue (6.09)</td>
<td>46.04</td>
<td>46.05</td>
</tr>
<tr>
<td>at West El Camino Avenue (2.96)</td>
<td>44.99</td>
<td>45.00</td>
</tr>
<tr>
<td>Feather River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Nicolaus Gage (8.00)</td>
<td>55.73</td>
<td>55.75</td>
</tr>
<tr>
<td>Yolo Bypass</td>
<td>38.24</td>
<td>38.29</td>
</tr>
<tr>
<td>American River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at H Street (6.471)</td>
<td>51.44</td>
<td>51.45</td>
</tr>
</tbody>
</table>

Notes: AEP = Annual Exceedance Probability; I-5 = Interstate 5; NEMDC = Natomas East Main Drainage Canal; NAVD88 = North American Vertical Datum of 1988; SR = State Route
1 Water surface elevations originally calculated in National Geodetic Vertical Datum of 1929 (NGVD29). Converted to NAVD88 by adding 2.28 feet (0 NGVD29 = 2.28 NAVD88).
2 With-Project condition adds the improvements proposed as part of the NLIP regardless of levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) to the Without-Project condition.

Source: Appendix C1
The existing conditions analysis provided an evaluation of the levee and reservoir system as it existed in April 2008. The No-Action condition assumed implementation of Federally authorized improvements to Folsom Dam and anticipated “early implementation” improvements to the levees protecting existing urban areas outside the Natomas Basin (i.e., American River Basin, West Sacramento, Yuba Basin, and Sutter Basin) so as to provide these areas with 200-year flood protection. The With-Project condition added the improvements proposed as part of the entire NLIP to the No-Action condition to display the individual and cumulative impacts of the Proposed Action when added to the other reasonably foreseeable urban levee improvement projects in the Sacramento Valley. The NLIP includes additional levee raising already evaluated in the Phase 2 EIR, Phase 2 EIS, and Phase 3 DEIS/DEIR, as well as levee raising that is evaluated in this FEIS.

The analysis consisted of calibrating the hydraulic model to historic flood events using high-water marks and stream gauge data gathered in connection with the 1997 flood, and modeling the existing Proposed Action and No-Action conditions under the following flood scenarios: (1) the 1957 water surface profiles that serve as the minimum design standard for the SRFCP; (2) the 100-year (1% AEP) flood that affects management of SRFCP-protected floodplains under the National Flood Insurance Program (33 CFR 65.10); (3) the 200-year (0.5% AEP) flood that is likely to affect implementation of the floodplain management standards recently adopted by the California Legislature (Chapter 364, Statutes of 2008 [adding Water Code Section 9602(i)]); and (4) the 500-year (0.2% AEP) flood that represents a worst-case scenario for analyzing project impacts. Each of these scenarios was modeled assuming that levees outside the project area would fail when overtopped. However, to test how sensitive the water surface elevations predicted by the model are to different levee failure scenarios, each scenario was also modeled assuming that nonurban levees that currently do not meet the SRFCP’s minimum levee height requirements would be repaired and that no levees would fail even under the most extreme overtopping condition. The 500-year (0.2% AEP) flood scenario represents the worst case because it is the largest hydrologic event modeled for the SRFCP and would produce the highest water surface elevations among the model results. See Appendix C1 of this FEIS for additional information about the background, approach, and results of the NLIP hydrologic and hydraulic modeling analyses, including a summary description of the legislative support for the NLIP impact methodology.

4.5.1.2 Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to hydrology and hydraulics if they would do any of the following:

► substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;

► create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

► place housing within a 100-year flood hazard area or place within a 100-year flood hazard area structures that would impede or redirect flood flows;

► expose people or structures to a significant risk of loss, injury, or death involving flooding; or

► substantially alter the existing drainage pattern of a site or an area, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on-site or off-site.

The project would not cause substantial increases in amounts of runoff or place housing or other inhabited structures in a 100-year flood hazard area. Therefore, this issue is not discussed further in this FEIS.
In determining whether a project would expose people or structures to a significant risk as a result of flooding, SAFCA uses the following thresholds:

- whether the project would cause encroachment on SRFCP design levee height for the SRFCP design flow for a project levee outside the project area, or

- whether the project would cause a significant increase in flooding in an area that is outside the protection of the SRFCP.

For purposes of these thresholds, “flood hazard area” means an area that does not meet the minimum level of flood protection required by Federal or state law, whichever is more stringent. The 100-year (1% AEP) level of flood protection will be the standard applicable until 2015, or perhaps earlier, depending on when the Central Valley Flood Protection Plan takes effect. At that point, the applicable standard would be governed by Senate Bill 5, namely, either 200-year (0.5% AEP) protection or “adequate progress” towards meeting the 200-year (0.2% AEP) protection standard by 2025.

4.5.2 IMPACTS AND MITIGATION MEASURES

Impact 4.5-a: Hydraulic Impacts on Other Areas and Exposure to Flood Risk

Table 4.5-2 and Appendix C1 of this FEIS indicate the levee failures that would occur throughout the SRFCP area under each of the targeted flood conditions assuming levees fail when overtopped. These failures would generally affect nonurban levees. However, the urban levees along the Lower American River would fail under the existing condition 200-year (0.5% AEP) flood (flooding that has a 1-in-200 chance of occurring in any given year), and urban levees along the Feather and Lower American Rivers would fail in the existing condition 500-year (0.2% AEP) flood (flooding that has a 1-in-500 chance of occurring in any given year).

Tables 4.5-3, 4.5-4, and 4.5-5 display the comparative water surface elevations that would occur under each of the targeted flood scenarios with levee failures caused by overtopping. These data indicate no significant increase in water surface elevations when the Proposed Action conditions are compared to the existing and No-Action conditions. The sensitivity analysis does show an increase in water surface elevations on the NEMDC at Elverta Road for 500-year (0.2% AEP) analyses. It should be noted that this potential increase in flood stage is a result of raising the NEMDC levee between Sankey Road and Elkhorn Boulevard. This reach of the NEMDC (Sankey Road to Elkhorn Boulevard) is part of the Phase 4b Project area and will be evaluated at a project-level in a future, separate NEPA/CEQA compliance document.

In addition, as shown in Table 4.5-2, the same number of levee failures would occur in the 100-year (1% AEP) flood event under both the Proposed Action and No-Action Alternative.

Tables 4.5-6, 4.5-7, and 4.5-8 display the comparative water surface elevations that would occur under the sensitivity analysis, which assumes no levee failures. The sensitivity analysis does show an increase in water surface elevations on the NEMDC at Elverta Road for the 200-year (0.5% AEP) and 500-year (0.2% AEP) analyses. It should be noted that this potential increase in flood stage is a result of raising the NEMDC levee between Sankey Road and Elkhorn Boulevard. This reach of the NEMDC (Sankey Road to Elkhorn Boulevard) is part of the Phase 4b Project area and will be evaluated at a project-level in a future, separate NEPA/CEQA compliance document.

These modeling results are more fully discussed in Appendix C1 of this FEIS.
No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore hydrology or hydraulics would not be altered. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Wind and wave run-up or seepage conditions could cause portions of this system to fail, triggering widespread flooding and extensive damage to property within the Basin. Residences on the waterside of the Sacramento River levee in the vicinity of a levee breach could be engulfed, access to residences on the waterside of the levee and within the Basin could be cut off, and interior roadways and other infrastructure damaged. The magnitude of the impacts would depend upon the location of the levee breach, severity of the storm, and river flows at the time of flooding. While a precise determination of significance is uncertain, due to the uncontrolled consequences of levee failure, this impact is still assumed to be significant. As discussed in Section 4.1, “Approach to the Environmental Analysis,” no mitigation is required. This impact would remain significant and unavoidable. (Greater)

Proposed Action and RSLIP Alternative

The hydraulic impacts of either levee construction alternative (i.e., the Proposed Action or the RSLIP Alternative) would be the same, as described in further detail below, because the water surface elevations would not be altered.

Under both action alternatives, levee raises would occur on the Sacramento River east levee (Reaches 10–15) and portions of the NCC south levee to provide the required 3 feet of levee height above the 200-year (0.5% AEP) design water surface profile. This levee height requirement originates in National Flood Insurance Program regulations and the engineering practice of the California Department of Water Resources, which has been established by FEMA to develop design standards for providing a 200-year (0.5% AEP) level of flood protection for urban areas protected by levees in the Central Valley.

As indicated in Tables 4.5-1 through 4.5-8 above, this analysis shows that the levees around the Natomas Basin are currently high enough to contain the 1957 profile and the 100-year (1% AEP) flood profile under both the levee failure scenario and the sensitivity (no levee failure) analysis. Accordingly, the improvements that would be constructed as part of the Proposed Action would not measurably alter these water surface elevations. However, it should be noted that some of these levees do not meet FEMA’s requirement of 3 feet of levee height above the 100-year design water surface profile (see Chapter 2.0, “Alternatives,” Section 2.3.1.1, “Levee Raises, Widening, and Slope Flattening”); meeting this requirement is one of the project objectives.

With respect to the 200-year (0.5% AEP) design flood, the hydraulic models show that nonurban levees outside of the Natomas Basin would overtop in multiple locations by 6 inches to 1 foot. At these locations, the UNET model assumes that the overtopping would produce a 500-foot breach over a 2-hour period. The model allows water to leave the system by flowing through the breach. The water remaining in the adjacent channel is routed downstream and thus contributes to the resulting water surface elevations in the channels surrounding the Natomas Basin. The Phase 4a Project would increase flood stages for the 200-year (0.5% AEP) flood profile by a maximum of 0.06 foot; therefore, this impact is less than significant.

With respect to the 500-year (0.2% AEP) flood, the hydraulic modeling results show that approximately 100 miles of the SRFCP levee system would be subject to overtopping by up to 2 feet in some locations. The affected levees would perform as described above for the 200-year (0.5% AEP) levee failure.
As part of the sensitivity analysis, the 200-year (0.5% AEP) and 500-year (0.2% AEP) flood analyses were performed without any levee failures being allowed. Under these conditions, the UNET model assumes that the affected levees would function as weirs, allowing water to leave the system by flowing over the top of the affected levee, but without triggering a breach. As in the levee failure scenarios, the water remaining in the adjacent channel is routed downstream and thus contributes to the resulting water surface elevations in the channels surrounding the Natomas Basin. These no levee failure routings indicate that the 200-year (0.5% AEP) flood would slightly overtop portions of the existing Sacramento River east levee, the existing NCC south levee, and the existing NEMDC west levee, but would otherwise be contained. Raising these levees under either action alternative would prevent this overtopping and increase the 200-year (0.5% AEP) design water surface elevation in the project area by 0.02 foot in the Sacramento River channel, 0.02 foot in the NCC, 0.02 foot in the PGCC, and 0.41 foot in the NEMDC. The 500-year (0.2% AEP) flood with no upstream levee failures would cause more substantial overtopping in these reaches of the Natomas Basin levee system. The proposed improvements would contain these overflows and cause the 500-year (0.2% AEP) design water surface elevation to potentially increase by up to 0.17 foot in the Sacramento River channel, up to 0.26 foot in the NCC, up to 0.25 foot in the PGCC, and up to 1.36 feet in the NEMDC. It should be noted that raising the NEMDC levee would be conducted as part of the Phase 4b Project that will be evaluated at a project-level in a future, separate NEPA/CEQA compliance document.

In summary, implementation of the Proposed Action or the RSLIP Alternative would not measurably alter water surface elevations in the project area except in the most extreme circumstances (i.e., a 200-year (0.5% AEP) or a 500-year (0.2% AEP) flood with no levee failures despite 100 miles of levee overtopping in areas upstream of the Natomas Basin). The action alternatives would not change the existing geometry of the channels surrounding the Natomas Basin and therefore would not cause significant changes to water flow in these channels, or cause adverse hydraulic effects upstream or downstream of the project area during peak flows. The details of this analysis are included in Appendix C1 of this FEIS.

A number of residents of homes on the waterside of the Sacramento River east levee have expressed concerns to SAFCA and USACE that the proposed levee height would increase the risk of flooding of their residences. As described above, implementation of either action alternative would not cause the SRFCP operations to be altered; therefore, the principal risks of flood damage to these existing waterside Garden Highway residences would continue to be either inundation by the water surface elevations that would remain unchanged by the Proposed Action or damage by the wind and wave run-up generated from these water surface elevations. In either event, neither action alternative would alter the existing risk of damage associated with living along the edge of the Sacramento River channel. Moreover, this risk would be alleviated by the project because the levee height added to the Sacramento River east levee would significantly reduce a potential wind- and wave-induced levee failure, and the improvements to address seepage potential would greatly reduce the potential for a seepage-induced failure.

For these reasons, the Proposed Action and the RSLIP Alternative would not have a significant adverse hydraulic impact on the SRFCP. In addition, these alternatives would not expose people or structures to a significant risk of flooding. Rather, this risk would be alleviated because the levee height added to the Sacramento River east levee would reduce the risk of wind- and wave-induced levee failure, and the seepage remediation measures would reduce the potential for seepage-induced failure. Because the action alternatives would replace or upgrade existing levees using up-to-date design and construction standards, implementation of either of these action alternatives would substantially reduce the risk of flooding of the Natomas Basin, which would be a less-than-significant (beneficial) impact. (Similar)

Mitigation Measure: No mitigation is required.
Impact 4.5-b: Alteration of Local Drainage

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, construction activities related to the project would not alter the local drainage systems described in Chapter 2.0, “Alternatives.” There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could alter local drainage systems. However, the potential for such an occurrence is uncertain, and the magnitude and duration of any related effects on local drainage systems cannot be predicted. Therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

In coordination with SAFCA, the SCAS, and RD 1000, Mead & Hunt has conducted preliminary evaluations of local drainage patterns and needs in relation to proposed features of the alternatives.

The primary source of material that would be used for the Phase 4a Project work along the Sacramento River east levee would be the Fisherman’s Lake Borrow Area. Sites within this borrow area would be graded to allow positive draining by gravity, with no ponded, open water. The managed marshes would be primarily supplied by surface water from irrigation canals, but would also have wells and pumps to provide groundwater as a back-up source to maintain water quality objectives. The marshes would be managed to maintain a relatively consistent water level within the confines of the marsh and would not interrupt irrigation or drainage services to adjacent properties or change the routine water levels in surrounding irrigation and drainage canals.

Other Phase 4a Project elements include construction of the adjacent levee in Reaches 10–15 of the Sacramento River east levee and levee raises in Reaches 10–11B under the Proposed Action, and raising the Sacramento River east levee in place in Reaches 10–11B with backslope flattening throughout Reaches 10–15 under the RSLIP Alternative. Under both action alternatives, the existing Riverside Canal would be relocated and extended, and in two locations on the NCC south levee, the cutoff walls would be installed and the levee would be raised. Ports of privately maintained local canals, some of which may provide a drainage function, would be overlapped by the footprint of the adjacent levee along the Sacramento River east levee and/or berms associated with both levees. Drainage would need to be rerouted to new replacement canals before the existing canals are decommissioned to ensure that local drainage and ponding areas would not be adversely affected as a result of project construction. Detailed engineering and design plans for these replacements are still under development.

Because the action alternatives under the Phase 4a Project would temporarily or even potentially permanently alter the existing drainage pattern of the project area, localized flooding could occur, resulting in a potentially significant impact. (Similar)
Mitigation Measure 4.5-b: Coordinate with Landowners and Drainage Infrastructure Operators, Prepare Final Drainage Studies as Needed, and Implement Proper Project Design

### Proposed Action and RSLIP Alternative

During project design, SAFCA’s project engineers shall coordinate with owners and operators of local drainage systems and landowners served by the systems. This coordination shall enable the project engineers to evaluate the preproject and postproject drainage needs and the design features to consider in project design any project-related substantial drainage disruption or alteration in runoff that would increase the potential for local flooding. If substantial alteration of runoff patterns or disruption of a local drainage system could result from a project feature, a final drainage study shall be prepared and implemented as part of project design. The study shall consider the design flows of any existing facilities that would be crossed by project features and shall develop appropriate plans for relocation or other modification of these facilities and construction of new facilities, as needed, to ensure that the altered systems provide drainage services during and after construction that are equivalent to the drainage services that were provided prior to construction. If no drainage facilities (e.g., ditches, canals) would be affected, but project features would have a substantial adverse impact on runoff amounts and/or patterns, then new drainage systems shall be included in the design of project improvements to ensure that the project would not result in new or increased local flooding. Any necessary features to remediate project-induced drainage problems shall be constructed before the project is completed or as part of the project, depending on site-specific conditions. Any additional coordination with landowners and drainage infrastructure operators related to future selection of borrow sites in the Fisherman’s Lake Area shall be completed by SAFCA before commencement of any earth-moving activities. Implementing this mitigation would reduce adverse impacts to local drainage to a less-than-significant level. *(Similar)*

### Impact 4.5-c: Effects on Groundwater

#### No-Action Alternative

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly disturb groundwater recharge or flow. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Flooding of the Basin, should it occur in the absence of improvements to the perimeter levee system, would not inhibit groundwater recharge. Therefore, there would be no impact. *(Lesser)*

#### Proposed Action and RSLIP Alternative

Groundwater impacts from proposed levee improvements are primarily limited to land use changes and the installation of slurry cutoff walls. No direct groundwater impacts are expected from increasing the height or width of levees, modifying levee slopes, or building seepage berms because this construction would all be above the water table.

Construction of the adjacent levee under the Phase 4a Project would include installation of either soil-bentonite or soil-cement-bentonite cutoff walls throughout Reaches 10–15 of the proposed adjacent levee. The Phase 4a Project would also include installation of cutoff walls in the south levee of the NCC from Station 56+00 to Station 61+00 (Bennett Pump Station) and Station 108+50 to Station 122+10 (Northern Main Pump Station). The depth
of these cutoff walls from the levee crown would range up to 110 feet. In Reach 4B of the Sacramento River east levee, a cutoff wall, ranging in depth from 20 to 75 feet deep, would be installed from approximately Station 190+00 to Station 214+00.

The presence of cutoff walls could restrict the movement of groundwater in either direction (away from or toward the Sacramento River or the NCC), potentially increasing or decreasing localized near-surface groundwater levels in areas immediately adjacent to the cutoff wall. A significant drop in groundwater levels could decrease the yields of nearby wells or increase the pumping costs of those wells. The combined effect of all of SAFCA’s proposed construction activities under the NLIP (including the contribution of the Phase 4a Project) on the overall groundwater budget for the Natomas Basin under both existing and future conditions is discussed in Chapter 5.0, “Cumulative and Growth-Inducing Impacts, and Other Statutory Requirements.”

The evaluation of potential groundwater impacts prepared by LSCE (Appendix C2) estimated the water-level changes caused by the cutoff walls along the Sacramento River east levee. These estimates were based on simulations using the SEEP/W groundwater model analysis developed by Kleinfelder in its report, Evaluation of Cutoff Walls Impact on Groundwater Recharge Sacramento River East Levee (Appendix C3). To evaluate impacts to groundwater levels from the addition of a cutoff wall in Reach 4B, which was not evaluated in the May 2009 report (Appendix C2), LSCE prepared a supplemental technical memorandum, (Appendix C4). The technical memo concluded that the groundwater impacts that would result from the addition of a cutoff wall in Reach 4B would not have a measurable effect on groundwater conditions in the area and would not change the conclusion reached in the original groundwater evaluation. On the waterside of the levee, the predicted effect of the cutoff wall is negligible (less than an inch) at low stage, and there would be a slight increase in groundwater levels (less than 1 foot) at high stage (see Figure 8-2 in Appendix C2). On the landside of the levee, the simulated groundwater levels are slightly lower because of the cutoff wall (typically 0.25 to 0.5 foot lower). In both cases, any impacts would be small enough to be considered negligible even for the shallowest domestic wells (less than 100 feet deep). As a result, no substantial decrease in groundwater levels or well yields or increase in pumping costs are expected to be caused by the cutoff walls; therefore, this impact is considered less than significant.

The evaluation of potential groundwater impacts prepared by LSCE (Appendix C2) also estimated the water-level changes to private wells caused by the cutoff walls along the Sacramento River east levee. These estimates were also based on the Kleinfelder report (Appendix C3). Groundwater level changes due to slurry cutoff walls along the NCC south levee would likely be similar to those along the Sacramento River east levee. On the waterside of the levee, the predicted effect of the cutoff wall is negligible (less than an inch) at low stage, and there would be a slight increase in water level (less than 1 foot) at high stage (see Figure 8-2 in Appendix C2). On the landside of the levee, the simulated water levels are slightly lower because of the cutoff wall (typically 0.25 to 0.5 foot). In both cases, impacts, if any, would be small enough to be considered negligible even for the shallowest domestic wells (less than 100 feet deep). As a result, no substantial decrease in well yields or increase in pumping costs is expected to be caused by the cutoff walls along the Sacramento River east levee; therefore, this impact is considered less than significant.

LSCE prepared a supplemental technical memorandum (Appendix C5) that evaluates the potential for reduction in yields from existing wells that would be near the five wells that SAFCA has proposed to provide a water supply to habitat mitigation sites. The proposed habitat mitigation water supply wells include a back-up well in Reach 6A of the Sacramento River east levee for the GGS/Drainage Canal, two wells in Reaches 7 and 14 to provide up to five years of irrigation to woodland planting sites until the trees are self-supporting, and two wells in the Fisherman’s Lake Habitat Complex (Reaches 12–13) that would provide a back-up water supply to the two proposed managed marsh sites (Plate 2-13). LSCE used a single-layer analytical groundwater flow model to estimate drawdowns from operation of these wells. Modeling results indicate that pumping from the proposed wells would not significantly reduce the yield of existing wells in Sacramento River east levee Reaches 12A–14. Therefore, this impact is considered less than significant.
The evaluation of potential groundwater impacts prepared by LSCE investigated the effects on groundwater from excavation of the proposed borrow sites (see Appendix C2). Excavation and reclamation of the Fisherman’s Lake Borrow Area would have an indirect effect on groundwater conditions due to land use and water supply changes. At this site, approximately 400 acres of land would be used for borrow material (see Table 5-1 in Appendix C2). After reclamation, there would be up to 150 acres of created, managed marsh, with the remaining acreage returned to and preserved as upland agriculture, or converted to non-irrigated grassland, or woodland. The creation of managed marsh would result in an increase in deep percolation of 30 acre-feet per year (afy). Overall, however, there would be a net loss in deep percolation of 37 afy due to the conversion of field crops to non-irrigated grassland (see Appendix C2). The managed marshes would be primarily supplied by surface water from irrigation canals, but would also have wells and pumps to provide groundwater as a back-up source to maintain water quality objectives. Current groundwater levels in the Fisherman’s Lake Area vary widely, depending upon soil type and subsurface stratigraphy; groundwater levels also vary by season, with higher levels in winter than in summer. The postreclamation land uses are not expected to significantly change this variability. Relocation and extension of the Riverside Canal would also affect deep percolation from applied water and seepage from the canals, with an estimated net loss of groundwater storage of about 9 afy. Because the overall effects of land use changes are minor, this impact is considered less than significant. (Similar)

Mitigation Measure: No mitigation is required.

4.5.3 **Residual Significant Impacts**

Because mitigation would not be required for the No-Action Alternative, impacts related to the continued exposure of the Natomas Basin to a significant residual risk of flooding are assumed to be significant and unavoidable. Under the No-Action Alternative, impacts to local drainage systems are uncertain. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration.

Implementation of the mitigation measures described in this section for the Proposed Action and the RSLIP Alternative would reduce residual hydraulic impacts to a less-than-significant level.

As noted in Chapter 2.0, “Alternatives,” Section 2.5.1, “Residual Risk of Flooding,” implementation of the Phase 4a Project would substantially lessen the probability of a flood in the Natomas Basin due to levee failure. However, the Basin would remain subject to a residual risk of flooding, which would be the same under both the Proposed Action and the RSLIP Alternative. SAFCA would be required to maintain an ongoing residual risk management program, as detailed in Section 2.5.1.
4.6 WATER QUALITY

4.6.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.6.1.1 METHODOLOGY

Water quality impacts that could result from project construction activities were evaluated based on the construction practices and materials used, the location and duration of the activities, and the potential for degradation of water quality or beneficial uses of project area waterways.

4.6.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to water quality if they would violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.

4.6.2 IMPACTS AND MITIGATION MEASURES

Impact 4.6-a: Temporary Impacts on Water Quality from Stormwater Runoff, Erosion, or Spills

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly disturb water quality from stormwater runoff. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Potential flooding and inundation of the Natomas Basin could introduce large quantities of agricultural pesticides, oil, gasoline, and other hazardous materials into waters and subsequently into stream channels and groundwater. However, the potential for such an occurrence is uncertain, and the magnitude and duration of any related impacts on water quality cannot be predicted. A precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Project implementation would include extensive ground-disturbing activities during construction, many of them near local drainages and waterways that could become contaminated by soil or construction substances. These waterways include the Sacramento River, the NCC, the West Drainage Canal in the Fisherman’s Lake Area, and the Riverside Canal. Construction for the Proposed Action would include landside widening of the Sacramento River east levee along Reaches 10–15 (with levee raising in Reaches 10–11B); and the RSLIP Alternative would raise the Sacramento River east levee in place along reaches 10–11B and strengthen it in place in Reaches 12–15. Both action alternatives would include installation of cutoff walls, seepage berms, and relief wells where necessary. In addition, both of these alternatives would include raising the NCC south levee with the installation of cutoff walls at the Bennett and Northern Main Pump Stations, relocation and extension of the Riverside Canal away from the existing Sacramento River east levee, and modifications to Pumping Plant Nos. 3 and 5 to
accommodate levee construction. Activities associated with Sacramento River east levee construction include reconstructing sections of Garden Highway and some intersections, and removing vegetation along the landside of the existing levee.

Fill material for levee and berm construction would be excavated primarily from sites in the Fisherman’s Lake Borrow Area shown on Plate 2-7. Following excavation, these sites would either be returned to their preproject use or converted to marsh or upland habitat (see Table 2-10). Some of this land is bordered by agricultural canals or ditches.

Planned construction activities would coincide with part of the rainy season. These activities have the potential to temporarily impair water quality if disturbed and eroded soil, petroleum products, or construction-related wastes (e.g., cement and solvents) are discharged into receiving waters or onto the ground where they can be carried into receiving waters. Soil and associated contaminants that enter receiving waters through stormwater runoff and erosion can increase turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms. Accidental spills of construction-related substances such as oils and fuels can contaminate both surface water and groundwater. The extent of potential impacts on water quality would depend on the following factors: tendency for erosion of soil types encountered, types of construction practices, extent of the disturbed area, duration of construction activities, timing of particular construction activities relative to the rainy season, proximity to receiving water bodies, and sensitivity of those water bodies to construction-related contaminants.

Slurry that would be used for construction of the new cutoff walls has a fluid consistency when being placed. Improper handling or storage could result in releases to nearby surface water, thereby degrading water quality.

Construction of Pumping Plant Nos. 3 and 5 would require dewatering on both the waterside and landside of the Sacramento River east levee. Discharge from dewatering would either be dispersed on farmland or released to adjacent canals or the Sacramento River, potentially degrading water quality in these water bodies.

Excavated areas that fill with surface or groundwater during project construction would require dewatering. Surface or groundwater extracted from dewatering operations typically contains high levels of suspended sediment and often high levels of petroleum products and other construction-related contaminants. This extracted water could be directly released to local receiving waters, thereby degrading water quality.

The potential for release of soil or construction-related materials into the NCC, West Drainage Canal, local drainages, and ultimately the Sacramento River could adversely affect river water quality. This temporary construction-related impact is considered potentially significant. (Similar)

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

**Proposed Action and RSLIP Alternative**

SAFCA shall file a Notice of Intent (NOI) to discharge stormwater associated with construction activity with the Central Valley RWQCB. Final design and construction specifications shall require the implementation of standard erosion, siltation, and good housekeeping BMPs. Construction contractors shall be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and comply with the conditions of the National Pollutant Discharge Elimination System (NPDES) general stormwater permit for construction activity. The SWPPP shall describe the construction activities to be conducted, BMPs that will be implemented to prevent discharges of contaminated stormwater into waterways, and inspection and monitoring activities that shall be conducted.

The SWPPP shall include the following:
pollution prevention measures (erosion and sediment control measures and measures to control nonstormwater discharges and hazardous spills),

demonstration of compliance with all applicable Central Valley RWQCB standards and other applicable water quality standards,

demonstration of compliance with regional and local standards for erosion and sediment control,

identification of responsible parties,

detailed construction timelines, and

a BMP monitoring and maintenance schedule.

BMPs shall include the following:

- conduct all work according to site-specific construction plans that identify areas for clearing, grading, and revegetation so that ground disturbance is minimized;

- install silt fences near riparian areas or streams to control erosion and trap sediment, and reseed cleared areas with native vegetation;

- stabilize disturbed soils of the new or raised levees, existing levee removal areas, and borrow sites before the onset of the winter rainfall season; and

- stabilize and protect stockpiles from exposure to rain and potential erosion.

The SWPPP also shall specify appropriate hazardous materials handling, storage, and spill response practices to reduce the possibility of adverse impacts from use or accidental spills or releases of contaminants. Specific measures applicable to the project include, but are not limited to, the following:

- develop and implement strict on-site handling rules to keep potentially contaminating construction and maintenance materials out of drainages and other waterways;

- conduct all refueling and servicing of equipment with absorbent material or drip pans underneath to contain spilled fuel, and collect any fluid drained from machinery during servicing in leak-proof containers and deliver to an appropriate disposal or recycling facility;

- maintain controlled construction staging and fueling areas at least 100 feet away from channels or wetlands to minimize accidental spills and runoff of contaminants in stormwater;

- prevent substances that could be hazardous to aquatic life from contaminating the soil or entering watercourses;

- maintain spill cleanup equipment in proper working condition. Clean up all spills immediately according to the spill prevention and response plan;
► develop a slurry spill contingency plan to respond to a potential for bentonite slurry spill and prevent slurry from entering the Sacramento River or NCC; and

► immediately notify the California Department of Fish and Game (DFG) and the Central Valley RWQCB of any spills and cleanup procedures.

BMPs shall be applied to meet the “maximum extent practicable” and “best conventional technology/best available technology” requirements and to address compliance with water quality standards. A monitoring program shall be implemented during and after construction to ensure that the project is in compliance with all applicable standards and that the BMPs are effective.

Several technical studies have been conducted regarding water-quality control feature impacts on groundwater (e.g., *California Stormwater Best Management Practices Handbooks* prepared by the California Stormwater Quality Association [DWR 2007]) and surface water (e.g., *Truckee River Basin Stormwater Management Program-Program Years 2007–2012* [Lahontan Regional Water Quality Control Board 2007]). These studies have determined that water-quality control features such as revegetation, erosion control measures, and detention and infiltration basins have been successful in avoiding water quality impacts (e.g., metals and organic compounds associated with stormwater are typically lost within the first few feet of the soil of the retention basins associated with groundwater). Technical studies associated with the Lahontan Development (residential and golf course development) demonstrated that the use of a variety of BMPs (e.g., source control, detention basins, revegetation, and erosion control) have been able to maintain surface water quality conditions in adjacent receiving waters (Martis Creek).

Implementation of Mitigation Measure 4.6-a would reduce water quality impacts from temporary construction activities under the Proposed Action and RSLIP Alternative because SAFCA would conform with applicable local and state regulations regulating construction discharges, which would reduce temporary potentially significant impacts to a less-than-significant level. *(Similar)*

**Impact 4.6-b: Impacts to Sacramento River Water Quality from Stormwater Runoff from Garden Highway Drainage Outlets**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly disturb water quality from stormwater runoff. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Impacts to water quality as a result of levee failure would be the same as described in Impact 4.6-a under the No-Action Alternative (Potential Levee Failure). The potential impact is considered too speculative for meaningful consideration. *(Currently Unknown)*
Proposed Action

Implementation of the Proposed Action would involve construction of a new drainage system along Garden Highway in Reaches 10–11B of the Sacramento River to collect surface water from the drainage area between the existing highway and the new adjacent levee and convey it beneath Garden Highway to the Sacramento River. The surface water would collect in drainage swales between Garden Highway and the adjacent levee and drain through pipe laterals under Garden Highway to outfalls in the berm along the east bank of the Sacramento River. Without treatment, stormwater runoff from Garden Highway could degrade the water quality of the Sacramento River by discharging water containing metals (e.g., brake-lining dust), oil and grease, solvents, phosphates, hydrocarbons, and suspended solids through the proposed drainage outlets. This impact would be significant.

RSLIP Alternative

Under the RSLIP Alternative, the existing drainage patterns on Garden Highway would remain in place. Because the existing drainage would not be altered, there would be no increased impact to water quality in the Sacramento River. This impact would be less than significant. (Lesser)

Mitigation Measure 4.6-b: Implement Standard Best Management Practices and Comply with NPDES Permit Conditions

Proposed Action

SAFCA and its contractor(s) for construction shall implement a suite of stormwater quality BMPs designed to remove contaminants from water discharging through the Garden Highway outlets. These BMPs shall be based on the strategies for effectively integrating stormwater quality management into project design described in Stormwater Quality Design Manual for Sacramento and South Placer Regions (May 2007). Treatment control measures such as vegetated swales and vegetated filter strips shall be used, depending upon the design requirements of the levee. BMPs shall meet “maximum extent practicable” and “best conventional technology/best available technology” requirements, and comply with NPDES permit conditions.

Implementing this mitigation measure would reduce the potential impact on water quality from stormwater runoff associated with drainage from Garden Highway to a less-than-significant level.

RSLIP Alternative

No mitigation is required.

Impact 4.6-c: Effects on Water Quality from Groundwater Discharged by Relief Wells

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no relief wells would be installed; therefore, no potential exists for the project to directly disturb water quality from agricultural tailwater runoff. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system the risk of levee failure would remain high. Impacts to water quality as a result of levee failure would be the same as described in Impact 4.6-a under the No-Action Alternative (Potential Levee Failure). The potential impact is considered too speculative for meaningful consideration. (Currently Unknown)
Proposed Action and RSLIP Alternative

Relief wells used for seepage remediation in the Phase 4a Project would release groundwater into drainage canals. Relief well surface discharge near the seepage berm toe would flow into new collection ditches or existing roadside ditches that would convey the water to Pumping Plant No. 5 or other parts of the interior drainage system. The water from the drainage canals, including the groundwater released from the relief wells, would ultimately be pumped into the Sacramento River. Groundwater may exceed contaminant levels under the water quality objectives of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan). Information about the quality of the groundwater in the areas where the wells are proposed is limited, although DWR has reported that an area between the Airport and the Bear River to the north has high levels of TDS, chloride, sodium, bicarbonate, manganese, and arsenic. It should be noted that relief wells are typically drilled to a shallower depth (approximately 50 feet) than the groundwater wells used by DWR for water sampling (200 feet deep or greater); therefore, the data from the sample wells in or near the Phase 4a Project area may not reflect the quality of water at the shallow depths that would be in contact with the proposed relief wells. In addition, during the high surface-water events in which the relief wells discharge, the groundwater would be highly diluted with water that has seeped under the levee from the Sacramento River. The actual quality of groundwater released by the relief wells would not be known until tests at or in the vicinity of potential well sites are conducted. Because the release of untreated groundwater into these waters could adversely affect river water quality, this impact would be potentially significant. (Similar)

Mitigation Measure 4.6-c: Conduct Groundwater Quality Tests, Notify the Central Valley RWQCB, and Comply with the RWQCB’s Waste Discharge Authorization and NPDES Permit.

Proposed Action and RSLIP Alternative

SAFCA, in coordination with RD 1000, shall ensure that groundwater in the vicinity of potential relief well locations is tested during project design and before well construction, to ensure that discharge of extracted groundwater does not exceed maximum contaminant levels specified in Title 22. SAFCA shall provide the Central Valley RWQCB with the results of these water quality tests and a conceptual plan for how the relief wells will be used (e.g., extracting and discharging groundwater), and shall comply with any waste discharge requirements and the NPDES permit issued by the Central Valley RWQCB.

Implementing this mitigation measure would reduce the potential impact on water quality in the Sacramento River from relief well discharges to a less-than-significant level. (Similar)

4.6.3 Residual Significant Impacts

Because mitigation cannot be required for the No-Action Alternative, water quality impacts related to the continued exposure of the Natomas Basin to a significant risk of flooding are uncertain. Because of this uncertainty, the potential impacts remain too speculative for meaningful consideration.

With implementation of Mitigation Measures 4.6-a, 4.6-b, and 4.6-c, there would be no residual significant impacts associated with the Proposed Action or the RSLIP Alternative related to long-term urban runoff, short-term alteration of drainages, sedimentation, groundwater recharge, or groundwater quality.
4.7 BIOLOGICAL RESOURCES

4.7.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.7.1.1 METHODOLOGY

This section presents the methodology used to assess the potential impacts of the Proposed Action and alternatives under consideration on biological resources, including sensitive habitats, terrestrial special-status species, and fisheries and aquatic resources.

Impacts to biological resources resulting from implementation of the Proposed Action and RSLIP Alternative were analyzed based on data collected during field surveys and review of existing documentation that addresses biological resources on or near the Phase 4a Project area. Biologists conducted multiple reconnaissance-level surveys of the project area during 2004–2009 as part of project-related studies and planning efforts. Specific documents reviewed to support the analysis in this section include the NBHCP (City of Sacramento, Sutter County, and TNBC 2003); TNBC’s annual monitoring reports; and multiple draft and USACE-verified wetland delineation reports that cover portions of the Phase 4a Project area (see Section 3.7.2.2, “Sensitive Biological Resources,” under “Sensitive Aquatic Habitat”).

Methodology used to preliminarily identify irrigation, drainage, and field canals and ditches within the Phase 4a Project area is consistent with the USACE-approved delineation methodology. Consistent with the overall approach to this document and for purposes of NEPA and CEQA compliance, the analysis of jurisdictional wetlands presented below encompasses all potential borrow sites for the Phase 4a Project, including some which may not be used for the project. In addition to the potential impacts at the identified borrow sites, if additional borrow sites are needed, they would need to be analyzed under separate supplemental environmental compliance documentation and SAFCA would be required to submit a permit modification.

The (California Natural Diversity Database [CNDDB] 2008), the NBHCP, and TNBC monitoring reports were used as the primary sources to identify previously reported occurrences of special-status species in the project area and vicinity.

Impacts resulting from levee improvement activities were based on the assumption that disturbance could occur within a 660-foot-wide corridor adjacent to the current levee toe on the landside for the Proposed Action and within a 630-foot-wide corridor for the RSLIP Alternative. However, this is a worst-case estimate of disturbance limits based on the potential use of 500-foot-wide berms, and it is probable that a reduced footprint with narrower berms or cutoff walls would meet project objectives along most levee reaches. Therefore, impacts in this section likely overestimate the magnitude of impacts associated with the levee footprint.

It is assumed for purposes of this analysis that USACE and SAFCA will work cooperatively and collaboratively to develop all plans, design, and mitigation associated with the project’s habitat improvements.

Natomas Levee Improvement Program Programmatic Conservation Strategy

The impact analysis methodology also considers the NLIP’s programmatic conservation strategy developed by SAFCA to offset impacts to sensitive habitats and special-status species that may be temporarily or permanently affected by the overall NLIP (Phase 1–4 Projects).

As discussed in Section 2.3.4, “Habitat Improvements,” the programmatic conservation strategy developed by SAFCA to provide compensatory mitigation for the NLIP would, in its entirety, substantially contribute toward the establishment of a valuable habitat reserve in the increasingly urbanized landscape of the Natomas Basin. The conservation strategy takes advantage of a unique opportunity provided by the NLIP to reconfigure and protect large nodes of habitat and connective corridors in the Basin at a landscape scale that would help to
advance the goals and objectives of the NBHCP and assist the Federal Aviation Administration (FAA) and the local reclamation districts (RD 1000 and RD 1001) in achieving their management goals. To date, other projects in the Basin have only provided piecemeal approaches to habitat protection.

The NLIP’s conservation strategy would create, restore, and preserve sensitive habitats in the Basin. The strategy would expand the amount of habitat protected in the Basin, establish the components that tie the preserves and disparate mitigation sites together in perpetuity under public ownership, and increase the quality and viability of this emerging habitat reserve. (See Section 2.3.4.3, “Phase 4a Project Habitat Elements,” for a detailed description of conservation measures, monitoring components, and performance standards associated with the conservation strategy.)

The conservation strategy has four primary goals:

1. Increase the amount of protected habitat and habitat corridors available for NBHCP-covered species.
2. Consolidate large areas of habitat, to assist in the expansion of TNBC reserve blocks in the northwestern and southwestern regions of the Basin.
3. Improve the connectivity between core habitat reserves and other existing natural habitats distributed throughout the Basin, improve linkages between isolated wildlife populations, and substantially increase acreage and patch size of these critical habitats.
4. Meet regulatory compensatory mitigation requirements.

To meet these goals, the conservation strategy includes the preservation and/or creation of managed marsh, managed grasslands, canals, and associated uplands, valley oak woodlands and savannah, rice fields, and agricultural field crops. These elements provide important habitat for NBHCP-covered species, including aquatic and upland habitat for giant garter snake and other aquatic species, nesting and foraging habitat for Swainson’s hawk and other raptors, and potential habitat for valley elderberry longhorn beetle.

Key programmatic conservation strategy elements relating to giant garter snake include:

- creating the GGS/Drainage Canal and improvements to the West Drainage Canal to enhance habitat functionality by linking known concentration of giant garter snakes in the basin and TNBC properties in the northern and southern reserve areas that are managed for giant garter snake habitat;
- reclaiming and preserving existing rice fields within the Basin, to compensate for any temporary losses of habitat; and
- creating managed marsh in the vicinity of Fisherman’s Lake to expand and consolidate marsh habitat on TNBC preserves in the area and to compensate for permanent effects to rice fields and aquatic and upland features considered giant garter snake habitat.

Key programmatic conservation strategy elements relating to Swainson’s hawk include:

- retaining the mature riparian tree corridor along the Sacramento River and the NCC, which provide important nesting habitat for Swainson’s hawk;
- increasing woodland acres, patch size, and connectivity (including creation of potential nesting habitat near Swainson’s hawk foraging habitat); and
- preserving and creating foraging habitat (including grassland and agricultural upland).
Implementation of the conservation strategy would result in a net gain in aquatic habitat for giant garter snake (including canals, rice, and managed marsh); a net gain in foraging habitat (overall acreage of grassland and upland agriculture) for Swainson’s hawk; and a net gain in woodlands that would provide more potential nesting and perching habitat for Swainson’s hawk in the Basin than currently exists, and bring potential nesting and perching sites in closer proximity to areas that are managed as foraging habitat for this species in the Basin.

Although land acquisition and habitat preservation is a key component of the NLIP, the primary benefit of the programmatic conservation strategy is the increased functionality and connectivity of habitat in the Natomas Basin. The NLIP would contribute to the large-scale conservation planning and substantial Basinwide benefits to NBHCP-covered species through providing substantially better quality habitat. Examples include:

► designing new and replacement canals that require less maintenance, and thus less disturbance, through increased canal flow capacity and reduced erosion resulting from higher stability 3H:1V slopes;

► secured water supply for managed marshes and canals through long-term contracts with NCMW;

► installation of rock pile refugia and expansion of upland banks along the new GGS/Drainage Canal providing giant garter snake habitat;

► precise and dependable water level control for managed marshes and canals provided by check structures and operational criteria;

► enhancements to the West Drainage Canal, which currently provides low-quality habitat;

► preserving rice and agricultural field crops to the benefit of NBHCP-covered species in the Basin;

► creating landside woodland corridors; and, most of all,

► creating permanent linkages between giant garter snake populations in the southern and northwestern portions of the Basin.

These benefits would substantially reduce the collective impacts of the NLIP and would result in the creation of a larger contiguous area protected and managed for giant garter snake, valley elderberry longhorn beetle, Swainson’s hawk, and other NBHCP-covered species than currently exists.

Table 4.7-1 provides, by project phase, the acreages of habitats that would be temporarily and permanently affected by implementation of the NLIP and also shows the acreages of habitats, by project phase, that would be preserved and/or created to compensate for construction-related and project footprint impacts. This information provides context to the overall impact assessment below under Section 4.7.2, “Impacts and Mitigation Measures.”

As discussed in Section 2.3.4, “Habitat Improvements,” the NLIP includes overall habitat conservation goals and strategies and improvements specific to each project phase. The following analysis considers the Phase 4a Project at a project level, as well as implementation of the programmatic conservation strategy covering all phases of the NLIP. The programmatic biological opinion (BO) and amended BO issued by the USFWS (Appendix D1), and the Phase 2 Project California Fish and Game Code Section 2081 incidental take permit issued by DFG, considered the entire NLIP habitat conservation strategy. Specific elements of the Phase 2 Project were included in the programmatic permitting documents, and subsequent project-level permits have been issued for the Phase 3 Project and will be issued for the Phase 4a and 4b Projects. The Phase 4a Project will require issuance of a project-level BO and a Section 2081 incidental take permit. This approach was used because elements of the conservation strategy implemented in earlier phases of the NLIP included compensation for impacts from future project phases (including the Phase 4a and 4b Projects), and habitat creation and preservation that is part of the Phase 4a Project would provide compensation for impacts to habitat disclosed in environmental documents for the previous project phases.
## Table 4.7-1

Habitat Impacts, Creation, and Preservation for the NLIP Programmatic Conservation Strategy by NLIP Project Phase

<table>
<thead>
<tr>
<th>Species/Habitat Type</th>
<th>Temporary Habitat Loss</th>
<th>Permanent Habitat Loss</th>
<th>Habitat Creation/Preservation</th>
<th>Net Gain/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phase 2</td>
<td>Phase 3</td>
<td>Phase 4a</td>
<td>Phase 2</td>
</tr>
<tr>
<td>Giant Garter Snake Habitat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canals – Aquatic</td>
<td>0.5</td>
<td>5.5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Canal – Associated Upland</td>
<td>21</td>
<td>36</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Non-canal GGS aquatic/upland habitat (i.e., temporary impacts to Rice)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>180</td>
<td>-</td>
<td>48</td>
<td>-</td>
</tr>
<tr>
<td>Non-canal GGS aquatic/upland habitat (i.e., permanent impacts to Rice or creation of Managed Marsh)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>45</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Swainson’s Hawk Habitat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field/Row Crop</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>163</td>
</tr>
<tr>
<td>Grassland/Ruderal</td>
<td>-</td>
<td>-</td>
<td>27</td>
<td>162</td>
</tr>
<tr>
<td>Landside Woodlands</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>35³</td>
</tr>
<tr>
<td>Waterside Riparian Woodland</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Note: Net gain = acres permanent habitat loss – acres habitat creation/preservation

1\ No net loss of habitat function because of concurrent conversion to Managed Marsh and subsequent long-term management.

2\ The combined total for field/row crop created/preserved as part of the Phase 3 and 4a Projects (which could occur as part of one or both of these project phases) would be 60 acres, which would combine with the 90 acres created/preserved as part of the Phase 2 Project to reach a total of 150 acres for the Phase 2, 3, and 4a Projects.

3\ This estimate includes vegetation removal in the maximum potential flood control footprint (i.e., 660-foot width) in Reaches 10–12A of the Sacramento River east levee as analyzed in the Phase 3 DEIS/DEIR.

4\ Includes approximately 2 acres of waterside riparian woodland that could potentially be affected by implementation of the USACE encroachment policy for the approximate 1,200-foot-wide portion of the levee proposed to be raised in place at the location of Pumping Plant No. 5. This portion of the impact would not be a result of construction-related impacts.

Source: Estimates calculated by AECOM in 2009

### 4.7.1.2 Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its
impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact if they would do any of the following:

- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFG or USFWS;
- substantially reduce the habitat of a fish species or cause a fish species to drop below self-sustaining levels;
- have a substantial adverse effect on native woodland habitats;
- have a substantial adverse effect on waters of the United States, including wetlands; or
- conflict with the provisions of the NBHCP.

### 4.7.2 IMPACTS AND MITIGATION MEASURES

**Impact 4.7-a: Loss of Woodland Habitats**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, there would be no improvements to the Natomas perimeter levee system. Conformance with USACE guidance regarding levee encroachments, however, could require removal of riparian vegetation and woodlands (see Table 4.7-2 for acreage) on the waterside of the Sacramento River east levee. These woodland habitats provide important wildlife habitat and movement corridors and contribute to Shaded Riverine Aquatic (SRA) habitat functions important for fish. Removal of waterside riparian woodland habitat would adversely affect important SRA habitat, including moderation of water temperatures, recruitment of woody debris, and introduction of insects that provide food for aquatic species. Removal of this habitat would also adversely affect terrestrial wildlife that use riparian woodlands, including Swainson’s hawks who frequently nest in waterside woodlands. This impact would be **potentially significant. (Greater)**

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could adversely or beneficially affect woodland habitats and SRA habitat, depending on timing, location, and duration of flooding. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of the impact is unknown. Because of this uncertainty, this potential impact is considered **too speculative for meaningful consideration. (Currently Unknown)**

**Proposed Action**

Landside woodlands and waterside (riparian) woodlands in and adjacent to the Natomas Basin are considered sensitive habitats. They provide important nesting and roosting habitat for a wide variety of wildlife species (including special-status species such as Swainson’s hawk) and serve as movement corridors for these species within the Basin. Waterside woodlands in particular are rich in biological fauna and flora and provide the primary source of nesting habitat for Swainson’s hawk in the Natomas Basin. Waterside woodlands on the Sacramento
River also provide SRA habitat function, which is important for fish and other Sacramento River aquatic resources.

<table>
<thead>
<tr>
<th>Location</th>
<th>No-Action Alternative (acres)</th>
<th>Proposed Action (acres)</th>
<th>RSLIP Alternative (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Landside Woodland Removal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento River East Levee Reaches 12B–15</td>
<td>No impact</td>
<td>16</td>
<td>15.83</td>
</tr>
<tr>
<td>Alignment of Relocated/Extended Riverside Canal</td>
<td>No impact</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Pumping Plant Nos. 3 and 5</td>
<td>No impact</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Riverside Pumping Plant</td>
<td>No impact</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>No impact</td>
<td>17.83</td>
<td>17.6</td>
</tr>
<tr>
<td><strong>Waterside (SRA) Woodland Removal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento River East Levee Reaches 10–15</td>
<td>21</td>
<td>No impact</td>
<td>21</td>
</tr>
<tr>
<td>Pumping Plant Nos. 3 and 5; Private River Pumps</td>
<td>No impact</td>
<td>3.4(^1)</td>
<td>N/A(^2)</td>
</tr>
<tr>
<td>Riverside Pumping Plant</td>
<td>No impact</td>
<td>0.27</td>
<td>N/A(^2)</td>
</tr>
<tr>
<td>Surface Drainage Outfalls</td>
<td>No impact</td>
<td>0.50</td>
<td>No impact</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>21</td>
<td>4.17</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total Losses (approximate)</strong></td>
<td>21 acres</td>
<td>22 acres</td>
<td>39 acres</td>
</tr>
</tbody>
</table>

Notes: N/A = Not Applicable; RSLIP Alternative = Raise and Strengthen Levee in Place Alternative; SRA = Shaded Riverine Aquatic Habitat

1 Includes 2 acres of waterside riparian woodland that could potentially be affected by implementation of the USACE encroachment policy for the approximate 1,200-foot-wide portion of the levee proposed to be raised in place at the location of Pumping Plant No. 5. This portion of the impact would not be a result of construction-related impacts.

2 Waterside woodland removal for Pumping Plant Nos. 3 and 5, and the Riverside Pumping Plant are included as part of the 21 acres of removal along the Sacramento River east levee Reaches 10–15.

Source: Estimates calculated by AECOM in 2009 based on construction data provided by Wood Rodgers, Mead & Hunt, and HDR, Inc. in 2008 and 2009

SRA habitat includes the nearshore aquatic habitat occurring at the interface between a river and adjacent woody riparian habitat. The principal attributes of this cover type are: (1) an adjacent bank composed of natural, eroding substrates supporting riparian vegetation that either overhangs or protrudes into the water; and (2) water that contains variable amounts of woody debris, such as leaves, logs, branches, and roots and has variable depths, velocities, and currents. SRA habitat provides structure and food for various fish species. Shade decreases water temperatures, while low overhanging branches can provide sources of food by attracting terrestrial insects. As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat consisting of large woody debris that furnishes refugia from predators, creates higher water velocities, and provides habitat for aquatic invertebrates. For the Phase 4a Project, SRA loss is estimated as the acreage of canopy coverage from any trees or shrubs (woodlands) on the waterside of the existing Sacramento River east levee that would be impacted by construction activities.

The Proposed Action would include removal of woodlands on the landside of the Sacramento River east levee as follows: (1) in the proposed adjacent levee footprint in Reaches 12B–15; (2) in the alignment for the relocation and extension of the Riverside Canal with underground pipe section in Reaches 11B–18B; (3) in the footprint of RD 1000’s Pumping Plant Nos. 3 and 5 sites; and (4) in the footprint of NCMWC’s Riverside Pumping Plant.
pipeline modifications (Table 4.7-2). Removal of vegetation in Reaches 10–12A was evaluated in the Phase 3 DEIS/DEIR.

The Proposed Action would include removal of a small amount of woodlands on the waterside of the Sacramento River east levee (considered SRA habitat) as follows: (1) in the footprint of Pumping Plant Nos. 3 and 5 where the new pipes tie in with the existing outfalls; (2) in the footprint of the Riverside Pumping Plant modifications; and (3) in the footprint of the Garden Highway waterside drainage outfalls in Reaches 10–11B (Table 4.7-2). Included in the impact area calculation in Table 4.7-2 are approximately 2 acres of waterside riparian woodland that could potentially be affected by implementation of the USACE encroachment policy for the 1,200-foot-wide portion of the levee proposed to be raised in place at the location of Pumping Plant No. 5. This portion of the impact would not be a result of construction-related impacts from the Proposed Action.

The small area of levee work to be completed along the NCC as part of the Phase 4a Project (levee raising in “gaps” remaining along the cutoff wall following construction of the Phase 1 and 2 Projects) falls within the footprint of woodland and vegetation removal previously analyzed in the Phase 2 EIR and Phase 2 EIS. That analysis is hereby incorporated by reference and summarized in Chapter 5.0, “Cumulative and Growth Inducing Impacts,” as allowable under CEQA (see Section 1.1.1, “Scope of Environmental Analysis”). The removal of approximately 20 acres of woodland on the landside of the Sacramento River east levee Reaches 10–12A (including along the new alignment for Riverside Canal within these reaches) was disclosed and previously analyzed as an element of the Phase 3 DEIS/DEIR. Impacts associated with woodland removal along these levee reaches were analyzed in the Phase 3 DEIS/DEIR. That analysis is hereby incorporated by reference and summarized in Chapter 5.0, “Cumulative and Growth Inducing Impacts.”

Impacts from loss of woodlands include short-term effects that would occur during the period it takes replacement plantings to mature. Although woodland habitat would be created to compensate for the loss of woodlands, replacement plantings do not provide habitat functions equivalent to the mature woodlands that would be removed for approximately 10–15 years. Long-term impacts take into consideration compensation provided by replacement plantings, once created woodlands provide functional replacement habitat.

**Temporal Loss (10–15 Years) of Woodland Habitat**

The Proposed Action would reduce the potential need to remove waterside woodlands (including those that provide SRA habitat function) along the Sacramento River in order to meet USACE levee guidelines on vegetation clearance because it would shift the Sacramento River east levee prism landward. However, the Proposed Action would result in the need for removal of several landside woodland groves and individual trees. Assuming landside vegetation would be cleared within a 660-foot-wide corridor along the Sacramento River east levee (a worst-case scenario), the proposed improvements would remove a moderate amount of landside woodland vegetation in Reaches 12B–15 of the east levee and along the alignment of the relocated Riverside Canal, and a minimal amount from the reconstruction of Riverside Pumping Plant and RD 1000’s Pumping Plant No. 3 and No. 5 (see Table 4.7-2 for acreages). It is anticipated that the small areas of woodlands that occur in the Fisherman’s Lake Borrow Area outside of the levee and seepage remediation footprint can be avoided and not impacted by borrow activities. In addition, as described in Section 2.3.1, “Flood Risk Reduction Components,” SAFCA would take measures to reduce impacts to heritage oaks where feasible under levee design and seepage remediation performance requirements.

The removal of small amounts of riparian vegetation or woody material along the waterside of the existing Sacramento River east levee would result from installation of drainage outfalls on the waterside of the levee and from modifications to pumping plants (see Table 4.7-2 for acreages). Additionally, as discussed above, approximately 2 acres of riparian vegetation and woody material along a 1,200-foot-wide portion of Reach 10 could potentially be removed to satisfy vegetation removal requirements of USACE encroachment policy for the portion of the Sacramento River east levee that would be raised and widened on the waterside of the existing levee. If implemented, this would result in the loss of individual trees that may provide SRA habitat function.

---

**Table 4.7-2**

- Pipeline modifications.
- Removal of vegetation in Reaches 10–12A.
- Small area of levee work along the NCC.
- Impact area calculation.
- Woodland and vegetation removal.
- Cumulative and Growth Inducing Impacts.
The potential loss of trees (and associated potential SRA habitat) would result in reduced quality and quantity of important habitat for fish species and/or their prey species and potential nest trees for Swainson’s hawks.

The Phase 4a Project would offset the loss of woodlands by preserving and creating woodlands (see Table 4.7-3 for acreages); however, there would be a temporal loss of woodland habitat as the replacement plantings mature within approximately 10–15 years. This impact due to loss of existing woodland habitat while the replacement plantings are maturing would be significant.

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Woodlands Removed</th>
<th>Woodlands Preserved</th>
<th>Woodlands Created</th>
<th>Total Compensation</th>
<th>Net Gain or (Loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 4a Project Alternatives (acres)</td>
<td>No-Action Alternative</td>
<td>Proposed Action</td>
<td>RSLIP Alternative</td>
<td>Programmatic NLIP (Proposed Action–All Phases)</td>
<td>Programmatic NLIP (Proposed Action–All Phases)</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>21</td>
<td>39</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-Action Alternative</td>
<td>-</td>
<td>0</td>
<td>58</td>
<td>133</td>
<td>80</td>
</tr>
<tr>
<td>Proposed Action</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSLIP Alternative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodlands Removed</td>
<td>21</td>
<td>21</td>
<td>39</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Woodlands Preserved</td>
<td>-</td>
<td>0</td>
<td>58</td>
<td>133</td>
<td>80</td>
</tr>
<tr>
<td>Woodlands Created</td>
<td>-</td>
<td>0</td>
<td>58</td>
<td>133</td>
<td>80</td>
</tr>
</tbody>
</table>

Note: RSLIP Alternative = Raise and Strengthen Levee in Place Alternative; Net Gain = Woodland Loss - (Woodlands Preserved + Woodlands Created)

1 Includes approximately 2 acres of waterside riparian woodland that could potentially be affected by implementation of the USACE encroachment policy for the approximate 1,200-foot-wide portion of the levee proposed to be raised in place at the location of Pumping Plant No. 5. This portion of the impact would not be a result of construction-related impacts.

2 Woodland creation for the RSLIP Alternative would be 75 acres more than for the Proposed Action to compensate for greater loss of mature woodlands on the waterside of the Sacramento River east levee to conform with USACE guidance regarding levee encroachments.

Source: Data compiled by AECOM in 2009

Long-Term Impact Due to Loss of Woodland Habitat

The plan for woodland mitigation would include transplanting suitable trees from the Phase 4a Project footprint, where feasible, as well as planting a variety of native tree species to create woodland habitat. Potential sites for woodland plantings would include locations within a 100- to 200-foot-wide corridor adjacent to the relocated Riverside Canal in Reaches 12A–14 (Plate 2-12) and in Reach 4A on the properties north and south of the Lausevic woodland planting area, which was part of the Phase 2 Project (Plate 2-14).

To provide adequate compensation for lost habitat, the woodlands must be created and/or managed in a manner that provides the essential woodland habitat functions. A plan for waterside woodland (e.g., SRA) habitat creation has been developed and is currently under review by USACE and NMFS. A detailed design of the landside woodland habitats to be created is being developed and provided for USFWS and DFG review and approval; protective mechanisms and specific management protocols for the woodlands are currently being prepared by SAFCA in coordination with these agencies (as described in Section 2.3.4, “Habitat Improvements”).

These proposed compensatory measures would complement woodland preservation and creation activities carried out as part of the programmatic compensation strategy for the NLIP as shown in Table 4.7-3. When completed, the programmatic conservation strategy would result in a substantial net gain in the amount of woodland habitat in the Natomas Basin. In addition, the conservation strategy would result in increased woodland grove size and connectivity, which would provide higher quality habitat for fish and wildlife species that depend on woodlands.
and oak savannah. However, the long-term loss of woodlands (if habitat creation/preservation is not effectively implemented) would result in a **potentially significant** impact.

**RSLIP Alternative**

The RSLIP Alternative would be similar to the Proposed Action except that no adjacent levee would be constructed along the Sacramento River east levee in Reaches 10–15, and the levee would instead be either raised or widened in place. However, mature riparian woodland vegetation (i.e., trees and shrubs) along Reaches 10–15 on the waterside of the levee that provide SRA function would likely be removed to construct cutoff walls and conform with USACE guidance regarding levee encroachments (see Table 4.7-2 for acreages). The RSLIP Alternative would also include removal of landside woodland on the Sacramento River east levee (See Table 4.7-2).

The adverse effects of vegetation removal for the RSLIP Alternative would be greater than under the Proposed Action, particularly in terms of the quality of the habitat lost, but also in the amount of habitat lost. The loss of waterside riparian woodlands including those that provide SRA habitat functions on the Sacramento River would be much greater compared to that under the Proposed Action.

Habitat creation and preservation components of this alternative would require planting of substantial woodland habitat along the landside of the adjacent levee along the Sacramento River east levee as part of the Phase 4a Project (see Table 4.7-3 for acreage). However, these woodland creation efforts would not fully compensate for the extensive loss of mature waterside vegetation, and credits would be purchased from a local mitigation bank to offset the removal of trees from the waterside of the existing levee (because replanting on the waterside of the levee would conflict with USACE guidance regarding levee encroachments).

In summary, woodland conservation efforts would not fully compensate for the extensive loss of mature waterside vegetation even if the habitat creation and management are properly implemented. In addition, the extensive riparian vegetation removal associated with this alternative could substantially and adversely affect the wildlife that depend on waterside riparian woodlands for foraging and nesting habitat and could substantially adversely affect SRA habitat functions important for fish. This impact would be **significant. (Greater)**

**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 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act Permit Conditions**

**Proposed Action and RSLIP Alternative** To reduce impacts on woodland habitat, SAFCA shall implement the measures described below:

- Native woodland areas shall be identified and the primary engineering and construction contractors shall ensure, through coordination with a qualified biologist retained by SAFCA, that construction is implemented in a manner that minimizes disturbance of such areas to the extent feasible. Temporary fencing shall be used during construction to prevent disturbance of native trees that are located adjacent to construction areas but can be avoided.

- SAFCA shall coordinate with USFWS, National Marine Fisheries Service (NMFS), DFG, and the Sacramento County Airport System (SCAS) (if on Airport property) to ensure that all woodland habitat improvements of the NLIP are created and managed. SAFCA shall prepare a project-specific Mitigation and Monitoring Plan (MMP) and append the programmatic Long-Term Management Plan (LTMP) to ensure the creation and long-term management of these components before construction commences. SAFCA shall enter into
agreements with the appropriate local entity responsible for long-term management of these created woodland habitats and shall coordinate with USFWS, NMFS, and DFG to ensure that performance standards and long-term management goals that are required by the regulatory agencies with jurisdiction over these resources will be specifically detailed and outlined in the MMP and LTMP. All performance standards and long-term management goals will be in full compliance with the Endangered Species Act (ESA) and California Endangered Species Act (CESA). SAFCA shall implement all terms and conditions of the agreements.

- Sacramento River waterside riparian woodland areas that provide SRA habitat functions shall be identified and the primary engineering and construction contractors shall ensure, through coordination with a qualified biologist retained by SAFCA, that construction is implemented in a manner that minimizes disturbance of such areas to the extent feasible. Temporary fencing shall be used during construction to prevent disturbance of trees and shrubs that are located adjacent to construction areas but can be avoided.

- Sacramento River waterside riparian forest and scrub (canopy acreage) shall be restored using ratios established by NMFS. Mitigation shall be 1:1 for in-kind mitigation and 3:1 for mitigation above the levee bench hinge (a surrogate for the ordinary high water mark (OHWM) for impacts below the levee bench hinge (OHWM). Mitigation shall be conducted using native plant species, including an assemblage of grasses, sedges, shrubs, and trees. At maturity, the riparian vegetation community would provide SRA functions. SAFCA shall develop a detailed woodland planting design and management protocols in coordination with USFWS, NMFS, and DFG. A monitoring plan with performance criteria shall be developed to determine the progress of the woodland habitats towards providing adequate mitigation.

- The criteria for measuring performance shall be used to determine if the habitat improvement is trending toward sustainability (reduced human intervention) and to assess the need for adaptive management (e.g., changes in design or maintenance revisions). These criteria must be met for the habitat improvement to be declared successful, both during a particular monitoring year and at the end of the establishment period. These performance criteria, shall be developed in consultation with USFWS, NMFS, and DFG, and shall include, but not be limited to:
  
  - percent survival of planted trees (from 65–85%),
  - percent survival of transplanted trees (from 60–85%), and
  - percent relative canopy cover (from 5–35%).

- SAFCA shall also enter into agreements with entities responsible for long-term management of created SRA habitats to ensure that performance standards and long-term management goals are met. SAFCA shall provide assurances for habitat creation and management goals that are required by regulatory agencies with jurisdiction over these resources will be specifically detailed and outlined in the LTMP and MMP. Such agreements shall be coordinated with USFWS, NMFS, and DFG. SAFCA shall implement all terms and conditions of the agreements.

- A Section 1602 Streambed Alteration Agreement from DFG shall be obtained before any trees within a stream zone under DFG jurisdiction are removed. SAFCA shall comply with all terms and conditions of the streambed alteration agreement including measures to protect fish habitat or to restore, replace, or rehabilitate any SRA habitat on a no-net-loss basis.
USACE shall initiate Section 7 consultation with NMFS under Section 7 of the Federal ESA and SAFCA shall consult or coordinate with DFG under CESA regarding potential impacts of the loss of SRA habitat on Federally listed fish species and state-listed fish species, respectively. SAFCA shall implement any additional measures developed through the ESA Section 7 and CESA consultation processes, including Section 2081 permit conditions, to ensure no net loss of SRA habitat functions.

Implementing this mitigation measure, along with the habitat improvements of the Phase 2 and 3 Projects, would minimize adverse effects of the Phase 4a Project on landside woodland habitat because the amount of landside woodlands that would be created and preserved as part of the Phase 2 and 3 Projects along with the Phase 4a Project would result in an increase of 95 acres of landside woodlands in the Basin. The adverse effects of loss to waterside woodlands providing SRA function under the Proposed Action and RSLIP Alternative would be mitigated for on a no net-loss-basis according to the ratios above. The habitat improvements from mitigation implementation would reduce long-term impacts to woodland habitats to a less-than-significant level. Although no permanent impacts would occur, this impact would remain significant and unavoidable for many years before reaching a less-than-significant level because replacement plantings would require a minimum of 10–15 years before providing important habitat components such as shade and structure.

While the woodland restoration and preservation proposed for the RSLIP Alternative may be adequate to offset the removal of landside woodlands, these replacement woodlands would not be adequate to compensate for the extensive loss of mature waterside vegetation and would not compensate for loss of SRA habitat along the Sacramento River in the vicinity of the Phase 4a Project. Thus, the loss of woodland and SRA habitat for the RSLIP Alternative would remain significant and unavoidable. (Greater)

Impact 4.7-b: Impacts on Wildlife Corridors

No-Action Alternative

No Project Construction

Under the No-Action Alternative, there would be no improvements to the Natomas perimeter levee system. However, extensive removal of woodland located on the waterside of the Sacramento River east levee would be required to conform with USACE guidance regarding levee encroachments (see Table 4.7-2). Removing a large portion of this riparian vegetation would adversely affect the movement and dispersal of the native birds and wildlife species that depend on woodland cover. This impact would be potentially significant. (Greater)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could adversely or beneficially affect wildlife corridors, depending on timing, location, and duration of flooding. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact, whether adverse or beneficial, is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)
Proposed Action

Impacts on Movement Corridors for Aquatic Species

Irrigation/drainage ditches and canals within the project area and larger Natomas Basin serve as critical corridors for movement of aquatic species, particularly the giant garter snake. Adverse impacts on these corridors under the Proposed Action would consist of temporary disturbance and permanent loss of canals, ditches, and their associated habitat values due to filling, redesigning, and reconfiguring these facilities to accommodate project improvements.

Under the Proposed Action, a small amount of canal habitat would be temporarily affected or permanently lost due to filling and relocating the Riverside Canal and portions of associated lateral supply pipes (see Table 4.7-1). SAFCA proposes to offset temporary impacts to the existing Riverside Canal through creation of the relocated and extended Riverside Canal, which is expected to provide a higher habitat value relative to the canal that would be filled. The relocated Riverside Canal would be designed to reduce maintenance requirements and resulting habitat degradation and snake injury and mortality that could occur.

New canal habitat created as part of SAFCA’s programmatic conservation strategy (including creation of the GGS/Drainage Canal under the Phase 2 and 3 Projects and proposed improvements to the West Drainage Canal as part of the future Phase 4b Project) would provide new movement corridors for giant garter snake, partially offsetting the permanent loss of canal habitat. The configuration and preliminary design of these new corridors were specifically formulated to enhance giant garter snake movement opportunities between populations in the northern and southern portions of the Natomas Basin (see Section 2.3.4 for additional details). This is anticipated to provide an overall, long-term enhancement in the quality of aquatic movement corridors in the western portion of the Basin. The creation of managed marsh in the vicinity of Fisherman’s Lake would also contribute towards offsetting the permanent loss of canal habitat.

A detailed design of the new canal and managed marsh habitats is being developed and will be provided for USFWS and DFG agency review. Protective mechanisms and specific management protocols are currently being prepared by SAFCA in coordination with USFWS and DFG. To provide adequate compensation for the canal habitat that would be lost, new canal and managed marsh habitat must be created and managed in a manner that provides the essential functions of habitat that would be lost. If this objective is not achieved, project impacts on aquatic movement corridors would be considered significant.

Impacts on Movement Corridors for Bird Species

The existing woodland corridor along the waterside and landside of the Sacramento River east levee provides valuable nesting and rearing habitat for a variety of bird species. Under the Proposed Action, substantial landside woodland and a small number of trees on the waterside would be removed (see Table 4.7-2 for acreage).

To offset this impact, woodland would be planted on the landside of the adjacent levee as described above under Impact 4.7-a and would complement the woodlands created as part of SAFCA’s programmatic conservation strategy, as shown in Table 4.7-3. This compensatory vegetation would not mature for 10–15 years, however, and its habitat value would therefore be limited in the near term when compared with the value of the existing landside woodlands that would be removed. The Proposed Action would leave the higher quality waterside riparian woodland largely undisturbed, thus substantially preserving the integrity of the existing woodland corridors during the interim period while the new woodland plantings mature. The net result of the Proposed Action (both at the project level and when considered in combination with the programmatic conservation strategy) would be a net increase in landside woodland habitat (see Table 4.7-3). Nevertheless, because of the time required for the woodland plantings to mature, this impact would be potentially significant.
Impacts on Movement Corridors for Aquatic Species

Impacts on the amount and quality of canal habitat under the RSLIP Alternative would be the same as described for the Proposed Action.

Impacts on Movement Corridors for Bird Species

Under the RSLIP Alternative, extensive removal of large woody vegetation from the riparian corridor on the waterside of the Sacramento River east levee would be required to conform with USACE guidance regarding levee encroachments. A slightly reduced amount of landside woodland (compared to the Proposed Action) would also be removed along Reaches 12B–15 of the Sacramento River east levee. As under the Proposed Action, landside woodlands would also be removed in the alignment of the relocated Riverside Canal and in the areas surrounding pumping plants to be replaced or upgraded (See Table 4.7-2).

Removal of a large portion of riparian vegetation would adversely affect the movement and dispersal of the native birds and wildlife species that depend on woodland cover. Without the creation of a levee setback area in the Natomas Basin to prevent extensive loss of riparian vegetation (as under the Proposed Action), there is no known feasible mitigation that would adequately and fully compensate for the likely loss of waterside vegetation along the Sacramento River east levee under the RSLIP Alternative. For these reasons, the RSLIP Alternative could adversely affect wildlife movement corridors, and this impact would be significant. (Greater)

Mitigation Measure 4.7-b: 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 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act Permit Conditions,” and 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”

Proposed Action

Implementing Mitigation Measure 4.7-a would ensure that significant adverse impacts on woodlands that provide wildlife movement corridors are minimized through the creation and preservation of landside woodlands, which would facilitate wildlife movement. These replacement woodlands would reduce effects on wildlife movement and dispersal to a less-than-significant level.

Implementing Mitigation Measure 4.7-e would ensure that significant adverse impacts on irrigation/drainage ditches and canals that provide wildlife movement corridors are minimized through the creation of replacement aquatic corridors, which would facilitate wildlife movement. Created canals that would serve as aquatic corridors would reduce effects on wildlife movement and dispersal to a less-than-significant level.

RSLIP Alternative

Implementing Mitigation Measures 4.7-a and 4.7-e would ensure that adverse effects on landside woodlands and irrigation/drainage ditches and canals that provide wildlife movement corridors are minimized through the creation of replacement woodland and aquatic corridors, which would facilitate wildlife movement. Created woodlands and canals would partially reduce the effects of wildlife movement and dispersal, but not to a less-than-significant level because there is no known feasible mitigation that would adequately and fully compensate for the likely loss of waterside vegetation along the Sacramento River east levee under the RSLIP Alternative. Thus, this impact would remain significant and unavoidable. (Greater)
Impact 4.7-c: Impacts on Jurisdictional Waters of the United States

Potential temporary and permanent impacts on waters of the United States resulting from the Phase 4a Project are identified in Table 4.7-4.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of Sacramento River East Levee Improvements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Ditches (Fill)</td>
<td>Low</td>
<td>-</td>
<td>&lt;3.25</td>
<td>-</td>
<td>&lt;3.25</td>
</tr>
<tr>
<td>Field Drain (Fill)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Low</td>
<td>-</td>
<td>&lt;3.0</td>
<td>-</td>
<td>&lt;3.0</td>
</tr>
<tr>
<td>Drainage Ditch (Fill)</td>
<td>Low</td>
<td>-</td>
<td>1.25</td>
<td>-</td>
<td>1.25</td>
</tr>
<tr>
<td>Construction of Relocated Riverside Canal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation, Agricultural, Field, and Drainage Ditches (Fill)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Low</td>
<td>-</td>
<td>0.75</td>
<td>-</td>
<td>0.75</td>
</tr>
<tr>
<td>Irrigation Ditches (Dewater of Existing Riverside Canal downstream of levee improvements)</td>
<td>Low</td>
<td>-</td>
<td>1.5</td>
<td>-</td>
<td>1.5</td>
</tr>
<tr>
<td>Replacement of RD 1000’s Pumping Plant Nos. 3 and 5 and NCMWC Riverside Pumping Plant&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Replacement of Outfalls and Intakes in the Sacramento River (Fill)</td>
<td>Low</td>
<td>-</td>
<td>&lt;0.5</td>
<td>-</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Sacramento River Waterside Erosion Control Rip Rap (Fill)&lt;sup&gt;9&lt;/sup&gt;</td>
<td>High</td>
<td>-</td>
<td>n/a&lt;sup&gt;6&lt;/sup&gt;</td>
<td>-</td>
<td>8.6</td>
</tr>
<tr>
<td>Drainage Outfalls in Sacramento River (Fill)</td>
<td>High</td>
<td>-</td>
<td>&lt;0.01</td>
<td>-</td>
<td>n/a</td>
</tr>
<tr>
<td>Borrow Site and Haul Road Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fisherman’s Lake and I-5 Borrow Area Drainage and Field Ditches and Canals (Fill/Dewater)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Low</td>
<td>1.0</td>
<td>&lt;3.0</td>
<td>1.0</td>
<td>&lt;3.0</td>
</tr>
<tr>
<td>Elkhorn Borrow Area Drainage, Irrigation, and Field Ditches (Fill)&lt;sup&gt;3,5&lt;/sup&gt;</td>
<td>Low</td>
<td>-</td>
<td>&lt;3.0</td>
<td>-</td>
<td>&lt;3.0</td>
</tr>
<tr>
<td>Irrigated Wetlands in Fisherman’s Lake (Fill)&lt;sup&gt;7&lt;/sup&gt;</td>
<td>Low</td>
<td>-</td>
<td>&lt;3.5&lt;sup&gt;7&lt;/sup&gt;</td>
<td>-</td>
<td>&lt;3.5&lt;sup&gt;7&lt;/sup&gt;</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1.0</td>
<td>&lt;19.76</td>
<td>1.0</td>
<td>&lt;28.35</td>
</tr>
</tbody>
</table>

Notes: RSLIP Alternative = Raise and Strengthen-Levee-in-Place Alternative; PGCC = Pleasant Grove Creek Canal; GGS = Giant Garter Snake; RD = Reclamation District

1. Functional value definitions: High = Natural structure and function of biotic community maintained, with minimal changes evident. Moderate = Moderate changes in structure and function of biotic community—i.e., moderate level of disturbance. Low = Severe changes in structure and/or function of biotic community evident—i.e., high level of disturbance. See Section 3.3.7 in Chapter 3.0, “Affected Environment,” for additional information.

2. Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act authorizations are required for work on the waterside of the levee.

3. In previous delineations conducted by AECOM and verified by the USACE, field drains were determined to be non-jurisdictional features; however, for this estimate, they are included here because USACE has not yet verified those listed above to be non-jurisdictional features.


5. Includes all Elkhorn Borrow Area Drainage, Irrigation, and Field Ditches.

6. Waterside erosion control riprap would not be necessary under the Proposed Action.

7. Because the temporal extent of impacts is unknown at this time, these impacts have been conservatively assessed as permanent.

No-Action Alternative

No Project Construction

Under the No-Action Alternative, the Natomas perimeter levee system would not be improved and the proposed landscape and irrigation/drainage system modifications would not be implemented. There would be no impact on waters of the United States under USACE jurisdiction. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could adversely or beneficially affect waters of the United States that occupy approximately 930 acres, or 1.7%, of the Basin (TNBC 2007). Because the exact level of impact would be dependent on the flooding duration, depth, rate, timing, and location, this impact is considered uncertain and a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action

The Proposed Action would, if all the borrow sites were affected, result in 14.51 acres of permanent impacts to waters of the United States, including wetlands (Table 4.7-4). These impacts would result from construction along the Sacramento River east levee, relocation and extension of the Riverside Canal, replacement of RD 1000’s Pumping Plants Nos. 3 and 5, the NCMWC’s Riverside Pump Station, and construction activities at the borrow sites and along haul roads.

Potential impacts to waters of the United States resulting from the Proposed Action would include fill of irrigation, field, and drainage ditches along or near the landside toe of the levee in Reaches 10–15 of the Sacramento River east levee. Relocation and extension of the Riverside Canal would result in permanent fill of irrigation ditches, field drains, and drainage ditches.

Under the Proposed Action, in reaches where the adjacent levee would be constructed and would be higher than the existing levee (Reaches 10–15), filtered runoff (via the grassed swale) would be conveyed in pipes from the swale between the existing levee and the new adjacent levee to new drainage outfalls in the berm along the east bank of the Sacramento River. Most of the outfalls would be placed above the OHWM and are not expected to qualify as fill of waters of the United States under Section 404 of the CWA. However, because this work would be occurring over a navigable water of the United States, authorization under Section 10 of the River and Harbors Act of 1899 would be required. Up to 15 outfalls are anticipated under the Proposed Action. The installation of these outfalls would result in no more than 0.01 acre of fill of waters of the United States and the removal of some minor amounts of riparian vegetation.

Replacement of RD 1000’s Pumping Plants Nos. 3 and 5 and would consist of raising the pumping plants’ discharge pipes above the 200-year design water surface, extension of the pipes to tie into existing discharge pipes within the waterside bench, replacement or modification of pumps and motors, and other seepage remediation, including relocating the landside stations away from the levee to accommodate the raised discharge pipes. Modifications to NCMWC Riverside Pumping Plant includes raising the pumping plant’s discharge pipes above the 200-year design water surface and modification or replacement of the plant’s existing pumps and motors to accommodate the raised discharge pipes. Grading and placement of these structures would result in the fill of approximately 0.5 acre of the Sacramento River below the ordinary high water mark.

Use of material from the Elkhorn, Fisherman’s Lake, and I-5 Borrow Areas would require the permanent fill of up to approximately 6 acres of drainage, irrigation, and field ditches. Up to approximately 1 acre of irrigation ditches
could be temporarily impacted by fill. The exact amount is not known at this time. Impacts associated with haul road construction across various drainage canals would be temporary, and these resources would be restored to preproject conditions after project completion. Although the temporal extent of the impacts are not known at this time, because only preliminary borrow plans are available, it is anticipated that up to 3.5 acres of irrigated wetlands could be temporarily affected or filled in the Fisherman’s Lake Area during borrow operations. For the purposes of this analysis, the impacts are conservatively shown above as being permanent. The total acreage for temporary impacts noted in Table 4.7-4 is the potential acreage of temporary impacts if all borrow sites are completely disturbed within their excavation footprints. It is not expected that all the borrow sites, however, would be used.

A detailed design of aquatic habitats will be developed and protective mechanisms and specific management protocols are currently being prepared by SAFCA in coordination with USACE, USFWS, and DFG. These aquatic habitats must be created and managed in a manner that provides the essential functions of the habitats that would be lost, for the created habitat to provide adequate compensation. Therefore, an overall adverse impact on waters of the United States could occur if habitat creation and management are not properly implemented. This impact is considered potentially significant.

**RSLIP Alternative**

As shown in Table 4.7-4, impacts on waters of the United States under the RSLIP Alternative would be similar to the Proposed Action except that (1) there would be no drainage outfalls constructed along the east bank of the Sacramento River levee and, therefore, no potential for impacts to navigable waters of the United States from those features; and (2) erosion control improvements would be implemented along approximately 5,410 linear feet of river bank at the waterside toe of the Sacramento River east levee at River Miles 70.0, 69.8, 69.4, 69.1, and 68.8 (Sites I, J, K, L, and M in Reaches 10–11B) (see Plate 1-5).

The proposed erosion control improvements would involve the permanent placement of cobble, riprap, and soil at Sites I, J, K, L, and M to provide protection of the levee foundation from catastrophic scour and erosion protection of the soil surface. The majority of riprap would be placed on the submerged toe of the eroding bank (where it meets the channel bottom) to arrest retreat of the emergent upper bank and stop the reduction in berm width, destabilization of the levee foundation, and shortening of seepage pathways. As shown in Table 4.7-4, approximately 8.6 acres of waters of the United States would be permanently filled at Sites I, J, K, L, and M under the RSLIP Alternative, which would be in addition to the same acreages that would also be affected under the Proposed Action. While the placement of fill in the Sacramento River would alter the cross section and the type of substrate present at the bank protection sites, it would not alter the ability of the Sacramento River to function as a navigable water of the United States. The design of the bank protection is expected to fully compensate for impacts on habitat values through the use of suitable types of substrate, vegetation, and instream woody material.

The RSLIP Alternative would include creation of the same acreages of relocated Riverside Canal and marsh habitat as described for the Proposed Action, more than offsetting the landside filling and dewatering of waters of the United States included under this alternative. However, an overall adverse effect on waters of the United States could occur if habitat creation and management are not properly implemented. This impact is considered potentially significant. (Greater)
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; and Comply with Section 404, Section 401, Section 10, and Section 1602 Permit Processes

**Proposed Action and RSLIP Alternative**

SAFCA shall implement the measures described below to reduce impacts related to loss or fill of jurisdictional waters of the United States.

- Waters of the United States, including wetlands, shall be identified and the primary engineering and construction contractors shall ensure, through coordination with a qualified biologist(s), that construction is implemented in a manner that minimizes disturbance of canals, ditches, and seasonal wetlands. Temporary fencing shall be used during construction to prevent disturbance of waters of the United States that are located adjacent to construction areas but can be avoided.

- To mitigate for permanent impacts to sensitive aquatic resources, at least 1 acre of aquatic habitat (irrigation/drainage canal) or 1 acre of seasonal wetland shall be created for every acre that is lost to ensure no net loss of sensitive aquatic habitat. The mitigation ratio that is ultimately required will be determined by USACE through the Section 404 permitting process. Features planned in the Phase 4a Project (under both action alternatives), would provide aquatic habitat that has been designed to offset the effects described above. These features include the creation of aquatic habitat resulting from construction of the relocated Riverside Canal and creation of managed marsh in the vicinity of Fisherman’s Lake, much of which would meet the criteria for Waters of the United States, including wetlands.

- Develop and implement a Mitigation and Monitoring Plan and Long-Term Management Plan in coordination with and subject to approval of USACE, USFWS, and DFG. The MMP and LTMP shall provide complete detailed designs of habitat creation components, performance standards and management protocols. SAFCA shall also enter into agreements with entities responsible for long-term management of created canals and marsh habitats to ensure that performance standards and long-term management goals that are required by the regulatory agencies with jurisdiction over these resources will be met and specifically detailed and outlined in the LTMP and MMP. All performance standards and long-term management goals will be in full compliance with ESA and CESA.

SAFCA shall secure all such agreements and implement all conditions of the agreements.

- Obtain the following applicable permits prior to the start of construction activities that would affect the resources covered by these permits: an individual permit pursuant to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act from USACE, Section 401 certification from the Central Valley RWQCB, and a Section 1602 Streambed Alteration Agreement from DFG. All requirements of these permitting processes shall be implemented by SAFCA.

Overall, the action alternatives would include creating waters of the United States that are expected to be more extensive than those filled by the project, and implementing this mitigation measure, including coordination with and issuance of the permits by the aforementioned resource/regulatory agencies, would ensure no net loss of sensitive aquatic habitats occurs and that new jurisdictional waters would be managed in a manner that minimizes maintenance disturbance and provides the essential functions of the habitats that
would be lost. Therefore, both the Proposed Action and the RSLIP Alternative, with implementation of this mitigation measure, would have a less-than-significant (beneficial) impact on the overall acreage and function of waters of the United States in the Natomas Basin. (Similar)

Impact 4.7-d: Impacts on Special-Status Plant Species

No-Action Alternative

No Project Construction

Under the No-Action Alternative, there would be no improvements to the Natomas perimeter levee system and associated modifications of irrigation and drainage facilities. Therefore, there would be no impact on special-status plant species and their habitats. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could adversely or beneficially affect special-status plants and their habitats, depending on timing, location, and duration of flooding. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact, whether beneficial or adverse is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Of the three special-status plant species that were determined to have the potential to occur in the project area (rose mallow, Delta tule pea, and Sanford’s arrowhead), all would occur in aquatic habitats (see Section 3.7.2.2, “Special-Status Plant Species,” for further discussion). Focused surveys were conducted by AECOM botanists in July 2009 to assess whether the species in question are present in suitable habitat in the Phase 4a Project area. The survey was conducted within the flowering period of these three species. As noted in Section 3.7.2.2, “Sensitive Biological Resources,” no special-status plant species were found. This impact is considered less than significant. (Similar)

Mitigation Measure: No mitigation is required.

Impact 4.7-e: Impacts on Giant Garter Snake Related to Project Construction Activities and Operational Activities of Relocated or Modified Pumping Plants

Table 4.7-5 summarizes the permanent impacts on giant garter snake habitat that would occur from project implementation.

No-Action Alternative

No Project Construction

Under the No-Action Alternative, there would be no improvements to the Natomas perimeter levee system, no associated modifications of irrigation and drainage facilities, and no reconstruction of pumping plants. Because no habitat would be affected, there would be no impact on giant garter snake. (Lesser)
### Table 4.7-5
Permanent Impacts of the Proposed Action and Alternatives on Giant Garter Snake Habitat

<table>
<thead>
<tr>
<th>Location</th>
<th>No-Action Alternative</th>
<th>Proposed Action and RSLIP Alternative (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat Impacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canal/ditch (Sacramento River east levee, Riverside Canal, Woodland Corridor)</td>
<td>Unknown, but losses of The Natomas Basin Conservancy preserve habitat and other agricultural habitats in the event of flooding could be substantial</td>
<td>4</td>
</tr>
<tr>
<td>Rice (Sacramento River East Levee, Riverside Canal, Woodland Corridor)</td>
<td>Unknown, but losses of rice in the event of flooding could be substantial</td>
<td>1</td>
</tr>
<tr>
<td>Total Permanent Impacts</td>
<td>Unknown, but potentially substantial</td>
<td>4 canal/ditch; 1 rice</td>
</tr>
<tr>
<td>Habitat Creation (Phase 4a Project)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Created marsh habitat¹ (Fisherman’s Lake)</td>
<td>-</td>
<td>Up to 120</td>
</tr>
<tr>
<td>Total Habitat Creation</td>
<td>-</td>
<td>Up to 120</td>
</tr>
<tr>
<td>Net Habitat Gain</td>
<td>Unknown</td>
<td>-5 canal/ditch and rice; 119 marsh</td>
</tr>
</tbody>
</table>

Notes: RSLIP Alternative = Raise and Strengthen-Levee-in-Place Alternative

¹ Created marsh habitat is considered to provide higher quality habitat than rice or canals for giant garter snake.

Source: EDAW (now AECOM) surveys in 2008; construction data provided by Wood Rodgers, Mead & Hunt, and HDR, Inc. in 2008; and compiled by AECOM in 2009

### Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure could result in an adverse impact on the Natomas Basin giant garter snake population. Giant garter snakes require upland refugia and may not be able to escape flood waters during their inactive season (October–April), depending on the velocity and depth of the floodwaters and the speed with which the floodwaters inundate the Basin. A catastrophic flood of the Natomas Basin could result in direct mortality of a substantial portion of the Basin’s giant garter snake population, as well as extensive damage to habitat for the species, including TNBC preserves and the infrastructure that supports operation of the preserves. The magnitude of the impacts would depend upon the flooding duration, depth, rate, timing, and location; therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. *(Currently Unknown)*

### Proposed Action and RSLIP Alternative

**Construction-related Impacts to Giant Garter Snake**

Project construction and implementation would result in permanent and temporary loss and disturbance of potential giant garter snake habitat. Temporary loss of habitat is defined as habitat being unavailable or unusable for one giant garter snake active season. Fill, temporary and permanent dewatering, land conversion, and staging and other construction disturbances could disturb, injure, or kill snakes using affected habitats, including irrigation ditches, drainage canals, rice fields, and associated uplands. Project construction activities in areas of potentially suitable habitat, as well as geotechnical and cultural resource investigations conducted near suitable habitat, could also result in direct disturbance and loss of individual giant garter snakes. Following project construction, the operation of intake structures at modified or relocated pumping plants could potentially disturb or injure aquatic fauna including giant garter snakes.
Construction-related adverse impacts on giant garter snake habitat within the Phase 4a Project footprint would occur along Reaches 10–15 of the Sacramento River east levee, along the existing and relocated alignment of the Riverside Canal, along the NCC, and within the Fisherman’s Lake Borrow Area.

Permanent loss of aquatic giant garter snake habitat in the Phase 4a Project area would include the loss of lateral canals that would be abandoned due to the relocation of the Riverside Canal as well as a small area of cultivated rice within the relocated Riverside Canal alignment (see Table 4.7-5 for acreage).

Temporary loss/disturbance of giant garter snake habitat would result from relocating and extending the Riverside Canal. This impact would be temporary because the new (relocated) Riverside Canal would be constructed and would be functional at least one giant garter snake season prior to impacts occurring to the existing Riverside Canal. The relocated Riverside Canal is expected to provide a higher habitat value relative to that of the canal that would be filled and, because the replacement canal would be extended to north of Powerline Road, it would provide more habitat than is being lost as a result of filling the existing canal. In addition, the relocated Riverside Canal would be designed to minimize maintenance requirements and resulting habitat degradation and snake injury and mortality that could occur. A small amount of aquatic habitat could also be temporarily disturbed in areas where the replacement of irrigation/drainage canals connect to existing lateral canals and in areas where pumping plants are relocated or modified. This impact would be potentially significant.

A portion of the Fisherman’s Lake Borrow Area (the primary source of soil borrow for the Phase 4a Project) supports rice fields that provide giant garter snake habitat. Following excavation for borrow, these former rice fields would be planted with native riparian and marsh vegetation in order to create managed seasonal and perennial marsh habitat prior to the beginning of the following giant garter snake active season. Therefore, the impacts of borrow activities on these rice fields are considered temporary as the habitat would be unsuitable as giant garter snake habitat for one active season and restored to a higher quality habitat upon the completion of borrow activities. Managed marsh is considered higher quality habitat than rice fields because rice provides suitable habitat only for one-third of the year (when it is flooded) and does not generally provide suitable habitat year-round (e.g., winter upland refugia are absent). A more detailed discussion of managed marsh habitat to be created in the Fisherman’s Lake Area is provided below. Should additional borrow be required, excess material from the Airport north bufferlands and the Elkhorn Borrow Area could be supplied for levee and berm construction for the Phase 4a Project. These two borrow area are planned to be used for levee improvements in Sacramento River east levee Reaches 4B to 9B, and previous environmental analysis of these borrow areas is incorporated by reference as discussed in Section 4.1. The potential exists for these borrow areas to be used for the Phase 3 and 4a Projects during the same construction season. Mitigation would be required to ensure that impacts to giant garter snake from overlapping uses of borrow areas are temporary and do not affect current habitat in borrow areas for more than one construction season. This impact would be potentially significant.

Beneficial impacts to giant garter snake would also result from implementation of the NLIP and its associated programmatic conservation strategy (see Section 4.7.1.1, “Methodology”). The conservation strategy is expected to result in an overall net gain in garter snake habitat in the Basin (Table 4.7-1) and an overall improvement in habitat conditions for giant garter snake. Benefits to giant garter snake in the programmatic conservation strategy for the NLIP that were included in earlier project phases are the creation of giant garter snake habitat resulting from construction of the new GGS/Drainage Canal and the relocation of Elkhorn Canal, which would be implemented as part of the Phase 3 Project. These canals have been designed to minimize the intensity and frequency of maintenance activities, thus reducing habitat degradation and snake injury and mortality. The habitat quality of the new GGS/Drainage Canal is anticipated to eventually be substantially higher than that of the canal habitat that would be lost. In addition to providing habitat, this canal would provide connectivity between known giant garter snake population centers in the northern and southern portions of the Natomas Basin. Loss and deterioration in the quality of existing travel corridors has been identified as a primary concern in maintaining a genetic connection among the snake populations in the Natomas Basin.
Managed marsh would be created in the Fisherman’s Lake Borrow Area as part of the Phase 4a Project to compensate for Phase 4a Project impacts to giant garter snake habitat as well as for impacts to giant garter snake habitat from the Phase 2 and 3 Projects. This proposed managed marsh creation would also aid in the overall goal of sustaining giant garter snake populations in the Natomas Basin. Parcels in the Fisherman’s Lake Borrow Area to be converted into managed marsh habitat lie adjacent to and between TNBC parcels (Plate 2-12) in the southern reserve area, which is one of three reserve areas in the Basin where habitats are managed for giant garter snakes. Creating marsh habitat would not only increase the amount of giant garter snake habitat over what currently exists, but would also help to consolidate and provide connectivity between marsh habitat on TNBC preserve lands managed for giant garter snake in the Fisherman’s Lake Area. This approach would be consistent with the NBHCP’s goal of sustaining giant garter snake populations in the southern reserve area. Giant garter snakes have been recorded on TNBC lands that were converted from rice to managed marsh, thus demonstrating that giant garter snake would use restored managed marsh habitats. Overall, impacts to giant garter snake-related to Phase 4a Project construction activities would be potentially significant. (Similar)

Operational Impacts to Giant Garter Snake

RD 1000’s Pumping Plant Nos. 3 and 5 (including intake structures situated in the interior of the Basin, landside pumping plant structures, and outfall structures in the Sacramento River) need to be relocated or modified in order to raise the irrigation pipes to the proposed new adjacent levee. The intake structure for Pumping Plant No. 3 would be located below the water line in the Pumping Plant No. 3 drainage canal, and the intake structure for Pumping Plant No. 5 would be located below the water line in an excavated channel that connects to the West Drainage Canal at its eastern end. Both intakes would be operated seasonally to pump out agricultural drainage and storm water from the interior of the basin to the Sacramento River and both intakes would be located in canals that are considered giant garter snake habitat.

In addition, should the Phase 4a Project occur before implementation of the American Basin Fish Screen and Habitat Improvement (ABFS) Project, modification of NCMWC’s Bennett and North Pump Stations along the NCC would also be necessary. The intakes for these two pumping plant would be located within the NCC, which is considered low-quality habitat for giant garter snake. Giant garter snakes swimming near intake structures could potentially be trapped by the intake velocities. However, because modifications to the pumps and intakes would not produce a change in the rate and volume of water pumped, an increase in entrapment of aquatic fauna above the existing condition is not expected. In addition, giant garter snakes, which typically swim near the water surface, are likely to avoid entrainment through their strong swimming skills and behavioral avoidance of areas that are routinely disturbed (Hansen pers. comm. 2008; Hansen and Brode 1993). Therefore, because giant garter snakes are likely to avoid the area, operational activities at modified pump stations are not likely to cause disturbance or injury to the snake. Impacts to giant garter snake related to operation of relocated or modified pump stations following project construction are considered less than significant. (Similar)

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

Proposed Action and RSLIP Alternative

To reduce impacts on the giant garter snake, SAFCA shall implement the measures described below.

- The engineering and design consultants and primary construction contractor(s) shall ensure, through coordination with a qualified biologist retained by SAFCA, that construction is implemented in a manner that minimizes disturbance of giant garter snake habitat (e.g., temporary fencing shall be used during construction to protect all aquatic and adjacent upland habitat that is located adjacent to construction areas that can be avoided).
Additional measures consistent with the goals and objectives of the NBHCP shall be implemented to minimize the potential for direct injury or mortality of individual giant garter snakes during project construction. Such measures shall be finalized in consultation with USFWS and DFG, and are likely to include conducting worker awareness training, timing initial ground disturbance to correspond with the snake’s active season (as feasible in combination with project needs and minimizing disturbance of nesting Swainson’s hawks), dewatering aquatic habitat before fill, conducting preconstruction surveys, erecting fencing around habitat features that can be avoided to ensure that these remain undisturbed by construction vehicles and personnel, conducting biological monitoring during construction, and removing any temporary fill or construction debris and restoring temporarily disturbed areas to their pre-project conditions according to the USFWS’s *Guidelines for the Restoration and/or Replacement of Giant Garter Snake Habitat* (USFWS 1997).

SAFCA shall coordinate with USFWS, DFG, and SCAS (if on Airport property) to ensure that the NLIP’s aquatic and upland habitat improvements are created and managed. SAFCA shall prepare a project-specific MMP and programmatic LTMP to ensure the creation and long-term management of these components before construction commences. SAFCA shall enter into agreements with the appropriate local entity responsible for long-term management of these created giant garter snake habitats and shall coordinate with USFWS and DFG to ensure that performance standards and long-term management goals required by the regulatory agencies with jurisdiction over these resources will be specifically detailed and outlined in the LTMP and MMP. All performance standards and long-term management goals will be in full compliance with ESA and CESA. SAFCA shall implement all terms and conditions of the management agreements.

Where borrow sites would result in impacts to giant garter snake habitat over more than one construction season, the work shall progress in cells that will be incrementally developed as habitat or returned to agricultural use as the borrow activities are completed such that no area would be used in consecutive years or such that replacement habitat is available prior to loss of existing habitat.

Authorization for take of giant garter snake under the ESA and CESA shall be obtained. All measures subsequently adopted through the permitting process shall be implemented. Implementing this mitigation measure would reduce this impact related to giant garter snake to a less-than-significant level because construction would be implemented in a manner that reduces loss of habitat and direct mortality, measures that are part of the NBHCP related to giant garter snake would be implemented, the NLIP’s habitat improvements would be implemented in consultation with USFWS and DFG, and take permits would be obtained. *(Similar)*

Impact 4.7-f: Impacts on Swainson’s Hawk and Other Special-Status Birds

*Tables 4.7-6 and 4.7-7 summarize impacts to Swainson’s hawk foraging and nesting habitat that would occur with project implementation.*
Table 4.7-6
Permanent Impacts of the Proposed Action and Alternatives on Swainson’s Hawk Habitat

<table>
<thead>
<tr>
<th>Location of Impact</th>
<th>No-Action Alternative (acres)</th>
<th>Proposed Action (acres)</th>
<th>RSLIP Alternative (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grasslands (Sacramento River east levee, Riverside Canal, woodland corridor)</td>
<td>Unknown, but losses of TNBC preserve habitats and other agricultural habitats in the event of flooding could be substantial</td>
<td>66</td>
<td>61</td>
</tr>
<tr>
<td>Croplands (Sacramento River east levee, Riverside Canal, woodland corridors)</td>
<td>Unknown, but losses of TNBC preserve habitats and other agricultural habitats in the event of flooding could be substantial</td>
<td>473</td>
<td>546</td>
</tr>
<tr>
<td>Woodlands (Sacramento River east levee, Riverside Canal, pump stations)</td>
<td>21 waterside</td>
<td>10.63 landside</td>
<td>10.46 landside</td>
</tr>
<tr>
<td></td>
<td>1.23 waterside</td>
<td>21 waterside</td>
<td></td>
</tr>
<tr>
<td><strong>Total Permanent Impacts</strong></td>
<td>Unknown, but potentially substantial</td>
<td>539 foraging</td>
<td>607 foraging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 nesting</td>
<td>32 nesting</td>
</tr>
</tbody>
</table>

Notes: RSLIP Alternative = Raise and Strengthen Levee in Place Alternative; TNBC = The Natomas Basin Conservancy
Source: EDAW (now AECOM) surveys in 2008; construction data provided by Wood Rodgers, Mead & Hunt, and HDR, Inc. in 2008; and data compiled by AECOM in 2009

Table 4.7-7
Summary of Permanent Impacts of the Proposed Action and Alternatives on Swainson’s Hawk Foraging Habitat (in Acres)

<table>
<thead>
<tr>
<th></th>
<th>Affected Cropland</th>
<th>Created Cropland</th>
<th>Net Cropland</th>
<th>Affected Grassland</th>
<th>Created Grassland</th>
<th>Net Grassland</th>
<th>Total Loss</th>
<th>Total Increase</th>
<th>Total Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 4a Project</td>
<td>-473</td>
<td>Up to 60</td>
<td>-Up to 417</td>
<td>-66</td>
<td>527</td>
<td>461</td>
<td>543</td>
<td>Up to 587</td>
<td>Up to 44</td>
</tr>
<tr>
<td>NLIP Program</td>
<td>-747</td>
<td>150</td>
<td>-597</td>
<td>-293</td>
<td>1,069</td>
<td>776</td>
<td>1,040</td>
<td>1,219</td>
<td>179</td>
</tr>
</tbody>
</table>

1 Total affected cropland includes 53 acres of alfalfa for the Phase 4a Project and 27 acres for the Phase 2 and 3 Projects (total 80 acres).
2 Includes wider Phase 4a Project levee footprint of 660 feet.
Source: Data compiled by AECOM in 2009

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no adverse or beneficial impacts on suitable habitat for Swainson’s hawk and other special-status birds due to project construction. However, even under the No-Action Alternative, there could be extensive removal of riparian vegetation on the waterside of the Sacramento River east levee to conform with USACE guidance regarding levee encroachments (see Table 4.7-2). The habitat along the waterside of the Sacramento River east levee supports the majority of Swainson’s hawk nest sites in the Natomas Basin. Removal of this vegetation would have a substantial impact on Swainson’s hawks; therefore, this impact would be potentially significant. (Greater)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Flooding could cause destruction of Swainson’s hawk or other special-status bird habitat. The magnitude of the
impacts would depend upon the flooding duration, depth, rate, timing, and location. Therefore, a definite determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

**Proposed Action**

Potential adverse effects on the Swainson’s hawk would include loss of suitable foraging and nesting habitat and disturbance of nesting pairs during project construction. Other special-status birds, including white-tailed kite, northern harrier, and Cooper’s hawk, could also be similarly affected. The effects on foraging and nesting habitat would result from construction of levee improvements (including seepage berms and O&M/utility corridors along the Sacramento River); construction of the relocated Riverside Canal; reconstruction of RD 1000’s Pumping Plant No. 3 and No. 5, NCMWC’s Riverside Pumping Plant, and potentially NCMWC’s North and Bennett Pump Stations; borrow activities; and the creation of woodland corridors and marsh habitat. The indirect impacts to Swainson’s hawk nesting and foraging habitat that could result from an agreement with the Airport to exchange approximately 45 acres within the Airport’s Critical Zone currently owned by SAFCA with lands (approximately 68 acres) in Sutter County outside the Airport Critical Zone currently owned by the Airport/Sacramento County (see Plate 2-14) are addressed in Section 5.1.8, “Cumulative Impact Analysis: Project Impacts that Could be Cumulatively Considerable.”

**Impacts to Foraging Habitat**

As summarized in Table 4.7-6, above, foraging habitat affected by the Proposed Action would be primarily croplands and grasslands. A portion of levee improvements along Reach 11B in the Phase 4a Project falls within a SCAS Swainson’s Hawk mitigation site which was established to compensate for loss of foraging habitat as a result of the Airports’ Terminal A expansion and implementation of the Airport Master Plan. Because SAFCA would establish native perennial grassland on levee slopes following completion of the Phase 4a Project and would maintain grasslands in these areas at 6–12 inches in height, it has been determined that these measures would be consistent with the SCAS’s foraging habitat requirements for the site (Sacramento County and SAFCA 2009).

The permanent loss of Swainson’s hawk foraging habitat within the Phase 4a Project area would be offset by the creation of foraging habitat, including both croplands and grasslands. The creation of grasslands would take place primarily on levee slopes of the adjacent levee and seepage berms and within maintenance setbacks in Reaches 10–15. The levee slopes would be less steep than the existing levee slopes, and several reaches of the levee would have adjoining 100- to 500-foot-wide earthen seepage berms with a nearly flat slope. These areas, with the exception of the crown of the levee and woodland corridors, would be managed as native perennial grassland that would be mowed or grazed with an emphasis on maintaining stubble height to optimize these areas for Swainson’s hawk foraging habitat.

As shown in Table 4.7-7, the Phase 4a Project would result in a net increase in foraging habitat for Swainson’s hawk. However, due to conversion of land cover types in the Phase 4a Project footprint, the composition of this habitat would permanently shift from primarily croplands to grasslands, leading to a decrease in the quality of foraging habitat for Swainson’s hawk. Some foraging habitat would be temporarily affected by the Phase 4a Project borrow activities; however, much of this would be returned to equivalent or higher quality Swainson’s hawk foraging habitat following borrow activities with the exception of areas that would be converted to marsh or woodland habitat.

The greatest impact to overall foraging habitat value would be the permanent loss of alfalfa and grass hay, which are considered the highest value foraging habitat types for Swainson’s hawks in the Central Valley. The loss of alfalfa, grass hay, and other foraging habitats could result in Swainson’s hawks having to forage farther from the nest or increase competition for prey with other hawks in the area. Several studies have documented the
importance of hay crops, especially alfalfa for Swainson’s hawks (Estep 1989, Estep 2008, and Woodbridge 1998). The characteristics that contribute to high value habitat include:

- low vegetation structure, which increases prey accessibility;
- relatively large prey populations due to abundant cover and food;
- farming operations, such as weekly irrigation, which increases cover and food for prey; and
- regular mowing, which lowers vegetation structure, disturbs prey and increases accessibility.

To offset impacts to this high-quality foraging habitat, SAFCA would acquire and preserve an equivalent amount of land that would be managed specifically to optimize its value as foraging habitat for Swainson’s hawk. This would be accomplished by creating habitat types (e.g., agricultural or other vegetation types) that can be managed to provide high-quality foraging habitat for Swainson’s hawk throughout the nesting season.

Preservation of agricultural uplands in the Phase 4a Project area would take place at borrow sites following completion of borrow activities (Plate 2-12). Other factors that would contribute to the value of the Swainson’s hawk foraging habitat being preserved includes its proximity to other preserved habitat (i.e., larger contiguous parcels of suitable foraging habitat generally provide greater foraging value than smaller parcels) and managing foraging habitat for Swainson’s hawk over the long term or in perpetuity. If successful, SAFCA’s commitment to preserve high quality foraging habitat in combination with the creation of perennial grasslands would fully mitigate the loss of alfalfa, grass hay, and other foraging habitat types that would result from implementation of the NLIP.

A detailed design of the foraging habitats to be created is being developed and provided for USFWS and DFG review. Protective mechanisms and specific management protocols for Swainson’s hawk foraging habitat that would be created in the Fisherman’s Lake Borrow Area are currently being prepared by SAFCA in coordination with these agencies. However, if habitat creation/preservation and management are not effectively implemented to provide foraging habitat for the Swainson’s hawk or other special-status bird species, an overall adverse effect could occur. This impact would be potentially significant.

Impacts to Nesting Habitat

An estimated 600 acres of riparian and nonriparian woodland habitat is present on the landside of the Natomas Basin and approximately 420 acres of riparian woodland habitat is present along the waterside of the Sacramento River east levee and American River north levee, totaling approximately 1,020 acres. The vast majority of Swainson’s hawk nests in the Basin are within the mature riparian forest/woodlands along the waterside of the Sacramento River east levee. The design of the adjacent levee along the Sacramento River east levee avoids almost entirely the need to remove waterside riparian forest/woodlands, which would otherwise be removed if the levee were being rebuilt and upgraded in place or no action was taken. The woodlands that would be affected are along the landside of the Sacramento River east levee in areas where few nests have been documented since 2001. Most nests that have been documented on the landside of the Sacramento River east levee are within woodlands in substantial riparian corridors along ditches, sloughs, and canals towards the interior of the Basin.

The Proposed Action would affect a moderate amount of primarily landside woodlands; this acreage includes an understory of scrub and grassland components (Table 4.7-2). Project impacts include removing landside woodland habitat along Reaches 12B–15 of the Sacramento River east levee, landside woodland habitat where the replacement Riverside Canal is to be constructed, landside and waterside woodland in the footprint of RD 1000’s Pumping Plant Nos. 3 and No. 5 and NCMWC’s Riverside Pumping Plant reconstruction sites, and riparian woodlands on the waterside of Sacramento River east levee Reaches 10–12A where drainage outlets would be constructed (see Table 4.7-2 for acreages).

Compensation for adverse impacts on nesting habitat and potential unavoidable loss of active nests resulting from the Proposed Action would include creating and preserving woodlands along the landside of the Sacramento River east levee so that no net loss of woodlands would occur over the long-term (see Table 4.7-3). As shown in
Table 4.7-3, SAFCA’s programmatic conservation strategy for creation and preservation of landside woodlands would result in an overall net increase in the acreage of woodlands in the Natomas Basin.

The woodland mitigation plan includes transplanting suitable trees from the project footprint, where feasible, as well as planting a variety of native tree species that could become potential nesting habitat for Swainson’s hawk. To provide adequate compensation for lost habitat, the woodlands must be created and/or managed in a manner that provides the essential habitat functions for special-status bird species. A detailed design of the woodland habitats to be created is being developed and provided for USFWS and DFG review; protective mechanisms and specific management protocols for the woodlands are currently being prepared by SAFCA in coordination with these agencies (as described in Section 2.3.4, “Habitat Improvements”).

However, if habitat creation/preservation is not effectively implemented to provide nesting habitat for Swainson’s hawk or other special-status bird species, an overall adverse effect could occur. Should habitat creation/preservation be implemented effectively, there would be a temporal (10–15 years) loss of woodlands providing potential nesting habitat. These impacts would be potentially significant.

**Impacts to Nesting Behavior**

Project construction would occur during the Swainson’s hawk nesting season and could disrupt nesting behavior. If project construction is already under way when pairs return to their nesting territories, project activity could render previously occupied territories unsuitable. If active nests are present near construction areas when construction begins, the nesting pairs could be disturbed, potentially resulting in nest abandonment and loss of eggs or young. Various conservation measures would be implemented to avoid and minimize take of Swainson’s hawks. These measures include conducting surveys for and monitoring of Swainson’s hawks before and during construction to identify active nests in the vicinity of project activities, and establishing and maintaining buffers around the nests, in coordination with DFG, so that project activity does not result in detectable adverse effects on active nests. This impact would be potentially significant.

**Impacts Related to Power Pole Relocations**

The Phase 4a Project includes relocating or replacing Pacific Gas & Electric Company and Sacramento Municipal Utility District (SMUD) power poles. Power poles may benefit raptors by providing perching and/or nesting structures (or both) in areas where few natural perches or nest sites exist. However, these structures can also pose a threat to raptors and other birds through electrocutions or collisions. Mortality is most common with large wing span birds, such as eagles or cranes. Electrocution can occur when a bird simultaneously touches two energized parts or an energized part and a grounded part of the electrical equipment. Pacific Gas & Electric Company has developed and implemented an Avian Protection Plan (APP) to better protect birds and improve safety and reliability for its customers. The APP, which has been in place since 2002, includes outfitting all new poles and replacement poles in bird-sensitive locations with bird-safe equipment. Pacific Gas & Electric Company is also a founding member of the Avian Power Line Interaction Committee (APLIC), a collaboration between utilities and USFWS that began nearly 20 years ago. The APLIC has guidelines and industry standards to avoid bird collisions and electrocutions.

The Proposed Action would not result in an increase in power pole related hazards for the Swainson’s hawk and other birds since the Phase 4a Project requires relocation or replacement of existing power poles. While SAFCA has no direct control over the specific design and retrofitting of the relocated and replaced power poles, it can be expected that Pacific Gas & Electric Company will implement its APP and follow the APLIC guidelines and industry standards to reduce electrocution of birds perching on the power poles and power lines. The Proposed Action would have no impact on Swainson’s hawks and other birds as a result of power pole relocations.
Under the RSLIP Alternative, potential effects on Swainson’s hawk associated with the Sacramento River east levee improvements would be somewhat different from those under the Proposed Action. Compared to the Proposed Action, loss of nesting habitat on the landside of the levee would be reduced under the RSLIP Alternative (see Table 4.7-2 for acreage). However, a substantially greater number of acres of riparian woodland acres on the waterside of these levee reaches that provide suitable nesting habitat for Swainson’s hawk would likely need to be removed in order to conform with USACE guidance regarding levee encroachments (Table 4.7-2). Potential adverse impacts from such vegetation removal are likely to be greater than those under the Proposed Action, in terms of both the amount and quality of that habitat. The foraging habitat affected by this alternative would be cropland replaced by grasslands along levee and berms resulting in a nearly equal amount of foraging habitat, but a conversion of higher-quality croplands to grasslands that provide lesser-quality habitat.

Similar to the Proposed Action, the impacts on nesting habitat and potential unavoidable loss of active nests associated with the removal of landside woodlands would be compensated by the proposed creation of landside woodland habitat at various locations along the Sacramento River east levee. However, it is uncertain whether the new woodlands would be adequate to compensate for the potential extensive loss of Swainson’s hawk nest sites on the waterside of the Sacramento River east levee. The RSLIP Alternative would also require relocation and replacement of some power poles. As with the Proposed Action, this alternative would not result in an increase in power pole related hazards for the Swainson’s hawk and other birds because the project requires relocation or replacement of existing power poles.

As with the Proposed Action, if habitat creation/preservation is not effectively implemented to provide foraging and nesting habitat for Swainson’s hawk or other special-status bird species, an overall adverse effect could occur. This impact would be potentially significant. (Greater)

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 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act Permit Conditions”

**Proposed Action and RSLIP Alternative**

SAFCA and its engineering and design consultants and primary construction contractor(s) shall ensure that the following measures are implemented to avoid, minimize, and compensate for potential project effects on Swainson’s hawks and other special-status birds:

- The engineering and design consultants and primary construction contractor(s) shall ensure, through coordination with a qualified biologist retained by SAFCA, that construction is implemented in a manner that minimizes disturbance of potential nesting habitat for special-status birds through the following activities:
  - The biologist shall conduct preconstruction surveys to identify active special-status bird nests near construction areas.
  - Surveys for nesting birds shall be conducted before project activities are initiated during the nesting season (March 1–September 15). Surveys shall be conducted in accordance with standardized protocols and NBHCP requirements.
• Removal of potential nesting habitat shall be conducted during the non-nesting season, to the extent feasible and practicable, to minimize the potential for loss of active nests.

• If an active nest is found, the biologist shall determine an appropriate buffer that minimizes potential for disturbance of the nest, in coordination with DFG. No project activities shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active or the birds are not dependent on it. Monitoring shall be conducted during construction and by a qualified biologist to ensure that project activity does not result in detectable adverse effects on the nesting pair or their young. The size of the buffer may vary, depending on the nest location, nest stage, construction activity, and monitoring results. If implementation of the buffer becomes infeasible or construction activities result in an unanticipated nest disturbance, DFG shall be consulted to determine the appropriate course of action.

► The engineering and design consultants and primary construction contractor(s) shall ensure, through coordination with a qualified biologist retained by SAFCA, that staging areas and access routes are designed to minimize disturbance of known Swainson’s hawk nesting territories through the following activities:

• The biologist shall conduct preconstruction surveys to identify active nests within 0.50 mile of construction areas, in accordance with DFG guidelines. Surveys shall be conducted in accordance with NBHCP requirements and Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in California’s Central Valley (Swainson’s Hawk Technical Advisory Committee 2000).

• If an active nest is found, an appropriate buffer that minimizes the potential for nest disturbance shall be determined by the biologist, in coordination with DFG. No project activities shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active or the birds are not dependent on it. Monitoring shall be conducted during construction and by a qualified biologist to determine whether project activity results in detectable adverse effects on the nesting pair or their young. The size of the buffer may vary, depending on the nest location, nest stage, construction activity, and monitoring results. If implementation of the buffer becomes infeasible or construction activities result in an unanticipated nest disturbance, DFG shall be consulted to determine the appropriate course of action.

► SAFCA shall coordinate with USFWS, DFG, and SCAS (if on Airport property) to ensure that the NLIP’s woodland, upland, and agricultural habitat improvements are created and managed. SAFCA shall prepare a project-specific MMP and programmatic LTMP to ensure the creation and long-term management of these components before construction commences. SAFCA shall enter into agreements with the appropriate local entity responsible for long-term management of these created Swainson’s hawk habitats and shall coordinate with USFWS and DFG to ensure that performance standards and long-term management goals that are required by the regulatory agencies with jurisdiction over these resources will be specifically detailed and outline in the LTMP and MMP. All performance standards and long-term management goals will be in full compliance with ESA and CESA. SAFCA shall implement all terms and conditions of the management agreements.

► The criteria for measuring performance shall be used to determine if the habitat improvement is trending toward sustainability (reduced human intervention) and to
assess the need for adaptive management (e.g., changes in design or maintenance revisions). These criteria must be met for the habitat improvement to be declared successful, both during a particular monitoring year and at the end of the establishment period. Performance criteria for managed grasslands shall be developed in consultation with USFWS, NMFS, and DFG, and shall include, but not be limited to:

- percent cover of invasive species (<1%),
- percent cover of nonnative herbaceous plants (<10–25%), and
- percent absolute cover of native species (>50–80%).

Authorization for take of Swainson’s hawk under CESA shall be obtained. All measures subsequently adopted through the permitting process shall be implemented.

Implementation of this mitigation measure as well as Mitigation Measure 4.7-a, would minimize adverse effects of the Proposed Action on Swainson’s hawk. This measure coupled with the amount of landside woodlands that would be created and preserved as part of the Phase 2 and 3 Projects would result in a net increase in potential nesting habitat (landside woodlands). In addition, up to 60 acres of high quality foraging habitat would be preserved in the Basin. The creation and preservation of nesting and foraging habitat in the Basin would reduce long-term and overall impacts to Swainson’s hawk to a less-than-significant level. Although no permanent impacts would occur, this impact would remain significant and unavoidable for many years before reaching a less-than-significant level because replacement plantings would likely require a minimum of 10–15 years before providing important habitat components such as structure and shade.

Implementation of this mitigation measure, as well as Mitigation Measure 4.7-a, would minimize long-term, adverse effects of the RSLIP Alternative on Swainson’s hawk, but would not reduce them to a less-than-significant level. While the woodland restoration and preservation proposed for the Levee Raise-in-Place Alternative may be adequate to offset the removal of landside woodlands, these replacement woodlands would not be adequate to compensate for the extensive loss of mature waterside vegetation; therefore, this impact would remain significant and unavoidable. (Greater)

Impact 4.7-g: Impacts on Valley Elderberry Longhorn Beetle

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for direct disturbance on valley elderberry longhorn beetle or elderberry shrubs due to project construction activities. However, there could be extensive removal of elderberry shrubs on the waterside of the Sacramento River east levee to conform with USACE guidance regarding levee encroachments, even without project implementation. This potential impact would be potentially significant. (Greater)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Flooding of the Basin might result in beneficial or adverse conditions for elderberry shrubs and, consequently, valley elderberry longhorn beetle, in some locations. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact, whether adverse or beneficial is unknown.
Because of this uncertainty, this potential impact is considered **too speculative for meaningful consideration. (Currently Unknown)**

**Proposed Action**

Approximately 10 elderberry shrubs are known to be present within or adjacent to the Phase 4a Project footprint along the landside of the Sacramento River east levee Reaches 12B–15. An additional three shrubs are known to occur along the alignment of the relocated Riverside Canal. The removal of approximately 15 elderberry shrubs along Reaches 10–12A of the Sacramento River east levee was analyzed in the Phase 3 DEIS/DEIR. That analysis is hereby incorporated by reference. Because elderberry surveys have not been conducted on the waterside of the east levee along Reaches 10–15, the number of waterside elderberry shrubs is unknown. However, the minimal amount of waterside vegetation removal required under the Proposed Action (Table 4.7-2) would likely require the removal of few if any elderberry shrubs. Focused surveys that will document the number of elderberry stems, particular size classes, and presence or absence of beetle exit holes in the Phase 4a Project area are currently being conducted. Some shrubs in the Phase 4a Project area may be able to be avoided in place and incorporated into the proposed woodlands corridor.

Per the USFWS’s conservation guidelines for this species (USFWS 1999), all shrubs that require removal would be transplanted during the dormant season into the proposed 150-foot-wide woodland corridor on either side of the new Riverside Canal in the vicinity of Fisherman’s Lake. The loss and/or direct impact of elderberry shrubs and potential loss of beetles under the Proposed Action would be offset by SAFCA’s plan to incorporate plantings of elderberry shrubs and other appropriate native species into the woodland corridors and other potential woodland restoration areas. Elderberry shrubs would be planted in numbers adequate to compensate for elderberry shrub loss, based on standard USFWS mitigation guidelines. A detailed plan for woodland creation is being developed and provided for USFWS and DFG review; and protective mechanisms and specific management protocols are currently being prepared by SAFCA in coordination with these agencies. Portions of the woodland areas must be created and managed in a manner that provides the essential functions of valley elderberry longhorn beetle habitat that would be lost through project activities in order for them to provide adequate compensation. However, if habitat creation and management are not effectively implemented to provide replacement habitat for the valley elderberry longhorn beetle, an overall adverse effect could occur. This impact would be **potentially significant**.

**RSLIP Alternative**

Under the RSLIP Alternative, potential impacts on valley elderberry longhorn beetle would be somewhat different from those under the Proposed Action. Loss of elderberry shrubs on the landside of the Sacramento River east levee may be reduced under this alternative by the lack of an adjacent levee, but a substantial amount of riparian woodland that supports an unknown number of elderberry shrubs on the waterside of the levee may require removal to conform with USACE guidance regarding levee encroachments (Table 4.7-2). Per the USFWS’s conservation guidelines for this species (USFWS 1999), all of these shrubs would be transplanted during the dormant season into woodland corridors. Potential adverse impacts from such vegetation removal could be greater than those within the adjacent levee footprint on the landside of the levee under the Proposed Action, particularly in terms of the quality of habitat that is affected. Similar to the Proposed Action, the loss of elderberry shrubs and potential loss of beetles under the RSLIP Alternative would be offset by SAFCA’s plan to incorporate plantings of elderberry shrubs and other appropriate native species into the woodland corridors and other potential woodland restoration areas. However, as with the Proposed Action, overall adverse effects could occur if the replacement habitat does not provide the essential components and is not managed in a way that maximizes habitat quality and minimizes potential adverse effects on valley elderberry longhorn beetle. This impact would be **potentially significant. (Similar)**
Mitigation Measure 4.7-g: Conduct Focused Surveys for Elderberry Shrub as Needed, Implement all Woodland Habitat Improvements and all Management Agreements, Ensure Adequate Compensation for Loss of Shrubs, and Obtain Incidental Take Authorization

**Proposed Action and RSLIP Alternative**

To reduce impacts on valley elderberry longhorn beetle, SAFCA shall implement the measures described below.

- A qualified biologist retained by SAFCA shall conduct focused surveys of elderberry shrubs within 100 feet of the project footprint, in accordance with USFWS guidelines. All elderberry shrubs with potential to be affected by project activities shall be mapped, the number of stems greater than 1 inch in diameter on each shrub that requires removal shall be counted, and these stems shall be searched for beetle exit holes.

- The engineering and design consultants and primary construction contractor(s) shall ensure, through coordination with the biologist, that construction is implemented in a manner that minimizes disturbance of areas that support elderberry shrubs (e.g., temporary fencing shall be used during construction to protect all elderberry shrubs that are located adjacent to construction areas but can be avoided). Shrubs that require removal shall be transplanted to the woodland creation areas, if feasible, when the plants are dormant (November through the first 2 weeks of February) to increase the success of transplanting. If none of the areas of suitable habitat to be created as part of the project would be available before the impact would occur, alternative transplantation locations (e.g., other SAFCA mitigation areas or TNBC preserves) shall be identified and shall be approved by USFWS.

- The number of replacement elderberry plantings shall be determined based on USFWS guidelines, which require replacement ratios ranging from 1:1 to 8:1 for lost stems at least 1 inch in diameter, depending on the size of the affected stems and presence or absence of beetle exit holes. Associated native species shall be planted at ratios ranging from 1:1 to 2:1 for each elderberry planting.

- SAFCA shall coordinate with USFWS, DFG, and SCAS (if on Airport property) to ensure that the NLIP’s woodland habitat improvements are created and managed. SAFCA shall prepare a project-specific MMP and programmatic LTMP to ensure the creation and long-term management of these components before construction commences. SAFCA shall enter into agreements with the appropriate local entity responsible for long-term management of these created woodland habitats and shall coordinate with USFWS and DFG to ensure that performance standards and long-term management goals that are required by regulatory agencies with jurisdiction over these resources will be specifically detailed and outlined in the LTMP and MMP. All performance standards and long-term management goals will be in full compliance with the ESA and CESA. SAFCA shall implement all terms and conditions of the management agreements USACE shall initiate consultation activities with USFWS under Section 7 of the ESA, and authorization for take of valley elderberry longhorn beetle under the ESA shall be obtained if it is determined, in consultation with USFWS, that shrub removal is likely to result in such take. All measures subsequently developed through the Section 7 consultation process shall be implemented by SAFCA.

Implementing this mitigation measure would reduce the impact on valley elderberry longhorn beetle to a less-than-significant level because protocol-level surveys would be conducted, construction activities would avoid elderberry shrubs to the maximum extent feasible, elderberry shrub replacement would occur in consultation with USFWS, habitat...
improvements would be implemented, and USACE would consult with USFWS under Section 7. (Similar)

Impact 4.7-h: Impacts on Other Special-Status Wildlife Species, Including Burrowing Owl and Northwestern Pond Turtle

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for direct disturbance of northwestern pond turtle or burrowing owl habitat or populations. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Floodwaters could inundate habitat areas and result in direct mortality of northwestern pond turtles. Burrowing owls could also be adversely affected by winter flooding as a result of either direct mortality or inundation and destruction of burrows. The magnitude of these impacts would depend upon the flooding duration, depth, rate, timing, and location. Therefore, a precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Project construction and implementation could result in the destruction of burrows occupied by burrowing owls should they occur within the setback levee footprint, along the existing or relocated Riverside Canal, along the NCC, or within active borrow areas. There is potential for direct loss of burrowing owls to occur if they are present within the affected habitats.

Proposed improvements to the Sacramento River east levee would result in the permanent loss of suitable pond turtle habitat due to fill and realignment of portions of irrigation/drainage canals near the landside toe of the levees. Adverse effects on suitable turtle habitat in the Phase 4a Project footprint would include the permanent loss of a small amount of relatively unvegetated irrigation/drainage canals along the Sacramento River east levee (see Table 4.7-5 for acreage). Development of the Fisherman’s Lake Borrow Area would potentially convert potential northwestern pond turtle habitat (e.g., irrigation and drainage ditches) to non-usable habitat temporarily. As described in Section 2.3.3, “Borrow Sites,” in selecting borrow sites, consideration would be given to ensure that activities result in minimal adverse impacts to the environment.

Habitat losses for northwestern pond turtle would be offset by the proposed habitat creation components of the Proposed Action, including creation of managed marsh habitat in the Fisherman’s Lake Borrow Area. Northwestern pond turtles would also benefit from the creation of canal habitat for giant garter snake implemented as part of the programmatic conservation strategy. There is potential, however, for direct loss of pond turtles to occur if they are present within the affected habitats.

The potential for destruction of burrows occupied by burrowing owls and for the direct loss of northwestern pond turtles would be a potentially significant impact. (Similar)
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

**Proposed Action and RSLIP Alternative**

To reduce impacts on northwestern pond turtle and burrowing owl, SAFCA shall implement the measures described below.

- A qualified biologist retained by SAFCA shall conduct surveys for northwestern pond turtle in aquatic habitats to be dewatered and/or filled during project construction. Surveys shall be conducted immediately after dewatering and before fill of aquatic habitat suitable for pond turtles. If pond turtles are found, the biologist shall capture them and move them to nearby areas of suitable habitat that would not be disturbed by project.

- The engineering and design consultants and primary construction contractor(s) shall ensure, through coordination with a qualified biologist retained by SAFCA, that construction is implemented in a manner that minimizes disturbance of potential nesting habitat for burrowing owls (e.g., removal of potential nesting habitat shall be conducted during the non-nesting season, to the extent feasible and practicable, to minimize the potential for loss of active nests).

- The biologist shall conduct preconstruction surveys to identify occupied burrowing owl burrows in the vicinity of construction areas. Surveys for burrowing owl shall be conducted before project activities are initiated at any time of year. Surveys shall be conducted in accordance with standardized protocols, including DFG’s *Staff Report on Burrowing Owl Mitigation* (DFG 1995), and NBHCP requirements. If an occupied nest burrow is found, an appropriate buffer that minimizes potential for disturbance of the nest shall be determined by the biologist, in coordination with DFG. No project activities shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active or the birds are not dependent on it. Monitoring shall be conducted by a qualified biologist to ensure that project activity does not result in detectable adverse effects on the nesting pair or their young. The size of the buffer may vary, depending on the nest location, nest stage, construction activity, and monitoring results. If implementation of the buffer becomes infeasible or construction activities result in an unanticipated nest disturbance, DFG shall be consulted to determine the appropriate course of action.

- If an occupied burrowing owl burrow that does not support an active nest is found, SAFCA shall develop and implement a relocation plan, in coordination with and subject to approval of DFG and USFWS and consistent with requirements of the NBHCP, DFG’s *Staff Report on Burrowing Owl Mitigation* (DFG 1995), and the Airport Wildlife Hazard Management Plan (WHMP). Relocation is anticipated to occur through passive exclusion of owls from the project site (using one-way doors at the burrow entrances). The owls would then be able to reoccupy the area after construction is complete. Because the project would generally result in temporary disturbance of burrowing owl habitat and conversion from one suitable habitat type to another, no mitigation for temporary burrow or habitat loss would be required.

Implementing this mitigation measure would reduce the potential impact to a less-than-significant level for the Proposed Action and the RSLIP Alternative because turtles would be physically relocated (if present) and construction would be implemented in a manner that reduces loss of nesting habitat and direct mortality of burrowing owls (if present). *(Similar)*
Impact 4.7-i: Temporary Construction-Related Impacts to Fish and Aquatic Habitats

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no improvements would be made to the Natomas perimeter levee system and there would be no potential for construction-related increases in sedimentation, turbidity, or contaminants, or direct disturbance to fish and aquatic habitats from perimeter levee improvements in project-related activities. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could introduce sediments and contaminants into stream channels, irrigation and drainage canals, and the Sacramento and American Rivers, potentially resulting in the loss of fish or aquatic habitat. Because the extent and location of a levee failure and subsequent flooding is unknown, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Water Quality – Turbidity, Sedimentation, and Contaminants

Fish population levels and survival have been linked to levels of turbidity and siltation in a watershed. Prolonged exposure to high levels of suspended sediment could create a loss of visual capability in fish, leading to a reduction in feeding and growth rates; a thickening of the gill epithelia, potentially causing the decrease of respiratory function; clogging and abrasion of gill filaments; and increases in stress levels, reducing the tolerance of fish to disease and toxicants (Waters 1995). Additionally, high levels of suspended sediments could cause the movement and redistribution of fish populations. Many fish are sight feeders, and turbid waters could reduce the ability of these fish to locate and feed on prey. Some fish, particularly juveniles, could become disoriented and leave areas where their main food sources are located, ultimately reducing their growth rates. Avoidance is the most common result of increases in turbidity and sedimentation. Fish will not occupy areas unsuitable for survival unless they have no other option.

Contaminants such as bentonite slurry, fuels, oils, and other petroleum products used in construction activities may be toxic to fish or may alter oxygen diffusion rates and can cause acute and/or chronic toxicity to aquatic organisms, thereby reducing growth and/or survival. Substances contributing to sedimentation, turbidity, or contamination can enter waterways directly during construction activities or through surface runoff.

Project construction activities that could result in loss of fish and aquatic habitat through temporary increases in sedimentation and turbidity or the release of contaminants into waterways from improvements to the perimeter levees include: extensive soil borrow excavation and placement for all levee improvements; construction of the adjacent levee along a portion of the Sacramento River east levee and raising and widening (on the waterside of the existing levee) of a 1,200-foot-wide portion of the existing levee in Reach 10 of the Sacramento River east levee including finish grading; clearing, and grubbing/stripping, degrading, and construction of slurry cutoff walls under the Proposed Action; finish grading, clearing, and grubbing/stripping, degrading, construction of slurry cutoff walls, and subsequent reconstruction of portions of the upper half of the Sacramento River east levee under the RSLIP Alternative; and raising of two segments of the NCC south levee, including flattening of the side slopes and construction of slurry cutoff walls, construction of the replacement for the South Lauppe Pumping Plant, modification of nine other private river pumps (Sacramento River east levee and NCC south levee),
site restoration, and demobilization/cleanup. These activities could impair water quality for fish if soils or contaminants enter waterways directly or through surface runoff and hydrologic connection. The removal and replacement of the South Lauppe Pumping Plant would be conducted in association with an approved bank protection project, which would include placement of riprap for erosion control and revegetation at River Mile 77.2. As noted in section 2.3.2.4, “South Lauppe Pump Replacement,” the bank protection project has already undergone environmental review (USACE 2009).

Modifications to pumping plants and/or their pipelines, including modification/replacement of RD 1000 Pumping Plant Nos. 3 and 5 pipelines (Sacramento River east levee), reconstruction of the outfall for Pumping Plant No. 3 and removal of a deep culvert at the outfall location including cofferdam construction and dewatering, modifications to irrigation Pumping Plant pipelines and pumps (Riverside Pumping Plant and South Lauppe Pumping Plant and eight other private river pumps [Sacramento River], Odysseus private river pump [NCC], Bennett Pump Station [NCC], and Northern Main Pump Station [NCC]), and potential localized dredging under the irrigation pumping plant intakes could impair water quality for fish if soils or contaminants enter waterways directly or through surface runoff.

Other modifications necessary for proposed levee improvements, including the relocation and construction of the Riverside Canal, reconstruction of the Garden Highway intersections (i.e., Powerline Road and San Juan Road), and construction of surface drainage outfalls could impair water quality for fish if soils or contaminants enter waterways directly or through surface runoff. Riverbank erosion control along 5,400 feet of riverbank (Reaches 10–11B) under the RSLIP Alternative and at the South Lauppe Pumping Plant location, including demobilization and cleanup, could also impair water quality for fish if soils or contaminants enter waterways directly or through surface runoff or through disturbance of bottom sediments (i.e., placement of rock riprap).

The waterways potentially affected (Sacramento River and NCC) provide or are hydrologically connected to waterways that provide habitat for special-status adult and juvenile Chinook salmon (all races), Central Valley steelhead, and green sturgeon, as well as striped bass and American shad.

**Disturbance to Fish and Aquatic Habitats**

In-water work that could cause direct disturbance or injury to fish and aquatic habitats include the following:

- placement of riprap on the riverbank for erosion control using a barge or excavator (which would be greater under the RSLIP Alternative than the Proposed Action) could cause disturbance to fish and aquatic habitats;

- potential dredging to accommodate modifications to the irrigation pumping plants (i.e., Riverside, Bennett, Northern Main, South Lauppe, and nine other private river pumps) could result in habitat disturbance and direct effects to fish and other aquatic organisms;

- pile driving/vibratory hammer use from construction of the replacement South Lauppe Pumping Plant, modifications to other private river pumps, and construction of the cofferdam for the reconstruction of the Pumping Plant No. 3 outfall and removal of the deep culvert could result in sounds pressure effects to fish;

- dewatering of the cofferdam at the Pumping Plant No. 3 outfall reconstruction/deep culvert removal location could cause fish stranding; and

- general disturbance from the dismantling and rebuilding (welding of steel supports) of the existing South Lauppe Pumping Plant infrastructure cause result in habitat disturbance and direct effects on fish and other aquatic organisms.

If the ABFS Project (replacement of the three irrigation pumping plants with two new irrigation pumping plants) does not occur prior to construction of the Phase 4a Project, modification of the Riverside, Bennett, and Northern Main pumping plants potentially requiring dredging would be included in the Phase 4a Project. Depending upon
whether or not the ABFS Project occurs before the Phase 4a Project, dredging may be necessary at the South Lauppe Pumping Plant replacement location, although the application of the bank stabilization materials prior to reconstruction may preclude the necessity for dredging for this purpose.

The construction of a sheetpile cofferdam and dewatering at the Pumping Plant No. 3 outfall reconstruction/ culvert removal site could result in underwater sound pressure effects and fish stranding if fish are present in the immediate work area during construction activities. All in-water work would be conducted during periods when sensitive fish species are least likely to be present and a fish rescue plan would be implemented to minimize the potential for stranding of individual fish in the relatively small area within the cofferdam. Available information indicates that exposure of fish species to underwater sound pressure levels exceeding approximately 180 decibels (dB) may result in sublethal (e.g., damage to ear, hearing impairments, behavioral implications including delays in migration) or lethal (e.g., ruptured swim bladder, internal bleeding) effects (Laughlin 2005). These critical sound levels exceed levels that are anticipated to be associated with project-related construction activities, as pile driving activities with repetitive high peaks have been documented to generate up to about 115 dB at a distance of 10 feet. Therefore, this activity is expected to be well below critical sound pressure levels for fish mortality or injury and avoidance of the construction area would be the anticipated behavioral response.

Individual fish, if present in the immediate work area during any of the above construction activities, could be injured by equipment used for these activities or the sound pressure generated by them. Behavioral avoidance of adverse habitat conditions by fish is anticipated to be the most common result of increases in disturbance. Fish and other aquatic organisms displaced from their habitat due to the application of riprap, placement of support piles, localized dredging, cofferdam construction and dewatering, or general in-water construction activities could become vulnerable to predators or other unfavorable habitat conditions. Construction-related habitat disturbance could result in temporarily adverse affects to the aquatic food web and fish populations including listed species within the Phase 4a Project area boundaries.

Impact Summary

Potential sedimentation, increased turbidity, or the release and exposure of contaminants could adversely affect fish and aquatic habitats. Construction activities including rip rap placement, potential dredging, pile driving, cofferdam construction and dewatering, and general in-water construction could cause direct disturbance to fish and their aquatic habitats. Out-of-water construction activities could also occur at times of the year when there is potential for the presence of sensitive fish species/life stages in the Sacramento River during construction activities. For the above reasons, this impact would be significant (Similar) for the Proposed Action. For the RSLIP Alternative, the extent of application of rip rap (and therefore direct disturbance to fish and aquatic habitats), and removal of waterside vegetation resulting in sedimentation would be greater than for the Proposed Action. The impact would also be significant. (Similar)

Mitigation Measure 4.7-i: 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

Proposed Action and RSLIP Alternative

SAFCA shall implement the following measures to reduce impacts to fish and aquatic habitats related to temporary, short-term construction-related increases in sediments and turbidity and release of contaminants as well as direct disturbance to a less than significant level. These measures shall be included in construction specifications along with any additional measures identified in necessary permits.
► SAFCA shall implement Mitigation Measure 4.6-a, as described in Section 4.6, “Water Quality.” This measure requires filing a Notice of Intent (NOI) with the Central Valley RWQCB; implementing standard erosion and siltation measures and best management practices (BMPs); preparing and implementing a storm water pollution prevention plan (SWPPP); preparing and implementing a spill containment plan; and complying with the conditions of the National Pollutant Discharge Elimination System (NPDES) general stormwater permit for construction activity.

► SAFCA shall identify and implement feasible in-water construction work windows in consultation with NMFS and DFG. In-water work windows shall be timed to occur when sensitive fish species/life stages are not present or least susceptible to disturbance (e.g., July 1–October 1). This measure would reduce potential construction-related direct impacts to fish from dredging and/or construction of the cofferdam and dewatering, general in-water construction, and/or the placement of rock riprap because all in-water work would occur during the period of time that sensitive fish (or life stages) would be least likely to be present in the construction area.

► USACE shall initiate Section 7 consultation with NMFS under Section 7 of the ESA, and SAFCA shall consult with DFG under CESA regarding potential construction-related impacts to Federally listed fish species and state-listed fish species, respectively. SAFCA shall implement any additional measures developed through the ESA Section 7 and CESA consultation processes, including Section 2081 permit conditions, to ensure that impacts are avoided and/or minimized.

► The cofferdam sheetpiles at the outfall structure construction site and the piles at the South Lauppe Pumping Plant site shall be installed using a vibratory hammer when possible to minimize underwater sound pressure levels to the greatest extent feasible and associated effects to sensitive fish species. Vibratory hammers/pile drivers shall only be used during daytime hours and shall commence at low energy levels and slowly build to impact force. If it is determined that a higher-intensity percussion hammer or pile driver would be required for installing the cofferdam or pilings, avoidance of potential adverse effects would be achieved by consulting with NMFS, USFWS, and DFG to determine the appropriate actions, which may include surveying the outfall site to determine fish presence prior to installation, and possibly modifying the work window accordingly.

► To reduce the potential for fish stranding or minimize the potential for harm during cofferdam dewatering activities, SAFCA or its contractor shall implement a fish rescue plan. Prior to the closure of the cofferdam in the Sacramento River, seining by a qualified fisheries biologist (with a current DFG collection permit) will be conducted within the cofferdam using a small-mesh seine to direct and move fish out of the cofferdam area. Upon completion of seining, the entrance to the cofferdam will be blocked with a net to prevent fish from entering the cofferdam isolation area before the cofferdam is completed. Once the cofferdam is completed and the area within the cofferdam is closed and isolated, additional seining will be conducted within the cofferdam to remove any remaining fish. Once most of the fish have been removed from the isolated area, portable pumps with intakes equipped with 1.75 mm mesh screen shall be used to dewater to a depth of 1.5–2 feet. A qualified biologist shall implement further fish rescue operations using electrofishing and dip nets. All fish that are captured will be placed in clean 5-gallon buckets and/or coolers filled with Sacramento River water, transported downstream of the construction area, and released back into suitable habitat in the Sacramento River with minimal handling. After all fish have been removed using multiple seine passes, electrofishing, and dip nets (as necessary) portable pumps with
screens (see above) will be used for final dewatering. NMFS, USFWS, and DFG shall be notified at least 48 hours prior to the fish rescue.

Implementing Mitigation Measure 4.7.i would reduce the potential impacts of increased sedimentation, turbidity, and direct disturbance to fish to a less-than-significant level because the use of BMPs (e.g., source control, detention basins, revegetation, spill containment plan, waterside construction outside of the flood season, erosion control), an in-water work window and operational controls and a fish rescue plan would maintain surface water quality conditions in adjacent receiving waters and minimize disturbance to fish and aquatic habitats. (Similar)

Impact 4.7-j: Impacts to Fish Species Associated with Operation of Pump Plants and Surface Drains

No-Action Alternative

No Project Construction

Under the No-Action Alternative, modifications to RD 1000 Pumping Plant Nos. 3 and 5, reconstruction of the Pumping Plant No. 3 outfall, removal of the deep culvert at the Pumping Plant No. 3 outfall location, construction of drainage outfalls, and modifications to/replacement of the existing irrigation pumping plants (i.e., Riverside, Bennett, Northern Main, South Lauppe, and nine other private river pumps) would not occur. As a result, there would be no potential for impacts related to the operation of the pump plants or surface drains because no new facilities would be constructed and existing facilities would not be modified. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Levee failure would cause flows into, and possibly out of the Natomas Basin, potentially stranding fish. Levee failure could also damage irrigation pump plants, and depending on the magnitude and location of the levee failure, could result in the pump plants being shut down for an unknown period of time. This could have an effect on fish entrainment as well as sedimentation, turbidity, and contaminants concentrations at the outfalls. A precise determination of significance of the impacts is not possible and cannot be made because the extent of the magnitude of impact is unknown and whether it would be adverse or beneficial. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Interference with the Migration of Migratory Fish Species through the Creation of Attraction Flows at Drainage Outfalls

The Phase 4a Project includes modification to the pipes and associated pumping facilities at RD 1000 Pumping Plant Nos. 3 and 5, and the reconstruction of the outfall at Pumping Plant No. 3 under both action alternatives and construction of several surface drainage outfalls to accommodate storm runoff from the area between the existing and adjacent levee in Reaches 10–11B of the Sacramento River east levee under the Proposed Action.

Pumping Plant Nos. 3 and 5 are drainage pumping plants with their pumps located on the landside of the Sacramento River east levee. New discharge pipes crossing the levee would be required to raise the pipes above the 200-year flood level elevation to meet USACE requirements for perimeter levee integrity under flood conditions. Modifications to the pumps may also be required to accommodate the additional pressure from the increase in elevation to maintain the existing pumping rate. Relocation of the pumping plants may also be required on the landside of the levee. The new discharge pipes would connect to the existing pipes on the waterside of the levee at Pumping Plant No. 5 and the stormwater would discharge into the river through the
existing outfalls. The outfall at Pumping Plant No. 3 would need to be reconstructed as part of the Phase 4a Project and the replaced pipes would connect at the reconstructed outfall and discharge into the Sacramento River. The existing outfall consisting of a single pipe would be replaced by a concrete-reinforced structure with three 36-inch openings covered by flap gates. There would be no change in the volume, timing, or quality of stormwater being discharged at the Pumping Plant Nos. 3 and 5 outfalls compared to the existing condition.

Several drainage outfalls are proposed to be constructed along Reaches 10–11B of the Sacramento River east levee. Each drain is designed to accommodate flows generated from runoff in the localized areas between the existing levee and proposed adjacent levee as a result of the raise in the height of the adjacent levee. Water quality of the runoff is anticipated to be similar to the runoff that currently occurs on the waterside of the existing levee (through drainage of stormwater over the crest of the levee). Drainage pipes are anticipated to vary in size from 12 to 15 inches in diameter. Most of the drainage outfalls would be located above the ordinary high-water mark of the river.

Water quality in the discharge water from the pumping plants and drainage outfalls would be required to meet NPDES permit requirements (see Mitigation Measures 4.6-b and 4.7-i); therefore, operation of these facilities would not substantially degrade water quality in the Sacramento River.

Anadromous salmonids, during their spawning migrations in the Sacramento River, use primarily olfactory cues to home to their natal streams once they reach the freshwater environment. There is the potential that the flows from the drainage pumps and surface drainage outfalls could create velocity gradients that could attract these fish to attempt to swim up the water discharge. During fall and winter, adult chinook salmon and steelhead are in the river migrating upstream to spawning grounds. If these fish become attracted to the flows from the outfall pipes, there is a potential to cause migration delays. With high river levels, the drainage outfalls could directly interface with Sacramento River surface water and create a condition where fish could swim directly into the pipes. However, because salmonids imprint on olfactory cues particular to their stream of origin, the probability of flows from the pump or drainage outfalls interfering with migration is low.

**Entrainment of Fish at Existing or Replaced Irrigation Pumping Plants**

The Phase 4a Project includes modification of the pumping facilities at the Bennett, Northern Main, and Riverside Pumping Plants to accommodate the raise in the pipes above the 200-year flood elevation. As a result of bank protection activities as well as the raise in the pipes, the South Lauppe Pumping Plant would need to be replaced either in place or at a location north of the rock slope protection area. Nine other private river pumps would also be modified to accommodate approved and proposed levee improvements. Operation of these modified/replaced facilities could entrain fish, including special-status species. Under the Proposed Action and the RSLIP Alternative, there are two possible scenarios with respect to this potential impact (as described in Section 2.3, “Proposed Action,” and Chapter 5.0, “Cumulative and Growth-Inducing Impacts, and Other Statutory Requirements”). Under the American Basin Fish Screen and Habitat Improvement Project (ABFS), there is a plan to decommission the Bennett and Northern Main Pump Stations and the Riverside Pumping Plant and replace them with two new irrigation pumping plants on the Sacramento River that would be fitted with fish screens. The construction activities to be included in the Phase 4a Project could vary depending on the timing of the ABFS project in relation to Phase 4a Project activities as follows:

- If construction of the ABFS is completed first, the decommissioning of the plants would be completed and the pipes beneath the levee would be removed by the responsible parties for the ABFS as needed to install a cutoff wall in the levee. As a result, modification or replacement of the pipes and associated pumps would not be required by and, therefore, would not be included in the Phase 4a Project.

- If the ABFS is not completed first, the modifications to the pipes and associated irrigation pumping plants to allow them to maintain their current operation with the rise of the pipes above the 200-year flood elevation would be implemented along the NCC south levee and Sacramento River east levee as part of the Phase 4a
Under the first scenario, the ABFS would decommission the plants and no modification and/or replacement of the existing discharge pipes and associated pump plants would be required. Under the second scenario, modification or replacement of the discharge pipes and associated irrigation pumps would be a necessary component of the Phase 4a Project for Riverside, Bennett, and Northern Main Pumping Plants. Replacement of the South Lauppe irrigation pump and infrastructure would be required to accommodate bank stabilization and would continue independent of the ABFS Project activities. The modifications to/replacement of the pumping plants under the Phase 4a Project, would not result in a change in the operation (e.g., frequency, magnitude, or duration of pumping). Therefore, there would be no change in the potential for fish entrainment associated with the future operation of these facilities compared to that under the existing condition.

**Impact Summary**

The potential for interference with the migration of fish species resulting from the modifications to Pumping Plant Nos. 3 and 5 or the surface drainage outlets would be low. The volume of water that would be discharged from the Pumping Plant Nos. 3 and 5 outfalls would not change from current levels, and, therefore, no additional attraction flows would be created compared to the existing condition. Further, migratory fish including anadromous salmonids follow olfactory cues on their upstream migrations and the stormwater discharges would not be expected to carry those particular cues. Modification/replacement of the irrigation pump plants including their intakes (Riverside, Bennett, and Northern Main Pumping Plants if the Proposed Action occurs before the ABFS project and South Lauppe under both timing scenarios) could result in the entrainment of fish. However, there would be no change in the rate or volume of water pumped compared to the existing condition. As a result, the potential for entrainment of fish into the pumps would be the same as under the existing condition. Therefore, impacts to fish species associated with modifications to/replacement of or operation of pumping plants and surface drains under the action alternatives would be less than significant. (Similar)

**Mitigation Measure:** No mitigation is required.

**Impact 4.7-k: Impacts on Successful Implementation of the NBHCP**

**No-Action Alternative**

Under the No-Action Alternative, without levee improvements, vegetation removal from the waterside of the levee would be required to conform with USACE guidance regarding levee encroachments, eliminating habitat for several species covered by the NBHCP. This habitat supports the majority of Swainson’s hawk nest sites in the Natomas Basin. As described under Impact 4.7-f, above, the impact of the loss of this vegetation on Swainson’s hawks would be significant and may not be mitigable. Impacts on nesting habitat for Swainson’s hawks in the near term (i.e., before compensation woodland plantings have developed sufficiently to provide replacement nesting habitat) could substantially affect the successful implementation of the NBHCP. Under the No-Action Alternative, therefore, this impact is considered significant. (Greater)

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. TNBC’s reserve infrastructure would be subject to damage in the event of levee failure; however the extent of such damage is uncertain. Without flood risk reduction provided by the project, restrictions would be placed on new urban development and remaining habitat would not be at risk for conversion due to development. Because there would be no habitat loss due to urban development, implementation of this alternative would not directly conflict with the implementation of the NBHCP. This potential impact would be less than significant. (Lesser)
**Proposed Action**

Implementation of the Proposed Action could jeopardize successful implementation of the NBHCP through the conversion of habitats and land uses.

**Impact on TNBC Preserves**

The Proposed Action could encroach onto a small area of TNBC reserve land. TNBC lands in the area of potential overlap support grassland and cropland managed to provide Swainson’s hawk foraging habitat (TNBC 2008). Within this area, the Proposed Action would result in land use conversions rather than loss of habitat (e.g., conversion of cropland to grassland) and following project implementation, the area would still provide Swainson’s hawk foraging habitat. This would be a significant impact.

**Impacts on NBHCP-Covered Species Viability**

The potential for the Proposed Action to threaten the viability of populations of certain covered species, reduce the effectiveness of the NBHCP’s conservation strategy, and adversely affect attainment of the goals and objectives of the NBHCP, could jeopardize successful implementation of the NBHCP. This would be a significant impact.

**Impacts on Habitat Availability**

The Proposed Action would not result in the development of land outside the NBHCP permit area, but it would result in land use conversions. Land use conversions, however, would not cause a net loss in the habitat values provided by these lands for NBHCP-covered species in the Natomas Basin.

Impacts to habitat resulting from project implementation are summarized in Tables 4.7-1 through 4.7-7. Although temporary and permanent loss of habitat would result from implementation of the Proposed Action, the overall habitat quality for NBHCP species that use these habitats is unlikely to be adversely affected. This is because many components of the proposed project would support attainment of NBHCP goals and objectives through: (1) the expansion of the amount of protected habitat available for NBHCP-covered species; (2) the consolidation of large areas of habitat, assisting in the expansion of TNBC reserve blocks in the northwestern and southwestern regions of the basin; (3) the connection of core habitat reserves that are distributed throughout the basin through the construction of new canals and the establishment of woodland corridors; and (4) the extension of currently protected habitat blocks by substantially increase acreage and patch size of these habitats.

Given the collective implementation of elements of SAFCA’s conservation strategy and proposed mitigation to compensate for temporary and permanent habitat loss, the proposed project would not jeopardize the implementation and efficacy of the NBHCP. However, if habitat creation/preservation are not effectively implemented to provide woodland habitat for NBHCP-covered species, an overall adverse effect could occur. This impact would be potentially significant.

**RSLIP Alternative**

The impacts of the Proposed Action on successful implementation of the NBHCP would also occur under the RSLIP Alternative, with the exception that under this alternative, there would also be extensive removal of riparian vegetation on the waterside of the Sacramento River east levee to conform with USACE guidance regarding levee encroachments. This habitat is used by a variety of species covered by the NBHCP, and supports the majority of Swainson’s hawk nest sites in the Natomas Basin. As described under Impact 4.7-f, above, the impact of the loss of this vegetation on Swainson’s hawks would be significant and may not be mitigable. Impacts on nesting habitat for Swainson’s hawks in the near term (i.e., before compensation woodland plantings have developed sufficiently to provide replacement nesting habitat) could substantially affect the successful implementation of the NBHCP. Under the RSLIP Alternative, therefore, this impact would be significant. (Greater)
Mitigation Measure 4.7-k: Ensure that Project Encroachment Does Not Jeopardize Successful Implementation of the NBHCP and Implement Mitigation Measures 4.7-a, 4.7-c, and 4.7-e through 4.7-h

**Proposed Action and RSLIP Alternative**

To reduce impacts on the successful implementation of the NBHCP, SAFCA shall implement the measures described below:

- Implement Mitigation Measures 4.7-a, 4.7-c, and 4.7-e though 4.7-h.
- Based on the current value-per-acre, SAFCA shall contribute funds to TNBC to offset direct impacts to TNBC reserves on an acre-per-acre basis, drawing upon TNBC’s existing land surplus.

These measures would ensure that the Proposed Action would be implemented in a manner that is consistent with and does not jeopardize successful implementation of the NBHCP. Creating woodland and aquatic movement corridors and other replacement habitats, conducting protocol-level surveys for special-status plants and wildlife, implementing construction in a manner that reduces loss of habitat and direct mortality of species, implementing measures that are part of the NBHCP related to special-status species, and creating and implementing a management plan in consultation with USFWS and DFG would reduce the impact on consistency with the NBHCP to a less-than-significant level.

Implementing this mitigation measure, and Mitigation Measures 4.7-a, 4.7-c, and 4.7-e though 4.7-h would partially reduce the impact under the RSLIP Alternative, but not to a less-than-significant level. Because of the likely loss of a substantial amount of nesting habitat for Swainson’s hawk, these measures could be insufficient to ensure that the RSLIP Alternative would not jeopardize successful implementation of the NBHCP. Thus, this impact would remain significant and unavoidable.

4.7.3 **Residual Significant Impacts**

Under the No-Action Alternative, there would be no impacts to sensitive aquatic habitats or impacts related to fish attraction at the drainage outfalls. However, impacts on waterside woodland, wildlife corridors, Swainson’s hawk nesting, and valley elderberry longhorn beetle cannot be fully reduced to a less-than-significant level without the successful creation of waterside planting areas sufficient in size to fully and adequately compensate for the removal of extensive amounts of waterside vegetation along the Sacramento River east levee. Because mitigation cannot be required for the No-Action Alternative, this impact would remain significant and unavoidable.

In the event of levee failure under the No-Action Alternative, impacts to waterside woodlands, wildlife corridors, fish, special-status plant and animal species, and sensitive aquatic habitats are uncertain. Although there would be some unknown level of fish mortality through physical injury and stranding of fish entering Natomas Basin through a levee breach and some impacts associated with degraded water quality on fish habitat, the severity of flood conditions can vary substantially, and the specific effects on fish cannot be reasonably predicted. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

Under the Proposed Action, implementation of mitigation measures described above would reduce long-term impacts to woodlands, Swainson’s hawk, and wildlife corridors for aquatic species, bird species, fish, and special-status species to a less-than-significant level and would not result in residual significant adverse impacts. These measures would also ensure that the Proposed Action would not jeopardize successful implementation of the NBHCP. Although no permanent impacts would occur, impacts to woodland habitats would remain significant and unavoidable for many years before reaching a less-than-significant level because replacement plantings would...
require 10–15 years to mature. This temporal loss of woodland habitat would also result in significant and unavoidable impacts to Swainson’s hawk nesting habitat related to this temporal loss of habitat.

Implementation of mitigation measures described above for the RSLIP Alternative would not be sufficient to fully mitigate impacts to woodland habitats, loss of wildlife corridors, or the likely loss of a substantial amount of nesting habitat for Swainson’s hawk along the waterside of the Sacramento River east levee. These measures would also be insufficient to ensure successful implementation of the NBHCP. Residual impacts would occur because of the extensive loss of waterside vegetation, the temporal loss of habitat while replacement vegetation matures, and the limited extent of the new plantings that would reduce the value of this replacement habitat to wildlife and bird movement. Because no other feasible mitigation measures are available, impacts under the RSLIP Alternative would remain significant and unavoidable.

With implementation of the mitigation measures described in this section, the Proposed Action and the RSLIP Alternative would not result in any residual significant impacts related to giant garter snake, valley elderberry longhorn beetle, northwestern pond turtle, burrowing owl, or fish.

With implementation of the mitigation measures described in this section, the Proposed Action and the RSLIP Alternative would not result in any residual significant impacts related to sensitive aquatic habitats. In fact, successful implementation of the mitigation measures would have a beneficial impact on overall acreage and functions of waters of the United States in the Natomas Basin.
4.8 CULTURAL RESOURCES

This section evaluates the Phase 4a Project’s potential effects on cultural resources. Cultural resources include prehistoric archaeological sites and artifacts, historic-era buildings and structures, and places used for traditional Native American practices or other properties with special cultural significance to Native Americans (Traditional Cultural Properties [TCPs]).

This project is subject to both CEQA and Section 106 of the National Historic Preservation Act (NHPA), hereinafter referred to as “Section 106”; each has specific cultural resources mitigation requirements. The regulatory setting for management of cultural resources is provided in Section 3.8, “Cultural Resources.” The requirements of the NHPA are described in Chapter 6.0, “Compliance with Federal Environmental Laws and Regulations.” In general, the standards and process required for identifying and managing effects on cultural resources under the NHPA are used for determining the significance of impacts under NEPA.

4.8.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.8.1.1 METHODOLOGY

This section describes the methods used to identify and evaluate cultural resources that may be affected by the Phase 4a Project.

Native American Tribal Consultation

In May 2008, USACE, SAFCA, and the State Historic Preservation Officer (SHPO) became signatories to a Programmatic Agreement (PA), concluding compliance with Section 106 (Appendix E1). Native American tribes who were consulted by USACE were the Ione Band of Miwok Indians, the Shingle Springs Band of Miwok Indians, and the United Auburn Community, and all were invited to participate in the PA. Native American monitors worked with SAFCA to assist in the treatment of Native American human remains and items associated with Native American burials discovered during the project inventory process, as required by the PA (Section VI).

EDAW (now AECOM) sent a letter of inquiry to the Native American Heritage Commission (NAHC) on June 12, 2007, asking for information or concerns regarding the project area, as well as a list of individuals or organizations that might have information or concerns regarding the project area. On June 19, 2007, Debbie Pilas-Treadway of the NAHC responded and indicated that no known sites were found in the Sacred Lands File that were located within the project area or in the immediate vicinity. Ms. Pilas-Treadway also provided a list of individuals who could be contacted concerning cultural resources in the project area. These individuals were sent contact letters on June 21, 2007, with information regarding the project and a request for any information they might provide or concerns that they might have about the project. This program of correspondence did not reveal new resources. The complete results of this program of investigation are described in the Phase 2 EIR (SAFCA 2007: 3.8-11).

The NAHC also designated a Most Likely Descendant (MLD) for the project, Mr. John Tayaba of the Shingle Springs Band of Miwok Indians. Mr. Tayaba has been designated as the MLD because he is a member of the Shingle Springs Band of Miwok Indians, and the Tribe’s aboriginal territory includes the NLIP project area. Mr. Tayaba is designated to determine how to reinter identified prehistoric human remains that are uncovered in the NLIP area with appropriate dignity per California Public Resources Code Section 5097.98. Representatives from SAFCA, USACE, and AECOM, and Mr. Tayaba meet weekly to discuss management of cultural resources for the NLIP and milestones in the Section 106 process.
Information Center Records Searches

Records searches were performed in 2006 and 2007 for the entire NLIP footprint, which includes the proposed Phase 4a Project footprint. Most of the searches were conducted at the North Central Information Center (NCIC) of the California Historical Resources Information System, located at California State University, Sacramento. The NCIC records search covered portions of the project area in Sacramento County. Records searches were also conducted at the Northeast Information Center (NEIC), which maintains cultural resource records for Sutter County. The searches at both facilities included, but were not necessarily restricted to, an examination of the following resources:

► the State Office of Historic Preservation’s *Historic Property Directory and Determination of Eligibility* (2006),
► the National Register of Historic Places and California Registers of Historical Resources (2006),
► *California Inventory of Historic Resources* (1976 and updates),
► *Historic Properties Directory* (2006),
► *California Historical Landmarks* (1996 and updates),
► *California Points of Historical Interest* (1992 and updates),
► *Caltrans Local Bridge Survey* (1987), and
► various historic maps.

The record search results are described in detail in Section 3.8.2.3, “Records Search Results.”

Inventory and Management of Resources Within the Phase 4a Project Area of Potential Effect

SAFCA is required to perform an inventory, evaluation, and finding of effect for identified resources for the area of potential effect (APE) for each project phase, under the executed PA, as described below (Stipulation IV[A]). Inventory and evaluation typically consists of the following steps:

► pedestrian survey of the project footprint;
► limited shovel testing or probing where ground cover impairs surface visibility;
► monitoring of preconstruction geotechnical borings and backhoe excavations;
► documentation of identified resources; and
► evaluation of identified resources by application of eligibility criteria, and where necessary, limited test excavation to assist in resource evaluation.

SAFCA has completed a pedestrian survey for a portion of the Phase 4a Project footprint along the Sacramento River east levee. However, several proposed borrow locations remain within the Phase 4a Project footprint that require pedestrian inventory or additional subsurface investigation, including the majority of the Fisherman’s Lake Borrow Area (see Plate 2-6a), and segments along the Sacramento River east levee. SAFCA will complete an inventory of all project features that involve ground-disturbing work in native soils, including borrow locations. SAFCA will also complete evaluations, findings of effect, and treatment of identified resources where required. Within the portion of the Phase 4a Project footprint that has been surveyed, three identified resources require evaluation to determine if they are historic properties or historical resources (CA-Sac-15/H, CA-Sac-268, and CA-Sac-160). If they are eligible for listing on the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR), SAFCA will make a finding of effect and make recommendations for further management in an Historic Property Treatment Plan (HPTP), as required under Stipulation V(A) of the PA. The remaining resources are either determined ineligible for listing on the NRHP or CRHR (CA-Sac-493H, CA-Sac-1115H), or are listed on the NRHP (CA-Sac-16/H). Because CA-Sac-16/H is listed on the NRHP it is automatically listed on the CRHR (California PRC Section 5024.1[d][1]), and thus is an
historical resource under CEQA. As described below, CA-Sac-17/H was documented in the project vicinity, but it has not been relocated and may have been destroyed.

### 4.8.1.2 Thresholds of Significance

**California Environmental Quality Act**

The Phase 4a Project would result in a significant impact on a cultural resource if it would result in a substantial adverse change in an historical resource, as defined under CEQA. A substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired.

**National Historic Preservation Act**

The Phase 4a Project would result in a significant impact on an historic property as defined under Section 106 if it would result in an adverse effect on that resource. An adverse effect would occur if the project would alter, directly or indirectly, any of the characteristics of an historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.

### 4.8.2 Identified Resources

Table 4.8-1 contains all identified resources, other than elements of RD 1000 (discussed separately under Impact 4.8-a, below) in the Phase 4a Project footprint. For all resources that are determined ineligible, no further management is required. The Phase 4a Project is an action within a program of undertakings. The Phase 2 EIR and Phase 2 EIS have analyzed the impacts of the program and have identified potential impacts for several other identified resources within the Phase 4a Project footprint (Table 4.8-1). These program-level significance conclusions are summarized in Table 4.8-1.

As described in Section 1.1.1, “Scope of Environmental Analysis,” the State CEQA Guidelines allow for tiering of analysis and documentation when CEQA documentation has been performed for a program of projects. Incorporation of previous analysis by reference is also encouraged for NEPA analysis under the CEQ regulations, as described in Section 1.1.1. Accordingly, for resources for which the potential impact of the program has been previously determined, the significance conclusion is identified in Table 4.8-1, and a citation is provided to the relevant document. No further analysis is provided in this document, and the reader is referred to the previous analysis. The list of documents in which this analysis is provided includes the Phase 2 EIR and Phase 2 EIS.

### 4.8.2.2 Prehistoric Resources

The following prehistoric resources, which were not addressed fully in the program-level documents cited above, have been identified within the project footprint, as noted in Table 4.8-1. In this table, resources are organized approximately north to south. For all resources that may be determined eligible or are already listed on the NRHP or CRHR, SAFCA will determine the effect of the undertaking, subject to USACE and SHPO concurrence. If adverse effects are found, SAFCA would prepare and implement an HPTP in consultation with USACE and the SHPO.

An analysis of these resources is required in this document to determine if the Phase 4a Project could result in a substantial adverse change on an historical resource under CEQA, or an adverse effect on a historic property under the NHPA:

- **CA-Sac-17/H.** This resource consists of the remains of a mound site recorded as early as 1934 along the Sacramento River east levee. Site records depict the site in varying locations. AECOM conducted pedestrian
and subsurface inventory efforts in 2009 to relocate this resource; however, because the above-grade portion of this resource has been truncated, it is difficult to identify and relocate the remaining subterranean portion of the site, if it still exists with any degree of integrity. AECOM’s shovel testing efforts may have identified the

<table>
<thead>
<tr>
<th>Trinomial or P-Number</th>
<th>Resource Type</th>
<th>Eligibility Status (NRHP and CRHR)</th>
<th>Previous Significance Conclusion after Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA-Sac-485/H</td>
<td>Prehistoric site</td>
<td>Determined eligible</td>
<td>Significant and Unavoidable (Phase 2 EIR, SAFCA 2007:3.8-29), Potentially Significant (Phase 2 EIS, USACE 2008:4-72)</td>
</tr>
<tr>
<td>CA-Sac-15/H</td>
<td>Prehistoric site</td>
<td>Requires testing/evaluation to determine eligibility</td>
<td>Significant and Unavoidable (Phase 2 EIR, SAFCA 2007:3.8-31), Potentially Significant (Phase 2 EIS, USACE 2008:4-73)</td>
</tr>
<tr>
<td>CA-Sac-493/H</td>
<td>Historic debris</td>
<td>Determined ineligible for listing on the NRHP and CRHR (SHPO concurrence received) (USACE 2008)</td>
<td>Not applicable; no further management required</td>
</tr>
<tr>
<td>CA-Sac-16/H1</td>
<td>Prehistoric mound site with spatially associated historic component</td>
<td>Listed on the NRHP and CRHR</td>
<td>Significant and Unavoidable (Phase 2 EIR, SAFCA 2007:3.8-31), Potentially Significant (Phase 2 EIS, USACE 2008:4-73)</td>
</tr>
<tr>
<td>CA-Sac-1115H</td>
<td>Historic farmstead</td>
<td>Determined ineligible for listing on the NRHP and CRHR (SHPO concurrence received) (USACE 2009)</td>
<td>Not applicable; no further management required</td>
</tr>
<tr>
<td>CA-Sac-268</td>
<td>Lithic scatter</td>
<td>Requires testing/evaluation to determine eligibility</td>
<td>Discussed in Impact 4.8-b, below</td>
</tr>
<tr>
<td>CA-Sac-17/H</td>
<td>Prehistoric mound site</td>
<td>Not relocated, requires testing/evaluation to determine eligibility</td>
<td>Potentially Significant (Phase 2 EIS, USACE 2008:4-73) Discussed in Impact 4.8-b, below, pursuant to CEQA</td>
</tr>
<tr>
<td>CA-Sac-160/H2</td>
<td>Prehistoric mound site and spatially associated historic farmstead</td>
<td>Requires testing/evaluation to determine eligibility</td>
<td>Significant and Unavoidable (Phase 2 EIR, SAFCA 2007:3.8-31), Potentially Significant (Phase 2 EIS, USACE 2008:4-73)</td>
</tr>
</tbody>
</table>

Notes: NRHP = National Register of Historic Places; CRHR = California Register of Historic Resources
1 The Phase 2 EIS text states “implementation of this mitigation may not fully reduce the impact to a less-than-significant level”; therefore, the significance conclusion after mitigation implementation would be significant and unavoidable.
2 Resource contains a mortuary component.
Source: Data compiled by AECOM in 2008 and 2009
edge of the site on the edge of the AKT and Huffstutler Trust properties within the proposed Elkhorn Borrow Area (Plate 2-7). Absent stronger physical evidence, it is extremely difficult to say where this site is, but mound sites in the Sacramento Valley almost always have mortuary components. Even though the mound has been leveled to the current grade, it is likely that subterranean portions of the deposit contain human remains, if such deposits remain with sufficient integrity to allow identification and evaluation.

- CA-Sac-268. This resource consists of a sparse scatter of debris associated with the manufacture of flaked stone tools. While the deposit requires testing and evaluation under the NRHP and CRHR listing criteria it does not evince potential to offer data in prehistoric archaeological research, and thus is not anticipated to be eligible or require treatment to resolve adverse effects.

### 4.8.3 IMPACTS AND MITIGATION MEASURES

This section describes the impacts of the Proposed Action and alternatives under consideration on cultural resources and outlines treatment measures that may avoid or reduce the predicted impacts. These measures would be implemented by USACE and SAFCA, in consultation with the SHPO and the MLD, as appropriate. The specific documents that will further define and describe monitoring and mitigation measures include HPTPs that SAFCA will prepare and the Construction Monitoring and Inadvertent Discovery Plan, in compliance with the PA.

Impacts that are significant under CEQA are also considered adverse effects under the NHPA.

**Impact 4.8-a: Potential Changes to Elements of Reclamation District 1000 and Rural Landscape District**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly disturb elements of RD 1000 and Rural Landscape District. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could alter elements of RD 1000. However, the major elements and overall character of RD 1000 are unlikely to be significantly adversely affected because levee systems by their nature are subject to ongoing repair and upgrades. Repairs would thus be consistent with the character-defining elements of the landscape. This potential impact is considered less than significant. *(Lesser)*

**Proposed Action and RSLIP Alternative**

As described in Section 3.8.2.2, “Historic Setting,” RD 1000 is a rural historic landscape district that contains numerous elements associated with flood damage reduction and drainage infrastructure. An evaluation of RD 1000 was conducted both to determine the NRHP eligibility of the district and to evaluate whether the district would be significantly affected by flood damage reduction projects (levee modifications) planned and subsequently implemented by USACE as part of the American River Watershed Project (USACE 1991). RD 1000 was identified as eligible for inclusion in the NRHP as a Rural Historic Landscape District. Because RD 1000 was determined eligible for listing on the NRHP, it is also listed on the CRHR and is an historical resource under CEQA. The finding of effect statement concluded that USACE projects would adversely affect both contributing and noncontributing elements of RD 1000 by allowing for greater development to occur in the region. As a result, mitigation measures were adopted and incorporated into USACE’s project. These consisted of Historic American Engineering Record (HAER) documentation, which was prepared by Peak & Associates (1997), videotapes of
historic properties, and a list of repositories where copies of the information would be made available to the public.

Work associated with the Phase 4a Project under both the Proposed Action and the RSLIP Alternative may alter contributing elements of RD 1000. This work includes improving the Sacramento River east levee, remediating seepage, and modifying pumping plants along the Sacramento River east levee, as well as relocating and extending Riverside Canal.

Along the NCC south levee, the Bennett and Northern Main Pump Stations would be modified, and cutoff walls would be installed and the levee raised at the pump stations. These changes include construction of new features along contributing levees, such as adjacent levees and seepage berms (under the Proposed Action), or changes to the existing levee slope and crown (under the RSLIP Alternative). These changes may be consistent with the character-defining elements of RD 1000 because flood damage reduction infrastructure, by its nature, requires ongoing maintenance and alteration. However, such changes could diminish the significance or integrity of contributing elements of the district, under both the Proposed Action and the RSLIP Alternative. This impact is considered potentially significant pending identification and evaluation of effects on contributing elements of RD 1000. (Similar)

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

| Proposed Action and RSLIP Alternative | The management of the cultural resources that constitute the contributing elements of RD 1000 is governed by the PA (Appendix E1). Because the elements of the RD 1000 historic landscape district have already been recorded, a new inventory of these resources is not required under Stipulation IV(A) of the PA. After an APE has been determined per Stipulation III(C), a qualified architectural historian shall determine if contributing elements of the district are present in the APE. If contributing elements are present, the architectural historian shall update records for these resources and evaluate those elements to determine if they retain integrity. Because much of the Natomas Basin has been developed, it is possible that changes to the setting have diminished the integrity and thus eligibility of contributing elements in the APE. If the elements in the APE retain eligibility, the architectural historian shall make a finding of effect.

If there is an adverse effect to a contributing element (under Section 106) or a significant impact on the resource’s integrity as an historical resource (under CEQA), the architectural historian shall review existing HAER documentation and determine whether any augmentation of this documentation is needed. The original documentation for the American River Watershed Project (completed in 1997) contemplated changes to the setting of the district and thus provided comprehensive documentation to record the district before urbanization (Peak & Associates 1997). This original documentation was intended to adequately recorded and preserve records of the elements that may be affected. However, if this documentation is not sufficient for adversely affected and contributing elements, SAFCA shall prepare an HPTP stipulating additional HAER documentation, or other similar treatment as required under Stipulation V(A). After consultation with USACE and the SHPO, SAFCA shall implement the required documentation or treatment prior to construction. Any additional documentation that is needed shall be prepared and distributed to appropriate public repositories.

Implementing this mitigation and treatment measure would reduce the impacts of potential changes to elements of RD 1000 under both the Proposed Action and the RSLIP Alternative to a less-than-significant level. If required, this treatment measure would be incorporated.
Impact 4.8-b: Potential Damage or Disturbance to Known Prehistoric Resources from Ground-Disturbance or Other Construction-Related Activities

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly disturb any known historic-era resources. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Substantial flooding could result in inundation, or scour at the location of a levee break, of known subsurface prehistoric resources. Before construction of the levee system, these resources were subject to the effects of periodic flooding over several centuries and are unlikely to be adversely affected by additional episodes of inundation. Should a levee break occur at the location of a prehistoric site, the resource could be obliterated by the scourhole (potentially 1,000 feet wide and 80 feet deep) that would be created by the levee break. The magnitude of the impacts would depend upon the location of the levee breach, severity of the storm, and river flows at the time. Therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Construction of proposed improvements may affect six identified prehistoric sites (see Table 4.8-1) under both the Proposed Action and the RSLIP Alternatives. The impact of program and project work on these sites has largely been addressed in previous documents (see Table 4.8-1). The following analysis focuses on the potential effect that the two action alternatives would have on CA-Sac-17/H and CA-Sac-268, which were not fully addressed in previous environmental documents, as well as the potential for an increase in the severity of impacts to CA-Sac-485/H. This discussion also incorporates by reference previous discussion of CA-Sac-16/H, an NRHP- and CRHR-listed site that is within the APE for the Phase 4a Project, and updates this analysis by examining the potential effect that the action alternatives would have on this important resource.

CA-Sac-17/H, a prehistoric archaeological deposit, has not been precisely located despite extensive pedestrian and subsurface testing in the vicinity. Although agricultural practices appear to have largely obliterated this resource, it is possible that intact portions of this deposit remain. Because the original site record describes a mound site, any remaining portions of the resource are likely to have mortuary components. Another identified prehistoric resource, CA-Sac-268, consists of a sparse scatter of debris associated with the manufacture of flakes stone tools. It does not appear to be eligible for listing on the NRHP or CRHR; however, neither CA-Sac-17/H nor CA-Sac-268 have been formally evaluated for listing in accordance with the PA. Construction of proposed levee improvements, such as placement of seepage berms and relief wells along the Sacramento River east levee, excavation of inspection trenches and cutoff walls, and improvements and additions to drainage and water conveyance features, could result in ground disturbance that would affect these unevaluated resources.

As noted in Table 4.8-1, the effect of program- and project-level work on CA-Sac-16/H was analyzed in the Phase 2 EIR (SAFCA 2007:3.8-31) and the Phase 2 EIS (USACE 2008:4-73). These documents described how proposed work, including levee improvements and borrow excavation, could affect this NRHP- and CRHR-listed resource at a program and project level. Because CA-Sac-16/H is listed on the NRHP, it is also listed on the CRHR and is thus an historical resource under CEQA. Proposed improvements in the Phase 4a Project footprint
in the vicinity of this resource would involve construction of up to 500-foot-wide seepage berms, placement of relief wells, and excavation of cutoff walls or inspection trenches. The presence of an existing jet fuel pipeline in the southeastern portion of Reach 11B of the Sacramento River east levee may also require ground-disturbing work in the vicinity of CA-Sac-16/H. These actions could require excavation into and disturbance of CA-Sac-16/H.

The proposed construction of cutoff walls in Reach 4B overlaps with the location of CA-Sac-485/H. The proposed cutoff wall, which would range in depth from 20 to 75 feet, could intrude into deposits associated with CA-Sac-485/H that extend under the levee because the southern end of the cutoff wall overlaps slightly with the northern edge of CA-Sac-485/H. Because these deposits occur under the existing levee, it would not be feasible to perform any data recovery excavations on these deposits in advance of construction. Therefore, construction may result in significant impacts to CA-Sac-485/H.

The evaluation of eligibility and determination of effects on all eligible and listed sites will be made in consultation with USACE and the SHPO and the MLD, as appropriate. The sites that require evaluation may be significant both for their data potential and for their importance to local Native American groups, and may have the integrity to convey this significance. Such resources would be eligible for listing on the NRHP and the CRHR. As described above, it is possible that ground-disturbing work associated with the Phase 4a Project may, absent mitigation or treatment, result in significant impacts to CA-Sac-16/H, CA-Sac-17/H, CA-Sac-268, and CA-Sac-485/H, as well as other prehistoric sites listed in Table 4.8-1. Significant impacts may occur by conducting ground-disturbing construction that diminishes the data these resources may contain, or disturbing interred human skeletal remains and associated grave goods, under both the Proposed Action and the RSLIP Alternative. This impact is considered potentially significant. (Similar)

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

Under either the Proposed Action or the RSLIP Alternative, SAFCA shall implement the following measures.

- Complete an evaluation of identified resources, and determine the effect of each phase of work on all eligible or listed resources in accordance with Stipulation IV(A) of the PA.

- Consult with USACE, the SHPO, the MLD, and other consulting parties such as Native American individuals and organizations, to develop appropriate treatment or mitigation in an HPTP, per Stipulation V(A) of the PA if the project would result in adverse effects on eligible resources.

- Document the site and avoid further effects by protecting the resource through capping per management under an HPTP or other avoidance measures where feasible. Where physical impacts cannot be avoided and such physical impacts could damage the data these sites contain, including mortuary components, further mitigation may be required. Such mitigation may consist of data recovery excavations to retrieve those values and mortuary assemblages that contain significance for archaeology after consultation with and the agreement of the Native American MLD, where possible.

- Monitor potentially destructive construction in the vicinity of documented resources, as required under the Construction Monitoring and Inadvertent Discovery Plan.

Project implementation involves ground-disturbing work that both covers large areas of land, and includes deep excavation within the existing and adjacent levee footprint to provide necessary repairs to the flood damage reduction infrastructure in the Basin. Flood damage reduction measures that only involve capping of sites with minimization of vibratory and
compaction impacts may reduce significant impacts to less-than-significant levels. The complex and stratified geomorphology of the Basin as well as the magnitude of the construction are such that implementation of all treatment and mitigation may not fully reduce all impacts to known prehistoric resources under either the Proposed Action or the RSLIP Alternative to a less-than-significant level. For example, identified sites may have buried components containing mortuary elements that cannot be adequately documented prior to intrusive work. Therefore, these impacts would remain significant and unavoidable. (Similar)

Impact 4.8-c: Potential Damage to or Destruction of Previously Undiscovered Cultural Resources from Ground-Disturbance or Other Construction-Related Activities

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly damage or destroy previously undiscovered cultural resources. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to this system, the risk of levee failure would remain high. Substantial flooding could occur and result in inundation of unknown subsurface prehistoric resources, or scour at the location of a levee break. However, before construction of the levee system, these resources would have been subject to the effects of periodic flooding over several centuries and are unlikely to be significantly adversely affected by additional episodes of inundation. Should a levee break occur at the location of a previously unidentified and significant prehistoric site, the resource would likely be obliterated by the scourhole (potentially 1,000 feet wide and 80 feet deep) that would be created by the levee break. The magnitude of the impacts would depend upon the location of the levee breach, severity of the storm, and river flows at the time. Therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

The Proposed Phase 4a Project includes construction of levee improvements and seepage remediation (Reach 4B and Reaches 10–15 of the Sacramento River east levee), excavation of borrow sites, and changes and improvements to drainage infrastructure along the Sacramento River east levee, and work at the Northern and Bennett Pump Stations along the NCC south levee. These construction activities would involve ground disturbance and excavation that could damage or destroy previously undiscovered cultural resources.

Sacramento Valley floodplains and riverbanks were extensively occupied and used by prehistoric populations. Prehistoric occupation sites frequently took the form of mounds constructed above the natural ground surface by prehistoric human populations, but the upper portions of many of these sites have been destroyed by modern agricultural cultivation and leveling of fields, and the remains of these sites are thus no longer easily visible above ground. Additionally, intermittent flooding deposited layers of alluvium over prehistoric deposits, leaving these resources intact below grade with no surface manifestations. Areas within the Phase 4a Project footprint are also commonly covered with agricultural crops or residential developments such as lawns and driveways, and other impervious surfaces associated with residential development. These conditions may obscure both prehistoric and historic archaeological deposits.
Because technical work necessary to identify additional resources in the Phase 4a Project footprint and overall NLIP footprint is ongoing, significant resources may be identified after certification and approval of this FEIS that would be adversely affected by construction-related and other ground-disturbing activities. It is possible that impacts on yet unidentified resources cannot be avoided through changes in project design or configuration of borrow sites identified in Chapter 2.0, “Alternatives.” This impact is considered potentially significant. (Similar)

Where cultural resources are buried below sterile soils or where mounds have been truncated with no surface manifestation, discovery prior to construction or other ground-disturbing activities is not always possible. Furthermore, proposed improvements such as cutoff walls would occur under the footprint of the existing Sacramento River east levee. The levee would only be degraded immediately prior to construction; thus, there are no feasible methods of conducting a cultural resources inventory within the footprint of these activities. Degrading the levee prior to construction for cultural resource investigations would not be feasible because it would require demolishing the levee for cultural investigations during the summer in advance of construction and rebuilding the levee for the flood season, at substantial expense and project delay.

Excavation, grading, and other ground-disturbing activities required during construction of improvements and excavation of borrow from sites identified in Chapter 2.0, “Alternatives,” could encounter and damage previously unknown cultural resources that may be eligible for listing on the NRHP, CRHR, or both, under both the Proposed Action and the RSLIP Alternative. This impact is considered potentially significant. (Similar)


Proposed Action and RSLIP Alternative

Under either the Proposed Action or the RSLIP Alternative, SAFCA shall implement the following measures.

► SAFCA shall complete surveys to identify cultural resources in the Phase 4a Project footprint, as identified in the Phase 2 EIR (SAFCA 2007:3.8-31) at the program level.

► Mitigation Measure 3.4-d from the SEIR prepared for the Phase 2 Project is copied below and shall be implemented, as appropriate within the footprint of the Proposed Action (SAFCA 2009: 3.4-10).

Mitigation Measure 3.4-d: Conduct Additional Backhoe and Canine Forensic Investigations As Appropriate

To increase the data set for identifying buried sites under the existing levee, SAFCA shall recommend that the following additional mitigation measures be adopted by USACE during Section 106 consultation:

► Additional inventory may be conducted at appropriate intervals along the Sacramento River east levee, using a backhoe excavator, to increase the sample of information at depths below 6 feet that cannot be reached with conventional shovel test methods. Such methods may be used only when necessary to address potential project-related effects to cultural resources because other methods are ineffective or project circumstances dictate that such resources must be identified in advance of construction. USACE and SAFCA shall consult with the MLD regarding the use of such methods. USACE and SAFCA recognize the Tribe’s preference for less invasive methods of investigation such as the use of canine forensics.
Where this process or additional inventory efforts reveal other resources, SAFCA recommends the use of canine forensic investigations as a way of identifying interred human remains with minimal disturbance, and for further refinement of and understanding of the constituents of identified resources.

Before construction begins, a qualified professional archaeologist retained by SAFCA shall give a presentation and training session to all construction personnel so that they can assist with identification of undiscovered cultural resource materials and avoid them where possible. Such training shall note the importance of these materials to Native American groups that attach cultural significance to resources in the project area.

A qualified archaeologist shall monitor ground-disturbing construction activities along the Sacramento River east levee. In areas of known sacred value, such as archaeological sites containing Native American burials, a Native American monitor will be present to observe potentially destructive construction activities and to ensure proper treatment of human remains in accordance with State law. If a previously unidentified archaeological resource is uncovered during construction, construction activities shall be halted in the vicinity of the find and the construction contractor, SAFCA, USACE, the MLD, the NAHC (if appropriate), and other appropriate parties shall be notified regarding the discovery. Where construction would consist of cutoff walls excavated in a bentonite and/or cement slurry, SAFCA and USACE anticipate that it will not be possible to identify the precise location of any materials found in spoils or at soil mixing stations, thus construction cannot stop during excavation of cutoff walls if resources are discovered in spoils.

SAFCA shall then consult with USACE and the SHPO to determine the eligibility of the resource. If SAFCA and USACE, in consultation with the SHPO, concur that the resource is eligible and the project may result in adverse effects on the resource, SAFCA shall prepare and implement an HPTP as required under the PA, Stipulation V(A). The HPTP shall be prepared in consultation with USACE, the SHPO, and other appropriate consulting parties such as Native American individuals or organizations.

Work may only resume when either all necessary treatment has been performed under the HPTP, or construction in the vicinity will not result in adverse effects, and that work does not encroach within 30 meters of the known boundaries of the resource, or the boundaries designated by the SHPO, per the PA, Stipulation V(B)(2). All treatment stipulated in the HPTP shall be performed by SAFCA, in consultation with USACE.

It may be possible to avoid resources or recover and preserve them through measures stipulated in an HPTP. However, as with all ground-disturbing construction impacts, there is always the possibility of disturbing and adversely affecting resources before they can be discovered and appropriately protected. There is also the possibility that design constraints for proposed improvements and borrow sites will preclude the ability of SAFCA and USACE to avoid impacts on significant resources identified during inventory efforts. Therefore, implementation of these mitigation measures may not fully reduce all impacts under the Proposed Action, or the RSLIP Alternative, or under the NLIP to a less-than-significant level. Thus, this impact would remain significant and unavoidable. (Similar)
Impact 4.8-d: Potential Discovery of Human Remains during Construction

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to result in the discovery of human remains. There would be no impact. *(Lesser)*

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Substantial flooding could occur and result in inundation of unknown human remains, or scour at the location of a levee break. However, before construction of the levee system, these resources would have been subject to the effects of periodic flooding over several centuries. Should a levee break occur at the location of the prehistoric resource site, any interred and previously unidentified burials would be obliterated by the scourhole (potentially 1,000 feet wide and 80 feet deep) that would be created by the levee break. A precise determination of significance is not possible and cannot be made because it is unknown where such an event would occur and whether any resources would be affected. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. *(Currently Unknown)*

Proposed Action and RSLIP Alternative

Prehistoric human remains have been found at several prehistoric sites in the NLIP and Phase 4a Project areas. Previously unknown buried human remains may be unearthed, damaged, or destroyed during excavation activities associated with project construction and excavation of borrow from the sites identified in Chapter 2.0, “Alternatives.” This work includes construction of levee improvements, seepage remediation, changes and improvements to drainage infrastructure along the Sacramento River east levee, and work at the Northern and Bennett Pump Stations along the NCC. This impact was previously analyzed by SAFCA in the Phase 2 EIR, which is hereby incorporated by reference, as Impact 3.8-e (SAFCA 2007:3.8-32). Mitigation Measure 3.8-e was adopted by the SAFCA Board of Directors and incorporated into the NLIP, and the significance conclusion remains unchanged under CEQA. USACE concludes that the possibility exists of inadvertently disturbing interred human remains under both the Proposed Action and the RSLIP Alternative. In particular, the Proposed Action has a high risk of impacting previously undiscovered human remains because of the nature of the construction methods and procedures involved in the levee improvements. Under the Proposed Action, the existing stability berm along the landside of the levee would be removed and an earthen platform would be constructed to serve as the working area for construction of the cutoff wall, where cutoff walls are planned along the Sacramento River east levee. The existing level of flood protection would be reduced temporarily by removal of the stability berm and the levee would need to be reconstructed to at least the same level of flood protection for the following flood season.

Because there is no feasible way to conduct cultural resource investigations in advance of cutoff wall construction, there is no way to completely investigate the exact footprint of the deep cutoff wall for human remains and other cultural features. In areas where seepage berms are proposed, the excavation of the inspection trench that would be constructed prior to placement of the berm could not be accomplished without prior removal of the existing stability berm. This excavation could not be conducted during the flood season because the open trench would aggravate existing underseepage concerns. This impact is considered potentially significant. *(Similar)*
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 USACE, SAFCA, and the SHPO

**Proposed Action and RSLIP Alternative**

If human remains are uncovered during ground-disturbing activities, under either the Proposed Action or the RSLIP Alternative, SAFCA shall cease all ground-disturbing activities within the vicinity of the find, if known. If the discovery occurs in spoils removed from construction of cutoff walls, the remains shall be treated in accordance with state law. Because cutoff walls are constructed at great depth within a slurry of soil and bentonite and/or cement, SAFCA and USACE anticipate that it will not be possible to pinpoint the location of human remains that may be disinterred during construction of these features and it will not be feasible or useful to stop construction. Discovered remains removed from cutoff wall spoils will be treated as required by state law, as follows. SAFCA’s archaeological monitors and/or the contractor shall notify the relevant county coroner and a SAFCA-retained archaeologist skilled in osteological analysis to determine the nature of the remains. If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The NAHC will designate an MLD who may decide how to reinter the remains with appropriate dignity in an appropriate location.

Prehistoric remains are usually found in the context of an archaeological site. The treatment of any associated site shall be in consultation with the MLD, as required under the PA and Mitigation Measure 4.8-c. It is unlikely, but also possible, that ground-disturbing work may disinter human remains associated with an historic burial, not subject to the jurisdiction of the NAHC. Such a resource shall be treated as an archaeological discovery as required by Mitigation Measure 4.8-c.

Monitoring (Mitigation Measure 4.8-c) and discovery protocols reduce the chance of damage to or destruction of previously undiscovered human remains. However, it is possible that despite monitoring of construction and implementation of this mitigation measure, ground-disturbing work would disinter and damage human remains under either the Proposed Action or the RSLIP Alternative. Therefore, implementation of this mitigation measure may not fully reduce the impact to potential interred human remains under the Proposed Action or the RSLIP Alternative to a less-than-significant level. Thus, this impact would remain significant and unavoidable. (Similar)

### 4.8.4 RESIDUAL SIGNIFICANT IMPACTS

Under the No-Action Alternative, the significance determinations for potential impacts to known and undiscovered cultural resources and to undiscovered human remains due to levee failure are uncertain. Because of this uncertainty, these impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

As described under Mitigation Measures 4.8-b, 4.8-c, and 4.8-d, potential construction impacts on known prehistoric resources, previously unidentified cultural resources, and interred human remains are potentially significant and unavoidable under the Proposed Action and the RSLIP Alternative, despite the implementation of all feasible mitigation measures, because there is a potential that resources could still be adversely affected. Therefore, significant and unavoidable impacts would likely remain even with implementation of the recommended mitigation measures.
4.9 PALEONTOLOGICAL RESOURCES

4.9.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

Paleontological resources (fossils) are the remains or traces of prehistoric animals and plants that are 10,000 years old or older. This section assesses the potential for earthmoving activities associated with the Proposed Action and alternatives under consideration to affect scientifically important fossil remains. Plate 3-4 shows the geologic formations in the project area.

4.9.1.1 METHODOLOGY

The potential paleontological importance of the project area can be assessed by identifying the paleontological importance of exposed rock units within the project site. Because the aerial distribution of a rock unit can be easily delineated on a topographic map, this method is conducive to delineating parts of the project area that are of higher and lower sensitivity for paleontological resources and to delineating parts of the project area that may require monitoring during construction.

A paleontologically important rock unit is one that (1) has a high potential paleontological productivity rating and (2) is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed in the project area refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the project area. Exposures of a specific rock unit at the project site are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the project area.

The following tasks were completed to establish the paleontological importance of each rock unit exposed at or near the project area:

► the potential paleontological productivity of each rock unit was assessed, based on the density of fossil remains previously documented within the rock unit; and

► the potential for a rock unit exposed in the project area to contain a unique paleontological resource was considered.

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the Society of Vertebrate Paleontology (SVP) (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity. Areas that have not had any previous paleontological resource surveys or fossil finds are considered to be of undetermined sensitivity until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having high or low sensitivity. In keeping with the significance criteria of the SVP (1995), all vertebrate fossils are generally categorized as being of potentially significant scientific value.

4.9.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to paleontological resources if they would directly or indirectly destroy a unique paleontological resource or site.
For the purposes of this analysis, an individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

- a type specimen (i.e., the individual from which a species or subspecies has been described);
- a member of a rare species;
- a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- a skeletal element different from, or a specimen more complete than, those now available for its species; or
- a complete specimen (i.e., all or substantially all of the entire skeleton is present).

For example, identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. The value or importance of different fossil groups varies, depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions such as part of a research project. Marine invertebrates are generally common, well developed, and well documented. They would generally not be considered a unique paleontological resource.

4.9.2 IMPACTS AND MITIGATION MEASURES

Impact 4.9-a: Disturbance of Unknown Unique Paleontological Resources during Earthmoving Activities

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no excavation activities would occur along the Natomas perimeter levee system or at the proposed borrow sites; therefore, no potential exists for the project to directly disturb any paleontological resources that may be present in those areas. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Because any paleontological resources in the Basin would be relatively deep within the ground and would have existed through numerous past flooding episodes, they would be unlikely to sustain damage in the event of flooding in the absence of improvements to the perimeter levee system. This potential impact is considered less than significant. (Lesser)

Proposed Action and RSLIP Alternative

Areas along the Sacramento River east levee are associated with Holocene-age alluvium. By definition, sediments associated with Holocene-age alluvium are too young to contain paleontologically sensitive resources. Therefore, earthmoving activities in any of these sediments would result in no impacts on paleontological resources.

However, because of the number of recorded fossil sites in the Riverbank and Modesto Formations within the Central Valley, they are both considered paleontologically sensitive rock formations under SVP criteria. The discovery of Pleistocene vertebrate fossil remains in sediments referable to the Riverbank and Modesto Formations from Sutter and Sacramento Counties, as well as from Davis, Woodland, and numerous other areas
throughout the Central Valley, suggests the potential exists for uncovering additional similar fossil remains during construction-related deep excavation within portions of the project area.

Certain construction-related activities in the Riverbank or Modesto Formations, such as enhancing levee embankments or forming berms on top of the existing ground surface, would not cause significant adverse impacts on paleontological resources because Pleistocene-age fossils would not be encountered until approximately 10 feet below the surface. However, excavations deeper than 10 feet (e.g., for borrow excavation, installation of cutoff walls, and installation of relief wells) in the Riverbank or Modesto Formations could encounter and possibly damage unique paleontological resources.

Of the areas potentially excavated as part of the project, portions of the Fisherman’s Lake Borrow Area and Northern Main Pump Station overlie paleontologically sensitive rock units. Because construction-related activities have the potential to encounter and damage or destroy unique paleontological resources, this impact is considered potentially significant. *(Similar)*

**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**

| Proposed Action and RSLIP Alternative | Before the start of construction and/or borrow activities in the Riverbank Formation or the Modesto Formation, construction personnel involved with earthmoving activities shall be informed by SAFCA of the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction activities, and the proper notification procedures should fossils be encountered. This worker training may be either (1) prepared and presented by an experienced field archaeologist at the same time as construction worker education on cultural resources, or (2) prepared and presented separately by a qualified paleontologist. If paleontological resources are discovered during earthmoving activities, the construction crew shall immediately stop work in the vicinity of the find. SAFCA shall retain a qualified paleontologist to evaluate the resource and prepare a mitigation plan in accordance with SVP guidelines (1995). The mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations made by the paleontologist, in consultation with SAFCA, shall be implemented before construction activities can resume at the site where the paleontological resources were discovered. Implementing this mitigation measure would reduce the impact to unique, scientifically-important paleontological resources discovered during construction or other earthmoving activities to a less-than-significant level. *(Similar)* |

**4.9.3 Residual Significant Impacts**

Under the No-Action Alternative no impacts would occur to paleontological resources. In the event of a levee failure, under the No-Action Alternative impacts would be less than significant.

With implementation of the mitigation measures described in this section, project implementation would not result in any residual significant impacts related to paleontological resources under the Proposed Action and the RSLIP Alternative.
4.10 TRANSPORTATION AND CIRCULATION

4.10.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.10.1.1 METHODOLOGY

This section analyzes the potential impacts of the Proposed Action and alternatives under consideration on traffic circulation and transportation systems and potential impacts related to emergency vehicle access and construction traffic hazards. Impacts on flight safety related to operation of the Airport are addressed in Section 4.15, “Hazards and Hazardous Materials.”

Because project operation would not generate an increase in vehicle trips, long-term project operation would have no impacts on transportation and circulation. Therefore, this analysis is focused on temporary and short-term construction-related traffic impacts.

Instead of a traffic analysis focused on level of service, which is appropriate for projects that are focused within a specific, discrete area and when the exact project-related traffic routes are known, this analysis uses the traffic analysis methodology from the Institute of Transportation Engineers (ITE) (1989). This methodology is appropriate for this FEIS because the exact traffic routes are not known and construction activities would be dispersed over a wide area. ITE recommends using the following screening criterion for assessing the impacts of development projects that create permanent traffic increases: “In lieu of other locally preferred thresholds, a traffic access/impact study should be conducted whenever a proposed development will generate 100 or more added (new) peak-direction trips to or from the site during the adjacent roadway’s peak hours or the development’s peak hours.” For construction projects that create temporary traffic increases, this criterion is considered conservative by ITE (1989).

4.10.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action and alternatives under consideration were determined to result in a significant impact related to transportation and circulation if they would do any of the following:

► cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system;

► result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

► substantially increase hazards due to a design feature or incompatible uses;

► result in inadequate emergency access;

► result in inadequate parking capacity; or

► conflict with adopted policies, plans, or programs supporting alternative transportation.

To account for the large percentage of heavy trucks associated with a large construction project, ITE recommends that the threshold level (see Section 4.10.1.1, “Methodology,” above) be reduced to 50 or more new peak-direction trips. Consequently, the Proposed Action and alternatives under consideration were determined to result in a significant impact on traffic (i.e., would be considered to cause an increase in traffic that is substantial in
relation to the existing traffic load and capacity of the street system) if the project would result in 50 or more new truck trips during the a.m. or p.m. peak hour.

The project does not involve changes to air traffic patterns or other Airport operations that would affect air traffic patterns, and therefore this issue is not discussed further in this FEIS.

All construction-related vehicles (i.e., equipment and worker vehicles) would be parked at construction staging areas, which would be located away from any public roadways. No public parking facilities would be affected by the parking of project-related construction-related equipment and worker vehicles, and therefore this issue is not discussed further in this FEIS.

The project would not permanently eliminate alternative transportation corridors or facilities (e.g., bike paths, lanes, bus turnouts). In addition, the project would not include changes in policies or programs that support alternative transportation. Therefore, the project would not conflict with adopted policies, plans, or programs supporting alternative transportation. These issues are not discussed further in this FEIS.

4.10.2 IMPACTS AND MITIGATION MEASURES

Impact 4.10-a: Temporary Increase in Traffic on Local Roadways

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to adversely affect traffic on local roadways. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Flooding of Natomas Basin roadways—Sacramento and Sutter County roadways, SR 99/70, I-5, and I-80—could be minor to extensive depending on the location and severity of the levee failure and the duration of flooding. Traffic rerouting could lead to minor to substantial traffic congestion on alternate roadways. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action

Project construction would result in a temporary, but substantial, increase in traffic on local roadways. Construction-related traffic would consist of daily commute trips by construction workers and truck trips to haul materials (especially borrow) and supplies from outside the project area, as well as truck trips to haul waste materials off-site for disposal. Section 3.10, “Transportation and Circulation,” identifies the roadways in the project area (see Table 3.10-1) and includes the traffic count and level of service (LOS) data for these roadways, where available. Plate 2-7 shows the anticipated haul routes that would be used during construction.

Haul routes proposed for transporting materials from borrow sites to construction areas are shown in Plate 2-7. Construction of the Sacramento River east levee improvements and Riverside Canal relocation and extension would require borrow from the Fisherman’s Lake Area, which is located in Reaches 12A–15. Other potential sources of soil borrow include the I-5 Borrow Area, the Elkhorn Borrow Area, South Sutter, LLC, the Airport north bufferlands, the Krumenacher borrow site, and the Twin Rivers Unified School District stockpile site (adjacent to the NEMDC west levee). Hauling from the Fisherman’s Lake Borrow Area would primarily take
place on off-road haul routes, with some truck traffic occurring on short sections of Del Paso, Powerline, and Radio Roads. The improvements to the Sacramento River east levee would involve haul trucks carrying borrow material to construction areas along unpaved access roads that would be constructed parallel to the Sacramento River east levee to allow equipment to move up and down the levee during construction. Because the I-5 Borrow Area, the Elkhorn Borrow Area, and the South Sutter, LLC borrow site are located close to construction sites along the Sacramento River east levee, borrow material would primarily be trucked on the off-road haul routes shown on Plate 2-7 or moved overland via scrapers. Truck hauling from the South Sutter, LLC borrow site and the Elkhorn Borrow Area could also take place on West Elkhorn Boulevard west of Schoolhouse Road. Hauling from the Krumenacher borrow site and the Twin Rivers Unified School District stockpile site, which are both located adjacent to the NEMDC west levee, would use Elkhorn Boulevard and Powerline Road. Personnel, equipment, and other imported construction materials would reach the construction areas along Garden Highway via a combination of roadways that may include SR 99/70, Elverta Road, Powerline Road, Natomas Road, East Levee Road, Elkhorn Boulevard, Del Paso Road, San Juan Road, El Centro Road, and West El Camino Avenue. Borrow material would be hauled from the Brookfield borrow site to the NCC south levee along a short section of Howsley Road and on off-road haul routes paralleling the levee.

The total crew size for the Sacramento River east levee would reach up to 300 workers per shift working two shifts. The total crew size for the NCC south levee would reach up to 35 workers, with 10–15 of those workers divided between two 12-hour shifts. Construction crew members would travel to different project sites from different directions and by way of different sets of roadways and intersections. It is also likely that some ridesharing would take place and that trips would occur before and after peak hours. Therefore, traffic from construction crew commutes is unlikely to substantially affect local roadways, even during the peak a.m. and p.m. hours.

Haul trips for borrow material are anticipated to be up to 2,200 trips per day for the Sacramento River east levee (Reaches 10–15) and Riverside Canal improvements (Reaches 11B–18). Many of these trips would take place using the off-road haul route on the landside of the existing levee toe, and scrapers may be used where borrow sites in the Fisherman’s Lake and I-5 Borrow Areas are close to the site of the new adjacent levee. Some trips from the Fisherman’s Lake Borrow Area would use Del Paso Road (from Powerline Road east 1 mile), Powerline Road (from Del Paso Road south), and Radio Road. Haul trips from the Elkhorn Borrow Area would use the off-road landside haul route, and haul trips from the Airport north bufferlands would use a 4-mile segment of Powerline Road from Elverta Road south to the Sacramento River east levee in Reach 12A (see Plate 2-7). Up to 200 trips per day would be required to haul borrow material from the Krumenacher borrow site and the Twin Rivers Unified School District stockpile site to the improvement areas. This hauling would use the section of Elkhorn Boulevard between the NEMDC and Powerline Road. Construction of the Phase 3 Project (Sacramento River east levee Reaches 5A–9B) and the Phase 4a Project may overlap; however, the two project phases would use different haul routes and therefore would not add to each other’s traffic loads on public roads.

Haul trips for borrow material for the NCC south levee improvements would be up to 20 trips per day. Most of these trips would take place on off-roads between the Brookfield borrow site and the two construction sites (see Plate 2-7); however, a short section of Howsley Road may also be used. Construction of the Phase 3 Project (Pleasant Grove Creek Canal west levee) and the Phase 4a Project may overlap; however, the two project phases would use different haul routes and therefore would not add to each other’s traffic loads on public roads.

Implementation of the Proposed Action would result in a substantial increase in traffic on local roadways associated with truck haul trips during construction activities. In addition, temporary, short-term road closures would be required to accommodate construction activities on the levee and relocated Riverside Canal. The Proposed Action may require portions of Garden Highway south of Powerline Road to experience single-lane closures for 8–12 weeks for construction of cutoff walls. One-way traffic would be maintained during cutoff-wall construction to provide access to properties along the work area. Lane closures on the landside of Garden Highway may also be necessary in this area for installation of underground utilities. Relocation of the Riverside Canal would require road closures at San Juan, Powerline, and Radio Roads for up to 2 weeks at each crossing as
culverts are installed under these roads. These lane closures would be minimal in duration and extent, and measures would be taken to provide access outside of construction working hours for residents on the landside of Garden Highway.

Temporary pipes would be installed under Garden Highway at the Riverside Pumping Plant and Pumping Plants Nos. 3 and 5 (see Plate 2-6a) concurrent with cutoff wall construction. In the following construction year permanent pipes would be installed after the levee has settled. Garden Highway would be closed to through traffic for up to 120 days in three locations for replacement of the temporary pipes; except for these closure points, Garden Highway would remain open and traffic detours would be located between Powerline Road and San Juan Road for the Riverside Pumping Plant, between Bayou Road and Powerline Road for Pumping Plant No. 5, and between Powerline Road and San Juan Road for Pumping Plant No. 3. Installation of pipes at South Lauppe Pump and nine other private river pumps would require Garden Highway to be closed at each location for up to 4 weeks with traffic control measures, including detours for through traffic.

Compared to other local roads in the Natomas Basin, Garden Highway is a primary route for residents traveling to and from their homes on the west side of the Basin. These road closures would cause or contribute to temporary substantial increases in traffic levels as traffic is detoured or slowed on Garden Highway and other local roadways. This temporary impact is considered significant.

RSLIP Alternative

Under the RSLIP Alternative, construction-related trips would be the same as for all elements described for the Proposed Action, including haul trips associated with work on the NCC south levee, improvements to the Sacramento River east levee (Reaches 10–15), and the relocation and extension of the Riverside Canal (Reaches 11B–18). The number of trips would be approximately 14% lower than the Proposed Action (1,900 haul trips per day under this alternative compared to 2,200 trips per day under the Proposed Action). However, unlike the Proposed Action, raising the existing Sacramento River east levee in place under the RSLIP Alternative would require lane or road closures along portions of Garden Highway for prolonged periods during construction, causing traffic and access delays on local roadways. Closures would affect 1.5- to 2-mile segments of Garden Highway at any one time with the duration of closure for each segment lasting approximately 8–12 weeks to allow for levee degradation, installation of the cutoff wall, reconstruction of the levee, and reconstruction of Garden Highway and connecting roadway intersections. Access to some residences located on the waterside of the levee would be temporarily prevented by construction of the cutoff walls, requiring some residents to relocate temporarily for approximately 8–12 weeks during construction.

As described above for the Proposed Action, Garden Highway would be closed to through traffic for up to 120 days in three locations for replacement of the temporary pipes under Garden Highway at the Riverside Pumping Plant and Pumping Plants Nos. 3 and 5; except for these closure points, Garden Highway would remain open and traffic detours would be located between Powerline Road and San Juan Road for the Riverside Pumping Plant, between Bayou Road and Powerline Road for Pumping Plant No. 5, and between Powerline Road and San Juan Road for Pumping Plant No. 3. Installation of pipes at South Lauppe Pump and nine other private river pumps would require Garden Highway to be closed at each location for up to 4 weeks with traffic control measures, including detours for through traffic.

Compared to other local roads in the Natomas Basin, Garden Highway is a primary route for residents traveling to and from their homes on the west side of the Basin. The prolonged closures that would be required to raise the levee in place and construct cutoff walls would result in substantial traffic and access delays that, although temporary, would be greater than for the Proposed Action. This impact is considered significant.(Greater)
Mitigation Measure 4.10-a: Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips

Before the start of construction in each construction season, SAFCA and its primary contractors for engineering and construction shall develop a coordinated construction traffic safety and control plan to minimize the simultaneous use of roadways by different construction contractors for material hauling and equipment delivery to the extent feasible and to avoid and minimize potential traffic hazards on local roadways during construction. Upon selection of borrow sites within the Elkhorn Borrow Area, the traffic safety and control plan shall reflect affected roadways. Items (a) through (e) of this mitigation measure, as listed below, shall be integrated as terms of the construction contracts.

(a) The plan shall outline phasing of activities and the use of multiple routes to and from off-site locations to minimize the daily amount of traffic on individual roadways. SAFCA shall ensure that the construction contractors enforce the plans throughout the construction periods.

(b) The construction contractors shall develop a traffic safety and control plan for the local roadways that would be affected by construction traffic. Before the initiation of construction-related activity involving high volumes of traffic, the plan shall be submitted for review by Caltrans and the agencies of the local jurisdictions (Sutter County, Sacramento County, and/or City of Sacramento) having responsibility for roadway safety at and between project sites. The plan shall call for the following elements:

- posting warnings about the potential presence of slow-moving vehicles;
- using traffic control personnel when appropriate; and
- placing and maintaining barriers and installing traffic control devices necessary for safety, as specified in Caltrans’s Manual of Traffic Controls for Construction and Maintenance Works Zones and in accordance with city/county requirements (Caltrans 1996).

The contractor shall train construction personnel in appropriate safety measures as described in the plan and shall implement the plan. The plan shall include the prescribed locations for staging equipment and parking trucks and vehicles. Provisions shall be made for overnight parking of haul trucks to avoid causing traffic or circulation congestion.

(c) Consistent with Mitigation Measure 4.11-a “Implement Applicable District-Recommended Control Measures to Minimize Temporary Emissions of ROG, NOX, and PM10 during Construction,” the track-out of bulk material onto public paved roadways as a result of operations, or erosion, shall be minimized by the use of track-out and erosion control, minimization, and preventive measures. Tracked-out materials shall be removed within 1 hour from adjacent streets anytime such material track-out extends for a cumulative distance of greater than 50 feet onto any paved public road during active operations. All visible roadway dust tracked out upon public paved roadways as a result of active operations shall be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. Wet sweeping or a HEPA filter equipped vacuum device shall be used for roadway dust removal.

(d) Construction of project features along the Sacramento River east levee shall be accommodated through the creation of temporary haul roads along the landside of the
adjacent levee and berm footprint. Garden Highway shall not be used for earthen materials hauling activities.

(e) A Transportation Management Plan shall be prepared and submitted to Caltrans District 3 to cover any points of access from the state highway system for haul trucks and other construction equipment.

(f) Before the start of construction, SAFCA shall coordinate with Sacramento and Sutter Counties and the City of Sacramento to address maintenance and repair of affected roadways resulting from increased truck traffic.

(g) Before the start of construction, SAFCA shall provide notification of project construction to all appropriate emergency service providers in Sutter County, Sacramento County, and/or the City of Sacramento and shall coordinate with providers throughout the construction period to ensure that emergency access through construction areas is maintained.

(h) Before the start of construction, SAFCA and its primary contractors shall coordinate with Sutter County, Sacramento County, and/or the City of Sacramento regarding any closures of any public roadways.

Implementation of this mitigation measure would reduce the impact, but not to a less-than-significant level. However, given the high amount of hauling required for the Proposed Action and the RSLIP Alternative, and the limited number of roadways in the project vicinity that would be suitable for hauling between borrow sites and project construction sites, it is possible that the volume of traffic during some periods may still exceed ITE thresholds despite the implementation of this measure. Because no other feasible mitigation measures are available to fully reduce this impact to a less-than-significant level, this impact would remain significant and unavoidable.

In addition to the above, the RSLIP Alternative would require the temporary closure of 1.5- to 2-mile segments of Garden Highway (for approximately 8–12 weeks in each segment) in order to accommodate the construction of cutoff walls. Even with implementation of this mitigation measure, there are no feasible mitigation measures available to fully reduce the impacts from the temporary closure of Garden Highway; therefore, this temporary, short-term impact would remain significant and unavoidable. (Greater)

Impact 4.10-b: Temporary Increase in Traffic Hazards on Local Roadways

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to temporarily increase traffic hazards. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. If any part of the levee system were to fail, flooding of Natomas Basin roadways—Sacramento and Sutter County roadways, SR 99/70, I-5, and I-80—could be minor to extensive depending on the location and severity of the failure and the duration of flooding and associated traffic hazards could be minor to severe. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is
unknown. Because of this uncertainty, this potential impact is considered to **too speculative for meaningful consideration. (Currently Unknown)**

**Proposed Action**

During project construction along the Sacramento River east levee (Reaches 10–15), two public roadways—Powerline Road and San Juan Road—would be reconstructed across the adjacent levee to Garden Highway. As described under Impact 4.10-a, high volumes of slow-moving truck traffic could be associated with the construction activities on some rural roadways.

Pavement sections on the rural Sacramento and Sutter County roadways in the project area were designed to carry low-volume traffic. The high-volume truck traffic during construction would accelerate wear and tear on a section of Howsley Road north of the Brookfield borrow site and on Powerline, Del Paso, and Radio Roads, and on Elkhorn Boulevard. Besides shortening the life of pavement sections, high-volume truck traffic could cause road damage, such as cracks and potholes, which could create road hazards for other motorists.

The combination of the high volume of slow-moving truck traffic, potentially tracking mud and debris onto roadways; workers entering and exiting construction sites; periodic road and lane closures associated with levee improvements; and potential damage to pavement would increase traffic hazards on local roadways during the construction period. This impact is considered **significant**.

**RSLIP Alternative**

Under the RSLIP Alternative, construction-related traffic hazards would be similar to but greater in magnitude than those described above for the Proposed Action. Construction of the RSLIP Alternative would include raising the existing Sacramento River east levee in place in Reaches 10–11B, which would require closure of both lanes of Garden Highway for prolonged periods during construction, causing traffic and access delays on local roadways. Additionally, Garden Highway intersections at Powerline Road and San Juan Road would be reconstructed to match the reconfigured profile of the raised existing levee.

Construction workers entering and exiting construction areas at the beginning and end of work shift could also increase traffic hazards. In addition, trucks and other vehicles could track mud and gravel onto the local roadways, potentially posing driving hazards.

Under the RSLIP Alternative, the high-volume truck traffic during construction would accelerate wear and tear on Howsley Road north of the Brookfield borrow site, and on Powerline and Radio Roads, and on Elkhorn Boulevard. Besides shortening the life of pavement sections, high-volume truck traffic could cause road damage such as cracks and potholes, which could create road hazards for other motorists. The potential increase in traffic hazards under the RSLIP Alternative is considered a **significant** impact. *(Similar)*

**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”**

Proposed Action and RSLIP Alternative

SAFCA and its primary contractors for engineering design and construction shall implement Mitigation Measure 4.10-a, above.

Implementing this mitigation measure would reduce the impact to a **less-than-significant** level because a traffic safety plan would be prepared and implemented, and SAFCA would coordinate with the construction contractors and local and regional agencies regarding the distribution of traffic along haul routes and establishing alternative traffic routes. *(Similar)*
Impact 4.10-c: Temporary Disruption of Emergency Service Response Times and Access

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly disturb emergency service response times and access. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure along the NCC or the Sacramento River east levee could result in minor to substantial flooding of the Natomas Basin, including the Airport, I-5 and I-80, and SR 99/70, as well as local roadways, which would result in a minor to substantial disruption of emergency service and response times. However, the potential for such an occurrence is uncertain, and the magnitude and duration of any related effect on traffic and circulation and emergency service response cannot be estimated. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered to too speculative for meaningful consideration. (Currently Unknown)

Proposed Action

Implementation of the Proposed Action could delay emergency service response times because of the difficulty of emergency vehicles needing to pass through or near construction areas as discussed under Impacts 4.10-a and 4.10-b, above.

The Proposed Action would increase traffic on local roadways associated with construction trips. In addition, temporary road closures associated with levee improvements could cause or contribute to temporary increases in traffic levels as traffic is detoured or slowed on some local roadways and SR 99/70. Increased traffic congestion could interfere with the use of main roadways for emergency evacuation routes. Garden Highway is the primary access for homes and businesses located on the water side of the levee. Temporary construction closures, including an approximately 8- to 12-week closure of one lane of Garden Highway downstream of Powerline Road, would interfere with emergency access to these residences and businesses (see also Section 4.16, “Socioeconomics and Population and Housing”). Installation of the permanent pipes for the pumping stations would take place one year following completion of levee construction as described in Impact 4.10-a, “Temporary Increase in Traffic on Local Roadways.” Closures of Garden Highway would be required at three different locations with detours provided that would maintain access; however delays in emergency service response times may result. Relocation of the Riverside Canal would also require road closures at San Juan, Powerline, and Radio Roads for up to 2 weeks at each crossing as culverts are installed under these roads. In addition, installation of pipes at South Lauppe Pump and nine other private river pumps would require Garden Highway to be closed at each location for up to 4 weeks with traffic control measures, including detours for through traffic. Because the Proposed Action could result in delays in emergency service response times, this impact is considered potentially significant.

RSLIP Alternative

As with the Proposed Action, the RSLIP Alternative would increase traffic on local roadways due to construction trips and traffic detours, including detours to accommodate permanent installation of pipes for the pumping stations as described under the Proposed Action. Additionally, this alternative would require long-term closure of Garden Highway to accommodate construction of cutoff walls in the existing levee. Closures would affect 1.5- to 2-mile segments of Garden Highway at any one time with the duration of closure for each segment lasting approximately 8–12 weeks to allow for levee degradation, installation of the cutoff wall, reconstruction of the
levee, and reconstruction of Garden Highway and connecting roadway intersections. This would eliminate landside access to residences and businesses along Garden Highway in these sections; therefore, emergency access to residences and businesses would be severely limited during construction in this area (see also Section 4.16, “Socioeconomics and Population and Housing”). Because the RSLIP Alternative could restrict emergency service response in the project area, this impact is considered potentially significant. (Greater)

Mitigation Measure 4.10-c: Notify Emergency Service Providers about Project Construction and Maintain Emergency Access or Coordinate Detours with Providers

**Proposed Action** SAFCA and its primary contractors for engineering design and construction shall implement Mitigation Measure 4.10-a, above.

Implementing this mitigation measure would reduce the temporary impact on emergency service response times and access to a less-than-significant level because before project construction begins, SAFCA would provide notification of project construction to all appropriate emergency service providers in Sutter County, Sacramento County, and/or the City of Sacramento and would coordinate with providers throughout the construction period to ensure that emergency access through construction areas is maintained.

**RSLIP Alternative** SAFCA and its primary contractors for engineering design and construction shall implement Mitigation Measure 4.10-a, above. Despite implementing this mitigation measure, the temporary impact on emergency service response time and access would be significant and unavoidable under the RSLIP Alternative due to the requirements for road closures of 1.5-to 2-mile segments of Garden Highway (for approximately 8–12 weeks in each segment) needed to accommodate construction of cutoff walls and Garden Highway for 60 days in three locations for replacement of the temporary pipes. (Greater)

Impact 4.10-d: Conflict with Adopted Policies, Plans, or Programs Supporting Alternative Transportation

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to conflict with adopted policies, or programs supporting alternative transportation, or to prevent use of project area roadways by alternative modes of transportation. There would be no impact. (Lesser)

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. If any part of the levee system were to fail, flooding of Natomas Basin roadways could be minor to extensive depending on the location and severity of the failure and the duration of flooding and associated effects on alternative modes of transportation could be minor to severe. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered to too speculative for meaningful consideration. (Currently Unknown)

**Proposed Action and RSLIP Alternative**

There are no Sacramento Regional Transit bus routes serving the project area, either along Garden Highway or along the roads that are potential haul routes (see Plate 2-7). The Sacramento County Department of Transportation is in the process of updating the Sacramento County Bikeway Master Plan (Klinker, pers. comm., 2009). At the present time there are no designated Class I (off-street), Class II (on-street with lane markings) or
Class III (designated on-street) bicycle routes within the Phase 4a Project area. However, future bicycle routes are planned in the area; a Class I off-street trail is planned along Garden Highway and on-street Class II routes are planned for Powerline Road, Del Paso Boulevard, and Elkhorn Boulevard (Sacramento County 2009). The project would not preclude future development of alternative transportation corridors or facilities (e.g., bike paths, lanes, bus turnouts) in the project area. In addition, the Phase 4a Project would not include changes in policies or programs that support alternative transportation. Therefore, the project would not conflict with adopted policies, plans, or programs supporting alternative transportation.

Bicycle use of roadways in the Phase 4a Project area does occur on roadways without bikeway designations. The Sacramento Area Bicycle Advocates have noted that Garden Highway is used extensively by recreational cyclists and increasingly by commuters (SAFCA 2009). Construction of levee improvements would require partial (Proposed Action) or full closure (RSLIP Alternative) of Garden Highway requiring bicyclists to use alternative routes or alternate modes of transportation. Additionally, the Sacramento County General Plan Circulation Element notes that routes used extensively for truck hauling have increased hazards for bicycles (Sacramento County 1993). Proposed on-road haul routes, as shown in Plate 2-7, include Elverta Road, Elkhorn Boulevard, Powerline Road, and Del Paso Road. Bicyclists using these routes would be exposed to increased hazards during construction. The potential increase in hazards for bicyclists using the Phase 4a Project area roadways would be a temporary, short-term construction-related significant impact. (Similar)

**Mitigation Measure 4.10-d: Prepare and Implement a Bicycle Detour Plan for Project Area Roadways, Including Garden Highway**

**Proposed Action and RSLIP Alternative**

SAFCA shall implement the following measures to reduce temporary, short-term construction impacts on bicycle transportation facilities in the project area:

- Before the start of construction, SAFCA or its primary contractor shall prepare a bicycle detour plan for roadways that would be affected by project construction activities, including Garden Highway, in consultation with the County Alternative Modes Coordinator and/or City of Sacramento Bicycle and Pedestrian Coordinator as applicable. The detour plan shall include posted signs clearly indicating closure points, truck haul routes, detour routes, and informational signs to notify motorists and bicyclists to share the roads. Signs shall be posted outside of the immediate project area in order to notify bicyclists of closure points and detours. The detour plan shall be in place before the start of construction and shall be maintained and implemented throughout the construction period.

Implementing this mitigation measure would reduce the temporary, short-term impact from construction-related disruption to bicycle facilities under the Proposed Action and the RSLIP Alternative to a less-than-significant level because construction-related damage would be repaired, access restored, and detour routes, roadway markings to designate temporary bike lanes, and informational signs would be provided. (Similar)

### 4.10.3 Residual Significant Impacts

Under the No-Action Alternative, impacts due to disruption of traffic circulation, traffic hazards, and emergency service response times and access in the event of levee failure are uncertain. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

Implementation of Mitigation Measure 4.10-a under the Proposed Action and RSLIP Alternative would not fully reduce the impacts created from the temporary increase in traffic levels from haul trucks during construction to a
less-than-significant level; therefore, a residual significant impact would occur. While impacts related to the temporary disruption of emergency service response times and access would be reduced to a less-than-significant level under the Proposed Action, this impact would remain significant and unavoidable on a temporary, short-term basis for the RSLIP Alternative as a result of the closures of 1.5- to 2-mile segments of Garden Highway for approximately 8–12 weeks in each segment.

Implementation of Mitigation Measure 4.10-a under the Proposed Action and the RSLIP would reduce impacts created from temporary traffic increase and impacts related to emergency service response times related to the installation of permanent pipes for the pumping stations to a less than significant level; closure of Garden Highway would be limited to the points where the pipes would be placed under the roadway and detours would maintain access for residents.
4.11 AIR QUALITY

4.11.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.11.1.1 METHODOLOGY

Almost all increased pollutant emissions that would be associated with the proposed Phase 4a Project levee improvements would be generated by construction-related activities. Construction emissions are described as “short-term” or temporary in duration. These temporary and short-term emissions, especially emissions of criteria air pollutants (i.e., respirable particulate matter less than 10 microns in diameter [PM\text{10}]) and ozone precursors (e.g., reactive organic gases [ROG] and oxides of nitrogen [NO\text{X}]), have the potential to represent a significant air quality impact.

Fugitive dust emissions are associated primarily with site preparation and excavation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled on- and off-site. Emissions of ROG and NO\text{X} are associated primarily with gas and diesel equipment and asphalt paving.

The method of analysis for temporary, short-term construction-long-term operation-related (regional); local mobile-source; and toxic air contaminant (TAC) emissions is consistent with the recommendations of the Sacramento Metropolitan Air Quality Management District (SMAQMD) and the Feather River Air Quality Management District (FRAQMD).

To ensure that worst case air quality impacts were captured for both the Proposed Action and RSLIP Alternative, emissions were estimated assuming that all of the Phase 4a Project is constructed in 2010 (simultaneous with construction of the Phase 3 Project and 30% of the Phase 2 Project, as discussed in Chapter 2.0, “Alternatives”). Construction elements in the Phase 2 and 3 Projects are summarized in Section 2.2.2, “No-Action Alternative—Implementation of Natomas Levee Improvement Program Phase 1, 2, and 3 Projects Only.” It should be noted that emissions are estimated within the air districts that regulate them. For purposes of analyzing the impacts of the Phase 4a Project, it is assumed that of the 30% of the Phase 2 Project construction that may occur in 2010, half would occur in Sutter County and half would occur in Sacramento County.

The Brookfield borrow site in Sutter County is the assumed source of soil borrow material for improvements to the NCC south levee. The Fisherman’s Lake Borrow Area would be the primary source of soil borrow material used for the Phase 4a Project, with other potential sources of borrow listed in Table 2-10 and shown on Plate 2-7, in Chapter 2.0, “Alternatives.” For modeling purposes and to capture worst-case impacts under both the Proposed Action and RSLIP Alternative, it was assumed that borrow material would be transported an average of approximately 4 miles round trip on 50% paved and 50% unpaved haul routes.

The estimates assume that all construction activity would take place in a 6-month construction season.

4.11.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to air quality if they would do any of the following:

- conflict with or obstruct implementation of the applicable air quality plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
result in a cumulatively considerable net increase of a criteria air pollutants for which the project region is nonattainment under any applicable Federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors),

result in exposure of sensitive receptors to substantial concentrations of toxic air emissions or criteria air pollutants, or

create objectionable odors affecting a substantial number of people.

As stated in Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management districts or air pollution control district may be relied upon to make the above determinations. Thus, the appropriate district-recommended emission thresholds as published in their respective CEQA guidance documents also applies to individual projects under their jurisdiction. For portions of the project that would occur in Sacramento County, based on SMAQMD’s Guide to Air Quality Assessment in Sacramento County (SMAQMD 2004), an air quality impact was considered significant if implementation of the Proposed Action or alternatives under consideration would do any of the following:

- generate construction-related emissions of criteria air pollutants or precursors that exceed the SMAQMD-recommended threshold of 85 pounds per day (lb/day) for NOX, or result in or substantially contribute (at a level equal to or greater than 5%) to emissions concentrations that exceed the national ambient air quality standards (NAAQS) or California ambient air quality standards (CAAQS) (e.g., 50 micrograms per cubic meter [µg/m³] and 2.5 µg/m³, respectively, for PM10); or

- generate long-term regional criteria air pollutant or precursor emissions that exceed the SMAQMD-recommended threshold of 65 lb/day for ROG and NOX, or result in or substantially contribute (at a level equal to or greater than 5%) to emissions concentrations that exceed the NAAQS or CAAQS (e.g., 50 µg/m³ and 2.5 µg/m³, respectively, for PM10).

For levee improvements conducted in Sutter County, the FRAQMD Indirect Source Review Guidelines and CEQA planning guidance (FRAQMD 1998, 2007) provide recommended thresholds of significance for project-generated emissions of ozone precursors and PM10. An air quality impact was considered significant if implementation of the Proposed Action or alternatives under consideration would result in project construction emissions that exceed:

- 25 lb/day of ROG,
- 25 lb/day of NOX, or
- 80 lb/day of PM10.

Project construction would conflict with applicable air quality planning efforts as specified under the Clean Air Act, and a conformity determination would be needed, if the following emissions thresholds were exceeded:

For construction-related emissions in Sacramento County:
- 25 tons per year (TPY) of ROG,
- 25 TPY of NOX, or
- 100 TPY of PM10.

For construction-related emissions in Sutter County:
- 25 TPY of ROG, or
- 25 TPY of NOX.

Project implementation would not result in any major sources of odor, and the Phase 4a Project would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, coffee roaster, wastewater treatment facility). Diesel exhaust, which is sometimes considered an objectionable odor source,
would be associated with the use of on-site construction equipment, but it would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Thus, project implementation would not expose sensitive receptors to odorous emissions, and this issue is not discussed further in this FEIS.

### 4.11.2 IMPACTS AND MITIGATION MEASURES

#### Impact 4.11-a: Temporary Emissions of ROG, NO\textsubscript{X}, and PM\textsubscript{10} during Construction

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for project-related construction emissions. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Cleanup actions in the event of levee failure would likely require the use of construction equipment that would emit air quality pollutants. The amount and types of pollutants cannot be predicted and would depend on the magnitude of cleanup operations. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered to too speculative for meaningful consideration. *(Currently Unknown)*

**Proposed Action**

The Proposed Action would result in the temporary generation of ROG, NO\textsubscript{X}, and PM\textsubscript{10} emissions from excavation, material handling, vegetation clearing, grading, cut-fill, concrete placement, asphalt paving, motor vehicle exhaust associated with construction equipment, construction employee commute trips, material transport (especially on unpaved surfaces), and other construction activities associated with construction of the Phase 4a Project, including excavation and reclamation in the borrow areas listed in Table 2-10 and shown on Plates 2-6a–6c and on Plate 2-7. Routes used for modeling haul truck trip emissions are shown on Plate 2-7.

See Section 4.11.1.1, “Methodology,” above, for assumptions used in estimating the emissions that would be generated as a result of the Phase 4a Project and assumptions for borrow and hauling.

With the exception of the two sites on the NCC south levee, the Phase 4a Project improvements described in Section 2.3, “Proposed Action,” would be constructed in Sacramento County and would be under the jurisdiction of SMAQMD. Construction on the NCC south levee would take place entirely within Sutter County and would be under FRAQMD’s jurisdiction.

Worst-case daily and annual construction emissions were calculated, based on the assumptions described in Section 4.11.1.1, “Methodology,” above, for completion of the 2010 construction season using AP-42 emission factors recommended by the U.S. Environmental Protection Agency (EPA) for fugitive dust, and OFFROAD and EMFAC 2007 emission factors for mobile-equipment, as contained in the Road Construction Emissions Model version 6, as recommended by FRAQMD and SMAQMD. The results of the calculations are shown in Table 4.11-1.
<table>
<thead>
<tr>
<th>Pollutant</th>
<th>ROG (lb/day)</th>
<th>NOx (lb/day)</th>
<th>PM10 (lb/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worst-Case Emissions within Sutter County—FRAQMD Emissions (lb/day)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 2 Emissions (30% of actions)</td>
<td>16.6</td>
<td>83.2</td>
<td>524.8</td>
</tr>
<tr>
<td>Phase 3 Emissions (100% of actions)</td>
<td>78.5</td>
<td>516.6</td>
<td>3,885.4</td>
</tr>
<tr>
<td>Phase 4a Emissions (100% of actions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCC Phase 4a work</td>
<td>12.0</td>
<td>58.9</td>
<td>627.6</td>
</tr>
<tr>
<td>Total unmitigated emissions (lb/day)</td>
<td>107.1</td>
<td>658.7</td>
<td>5,037.8</td>
</tr>
<tr>
<td>FRAQMD Threshold (lb/day)</td>
<td>25</td>
<td>25</td>
<td>80</td>
</tr>
<tr>
<td>Significant?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Total mitigated emissions (lb/day)2</td>
<td>101.7</td>
<td>527.0</td>
<td>1,259.5</td>
</tr>
<tr>
<td>Significant with Mitigation Incorporated?</td>
<td>Yes</td>
<td>Yes3</td>
<td>Yes</td>
</tr>
<tr>
<td>Worst-Case Emissions within Sacramento County—SMAQMD Emissions (lb/day)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 2 Emissions (30% of actions)</td>
<td>5.9</td>
<td>27.0</td>
<td>85.3</td>
</tr>
<tr>
<td>Phase 3 Emissions (100% of actions)</td>
<td>98.2</td>
<td>623.4</td>
<td>5,133.1</td>
</tr>
<tr>
<td>Phase 4a Emissions (100% of actions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento East Levee Reaches 10–15</td>
<td>153.3</td>
<td>909.6</td>
<td>8,442.2</td>
</tr>
<tr>
<td>Riverside Canal</td>
<td>21.7</td>
<td>101.0</td>
<td>1,645.8</td>
</tr>
<tr>
<td>RD 1000 Pumping Plants Nos. 3 and 5</td>
<td>20.3</td>
<td>160.7</td>
<td>8.7</td>
</tr>
<tr>
<td>Fisherman’s Lake Excavation and Restoration</td>
<td>3.3</td>
<td>24.3</td>
<td>72.6</td>
</tr>
<tr>
<td>Total unmitigated emissions (lb/day)</td>
<td>302.7</td>
<td>1,846.0</td>
<td>15,387.7</td>
</tr>
<tr>
<td>SMAQMD Threshold</td>
<td>--</td>
<td>85</td>
<td>--3</td>
</tr>
<tr>
<td>Significant?</td>
<td>--</td>
<td>Yes</td>
<td>Yes3</td>
</tr>
<tr>
<td>Total mitigated emissions (lb/day)2</td>
<td>287.6</td>
<td>1,476.8</td>
<td>3,846.9</td>
</tr>
<tr>
<td>Significant with Mitigation Incorporated?</td>
<td>--</td>
<td>No4</td>
<td>Yes3</td>
</tr>
</tbody>
</table>

Notes: FRAQMD = Feather River Air Quality Management District; lb/day = pounds per day; μg/m³ = micrograms per cubic meter; NCC = Natomas Cross Canal; NOx = oxides of nitrogen; PM10 = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; SMAQMD = Sacramento Metropolitan Air Quality Management District

1 2010 construction season refers to improvements to the NCC south levee, Sacramento River east levee Reaches 1-15, GGS/Drainage Canal, NEMDC, PGCC, and Riverside Canal.

2 Implementation of all recommended standard mitigation measures listed under Mitigation Measure 4.11-a would result in reductions of ROG, NOx, and PM10 emissions by approximately 5%, 20%, 75%–85% for fugitive PM10 emissions, and 45% for mobile-source PM10 emissions, respectively.

3 SMAQMD does not have an adopted mass emission-based threshold for PM10.

4 Payment into SMAQMD’s Off-site Construction Mitigation Fee Program to offset NOx emissions in excess of SMAQMD’s significance threshold would reduce impacts for this pollutant in SMAQMD’s jurisdiction to a less-than-significant level. Coordination of an emissions reduction agreement with the FRAQMD for calculation and fee payment by SAFCA to FRAQMD prior to project approval would be used to offset an equivalent mass of NOx emissions in excess of EPA’s applicable threshold for general conformity purposes. Successful implementation of Mitigation Measure 4.11-a would reduce NOx emissions in FRAQMD’s jurisdiction, but not to a less-than-significant level for this impact.

See Appendix F for assumptions and modeling results for each activity and subphase.

Source: Calculations performed by AECOM based on data provided by HDR, Wood Rodgers, and Mead & Hunt in 2009
Conservative assumptions were made for construction activities associated with all improvements that would occur under the Phase 4a Project. Therefore, emissions calculations summarized in Table 4.11-1 represent worst-case daily emissions that could occur associated with construction of the Phase 2 (30%), 3, and 4a Projects potentially overlapping during 2010. See Appendix F for detailed emission sources and assumptions. Based on the project information presented in Chapter 2.0, “Alternatives,” construction of the Proposed Action in 2010 would result in maximum unmitigated daily emissions in excess of applicable FRAQMD thresholds for ROG, NOX, and PM10 and SMAQMD thresholds for NOX and PM10. Because of the large size of the project, large extent, and high intensity of construction activities to be conducted concurrently, as well as the existing nonattainment status of the project area, and based on the modeling conducted, it is foreseeable that unmitigated construction-generated emissions could result in or substantially contribute to a violation of air quality standards.

SMAQMD does not have an adopted mass emission-based threshold for PM10. Instead, SMAQMD relies on a concentration-based threshold equivalent to the ambient air quality standard for PM10. If construction activities would result in or substantially contribute to a violation of the standard at or beyond the project boundary, then construction-generated emissions of PM10 would be significant. Because of the intensity of earthmoving activities that would be involved during the construction of the Sacramento River east levee and Riverside Canal improvements, it is likely that a substantial contribution to a violation of the applicable air quality standard would occur. Because the nature and intensity of construction activities and the construction equipment fleet would be similar during Phase 4a Project activities, worst-case daily emissions would be similar to, or slightly less than, those presented in Table 4.11-1 regardless of construction timing because the same extent of construction activities would be spread out over a longer duration, potentially resulting in less intense construction and earth movement on any single active day.

The Proposed Action would result in temporary and short-term construction-related emissions that could expose nearby existing sensitive receptors to substantial pollutant concentrations and/or substantially contribute to a violation of an air quality standard. As a result, the Proposed Action would have a direct, temporary, short-term adverse effect on air quality. This impact is considered significant.

**RSLIP Alternative**

Worst-case daily and annual construction emissions associated with this alternative would occur during the levee construction phase during which most earthmoving activities would occur. Emissions associated with the RSLIP Alternative were calculated based on the difference in earth movement volumes relative to the Proposed Action. As for the Proposed Action, modeling for this alternative was based on the scenario described above under “Methodology.” The difference in ROG, NOX, and PM10 emissions are modeled as a function of change in the number of haul trips and in the total amount of borrow material relative to the Proposed Action.

Total unmitigated worst-case emissions under the RSLIP Alternative would be approximately the same as those under the Proposed Action for the 2010 construction season (see Table 4.11-2). Emissions associated with the RSLIP Alternative would be anticipated to expose nearby existing sensitive receptors to substantial pollutant concentrations and/or substantially contribute to an air quality violation. The RSLIP Alternative would have a direct, adverse impact on air quality. This impact is considered significant. (Similar)
Table 4.11-2
Summary of Maximum Daily Emissions during the 2010 Construction Season (Combined Phase 2, 3, and 4a Projects) for the RSLIP Alternative

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>ROG</th>
<th>NOx</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Worst-Case Emissions within Sutter County—FRAQMD Emissions (lb/day)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total unmitigated emissions (lb/day)</td>
<td>71.8</td>
<td>426.2</td>
<td>3,289.4</td>
</tr>
<tr>
<td>FRAQMD Threshold (lb/day)</td>
<td>25</td>
<td>25</td>
<td>80</td>
</tr>
<tr>
<td>Significant?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Total mitigated emissions (lb/day)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>68.2</td>
<td>341.0</td>
<td>822.4</td>
</tr>
<tr>
<td>Significant with mitigation incorporated?</td>
<td>Yes</td>
<td>Yes&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Worst-Case Emissions within Sacramento County—SMAQMD Emissions (lb/day)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total unmitigated emissions (lb/day)</td>
<td>280.5</td>
<td>1,743.5</td>
<td>13,580.4</td>
</tr>
<tr>
<td>SMAQMD Threshold</td>
<td>–</td>
<td>85</td>
<td>–&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Significant?</td>
<td>–</td>
<td>Yes</td>
<td>Yes&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Total mitigated emissions (lb/day)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>266.5</td>
<td>1,394.8</td>
<td>3,395.1</td>
</tr>
<tr>
<td>Significant with Mitigation Incorporated?</td>
<td>–</td>
<td>No&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Yes&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Notes: FRAQMD = Feather River Air Quality Management District; lb/day = pounds per day; μg/m<sup>3</sup> = micrograms per cubic meter; NOx = oxides of nitrogen; PM<sub>10</sub> = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; RSLIP Alternative = Raise and Strengthen-Levee-in-Place Alternative; SMAQMD = Sacramento Metropolitan Air Quality Management District

1 2010 construction season refers to improvements to the NCC south levee, Sacramento River east levee Reaches 1-15, GGS/Drainage Canal, NEMDC, PGCC, and Riverside Canal.

2 Implementation of all recommended standard mitigation measures listed under Mitigation Measure 4.11-a would result in reductions of ROG, NOx, and PM<sub>10</sub> emissions by approximately 5%, 20%, and 75%–85% for fugitive PM<sub>10</sub> emissions, and 45% for mobile-source PM<sub>10</sub> emissions, respectively.

3 SMAQMD does not have an adopted mass emission-based threshold for PM<sub>10</sub>.

4 Payment into SMAQMD’s Off-site Construction Mitigation Fee Program to offset NOx emissions in excess of SMAQMD’s significance threshold would reduce impacts for this pollutant in SMAQMD’s jurisdiction to a less-than-significant level. Coordination of an emissions reduction agreement with the FRAQMD for calculation and fee payment by SAFCA to FRAQMD prior to project approval would be used to offset an equivalent mass of NOx emissions in excess of EPA’s applicable threshold for general conformity purposes. Successful implementation of Mitigation Measure 4.11-a would reduce NOx emissions in FRAQMD’s jurisdiction, but not to a less-than-significant level for this impact.

See Appendix F for assumptions and modeling results for each activity and subphase.

Source: Calculations performed by AECOM based on data provided by HDR, Wood Rodgers, and Mead & Hunt in 2009
SAFCA shall implement mitigation measures as recommended by FRAQMD or SMAQMD, as applicable, and shall comply with all applicable rules and regulations of FRAQMD or SMAQMD, as described below.

Construction in Sutter County (FRAQMD)

For portions of the project occurring in Sutter County, FRAQMD’s *Indirect Source Review Guidelines* and online CEQA guidance provide mitigation measures for reducing short-term air quality impacts. As recommended by FRAQMD, SAFCA shall ensure that the following mitigation measures are implemented during all project construction activities to the extent practicable. In addition, construction of the proposed levee improvements are required to comply with all applicable FRAQMD rules and regulations, in particular Rule 3.0 (Visible Emissions), Rule 3.16 (Fugitive Dust Emissions), and Rule 3.15 (Architectural Coatings).

1. SAFCA shall implement a Fugitive Dust Control Plan that includes the following measures:

   ► All earthmoving operations should be suspended when winds exceed 20 miles per hour or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.

   ► Construction sites shall be watered as directed by the Sutter County Department of Public Works or FRAQMD and as necessary to prevent fugitive dust violations.

   ► An operational water truck shall be on-site at all times. Apply water to control dust as needed to prevent visible emissions violations and off-site dust impacts.

   ► On-site dirt piles or other stockpiled particulate matter shall be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce wind blown dust emissions. Incorporate the use of approved nontoxic soil stabilizers to all inactive construction areas according to manufacturers’ specifications.

   ► All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free-fall distance and fugitive dust emissions.

   ► Apply approved chemical soil stabilizers to all inactive construction areas (previously graded areas that remain inactive for 96 hours), including unpaved roads and employee/equipment parking areas, according to the manufacturers’ specifications.

   ► To prevent track-out, wheel washers shall be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed before each trip. Alternatively, a gravel bed or rumble strip may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.
Paved streets shall be swept frequently (at least once per day by water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.

Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Sutter County Department of Public Works and/or Caltrans and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 miles per hour on unpaved roads.

Reduce traffic speeds on all unpaved surfaces to 15 miles per hour, where feasible, and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, on-site enforcement, and signage. Where restricting vehicle speeds on unpaved surfaces to 15 miles per hour would make timely completion of the project infeasible, SAFCA shall cooperate with FRAQMD to implement alternative dust control measures that would be at least as effective in reducing fugitive dust emissions. Such measures may include increased frequency in applying water to the unpaved roads in the vicinity of sensitive receptors and reducing speeds in the vicinity of sensitive receptors.

Reestablish ground cover on the construction site as soon as possible, through seeding and watering.

Open burning is yet another source of fugitive gas and particulate emissions, and it shall be prohibited at the project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, etc.) may be conducted at the project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials off-site for disposal by open burning.

2. Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions Limitations (40% opacity or Ringelmann 2.0). Operators of vehicles and equipment found to exceed opacity limits shall take action to repair the equipment within 72 hours or remove the equipment from service. Failure to comply may result in a notice of violation.

3. SAFCA shall be responsible for ensuring that all construction equipment is properly tuned and maintained before and during on-site operation.

4. Minimize idling time to 10 minutes, to conserve fuel and minimize emissions.

5. Use existing power sources (e.g., power poles) or clean fuel generators rather than temporary diesel-powered generators.

6. Portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, may require California Air Resources Board (ARB) Portable Equipment Registration with the state or a local district permit. The owner/operator shall be responsible for arranging appropriate consultations with ARB or FRAQMD to determine registration and permitting requirements before equipment is operated at the site.
7. SAFCA shall assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, and emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower [hp] and greater) that will be used an aggregate of 40 or more hours for the construction project and apply the following mitigation measure:

- Reduce NO\textsubscript{X} emissions from off-road diesel-powered equipment: SAFCA shall provide a plan for approval by FRAQMD demonstrating that the heavy-duty (equal to or greater than 50 hp) off-road equipment to be used in the construction project, including owned, leased and subcontractor vehicles, shall achieve a project wide fleet-average 20% NO\textsubscript{X} reduction and 45% particulate reduction\(^1\) compared to the most recent ARB fleet average at time of construction.

Implementing the FRAQMD-recommended measures is expected to achieve at least a 75% reduction in fugitive dust emissions, 5% reduction in ROG emissions from construction equipment, 20% reduction in NO\textsubscript{X} emissions from construction equipment, and 45% reduction in PM\textsubscript{10} emissions from construction equipment (SMAQMD 2004). The resulting maximum average daily construction-generated emissions in Sutter County, with mitigation incorporated, are conservatively calculated to be as high as 102 lb/day of ROG, 527 lb/day of NO\textsubscript{X}, and 1,260 lb/day of PM\textsubscript{10} for the Proposed Action, and 68 lb/day of ROG, 341 lb/day of NO\textsubscript{X}, and 822 lb/day of PM\textsubscript{10} for the RSLIP Alternative.

SAFCA shall implement the following measure to further mitigate NO\textsubscript{X} emissions through off-site reductions:

8. SAFCA shall enter into a voluntary emissions reduction agreement with the FRAQMD to mitigate the portion of construction-generated emissions of NO\textsubscript{X} that exceeds EPA’s applicable threshold for general conformity purposes. The calculation of the fee shall be determined in coordination with the FRAQMD and paid prior to the occurrence of any construction-related activities within areas under the jurisdiction of the FRAQMD.

Implementation of the mitigation measures described above would reduce project-generated construction-related emissions, but emissions would remain in excess of the FRAQMD-recommended thresholds of 25 lb/day for ROG and NO\textsubscript{X} and 80 lb/day for PM\textsubscript{10}. Therefore, although the impact would be reduced, implementing the mitigation measures described above would not reduce project-generated construction-related emissions of ROG and PM\textsubscript{10} in Sutter County to levels less than FRAQMD’s significance thresholds. It should be noted that not meeting FRAQMD-suggested impact criteria, postmitigation, is not a violation of any FRAQMD rules or guidelines, and authorization to construct would be provided by FRAQMD if the listed mitigation measures are implemented. Nevertheless, because this mitigation would not reduce temporary construction-related impacts in Sutter County below the FRAQMD-recommended thresholds, this impact is considered significant and unavoidable. \((\text{Similar})\)

**Construction in Sacramento County (SMAQMD)**

For portions of the project occurring in Sacramento County, SMAQMD’s *Guide to Air Quality Assessment in Sacramento County* (SMAQMD 2004) provides mitigation measures

---

\(^1\) Acceptable options for reducing emissions may include use of late-model engines, low-emission diesel products, alternative fuels, engine retrofit technology (Carl Moyer Guidelines), and after-treatment products; voluntary off-site mitigation projects; providing funds for air district off-site mitigation projects; and/or other options as they become available. FRAQMD should be contacted to discuss alternative measures.
for reducing short-term air quality impacts. As recommended by SMAQMD, SAFCA shall ensure that the following mitigation measures are implemented during all project construction activities to the extent practicable and feasible.

► SAFCA shall prepare a construction emissions dust control plan(s) in accordance with SMAQMD recommendations that reduces fugitive dust emissions by at least 85% (or shall provide calculations based on SMAQMD-approved methodologies showing that emissions would be reduced to less than 100 tons per year assuming a conservative reduction of 75% with typical mitigation). All grading operations shall be suspended when fugitive dust levels exceed levels specified by SMAQMD rules. SAFCA and its primary construction contractors shall ensure that dust is not causing a nuisance beyond the property line of the construction site.

► If overlapping construction phases in Sacramento County create unmitigated PM₁₀ emissions in excess of 400 TPY SAFCA shall use advanced dust suppressant materials (such as EnviroTac II) on all unpaved roadways and stockpiled materials to ensure 95% or greater control of fugitive dust and a reduction of PM₁₀ emissions below 100 TPY. Overlapping Phases where this would apply includes all work on the Sacramento River east levee for the Phase 3 and 4a Projects.

► SAFCA shall develop a plan, in consultation with SMAQMD, demonstrating that the heavy-duty (>50 hp), off-road vehicles to be used in the construction project (including owned, leased, and subcontractor vehicles) shall achieve a project-wide fleet-average 20% NOₓ reduction and 45% particulate reduction compared to the most recent ARB fleet average at the time of construction.²

► A comprehensive inventory of all off-road construction equipment equal to or greater than 50 hp that will be used for an aggregate of 40 or more hours during any portion of project construction shall be submitted to SMAQMD. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction operations occur. At least 48 hours before heavy-duty off-road equipment is used, SAFCA shall provide SMAQMD with the anticipated construction timeline, including the start date, and the name and phone number of the contractor’s project manager and on-site foreman.

► Emissions from off-road, diesel-powered equipment used on the project site shall not exceed 40% opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40% opacity (or Ringelmann 2.0) shall be repaired immediately, and SMAQMD shall be notified of noncompliant equipment within 48 hours of identification. A visual survey of all in-operation equipment shall be made at least weekly. A monthly summary of visual survey results shall be submitted to SMAQMD throughout the construction period, except that the monthly summary shall not be required for any 30-day period in which no construction operations occur. The monthly summary shall include the quantity and type of vehicles surveyed, as well as the dates of each survey. SMAQMD and/or other officials may conduct periodic site inspections to determine compliance.

► SAFCA shall pay SMAQMD an off-site mitigation fee for implementation of any proposed alternatives for the purpose of reducing impacts to a less-than-significant level. Based on the construction information presented in Chapter 2.0, “Alternatives” and the emissions calculations shown in Appendix F, if the Proposed Action is implemented, the

² Acceptable options for reducing emissions include the use of late-model engines, low-emission diesel products, alternative fuels, particulate-matter traps, engine retrofit technology, after-treatment products, and/or such other options as become available.
specific fee amount to offset NOX emissions for elements of the 2010 construction phase that would occur in Sacramento County would be $737,248 (see Appendix F for fee calculations) plus a 5% administrative fee of $36,862. Thus, the total mitigation fee for project-related work conducted in Sacramento County during the 2010 construction season is currently estimated to be $774,110 for the Proposed Action. Calculation of fees associated with subsequent improvement plans/project phases shall be conducted at the time of project approval. The applicable fee rate shall be determined and the total fee shall be calculated based on the fee rate in effect at the time that subsequent environmental documents are prepared. The fee for subsequent construction projects shall be remitted to SMAQMD before groundbreaking.

SAFCA shall pay into SMAQMD’s off-site construction mitigation fund to further mitigate construction-generated emissions of NOX that exceed SMAQMD’s daily emission threshold of 85 lb/day. The calculation of daily NOX emissions is based on the cost to reduce 1 ton of NOX at the time when the document is prepared (currently $16,000 per ton). The determination of the final mitigation fee shall be conducted in coordination with SMAQMD before any demolition or ground disturbance occurs for any project phase.

Calculation of and payment of the fee for all subsequent project phases shall also be included in the CEQA MMRP for the project.

Implementing the SMAQMD-recommended measures is expected to achieve at least a 75–85% reduction in fugitive dust emissions, 5% reduction in ROG emissions from construction equipment, 20% reduction in NOX emissions from construction equipment, and 45% reduction in PM10 emissions from construction equipment (SMAQMD 2004). The resulting maximum average daily construction-generated emissions with mitigation incorporated are shown in Table 4.11-1.

Implementation of the mitigation measures described above would reduce project-generated construction-related emissions in Sacramento County to a less-than-significant level for NOX. However, it is anticipated that the project could still result in emissions that substantially contribute to a violation of the ambient air quality standard for PM10. Therefore, although the impact would be reduced, implementing the mitigation measures described above would not fully reduce project-generated construction-related emissions of PM10 in Sacramento County to a less-than-significant level. Therefore, construction-related emissions for PM10 would remain significant and unavoidable. (Similar)

All Project Construction

SAFCA shall implement the following additional measures to reduce construction emissions of PM10 comprising fugitive dust and mobile-exhaust and ozone precursors throughout the project area:

► Open burning of removed vegetation shall be prohibited. Vegetation material shall be chipped on-site or delivered to waste-to-energy facilities to the extent feasible.

► An operational water truck shall be on-site at all times. Water shall be applied to control dust as needed to prevent dust impacts off-site. Unpaved areas subject to vehicle traffic, including employee parking areas and equipment staging areas, shall be stabilized by being kept wet, treated with a chemical dust suppressant or soil binders, or covered.

► The track-out of bulk material onto public paved roadways as a result of operations, or erosion, shall be minimized by the use of track-out and erosion control, minimization,
and preventive measures, and removed within 1 hour from adjacent streets such material anytime track-out extends for a cumulative distance of greater than 50 feet onto any paved public road during active operations. All visible roadway dust tracked out upon public paved roadways as a result of active operations shall be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. Wet sweeping or a HEPA filter equipped vacuum device shall be used for roadway dust removal.

► Low-sulfur fuel shall be used for stationary construction equipment.

► Existing power sources or clean fuel generators shall be used rather than temporary power generators to the extent feasible.

► Low-emission on-site stationary equipment shall be used.

► Vehicle speeds on unpaved roadways shall be limited to 15 miles per hour.

► Idling time for all heavy-duty equipment shall be limited to 5 minutes.

► Install ARB-certified Level 3 diesel particulate filters (DPF) on a minimum of 15% of the total number of off-road (non-street legal) diesel-powered construction equipment pieces with an engine size equal to or greater than 50 hp throughout the duration of the project. For fleets with 6 or fewer total applicable equipment pieces, a DPF shall be installed on a minimum of one engine. All DPFs shall be kept in working order and maintained in operable condition according to manufacturer’s specifications. At the time of writing, a list of ARB-certified Level 3 DPF can be found at http://www.arb.ca.gov/diesel/verdev/level3/level3.htm.

► Install Level 3 ARB-certified DPF that are functional and kept in working order to meet manufacturer’s specifications throughout the duration of the project on at least 15% of the total pieces of off-road (non-street legal) construction equipment on the project site over 50 hp (a minimum of one diesel particulate filter for fleets with 6 or less total pieces).

Since publication of the DEIS/DEIR, SMAQMD has also recently released draft BMPs for consideration as practical alternatives to reduce construction-generated greenhouse gas (GHG) emissions. SAFCA shall implement a range of measures to reduce GHG emissions, which may include the following:

► improve fuel efficiency from construction equipment by reducing unnecessary idling (modify work practices, install auxiliary power for driver comfort); performing equipment maintenance (inspections, detect failures early, corrections); training equipment operators in proper use of equipment; using the proper size of equipment for the job; and using equipment with new technologies (repowered engines, electric drive trains);

► use alternative fuels for generators at construction sites such as propane or solar, or use electrical power;

► encourage and provide carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes;
reduce electricity use in the construction office by using compact fluorescent bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones;

recycle or salvage non-hazardous construction and demolition debris (goal of at least 75% by weight);

use locally sourced or recycled materials for construction materials (goal of at least 20% based on costs for building materials, and based on volume for roadway, parking lot, and sidewalk and curb materials); and

develop a plan to efficiently use water for adequate dust control.

Implementing this mitigation measure would reduce the impact under the Proposed Action and the RSLIP Alternative, but not to a less-than-significant level. This impact would remain significant and unavoidable. *(Similar)*

**Impact 4.11-b: General Conformity with the Applicable Air Quality Plan**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no construction emissions associated with such construction would result. There would be **no impact. (Lesser)**

**Potential Levee Failure**

Without improvements to the Natoma perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natoma Basin could result in flooding, necessitating emergency procedures. Extensive construction required to repair infrastructure damages would result in ozone precursor emissions and PM10. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered to **too speculative for meaningful consideration. (Currently Unknown)**

**Proposed Action**

The General Conformity Rule, which addresses whether a project conforms to the State Implementation Plan (SIP) approved and promulgated under Section 110 of the Federal Clean Air Act (CAA), applies to Federal actions that would generate emissions of criteria air pollutant or precursor emissions in nonattainment or maintenance areas. The Sacramento and Sutter County portions of the Sacramento Valley Air Basin (SVAB) are currently designated as serious nonattainment areas with respect to the national 8-hour ozone standard. In addition, the Sacramento County portion of the SVAB is designated as moderate nonattainment for the national PM10 standard, while Sutter County is unclassified for PM10. General conformity requirements would apply to actions where the total project-generated direct or indirect emissions would be equal to or exceed the applicable emissions levels, known as the *de minimis* thresholds, or would be greater than 10% of the area’s annual emissions budget, known as regionally significant thresholds. If either of the thresholds is exceeded, a conformity determination would be needed prior to project approval. The *de minimis* thresholds applicable to Sacramento and Sutter Counties are provided in Section 4.11.1.2, “Thresholds of Significance,” above.

As discussed above, ozone precursor emissions of ROG and NOx would occur associated primarily with construction equipment exhaust and asphalt paving. Fugitive PM10 emissions are associated primarily with site
preparation and earthmoving activities. Because general conformity is determined by calendar year, total emissions were calculated for the 2010 calendar year using a worst-case assumption (i.e., that all of the levee improvements for 30% of the Phase 2 Project, 100% of the Phase 3 Project, and 100% of the Phase 4a Project would occur simultaneously with all activities in the 2010 calendar year at a minimum).

Construction-generated emissions that would occur during calendar year 2010 under worst-case assumptions for air quality analysis are shown in Table 4.11-3, and are categorized by the respective jurisdiction in which they would occur. Total worst-case emissions for Sutter and Sacramento Counties combined, with mitigation proposed under Mitigation Measure 4.11-a implemented, were calculated to be 20 TPY of ROG, 138 TPY of NOX, and 84 TPY of PM10. See Table 4.11-3 for detailed emissions that would occur in each jurisdiction. See Appendix F for detailed emission sources and assumptions.

Based on the project information presented in Chapter 2.0, “Alternatives,” construction of the Phase 4a Project would result in maximum unmitigated and mitigated annual emissions in excess of the de minimis threshold for NOX in the Sutter County portion of the SVAB, as summarized in Table 4.11-3. Based on the modeling conducted, it is foreseeable that unmitigated construction-generated emissions would result in or substantially conflict with applicable air quality planning efforts. However, with implementation of mitigation identified under Impact 4.11-a, emissions would be reduced below the Federal de minimis thresholds. Nonetheless, USACE is coordinating with EPA and has prepared a conformity determination for the Phase 4a Project, which is required before a ROD can be issued for the Phase 4a Project.

If the Phases 2, 3, and 4a Projects were not constructed during the same calendar year, then emissions would be less than those presented in Table 4.11-3, and would also be below the Federal de minimis thresholds.

Finally, project operation (discussed under Impact 4.11-c, below) would result in minimal emissions of pollutants for which the region is in nonattainment. As noted above, USACE is coordinating with EPA and has prepared a conformity determination, which is required before a ROD can be issued for the Phase 4a Project. For this reason, this impact is considered less than significant.

RSLIP Alternative

According to current Federal standards, a conformity determination is required only for the Proposed Action. However, for purposes of this analysis, the emissions of criteria air pollutant or precursor emissions under the RSLIP Alternative were calculated and are shown in Table 4.11-3. Because the emissions under this alternative would fall below the Federal de minimis threshold, implementation of the RSLIP Alternative would not conflict with implementation of the SIP, and therefore if selected in place of the Proposed Action, a conformity determination would not be required. Therefore, this impact is considered less than significant. (Similar)

Mitigation Measure: No mitigation is required.
Table 4.11-3
Summary of Maximum Annual Construction Emissions during the 2010 Calendar Year Associated with the Combined Phase 2, 3, and 4a Projects

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>ROG</th>
<th>NOx</th>
<th>PM₁₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worst-Case Emissions within Sutter County—FRAQMD Emissions (TPY)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 2 Emissions (15% of actions)</td>
<td>0.8</td>
<td>4.2</td>
<td>28.4</td>
</tr>
<tr>
<td>Phase 3 Emissions (100% of actions)</td>
<td>7.8</td>
<td>54.7</td>
<td>377.1</td>
</tr>
<tr>
<td>Phase 4a Emissions (100% of actions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCC Phase 4a work</td>
<td>0.3</td>
<td>1.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Total unmitigated emissions (tons/year)</td>
<td>8.9</td>
<td>60.3</td>
<td>409.7</td>
</tr>
<tr>
<td>General Conformity Thresholds: De minimis/Regional Significance (TPY)</td>
<td>25/377</td>
<td>25/740</td>
<td>-</td>
</tr>
<tr>
<td>Significant?</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Total mitigated emissions (TPY)¹</td>
<td>8.5</td>
<td>48.2</td>
<td>20.5</td>
</tr>
<tr>
<td>Significant with mitigation incorporated?</td>
<td>No</td>
<td>No²</td>
<td>-</td>
</tr>
<tr>
<td>Worst-Case Emissions within Sacramento County—SMAQMD Emissions (TPY)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 2 Emissions (15% of actions)</td>
<td>0.3</td>
<td>1.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Phase 3 Emissions (100% of actions)</td>
<td>6.3</td>
<td>41.2</td>
<td>356.0</td>
</tr>
<tr>
<td>Phase 4a Emissions (100% of actions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento River East Levee Reaches 10–15</td>
<td>9.8</td>
<td>56.9</td>
<td>811.6</td>
</tr>
<tr>
<td>Riverside Canal</td>
<td>1.0</td>
<td>5.4</td>
<td>60.5</td>
</tr>
<tr>
<td>RD 1000 Pumping Plants Nos. 3 and 5</td>
<td>0.6</td>
<td>4.8</td>
<td>0.3</td>
</tr>
<tr>
<td>Fisherman’s Lake Excavation and Restoration</td>
<td>0.3</td>
<td>1.9</td>
<td>5.1</td>
</tr>
<tr>
<td>Total unmitigated emissions (tons/year)</td>
<td>18.3</td>
<td>111.6</td>
<td>1,237.3</td>
</tr>
<tr>
<td>General Conformity Thresholds: De minimis/Regional Significance (TPY)</td>
<td>25/2,351</td>
<td>25/2,985</td>
<td>100/1,622</td>
</tr>
<tr>
<td>Significant?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Total mitigated emissions (TPY)¹</td>
<td>17.4</td>
<td>89.3</td>
<td>61.9</td>
</tr>
<tr>
<td>Significant with Mitigation Incorporated?</td>
<td>No</td>
<td>No²</td>
<td>No¹</td>
</tr>
</tbody>
</table>

Notes: FRAQMD = Feather River Air Quality Management District; TPY = tons per year; μg/m³ = micrograms per cubic meter; NOX = oxides of nitrogen; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; SMAQMD = Sacramento Metropolitan Air Quality Management District

¹ Implementation of all recommended standard mitigation measures and advanced dust suppressant applications listed under Mitigation Measure 4.11-a would result in reductions of ROG, NO_X, and PM₁₀ emissions by approximately 5%, 20%, 75–95% for fugitive PM₁₀ emissions, and 45% for mobile-source PM₁₀ emissions, respectively.

² Payment into SMAQMD’s Off-site Construction Mitigation Fee Program to offset NO_X emissions in excess of SMAQMD’s significance threshold would reduce impacts for this pollutant in SMAQMD’s jurisdiction to a less-than-significant level. Coordination of an emissions reduction agreement with the FRAQMD for calculation and fee payment by SAFCA to FRAQMD prior to project approval would be used to offset an equivalent mass of NO_X emissions in excess of EPA’s applicable threshold for general conformity purposes. Successful implementation of Mitigation Measure 4.11-a would reduce NO_X emissions in FRAQMD’s jurisdiction, but not to a less-than-significant level for this impact.

See Appendix F for assumptions and modeling results for each activity and subphase.

Source: Calculations performed by AECOM based on data provided by HDR, Wood Rodgers, and Mead & Hunt in 2009
Impact 4.11-c: Long-Term Changes in Emissions of ROG, NOX, and PM10 Associated with Project Implementation

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no long-term changes in emissions related to the project would occur. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Efforts to reconstruct the levee would depend on the extent and location of damage. Equipment such as pumping plants would likely be used, generating short-term emissions of air quality pollutants. Upon completion of levee repairs, generation of these emissions would not be substantially greater than in a no-action, no-flood scenario. However, a precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Long-term project operation would not result in increased regional emissions of ROG, NOX, and PM10 from mobile-, stationary-, or area-source emissions. Project implementation would require a negligible increase in operational maintenance activities at the proposed facilities, and associated vehicle trips. In addition, the levee system would not require extensive landscape maintenance or other activities that would result in a substantial net increase in emissions in comparison with existing conditions.

Furthermore, project implementation would not result in the operation of any new major stationary emission sources. Modifications to pump stations at the NCC south levee and along the Sacramento River east levee would require replacement of some motors; however, these motors operate on electricity. Modifications may also include the addition of diesel-powered backup generators, but these additions would be minor stationary sources of emissions. The diesel-powered backup generators would be used in emergency situations and would be tested monthly. Stationary equipment such as diesel-powered generators would be subject to the applicable air district’s permitting process and Best Available Control Technology (BACT) and offset requirements. The applicable air district’s permitting process would ensure that emissions from equipment are within acceptable limits. Emissions of ozone precursors and PM10 associated with pump station operation would be negligible. No other stationary sources of emissions would be associated with the action alternatives. Thus, long-term operational emissions of criteria air pollutants or precursors would not result in or substantially contribute to a violation of the applicable air quality standards. Because project operation would not result in a direct, adverse impact on air quality, this impact is considered less than significant. (Similar)

Mitigation Measure: No mitigation is required.

Impact 4.11-d: Exposure of Sensitive Receptors to Toxic Air Emissions

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for direct exposure of sensitive receptors to project-related toxic air emissions. There would be no impact. (Lesser)
**Potential Levee Failure**

Without improvements to the perimeter levee system, the risk of levee failure would remain high. In the event of a flood, toxic air emissions could be associated with the use of equipment during cleanup operations. However, effects on sensitive receptors would depend on many factors (e.g., magnitude and duration of emissions, proximity to sensitive receptors), and therefore the magnitude of the impact cannot be predicted. For these reasons, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered **too speculative for meaningful consideration. (Currently Unknown)**

**Proposed Action and RSLIP Alternative**

Project construction and operation would generate emissions of diesel PM, which is identified by ARB as a TAC. TAC emission sources are discussed separately below. Neither FRAQMD nor SMAQMD has any current guidance on TAC emissions from mobile equipment, and neither has a threshold of significance for exposure to emissions from this equipment.

Project construction would result in the temporary and short-term generation of diesel exhaust emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities, in addition to diesel-fueled on-road haul trucks used for hauling borrow material. The dose to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). According to the Office of Environmental Health Hazard Assessment, health risk assessments (HRAs) that determine the exposure of sensitive receptors to TAC emissions should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (Salinas, pers. comm., 2004).

The duration of mobilized equipment used near sensitive receptors located along the levee system and borrow sites would be short (less than 2 full years for the Phase 4a Project). Each construction season would last approximately 6 months. In addition, as improvements are completed, mobile equipment would progress along the levees and canal alignments and would not operate near (within approximately 500 feet of) any one sensitive receptor for more than a maximum of a few weeks at a time. Sensitive receptors located near (within 500 feet of) the borrow areas would likely experience longer exposure periods than receptors located along the levee alignments but would be located a greater distance from most of the borrow activities (see Plates 6a–6d for a depiction of the project area). The project would represent less than 0.1% of the 70-year exposure period for any nearby sensitive receptor in the area. Because the exposure period for receptors in the vicinity of the project would be minimal, and because the local air districts do not have guidance for preparation of HRAs for construction equipment, an HRA is not recommended for the action alternatives’ construction activities.

As discussed under Impact 4.11-c, above, the pump stations at the NCC south and along the Sacramento River east levee to be modified as part of the Proposed Action or the RSLIP Alternative would be minor stationary sources of TAC emissions in Sutter and Sacramento Counties. Diesel-powered backup generators would be used in emergency situations and would be tested monthly. Consequently, diesel PM emissions associated with the modified pump stations would be infrequent. Furthermore, this category of stationary source (i.e., portable equipment), in addition to any other stationary sources that may emit TACs (i.e., dry cleaners), would be subject to FRAQMD and SMAQMD permitting and toxic best available control technology (T-BACT) requirements. If the implementation of T-BACT would not reduce emissions to an acceptable level, then FRAQMD and SMAQMD would deny the required permit for the stationary source (in this case, the diesel-powered backup generators). Therefore, operation of these stationary sources would not result in the exposure of sensitive receptors to substantial concentrations of TACs. No other stationary sources of emissions would be associated with any of the action alternatives. Thus, this impact is considered to be **less than significant. (Similar)**
Mitigation Measure: No mitigation is required.

4.11.3 RESIDUAL SIGNIFICANT IMPACTS

In the event of a levee failure under the No-Action Alternative, impacts due to temporary construction emissions, lack of general conformity with the Air Quality Plan, long-term emissions, and exposure of sensitive receptors to toxic air emissions are uncertain. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

Because of the intensity of construction operations, time constraints to which it is assumed all action alternatives must adhere to avoid other environmental impacts and adverse weather conditions, and the nonattainment status of the project area, Mitigation Measure 4.11-a is not expected to be sufficient to reduce the Phase 4a Project emissions of ROG or PM$_{10}$ associated with the Proposed Action or the RSLIP Alternative below the applicable threshold. As described under Impact 4.11-a and summarized in Tables 4.11-1 and 4.11-2, emissions of ROG and PM$_{10}$ that would occur in Sutter County would still exceed the applicable FRAQMD significance criteria of 25 and 80 lb/day, respectively. Similarly, mitigated emissions of PM from earth-moving activities in Sacramento County would still be expected to result in or substantially contribute to a violation of applicable air quality standards. Because the impacts cannot be fully mitigated, this impact would be significant and unavoidable for the Proposed Action and the RSLIP Alternative.
4.12 NOISE

4.12.1 Methodology and Thresholds of Significance

4.12.1.1 Methodology

Construction-related and stationary-source noise impacts were calculated based on the Federal Transit Noise and Vibration Impact Assessment methodology (Federal Transit Administration [FTA] 2006). Reference emission noise levels and usage factors were based on the Federal Highway Administration (FHWA) Roadway Construction Noise Model. The FHWA Roadway Noise Prediction Model (FHWA-RD-77-108) was used to calculate traffic noise levels along haul routes, based on estimates described in Chapter 2.0, “Alternatives.”

4.12.1.2 Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of the context and intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to noise if they would do any of the following:

► result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

► expose people residing or working in the project area to excessive noise levels;

► expose persons to or generate excessive groundborne vibration or groundborne noise levels;

► for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or

► for a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

The following considerations apply to the first three significance thresholds:

► **Temporary, short-term construction noise impacts:** Temporary, short-term construction noise impacts are considered significant if construction-generated noise levels exceed the applicable standards at nearby noise-sensitive land uses.

► **Noise impacts from haul truck traffic:** For all affected residential land uses, noise that would be generated by haul truck traffic is considered significant if it would cause the overall exterior noise level to exceed the “normally acceptable” exterior land use compatibility noise standard of 60 A-weighted decibels (dBA) Ldn/CNEL (day-night average noise level/community noise equivalent level) for residential land uses or would exceed the interior noise standard of 45 dBA Ldn/CNEL in any inhabitable residence.

► **Exposure of sensitive receptors to, or generation of, excessive vibration levels:** Short- and long-term vibration impacts would be significant if project construction or operation would result in the exposure of sensitive receptors to, or would generate, vibration levels that exceed Caltrans’ recommended standard of 0.2 inches per second (in/sec) peak particle velocity (PPV) with respect to the prevention of structural damage for normal buildings (Caltrans 2002), or FTA’s maximum acceptable vibration standard of 80 vibration
decibels (VdB) with respect to human response for residential uses (i.e., annoyance) (FTA 2006) at any nearby existing sensitive land uses.

Portions of the Phase 4a Project activities would be located inside the Airport Land Use Compatibility Plan (ALUCP) area. In some areas, construction would occur as close as 3,000 feet from the Airport.

There are no private airstrips in the vicinity of the Phase 4a Project area. Therefore, this issue is not discussed further in this FEIS.

**Local Noise Standards**

**City of Sacramento**

The City of Sacramento General Plan Noise Element establishes an exterior noise level of 60 dBA L$_{dn}$ and an interior noise level of 45 dBA L$_{dn}$ as acceptable.

The City’s exterior noise standard, as stated in the City’s noise ordinance, is 55 dBA during the hours of 7:00 a.m. to 10:00 p.m. for residential and agricultural uses. The standard then adjusts to 50 dBA between 10:00 p.m. and 7:00 a.m. for residential and agricultural uses. The noise ordinance also exempts construction noise during the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and from 9:00 a.m. to 6:00 p.m. on Sundays. The ordinance further states that the operation of an internal combustion engine is not exempt if the engine is not equipped with suitable exhaust and intake silencers in good working order (8.68.080 Exemptions, Noise Control Standards, City of Sacramento Municipal Code).

**Sacramento County**

The Sacramento County General Plan Noise Element states that noise created by new non-transportation noise sources may not exceed the standards outlined in Table 4.12-1 when measured at the property line of the noise-sensitive land use.

<table>
<thead>
<tr>
<th>Noise Element Jurisdiction/ Land Use Category</th>
<th>Maximum Allowable Exterior Noise Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Daytime 7:00 a.m.–7:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Daytime Hourly</td>
</tr>
<tr>
<td>Sutter County</td>
<td>L$_{eq}$</td>
</tr>
<tr>
<td></td>
<td>50</td>
</tr>
</tbody>
</table>

Construction noise is not exempt from Sutter County noise standards during any hours of the day.

<table>
<thead>
<tr>
<th>Sacramento County Residential Areas</th>
<th>Hourly</th>
<th>Hourly</th>
<th>Hourly</th>
</tr>
</thead>
<tbody>
<tr>
<td>L$_{50}$</td>
<td>50</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>L$_{max}$</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>L$_{50}$</td>
<td>45</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

Construction noise is exempt from the Sacramento County noise regulations provided that construction does not take place before 6:00 a.m. or after 8:00 p.m. Monday through Friday, and before 7:00 a.m. or after 8:00 p.m. on Saturday and Sunday.

<table>
<thead>
<tr>
<th>City of Sacramento Residential Areas</th>
<th>Exterior L$_{dn}$/CNEL</th>
<th>Interior L$_{dn}$/CNEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60</td>
<td>45</td>
</tr>
</tbody>
</table>

Construction noise is exempt from the City of Sacramento noise regulations provided that construction does not take place before 7:00 a.m. or after 6:00 p.m. Monday through Saturday, and before 9:00 a.m. or after 6:00 p.m. on Sunday.

Notes: dBA = A-weighted decibel; L$_{50}$ = noise level exceeded 50% of the time; L$_{max}$ = maximum noise level; L$_{dn}$ = day-night average noise level; CNEL = community noise equivalent level; L$_{eq}$ = energy-equivalent noise level

Source: City of Sacramento 2009, Sacramento County 1993, Sutter County 1996
The Sacramento County noise ordinance states that a standard of 55 dBA is applied during the hours of 7:00 a.m. and 10:00 p.m. and a standard of 50 dBA is applied during the hours of 10:00 p.m. and 7:00 a.m. for residential and agricultural uses. The noise ordinance also states that construction activities are exempt during the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday and from 7:00 a.m. and 8:00 p.m. on Saturdays and Sundays (Chapter 6.68 Noise Control, County of Sacramento Code).

**Sutter County**

The Sutter County General Plan Noise Element has established noise standards for noise-sensitive land uses. The County has established an exterior noise level of 60 dBA Ldn and an interior noise level of 45 dBA Ldn. For non-transportation noise sources, the standards outlined in Table 4.12-1 would apply. Sutter County does not contain any provisions that would exempt construction noise within the County; therefore, the standards shown in Table 4.12-1 would also apply to construction noise.

**General**

Construction noise may affect sensitive receptors in unincorporated areas of Sutter and Sacramento Counties and in the City of Sacramento. These jurisdictions either have non-transportation noise standards based on time of day and land use sensitivity or provide exemptions for construction as long as those activities occur during the daytime. Residential areas are considered the most noise-sensitive land use, and the most restrictive noise standards apply.

Noise generated by a transportation source is also regulated according to land use. All the jurisdictions with standards for transportation noise impacts have adopted a normally acceptable Ldn/CNEL noise standard of 60 dBA for residential land uses and a conditionally acceptable Ldn/CNEL noise standard of 65 dBA, provided that the best available noise reduction measures have been applied. Many of the jurisdictions have adopted a maximum Ldn/CNEL noise limit of 70 dBA for playgrounds, parks, and riding stables.

For the purposes of this analysis, the local noise level standards presented above and in Table 4.12-1 are applied to evaluate the impacts of noise generated by construction equipment, and the local noise level standards presented above are applied to evaluate the impacts of noise generated by construction-related truck trips.

### 4.12.2 Impacts and Mitigation Measures

**Impact 4.12-a: Generation of Temporary, Short-Term Construction Noise**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to generate temporary, short-term construction noise. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Noise-sensitive land uses (in this case, primarily residential uses) are scattered throughout the area in which repair-related construction would occur. However, levee failure would likely result in evacuation of people (i.e., sensitive receptors) from damaged levee locations. Without sensitive receptors, potential impacts related to temporary, short-term construction noise would be less than significant. *(Lesser)*
Proposed Action

Construction of improvements to levees, drainage and irrigation infrastructure, and pumping plants; excavation of borrow sites; and development of habitat restoration areas under the Proposed Action would generate short-term, temporary and intermittent noise at or near the individual noise-sensitive locations. Much of the construction activity would proceed in a linear manner along the levee and canal alignments and would have the maximum noise impact on individual residences for approximately 2–3 weeks in most locations. Construction of the adjacent levee and associated cutoff walls and seepage berms would take place in Reaches 10–15 of the Sacramento River east levee. A cutoff wall would be installed in the adjacent levee in Reach 4B. The Riverside Canal would be relocated and extended in Reaches 11B–17, with a parallel underground pipe extension that would be located in Reaches 15–18B between landside residences and the new levee toe. A piped section is also being considered in Reaches 12B–13 to avoid residences. Noise levels would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment, and the physical location of construction activities. On-site equipment required for construction activities is anticipated to include excavators, backhoes, bulldozers, scrapers, rollers, graders, loaders, compactors, and various trucks. Drilling augers and associated support equipment would also be needed for well replacement activities and new well drilling needed to supply water for habitat mitigation. Individual equipment maximum noise levels produced by these operations could range from 79 to 90 dBA without the implementation of feasible noise control at a distance of 50 feet from the nearest noise source, as indicated in Table 4.12-2.

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Typical Noise Level (dB) at 50 feet</th>
<th>Equipment Type</th>
<th>Typical Noise Level (dB) at 50 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Compressor</td>
<td>78</td>
<td>Generator</td>
<td>81</td>
</tr>
<tr>
<td>Asphalt Paver</td>
<td>77</td>
<td>Grader</td>
<td>85</td>
</tr>
<tr>
<td>Backhoe</td>
<td>78</td>
<td>Hoe Ram Extension</td>
<td>90</td>
</tr>
<tr>
<td>Compactor</td>
<td>83</td>
<td>Jack Hammer</td>
<td>89</td>
</tr>
<tr>
<td>Concrete Breaker</td>
<td>82</td>
<td>Pneumatic Tools</td>
<td>85</td>
</tr>
<tr>
<td>Concrete Pump</td>
<td>81</td>
<td>Pile Driver</td>
<td>101</td>
</tr>
<tr>
<td>Concrete Saw</td>
<td>90</td>
<td>Rock Drill</td>
<td>81</td>
</tr>
<tr>
<td>Crane, Mobile</td>
<td>81</td>
<td>Scraper</td>
<td>84</td>
</tr>
<tr>
<td>Dozer</td>
<td>82</td>
<td>Trucks</td>
<td>74–81</td>
</tr>
<tr>
<td>Front-end Loader</td>
<td>79</td>
<td>Water Pump</td>
<td>81</td>
</tr>
<tr>
<td>Groundwater Well Drilling Operations</td>
<td>77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: dB = A-weighted decibels (dBA)
1 All equipment fitted with properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are the actual measured noise levels for each piece of heavy construction equipment.
2 Groundwater well drilling noise was measured by AECOM for the Phase 2 EIR Addendum on May 27, 2009.
Sources: Bolt, Beranek, and Newman 1981; FTA 2006; AECOM 2009

Noise-sensitive land uses (in this case, primarily residential uses) are scattered throughout the areas in which construction would occur. Waterside residences and a few landside residences are located along the Sacramento River east levee Reaches 10–15 (see Plate 2-6a); some of the landside residences would be removed before construction of levee improvements would take place in this area. Other scattered residences are present near the NCC pumping plants (Plate 2-6d), Fisherman’s Lake Borrow Area, and Riverside Canal, but are typically more
than one-half mile from work areas; however, several residences are as close as 50–100 feet from the canal, levee, and borrow areas where construction activity would occur. Several residences in Reaches 8, 12B, and 13 of the Sacramento River east levee would be subject to noise disturbance from a variety of construction activities, including borrow excavation and hauling, canal construction, habitat well drilling, cutoff wall installation and/or seepage berm, or levee construction. Three properties with residences located in Reaches 12B and 13 are situated between the levee (and off-road haul route) and the Riverside Canal alignment, and are located approximately 500 feet from the Fisherman’s Lake Borrow Area. Two landside residences in Reach 8 are located within 500 feet of the South Sutter, LLC borrow site and adjacent to the levee and off-road haul route. The proximity of these residences to more than one construction activity would likely prolong their exposure to daytime construction noise in comparison with other sensitive receptors. The duration of this exposure would range from several weeks to several months, depending on the extent to which schedules for the various construction activities listed above are staggered over the construction season.

Construction noise attributable to the Phase 4a Project was estimated using the FTA noise methodology for the prediction of stationary noise sources (FTA 2006). Table 4.12-3 shows the results for the various stages of construction activities associated with the proposed levee and canal improvements, based on the equipment requirements for construction shown in Chapter 2.0, “Alternatives,” and the distances to the 45-dBA and 50-dBA noise contours assuming no intervening barriers. Appendix G shows the complete listing of inputs and the methodology for predicting noise levels from construction.

<table>
<thead>
<tr>
<th>Action</th>
<th>Project Improvement Type</th>
<th>Resulting Noise Level in dBA $L_{eq}$ at 100 Feet</th>
<th>Distance to Noise Contour (Feet)</th>
<th>50 dBA</th>
<th>45 dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing and Grubbing/Stripping</td>
<td>Levee, Canal</td>
<td>77.6</td>
<td>2,386.3</td>
<td>4,243.5</td>
<td></td>
</tr>
<tr>
<td>Landside Structures Removal</td>
<td>Levee</td>
<td>76.6</td>
<td>2,073.9</td>
<td>3,687.9</td>
<td></td>
</tr>
<tr>
<td>Stability Berm Excavation</td>
<td>Levee</td>
<td>77.9</td>
<td>2,472.5</td>
<td>4,396.9</td>
<td></td>
</tr>
<tr>
<td>Adjacent Levee Construction</td>
<td>Levee</td>
<td>77.9</td>
<td>2,472.5</td>
<td>4,396.9</td>
<td></td>
</tr>
<tr>
<td>Cutoff wall Construction</td>
<td>Levee</td>
<td>77.3</td>
<td>2,313.5</td>
<td>4,114.1</td>
<td></td>
</tr>
<tr>
<td>Groundwater Well Drilling Operations</td>
<td>Levee</td>
<td>70.8</td>
<td>1,035.0</td>
<td>1,815.0</td>
<td></td>
</tr>
<tr>
<td>Garden Highway Reconstruction</td>
<td>Levee</td>
<td>76.1</td>
<td>2,019.1</td>
<td>3,590.6</td>
<td></td>
</tr>
<tr>
<td>Levee Degrading</td>
<td>Canal</td>
<td>76.7</td>
<td>2,172.6</td>
<td>3,863.4</td>
<td></td>
</tr>
<tr>
<td>Pipeline Removal</td>
<td>Canal</td>
<td>75.6</td>
<td>1,912.2</td>
<td>3,400.4</td>
<td></td>
</tr>
<tr>
<td>Cutoff Wall Construction</td>
<td>Canal</td>
<td>76.0</td>
<td>1,989.7</td>
<td>3,538.2</td>
<td></td>
</tr>
<tr>
<td>Levee Crown Reconstruction</td>
<td>Canal</td>
<td>75.1</td>
<td>1,805.7</td>
<td>3,211.0</td>
<td></td>
</tr>
<tr>
<td>Borrow Site Excavation</td>
<td>Canal</td>
<td>75.9</td>
<td>1,964.8</td>
<td>3493.9</td>
<td></td>
</tr>
<tr>
<td>Site Restoration, Demobilization</td>
<td>Levee, Canal</td>
<td>75.9</td>
<td>1,970.2</td>
<td>3,503.6</td>
<td></td>
</tr>
</tbody>
</table>

Notes: dBA = A-weighted decibel; $L_{eq}$ = energy-equivalent noise level

1 Distances to noise contours do not take into account intervening topography or existing structure facades.

2 Groundwater well drilling noise was measured by AECOM for the Phase 2 EIR Addendum on May 27, 2009. The equation: $L_{eq}$(equipment) = $E$.L.$+10\log(U.F.) - 20\log(D/50) - 10\log(D/50)$

Source: FTA 2006; Data modeled for SAFCA by AECOM in 2009
As shown in Table 4.12-3, the predicted highest noise level associated with construction activities would be 77.9 dBA Leq at 100 feet from construction activities without noise control device outfitting for heavy construction equipment, for the levee improvement, canal improvement, and pumping station construction activities. In some work locations, construction noise would be temporary and short term, and impacts would generally not result in sleep disruption or annoyance. In other instances, the levee itself may serve as a sound barrier that provides some protection to sensitive land uses. For instance, this may occur when construction activity takes place at the landside toe of the Sacramento River east levee in reaches where there are waterside residences.

Assuming a standard exterior-to-interior attenuation rate of 25 dBA for typical residential buildings with doors and windows closed, noise generated by construction equipment could result in interior noise levels that exceed the interior noise standard of 45 dBA Ldn/CNEL for residential land uses established by the City of Sacramento, Sacramento County, and Sutter County. Although construction activity is expected to take place during daytime hours in Sacramento County, Sutter County, and the City of Sacramento, because of the need to complete levee improvements outside of the flood season and because of other environmental and engineering constraints on project schedule, as described in Chapter 2.0, “Alternatives,” it is possible that construction may need to be conducted 24 hours per day, 7 days per week (24/7). For example, 24/7 construction would be needed for installation of cutoff walls in Reach 4B and in portions of Reaches 10–15 of the Sacramento River east levee, as well as for modifications to Pumping Plant Nos. 3 and 5. In addition, up to three days of 24-hour construction would be required for drilling of groundwater wells to replace existing wells located within the proposed levee footprint and for new wells to supply water for habitat mitigation. Additionally, up to 2 weeks of continuous (i.e., 24/7) pump testing for each well would be needed. Therefore, noise may be generated by construction equipment operating near homes during the more noise-sensitive early morning and nighttime hours (i.e., during hours that are not exempted by the applicable local ordinances in the City and County of Sacramento) and could result in sleep disturbance at nearby residences.

The standard for exterior night time noise levels established by Sacramento County and the City of Sacramento is 60 dBA Ldn. Noise models indicate that noise levels from cutoff wall construction equipment (deep soil mixing equipment or long-stick excavators) would be at or below 60 dBA Ldn at a distance of 500 feet from the construction equipment. Based on this distance of 500 feet from construction equipment, in the worst case, residents in the vicinity of cutoff wall construction could be affected by round-the-clock construction for approximately one week as the cutoff wall is installed along the levee. Residents are located within 500 feet of Pumping Plant No. 3 in Reach 13 of the Sacramento River east levee, where a cutoff wall would also be constructed. Construction at Pumping Plant No. 3 would occur 24/7. Because the pumping plant and cutoff wall construction activities would not overlap, 24/7 construction in this reach could take place throughout the entire 6-month construction season.

The 500-foot distance is modeled based on the assumption that sensitive receptors are located in the line-of-sight from the noise source. Additional reductions in noise levels would come from natural sound barriers, such as existing levees or other structures, including dwellings. For example, cutoff walls along the Sacramento River east levee would be constructed on the landside of the levee (near the toe of the existing levee) at an elevation below the crown of the levee. Therefore, the existing levee would provide some shielding to residents on the water side of Garden Highway, reducing exterior noise levels at 500 feet by an additional 10–12 dB below the predicted level of 60 dBA Ldn. This estimate is based on the assumption that cutoff wall construction equipment would generate noise at the level of 10 feet above ground surface, and the height of the existing levee is 25 feet above ground surface. Waterside residences would be out of the line-of-sight of this equipment.

Because of their proximity to residences, construction activities associated with the proposed levee and canal improvements as well as borrow site excavation could result in temporary, short-term noise levels that exceed the applicable daytime and nighttime standards for non-transportation sources (Table 4.12-3), resulting in increased annoyance and/or sleep disruption to occupants of residential dwellings and other sensitive receptors. Residences in Reaches 8 and 12B–13, which would be in proximity to multiple construction activities, including borrow site...
excavation and off-road materials hauling, could experience prolonged exposure (several weeks to several months) to noise levels exceeding applicable daytime standards because of the potential for those activities to be staggered over the construction season. This temporary, short-term impact is considered significant.

**RSLIP Alternative**

Under the RSLIP Alternative, residences along the Sacramento River east levee would be exposed to the highest noise levels shown in Table 4.12-3 without the benefit of the shielding that would be provided by the levee itself. As a result, this alternative would likely cause greater noise disturbance to residents along the Sacramento River east levee than under the Proposed Action. This temporary, short-term impact is considered significant. (Greater)


SAFCA and its primary contractors for engineering design and construction shall ensure that the following measures are implemented at each work site in any year of project construction to avoid and minimize construction noise effects on sensitive receptors. These measures are consistent with SAFCA’s standard contract specifications for noise control.

**All Project Construction**

The primary construction contractors shall employ noise-reducing construction practices. Measures that shall be used to limit noise shall include the measures listed below:

- Equipment shall be used as far away as practical from noise-sensitive uses.
- All construction equipment shall be equipped with noise-reduction devices such as mufflers to minimize construction noise and all internal combustion engines shall be equipped with exhaust and intake silencers in accordance with manufacturers’ specifications.
- Equipment that is quieter than standard equipment shall be used, including electrically powered equipment instead of internal combustion equipment where use of such equipment is a readily available substitute that accomplishes project tasks in the same manner as internal combustion equipment.
- Construction site and haul road speed limits shall be established and enforced.
- The use of bells, whistles, alarms, and horns shall be restricted to safety warning purposes only.
- Noise-reducing enclosures shall be used around stationary noise-generating equipment (e.g., compressors and generators).
- Fixed construction equipment (e.g., compressors and generators), construction staging and stockpiling areas, and construction vehicle routes shall be located at the most distant point feasible from noise-sensitive receptors.
- When noise sensitive uses are within close proximity and subject to prolonged construction noise, noise-attenuating buffers such as structures, truck trailers, or soil piles shall be located between noise generation sources and sensitive receptors.
Before construction activity begins within 500 feet of one or more residences or businesses, written notification shall be provided to the potentially affected residents or business owners, identifying the type, duration, and frequency of construction activities. Notification materials shall also identify a mechanism for residents or business owners to register complaints with the appropriate jurisdiction if construction noise levels are overly intrusive. The distance of 500 feet is based on the 60-dBA contour of the loudest anticipated construction activity.

If noise-generating activities are conducted within 100 feet of noise-sensitive receptors (the 70-dBA noise contour of construction noise), the primary contractor shall continuously measure and record noise levels generated as a result of the proposed work activities. Sound monitoring equipment shall be calibrated before taking measurements and shall have a resolution within 2 dBA. Monitoring shall take place at each activity operation adjacent to sensitive receptors. The recorded noise monitoring results shall be furnished weekly to SAFCA.

The primary contractor shall prepare and implement a detailed noise control plan based on the proposed construction methods. This plan shall identify specific measures to ensure compliance with the noise control measures specified above. The noise control plan shall be submitted to and approved by SAFCA before any noise-generating construction activity begins.

24/7 Project Construction

In addition to the noise-reducing measures listed above, SAFCA shall implement the following measures concerning 24/7 project construction:

- When construction of cutoff walls takes place during nighttime hours (between 10:00 p.m. and 6:00 a.m.), SAFCA shall honor requests from affected residents to provide reasonable reimbursement of local hotel or short-term rental stays for the period of time that cutoff wall construction takes place within 500 feet of the residents requesting reimbursement.

- When construction of groundwater wells (including up to 2 weeks of continuous pump testing for each well) or modifications to Pumping Plant Nos. 3 and 5 takes place during nighttime hours (between 10:00 p.m. and 6:00 a.m.) and the resulting noise levels exceed the applicable County noise standard (i.e., 45 dBA $L_{eq}$ and 65 dBA $L_{max}$ for Sutter County and 45 dBA $L_{50}$ and 65 dBA $L_{max}$ for Sacramento County), SAFCA shall honor requests from affected residents to provide reasonable reimbursement of local hotel or short-term rental stays for the period of time that construction of groundwater wells or modifications to Pumping Plant Nos. 3 and 5 takes place within 500 feet of the residents requesting reimbursement.

Implementing this mitigation measure would reduce the impact, but may not reduce noise levels at all times to a less-than-significant level because of the close proximity of noise-sensitive receptors to construction activities and the limited feasibility of mitigating construction noise to acceptable levels, especially during nighttime hours. Therefore, this temporary, short-term impact would remain significant and unavoidable. (Similar)
Impact 4.12-b: Temporary, Short-term Exposure of Sensitive Receptors to or Temporary, Short-term Generation of Excessive Groundborne Vibration

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to directly expose sensitive receptors to or generation of excessive groundborne vibration. There would be no impact. *(Lesser)*

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Noise-sensitive land uses (in this case, primarily residential uses) are scattered throughout the areas in which repair-related construction would occur. However, levee failure would likely result in evacuation of people (i.e., sensitive receptors) from damaged levee locations. Without sensitive receptors, potential impacts related to the generation of excessive groundborne vibration would be *less than significant*. *(Lesser)*

Proposed Action and RSLIP Alternative

Construction activities for the Proposed Action and the RSLIP Alternative have the potential to result in varying degrees of temporary ground vibration, depending upon the specific construction equipment used and operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Table 4.12-4 displays vibration levels for typical construction equipment.

<table>
<thead>
<tr>
<th>Table 4.12-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Construction Equipment Vibration Levels</td>
</tr>
<tr>
<td><strong>Equipment</strong></td>
</tr>
<tr>
<td>Large bulldozer</td>
</tr>
<tr>
<td>Trucks</td>
</tr>
<tr>
<td>Jackhammer</td>
</tr>
<tr>
<td>Small bulldozer</td>
</tr>
</tbody>
</table>

Notes:

1. Where PPV is the peak particle velocity.
2. Where Lv is the velocity level in decibels and based on the root mean square velocity amplitude.

Source: FTA 2006

On-site construction equipment would include excavators, backhoes, bulldozers, scrapers, rollers, graders, loaders, compactors, and various trucks. With the exception of pile driving, the most intense generation of ground vibration would be associated with large bulldozers that generate levels of 0.089 in/sec PPV and 87 vibration decibels (VdB). These levels would attenuate to 0.031 in/sec PPV or 78 VdB at a distance of 50 feet. Because there are no residential buildings closer than 50 feet to the construction areas, vibration generated by other off-road construction equipment would not exceed the Caltrans (0.2 in/sec PPV) or FTA (80 VdB) standards. Ground vibration would also be generated by haul trucks operating on area haul routes. As shown in Table 4.12-4, vibration levels generated by trucks could reach as high as 0.076 in/sec PPV or 86 VdB at a distance of 25 feet. At a distance of 50 feet, these levels would attenuate to 0.027 in/sec PPV and 77 VdB. Because levels would be less than Caltrans’ and FTA’s standards, this temporary, short-term impact related to vibration from other construction equipment is considered *less than significant*. *(Similar)*

Mitigation Measure: No mitigation is required.
Impact 4.12-c: Temporary, Short-term Exposure of Residents to Increased Traffic Noise Levels from Truck Hauling Associated With Borrow Activity

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for borrow hauling activity caused by the project to directly increase traffic noise levels. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Repairs would result in a substantial increase in vehicle trips. It is unknown how a flood would affect roadways within the Natomas Basin, or if borrow material sites would be the same or in close proximity to those examined for the Phase 4a Project. Traffic noise levels, as a result of flooding in Natomas during a catastrophic flood, are unpredictable; therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. *(Currently Unknown)*

**Proposed Action and RSLIP Alternative**

Construction during all construction years under the Proposed Action and the RSLIP Alternative would generate high volumes of haul truck trips for borrow activities on area roads, as shown on Plate 2-7 and described in Section 4.10, “Transportation and Circulation.” Associated traffic noise levels were estimated using the FHWA Federal Highway Traffic Noise Prediction Model (FHWA 1978) and are displayed in Table 4.12-5. These estimates are based on the amount of borrow material to be hauled, number of days of construction, and the hours per day in which hauling would occur.

<table>
<thead>
<tr>
<th>Phase 4a Project Area</th>
<th>Number of One-Way Trips Required per Hour</th>
<th>Resulting Noise Level (dBA L&lt;sub&gt;eq&lt;/sub&gt; 50 Feet from Haul Route Centerline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisherman’s Lake Borrow Area</td>
<td>573</td>
<td>71.5</td>
</tr>
<tr>
<td>Krumenacher Borrow Site and Twin Rivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unified School District Stockpile Site</td>
<td>36</td>
<td>59.4</td>
</tr>
</tbody>
</table>

Notes: dBA = A-weighted decibels; L<sub>eq</sub> = energy-equivalent noise level

Traffic noise levels were modeled using the Federal Highway Traffic Noise Prediction Model (FHWA 1978). Calculated noise levels do not consider any shielding or reflection of noise by existing structures or terrain features or noise contribution from other sources. Estimates are based on the amount of borrow material to be hauled, number of days of construction, and the number of hauling hours per day as provided in Chapter 2.0, “Alternatives,” and assuming a speed of 25 mph. See modeling results in Appendix G for further detail.

Source: Data compiled by AECOM in 2009

As shown in Table 4.12-5, noise levels attributable to Phase 4a Project haul truck traffic would be approximately 71.5 dBA L<sub>eq</sub> at a distance of 50 feet from the roadway centerline for material brought from the Fisherman’s Lake Borrow Area and 59.4 dBA L<sub>eq</sub> at a distance of 50 feet from the roadway centerline for material brought from the Krumenacher borrow site and the Twin Rivers Unified School District stockpile site. Borrow material transported from the I-5 Borrow Area would be moved within the footprint of levee construction, and noise levels from this activity are shown in Table 4.12-3.
Because most of the project area roadways currently serve a limited volume of residential and agricultural traffic, it is assumed that the modeled noise levels represent substantial increases compared to existing traffic noise levels. Not only would the Proposed Action result in substantially more vehicle trips on some roads along the toe of the Sacramento River east levee near residences, but the vehicles would be predominantly haul trucks, which generate considerably more noise than passenger vehicles. Predicted traffic noise levels along haul routes related to construction in Reaches 10–15 would exceed local exterior noise standards at residential land uses located along designated haul routes (Plate 2-7). Specifically, residences located along Del Paso Road, San Juan Road, El Centro Road, and Powerline Road would experience an increase in traffic noise levels due to hauling activities. The nearest residential land uses situated along San Juan Road are located 50 feet from the centerline and could experience haul truck traffic noise levels of 71.5 dB from borrow activities associated with the Fisherman’s Lake Borrow Area.

Hauling from the Krumenacher borrow site and the Twin Rivers Unified School District stockpile site would be approximately 36 one-way trips per hour and would travel west along Elkhorn Boulevard to Powerline Road and then south down Powerline Road. The nearest residential land uses situated along Elkhorn Boulevard are located 100 feet from the centerline of the road and could experience haul truck traffic noise levels of 53.4 dB. Hauling from the Krumenacher borrow site and Twin Rivers Unified School District stockpile site for construction in Reaches 10–15 of the Sacramento River east levee would not result in a substantial increase in roadway noise levels or a violation of applicable noise standards.

Assuming a standard exterior-to-interior attenuation rate of 25 dBA for residential buildings, noise generated by haul trucks supplying material for the Sacramento River east levee improvements could result in maximum interior noise levels of 46.5 dBA $L_{eq}$. The 24-hour average exterior noise levels ($L_{dn}$) associated with daily haul truck trips, assuming haul trucks would be operational for 10 daytime hours, would be 43.1 dBA $L_{dn}$. Based on these results, haul truck noise levels are not expected to result in an exceedance of the interior noise standard of 45 dBA $L_{dn}$/CNEL for residential land uses established by Sutter County, Sacramento County, and the City of Sacramento for transportation noise sources, although they would exceed local exterior noise standards at residential land uses, as noted above. In addition, although hauling activity is expected to take place during daytime hours, because of the need to complete levee improvements outside of the flood season and because of other environmental constraints on project schedule, it may be necessary to conduct some hauling activity during some noise-sensitive early morning and nighttime hours, potentially resulting in sleep disturbance at nearby residences. Although truck hauling for the Phase 2, 3, and 4a Projects may overlap in time, the haul routes used for these phases are not the same; therefore, noise generated by truck hauling from the Phase 2 and 3 Projects would not increase the contribution to the noise generated by the Phase 4a Project, and vice versa. For both the Proposed Action and RSLIP Alternative, this impact is considered potentially significant. (Similar)

**Mitigation Measure 4.12-c: Implement Noise-Reduction Measures to Reduce the Impacts of Haul Truck Traffic Noise**

**Proposed Action and RSLIP Alternative** SAFCA and its primary contractors for engineering design and construction shall ensure that the measures listed below are implemented at each work site in any year of project construction to minimize construction traffic noise effects on sensitive receptors:

- All heavy trucks shall be equipped with noise-control (e.g., muffler) devices in accordance with manufacturers’ specifications.

- All haul trucks shall be inspected before use and a minimum of once per year to ensure proper maintenance and presence of noise-control devices (e.g., lubrication, nonleaking mufflers, and shrouding).

- Before haul truck trips are initiated during a construction season on roads within 160 feet of residences (the 60-dBA noise contour of haul truck traffic), written notification shall be provided to the potentially affected residents identifying the hours and frequency of haul...
These measures would reduce interior and exterior noise levels generated by haul truck traffic that passes noise-sensitive receptors. However, the mitigated noise levels may not meet the applicable standards for local exterior noises for residential land uses. Therefore, implementing this mitigation measure would partially reduce the temporary traffic noise impact from hauling activities, but not to a less-than-significant level because there are no other feasible mitigation measures available to fully reduce this impact. Thus, this impact would remain significant and unavoidable. (Similar)

Impact 4.12-d: Long-Term Increases in Project-Generated Noise

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for long-term increases in project-generated noise. There would be no impact. (Lesser)

Potential Levee Failure

Without the Natomas perimeter levee system, the risk of levee failure would remain high. Efforts to reconstruct the levee would depend on the extent and location of damage. Equipment such as pumping plants would likely be used, generating short-term noise. Upon completion of levee repairs, noise generation would not be substantially greater than in a no-action, no-flood scenario. However, a precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

The proposed modifications to the NCC Bennett Pump Station and Northern Main Pump Station would be located on the south side of the NCC in Reaches 2 and 3, respectively. The proposed modifications to the RD 1000 Pumping Plants No. 3 and 5, and the Riverside Pumping Plant, would be located on the east bank of the Sacramento River in Reaches 10, 13, and 14, respectively. These new pumping stations would involve the long-term operation of noise-generating stationary equipment. RD 1000 Pumping Plant No. 3 would contain three new pumps and associated infrastructure. RD 1000 Pumping Plant No. 5 would contain four new pumps and associated infrastructure. Engineering details required for the Bennett, Northern, and Riverside Plants are not available at this time. Such equipment could result in noise levels in the range of 78–88 dBA at 3–5 feet from the source depending on the exact type and size (EPA 1971).

Any pumps that would be replaced as part of the proposed modifications would be similar in size to the pumps that are currently operating at these stations. The only increase in stationary and area source noise associated with the proposed pump station modifications would be from additional mechanical equipment, such as an emergency standby generator. The generator would be used only during emergency situations and during monthly testing. Operational noise levels associated with proposed pumping station improvements would be in compliance with applicable performance standards at nearby receptors. Therefore, this impact related to long-term operational noise is considered less than significant. (Similar)

Mitigation Measure: No mitigation is required.
Impact 4.12-e: Temporary Exposure of People Working in the Project Area to Excessive Airport Noise Levels

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, people would not be working in the project area and workers would not be exposed to excessive Airport noise levels. There would be **no impact. (Lesser)**

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. If a flood were to occur, the location of workers reconstructing the levee would depend on the location of damage. Provided that repair locations are in close proximity to the Airport, it is considered highly unlikely for aircraft operations to be occurring post-flood event. This potential impact would be **less than significant. (Similar)**

**Proposed Action and RSLIP Alternative**

Construction activities for the Proposed Action and the RSLIP Alternative would result in exposing people working in the Phase 4a Project area to excessive Airport noise levels. Portions of the Phase 4a Project construction area would be located within the 65 dB, 70 dB, and 75 dB L_{dn}/CNEL Airport noise level contours, specifically Reaches 10–11B and the I-5 Borrow Area. The Sacramento County General Plan Land Use Compatibility for Airport Noise chart (pages 21–23 of the Sacramento County General Plan) lists a variety of land uses and the acceptable Airport noise levels applicable for each land use. Construction areas are not specifically stated in this list; however, it is assumed to fall in the category of industrial and manufacturing, which allows an acceptable airport noise level of up to 85 dB L_{dn}/CNEL. As stated above, construction areas would only be exposed to noise levels of up to 75 dB L_{dn}/CNEL. Therefore, construction areas would not exceed the recommended land use compatibility for Airport noise for the Phase 4a Project under the Proposed Action and RSLIP Alternative. This temporary, short-term impact is considered **less than significant. (Similar)**

**Mitigation Measure: No mitigation is required.**

**4.12.3 RESIDUAL SIGNIFICANT IMPACTS**

No residual significant noise impacts would occur under the No-Action Alternative because there would be no noise impacts associated with No Project Construction and impacts associated with Potential Levee Failure are too speculative for meaningful consideration; therefore, it is currently unknown what the residual impact would be. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

Under the Proposed Action and the RSLIP Alternative, the adverse effects of both temporary, short-term exposure of sensitive receptors to construction noise and exposure of residents to increased traffic noise levels from hauling activity would be significant. Implementing Mitigation Measures 4.12-a and 4.12-c would reduce this impact, but not to a less-than-significant level, because the mitigation would not fully reduce exterior noise to levels that are below established standards. Therefore, the Proposed Action and the RSLIP Alternative would result in a temporary, short-term significant and unavoidable impact on noise-sensitive receptors (e.g., nearby residents).
4.13 VISUAL RESOURCES

4.13.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.13.1.1 METHODOLOGY

Evaluation of the project’s potential impacts on visual resources was based on a review of scenic vistas and landscapes that could be affected by project-related activities. Visual contrasts were examined, which included evaluations of changes in form, size, colors, project dominance, view blockage, and duration of impacts. Other elements such as natural screening by vegetation or landforms, placement of the Phase 4a Project in relation to existing structures, and sensitivity of viewer groups were also considered.

4.13.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to visual resources if they would do any of the following:

► have a substantial adverse effect on a scenic vista;

► substantially damage scenic resources, including but not limited to trees, rock outcrops, and historic buildings, within a state scenic highway;

► substantially degrade the existing visual character or quality of the site and its surroundings; or

► create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

There are no designated state scenic highways in the project area (Caltrans 2007); therefore, this issue is not discussed further in this FEIS.

4.13.2 IMPACTS AND MITIGATION MEASURES

Impact 4.13-a: Alteration of Scenic Vistas, Scenic Resources, and Existing Visual Character of the Project Area

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for impacts on adjacent trees on the landside of the Sacramento River east levee. On the waterside of the levee, trees and vegetation would continue to be removed in compliance with USACE guidance regarding levee encroachments. The quality of the views of the waterside of the levee would be degraded for recreational users of the river and for residents living along the waterside of the Sacramento River east levee as a result of these actions. Therefore, this is considered a potentially significant impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Damage caused by flooding could result in damage to structures, vegetation, and woodlands. Sensitive viewers, such as residents and recreational users, could lose aspects of visual coherence, vividness, and unity. However, if
a levee failure were to occur, damage to visual resources would depend on extent and duration of a flood event and subsequent repair. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered **too speculative for meaningful consideration. (Currently Unknown)**

**Proposed Action**

The Sacramento River east levee improvements would entail constructing an adjacent levee which would widen the levee embankment and flatten its landside slope. Pump stations located in the Phase 4a Project area would also be modified. These alterations to the existing levee and pump stations would result in views similar to existing conditions at the conclusion of construction activities. The temporary construction activities and presence of construction equipment would substantially degrade the visual character or quality along the landside of the Sacramento River east levee. Upon completion of project construction, visual resource qualities and character would return to preexisting conditions.

The construction of an adjacent levee and installation of seepage cutoff walls would enable SAFCA to retain the mature riparian tree corridor along the waterside of the Natomas Basin levees. However, the Proposed Action would require the removal of several woodland groves and individual trees on the landside toe of the Sacramento River east levee and along the alignment of the relocated and extended Riverside Canal. Many of these trees tower above the surrounding features and are striking, distinctive elements in local settings along the levee system, visible to residents on both sides of the levee and travelers along Garden Highway and other local roadways, including I-5. As reminders of the oak woodlands that formerly occupied much of the region and sometimes the only remnants of farmsteads that once stood in locations along the levee toe, these trees have a high aesthetic value. Additionally, a small amount of waterside vegetation would be removed at Garden Highway waterside drainage outlets (Reaches 10–11B of the Sacramento River east levee), Pumping Plants Nos. 3 and 5, and the Riverside Pumping Plant. Under the Proposed Action, vegetation would be cleared up to 660 feet from the landside toe of the existing Sacramento River east levee.

The total extent of tree removal for the Proposed Action is described in Table 4.7-2, under Impact 4.7-a, “Loss of Woodland Habitat.” As described in Section 2.3.4, “Habitat Improvements,” the Landside Improvements Project would preserve and create woodland groves throughout the western Natomas Basin near the Sacramento River east levee. Table 4.7-3 shows the estimated long-term impacts of the Phase 4a Project on woodlands and total compensation included in all phases of the NLIP. Sites for woodland plantings would primarily be located within a 100- to 200-foot-side corridor on the landside of the new Riverside Canal in Reaches 12–14A, and possibly in some locations between the Riverside Canal and the Operations and Maintenance/Utility Corridor. Compared to existing woodland groves in the Natomas Basin, the groves created by the Landside Improvements Project would have larger patch sizes, a wider range of age classes, and a greater diversity of woodland species.

In time, these new woodlands would enhance the visual qualities of the landscape; however, it would take many years for the new plantings to reach the size of the existing trees that are proposed to be removed, which in some cases are likely 100 years old or older. The removal of the existing trees would substantially degrade the quality of scenic resources and the existing visual character and quality of local sites and their surroundings.

The raised and widened Sacramento River east levee would be noticeable to travelers on Garden Highway, but variations in the height and width of flood damage reduction features are common throughout the flood damage reduction system, and the levees themselves are not distinctive scenic resources. For this reason and the reasons stated with regard to changes in views from the landside of the levees, these changes in the appearance of the flood damage reduction system would not represent a substantial change in scenic vistas or the character or quality of views.

The potential borrow sites for the Phase 4a Project are listed in Table 2-10 and shown on Plate 2-7. The proposed borrow operations would lower the elevation of borrow sites by about 5 feet over very large areas. The majority
of the sites would be returned to preproject conditions (field crops, fallow fields, rice, or grazing) (see Table 2-10 for details regarding borrow pit depth, area of excavation, and postreclamation uses). The proposed elevation changes would not be discernible at the scale at which they would be implemented (hundreds of acres), and the proposed postconstruction land cover types would be consistent with adjacent land uses and overall land cover types in the surrounding portions of the Natomas Basin. Therefore, the long-term impacts at the borrow sites are considered less than significant. However, in the short term, the presence of construction equipment and the loss of vegetative cover would temporarily degrade the visual character of the borrow sites, resulting in a short-term, temporary significant impact.

The NCC south levee improvements involving levee raises and cutoff walls in two locations would result in minor temporary changes in views of the south levee. Upon completion of the construction, visual resource qualities and character would return to preexisting conditions. Other infrastructure changes including realignment and relocation of power poles, irrigation systems, and pumps would not substantially alter the visual character of the project area.

Overall, alteration of scenic vistas, scenic resources, and existing visual character of the project area as a result of temporary construction and excavation activities, and as a result of tree removal, would be a significant impact.

**RSLIP Alternative**

The RSLIP Alternative is similar to the Proposed Action except that the Sacramento River east levee would be raised and widened in place, requiring removal of riparian woodlands on the waterside of these levee reaches to conform with USACE guidance regarding levee encroachments.

Tree removal for the relocation and extension of Riverside Canal would be the same as under the Proposed Action. The total amount of tree loss that would result from the RSLIP Alternative is described in Table 4.7-2, under Impact 4.7-a “Loss of Woodland Habitat.” Viewer sensitivity would be high for Sacramento River recreational users and for residents living on the waterside of the levee. This alternative would include offsetting the removal of trees with woodland planting; however, purchase of credits from a local mitigation bank would be necessary to fully offset the removal of trees from the waterside of the existing levee. As noted above, replacement plantings would require many years to achieve the same size and aesthetic value as the existing mature vegetation that would be removed. Woodland compensation efforts would not fully compensate for the extensive loss of mature waterside vegetation. The loss of high aesthetic qualities due to removal of mature waterside vegetation combined with high viewer sensitivity of recreational users of the Sacramento River and residents on the waterside of the levee would be a significant impact. (Greater)

**Mitigation Measure: No feasible mitigation is available.**

**Impact 4.13-b: New Sources of Light and Glare that Adversely Affect Views**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to change light and glare along the perimeter levee system. There would be no impact. (Lesser)

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Damage to the infrastructure in the Natomas Basin could result in a short-term decrease in nighttime lighting due to power outages. However, depending on the extent and location of levee failure and subsequent flood damage, emergency lighting could be required for nighttime security and construction. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of
this uncertainty, this potential impact is considered to be too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

No new permanent sources of light or glare would be associated with the Proposed Action or the RSLIP Alternative. However, equipment staging areas would be lit as necessary for security reasons during construction. With the exception of construction of the cutoff walls, groundwater wells, and pumping plant modifications (which would require construction to be conducted 24 hours per day, 7 days per week [24/7 construction]), construction is not generally anticipated to be conducted after 8:00 p.m.; however, it is possible that occasional construction activities may be required during nighttime hours (except for borrow areas in the Airport Critical Zone, namely, the I-5 Borrow Area), in which case additional construction areas may require temporary nighttime lighting. Security and construction night lighting would be used at locations requiring 24/7 construction.

Residences are located on the landside of the Sacramento River east levee close to the proposed levee improvement sites in the Phase 4a Project area; however, the landside construction areas could often be screened from direct views of the construction area by trees, depending on tree height and proximity to the construction areas, and proximity of residences to the construction area. Where many residences are present on the waterside of the levee, the existing levee itself, trees, and other vegetation could partially shield residences from lighting used on the landside of the levee, where the work would be performed. Security night lighting also would be provided at the modified pumping plants, although they would be situated such that no residences would be affected by this source of night light.

Construction work would typically move in a linear fashion along the levees, and construction activities generally would not take place in any one location for more than a few weeks. Therefore, where nighttime construction lighting (if needed) would be clearly visible from nearby residences, the activity would be short-term and temporary and therefore would not constitute a substantial source of light or glare. However, nighttime lighting related to 24/7 project construction in particular could create a new source of substantial light or glare that would adversely affect nighttime views in the area.

An additional source of construction-related light and glare would occur as a result of well abandonment and new or replacement construction, as described in Section 2.3.2.5, “Development of New and Replacement Groundwater Wells.” Approximately 13 existing groundwater wells on the landside of the Sacramento River east levee would require abandonment and replacement outside of the levee footprint. In addition to replacement wells, five new wells would be constructed to provide a water supply for habitat mitigation features. The well construction would extend approximately three weeks. Nighttime construction lighting would be required for up to three days for each well to allow drilling activities to continue 24 hours per day, which is required to avoid collapse or seizing of drill equipment within the hole. Development and test pumping would also continue 24 hours per day for several days per new well because continuous pumping is required to obtain accurate results.

The introduction of new light and glare, primarily with nighttime construction on the Sacramento River east levee and for well construction activities, would be a temporary but significant impact. (Similar)

Mitigation Measure 4.13-b: Implement Mitigation Measure 4.15-f, “Coordinate Work in the Critical Zone with Airport Operations and Restrict Night Lighting within and near the Runway Approaches,” and Direct Lighting Away from Adjacent Properties

SAFCA shall implement Mitigation Measure 4.15-f, “Coordinate Work in the Critical Zone with Airport Operations and Restrict Night Lighting within and near the Runway Approaches,” set forth in Section 4.15, “Hazards and Hazardous Materials.” In summary, this mitigation requires that no borrow activities shall be conducted within the Airport Critical Zone during nighttime hours; and, that all project-related nighttime lighting that is in,
or is aligned with, the Airport runway approach zone shall be directed downward to avoid potential interference within nighttime aircraft operations. As discussed in Section 4.15, “Hazards and Hazardous Materials,” implementation of Mitigation Measure 4.15-f would reduce lighting impacts associated with the Airport to a less-than-significant level. *(Similar)*

Additionally, SAFCA shall implement the following measures to reduce the impacts of light and glare associated with project construction activities:

(a) SAFCA shall require that nearby residents be notified in advance of nighttime construction activities.

(b) SAFCA shall require that construction and security lighting be shielded and directed downward to minimize the spill of light onto adjacent properties.

Implementing these measures would reduce the impacts of light and glare for nearby residents, but not to a less-than-significant level; therefore, this impact would remain **significant and unavoidable.**(Similar)

### 4.13.3 Residual Significant Impacts

Impacts related to degradation of visual resources in the project area in the event of levee failure are uncertain. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

Under the Proposed Action and the RSLIP Alternative, adverse impacts on visual resources due to construction activities and equipment on the levees would be significant. Measures to screen residences from construction sites and equipment staging and storage areas would reduce these impacts, but screening may not be feasible at all construction locations; therefore, the impact would remain significant and unavoidable. Similarly for visual degradation due to light and glare, screening and directing lighting away from adjacent properties would reduce the impacts of light and glare for nearby residents, but not to a less-than-significant level; therefore, this impact would remain significant and unavoidable.

Under the Proposed Action and the RSLIP Alternative, adverse effects on scenic resources and visual character of the Sacramento River east levee area from the removal of a substantial number of trees along the landside and waterside of this levee would be significant. The Proposed Action and the RSLIP Alternative include measures to limit the extent of impacts on visual resources caused by the short-term loss of woodland areas (e.g., transplanting existing trees outside the project footprint where feasible) and to offset them over the longer term (through substantial woodland planting). However, no feasible mitigation is available to reduce the short-term impacts from Impact 4.13-a to a less-than-significant level; thus, this impact would be significant and unavoidable in the short term. For the Proposed Action, with the new acres of woodland plantings that would be installed as described in Section 4.7, “Biological Resources,” the impact would be reduced to a less-than-significant level over the long term. With the RSLIP Alternative, mitigation measures would not be sufficient to fully mitigate impacts on woodland habitats as a result of the loss of waterside vegetation. The impact would remain significant and unavoidable under the RSLIP Alternative.
4.14 UTILITIES AND SERVICE SYSTEMS

4.14.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.14.1.1 METHODOLOGY

Impacts on utilities and service systems that would result from project implementation were identified by comparing existing service capacity and facilities against project implementation. Evaluation of potential utility and service systems impacts was based on a review of documents pertaining to the Natomas Basin. Additional information was obtained through consultation with appropriate agencies, such as Sacramento Regional County Sanitation District, Sacramento Municipal Utility District, Pacific Gas and Electric Company, and NCMWC.

4.14.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to utilities and service systems if they would do any of the following:

► exceed wastewater treatment requirements of the applicable regional water quality control board;

► require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

► exceed water supplies available to service the project from existing entitlements and resources, such that new or expanded entitlements would be needed;

► result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments;

► generate waste materials that would exceed the permitted capacity of local landfills or fail to comply with Federal, state, and local statutes and regulations related to solid waste; or

► result in substantial adverse physical impact associated with the provision of new or altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for public services such as fire protection, police protection, schools, or parks.

The Phase 4a Project would not involve any changes in land use that would increase short-term or long-term demand for public services, including fire and police protection, schools, parks, and other public facilities, thus necessitating the construction of new or altered government service facilities. Similarly, the Phase 4a Project would not result in demand for increased natural gas facilities, electrical transmission lines, communication systems, water infrastructure, sewer lines, or solid-waste services beyond their current capacity. Therefore, thresholds related to increasing demands on existing public services and utilities do not apply to this analysis and are not addressed further in this FEIS.
4.14.2 Impacts and Mitigation Measures

Impact 4.14-a: Potential Temporary Disruption of Irrigation Water Supply

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to cause construction-related disruption to irrigation water supply. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could cause flooding that would damage canals, potentially disrupting irrigation of cropland. However, the potential for such an occurrence is uncertain, and the magnitude and duration of any related effect on these services cannot be predicted. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

RSLIP Alternative

Irrigation and drainage pipeline penetrations of the Sacramento River east levee Reaches 10–15 would be raised as part of the project to meet current USACE regulations. Wells and pumps in the footprint of the proposed flood damage reduction facilities would be removed and replaced in locations farther from the project footprint. The Riverside Canal, which is constructed above the surrounding terrain, would be relocated away from the toe of the Sacramento River east levee (Reaches 13–17 with an extension through Reach 11B–12B and an underground pipe section in Reaches 15–18B), and the replacement canal would need to be operable and lateral irrigation canals connected to it before the existing canals are demolished. Additional buried irrigation lines may exist that would need to be removed or reconnected.

Substantial temporary interruptions of irrigation supply could occur if irrigation infrastructure is damaged or otherwise rendered inoperable at a time when it is needed (e.g., reconnections to water supply sources are not completed by the time crop irrigation must begin). Given the extent and intensity of project construction activities, it is possible that these activities could impede the repair of damaged infrastructure or cause a delay in the provision of irrigation supply. This temporary impact is considered potentially significant. (Similar)

Mitigation Measure 4.14-a: Coordinate with Irrigation Water Supply Users Before and During All Irrigation Infrastructure Modifications and Minimize Interruptions of Supply

Proposed Action and RSLIP Alternative

SAFCA and its primary contractors for engineering design and construction shall ensure that the measures listed below are implemented to minimize the potential for irrigation water supply interruptions during construction activities.

► Coordinate the timing of all modifications to irrigation supply infrastructure with the affected infrastructure owners and water supply users, either directly or through NCMWC.

► Include detailed scheduling of the phases of modifications/replacement of existing irrigation infrastructure components in project design and in construction plans and specifications.
Plan and complete modifications of irrigation infrastructure for the nonirrigation season to the extent feasible.

Provide for alternative water supply, if necessary, when modification/replacement of irrigation infrastructure must be conducted during a period when it would otherwise be in normal use by an irrigator.

Ensure either that (1) users of irrigation water supply do not, as a result of physical interference associated with the project, experience a substantial interruption in irrigation supply when such supply is needed for normal, planned farming operations (i.e., a decrease in level of service in comparison with the existing level of service), or (2) users of irrigation water supply that experience a substantial decrease in an existing level of service that meets the established standards for the project area are compensated in kind for losses associated with the reduction in level of service.

Implementing this mitigation measure would reduce the potential temporary impact of disruptions to irrigation supply to a less-than-significant level because SAFCA would coordinate with water supply providers and consumers to minimize interruptions, would conduct work during the nonirrigation season whenever feasible, and would ensure that essential water supply necessary during the irrigation season is provided by an alternative supply if an interruption is unavoidable. (Similar)

Impact 4.14-b: Potential Disruption of Utility Service

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to disrupt utility service. There would be no impact. (Lesser)

**Potential Levee Failure**

Without improvements to the Natoma perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natoma Basin could result in minor to substantial flooding that could substantially interrupt utilities and public services. However, the potential for such an occurrence is uncertain, and the magnitude and duration of any related impact on these services cannot be predicted. Therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

**Proposed Action and RSLIP Alternative**

Project implementation would encroach upon multiple types of utility equipment and facilities. Along the Sacramento River east levee Reaches 10–15, project implementation would infringe upon electric conduits, telephone conduits, conductors, irrigation pipes, and at least one gas line, as well as other pipelines and underground utilities. Project construction activities, including grading and excavation, could damage identified and unidentified utility equipment and facilities. In addition, required relocation of existing electrical and telephone lines and gas pipelines could result in interruptions in service.

As described in Section 3.14, “Utilities and Service Systems,” a jet fuel pipeline runs from the Port of Sacramento north to the Airport, crossing underneath the Sacramento River and continuing north from the landside toe of the Sacramento River east levee at a depth of 5–10 feet below ground surface through Reach 11B. To protect cultural
resources, a 500-foot-wide seepage berm may be required to be installed over this pipeline, which would block access to a shut-off valve that is located approximately 300 feet from the toe of the existing levee. To allow access to this valve from the top of the berm, SAFCA would install either a concrete access vault or a new riser stem and other necessary devices. This work is not expected to affect transportation of jet fuel to the Airport.

However, earthmoving activities and the use of heavy equipment on the ground surface level near the pipeline could damage the jet fuel pipeline and potentially interfere with jet fuel delivery to the Airport. Construction activities related to relocation of power poles, use of heavy construction equipment (i.e., backhoes), ground clearance prior to construction of the levee improvements, placement of fill material and grading of levee and berm structures, and shallow (1 foot deep) excavation for the relocated Riverside (highline) Canal could inadvertently damage the jet fuel pipeline and disrupt delivery of jet fuel to the Airport, or cause an accidental upset, as described in Section 4.15, “Hazards and Hazardous Materials.”

Detailed project design would include consultation with all known service providers to identify infrastructure locations and appropriate protection measures, and consultation would continue during construction to ensure avoidance/protection of facilities as construction proceeds to minimize service disruptions. The extent and intensity of project construction activities, however, may affect service providers’ abilities to quickly repair damage and/or restore interrupted service. This impact is considered potentially significant. (Similar)


Proposed Action and Alternative

Before construction begins, SAFCA and its primary contractors shall coordinate with USACE, the CVFPB, and applicable utility providers to implement orderly relocation of utilities that need to be removed or relocated. Power pole relocations shall be coordinated with SMUD and SACDOT to avoid conflicts with the SACDOT-proposed bike/pedestrian path. Existing main electrical power transmission lines and poles on the waterside of the existing Garden Highway levee that do not need to be relocated or replaced to accommodate the project may be left in place. No new main electrical power transmission lines and poles shall be installed on the waterside of Garden Highway. Consistent with sound engineering practices that prioritize the following, individual service lines shall: (1) use existing configurations and facilities, and (2) any new poles shall be placed on the landside of Garden Highway, subject to the approval of USACE, the CVFPB, and any other regulatory public agencies and utility companies. SAFCA shall implement Mitigation Measure 4.15-c, “Review Design Specifications and Prepare and Implement an Impact Avoidance and Contingency Plan in Consultation with Wickland Pipelines, LLC.”

- SAFCA and its primary construction contractors shall provide the following:
  Notification of any potential interruptions in service shall be provided to the appropriate agencies and affected landowners.

- Before the start of construction, utility locations shall be verified through field surveys and the use of the Underground Service Alert services. Any buried utility lines shall be clearly marked in the area of construction on the construction specifications in advance of any earthmoving activities.

- Before the start of construction, a response plan shall be prepared to address potential accidental damage to a utility line. The plan shall identify chain of command rules for notification of authorities and appropriate actions and responsibilities to ensure the safety of the public and workers. Worker education training in response to such situations shall
be conducted by the contractor. The response plan shall be implemented by SAFCA and its contractors during construction activities.

- Utility relocations shall be staged to minimize interruptions in service.

Implementing this mitigation measure would reduce the impact from disruption of utility services to a less-than-significant level because SAFCA and its primary contractors would coordinate with utility service providers and consumers to minimize interruptions to the maximum extent feasible, and a response plan to address service interruptions would be prepared and implemented. 

Impact 4.14-c: Increases in Solid Waste Generation

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no increase in solid waste generation related to project implementation. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Cleanup operations following flooding are likely to generate very high levels of solid waste; the amount of waste would depend on the extent, depth, and duration of flooding and the types of property damaged. Waste materials could exceed the permitted capacity of local landfills or fail to comply with Federal, state, and local statutes and regulations related to solid waste. A precise determination of significance is not possible and cannot be made because the extent of the magnitude of impact is unknown. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

There would be no long-term generation of solid waste associated with project operation. Temporary, short-term project construction activities would generate over 100,000 cubic yards of solid waste during construction of the Phase 4a Project. Some residences, agricultural structures, and appurtenances in or near the footprint of the proposed flood damage reduction facilities on the landside of the Sacramento River east levee Reaches 10–15 would be relocated if feasible and in accordance with landowner preferences, but others would be demolished. Other materials, such as asphalt, concrete, pipes, and gravel, would need to be removed from the footprint of the proposed flood damage reduction facilities.

Waste materials (including cleared vegetation) would be hauled off-site to a suitable disposal location. Excess earth materials (organic soils, roots, and grass from borrow sites and the adjacent levee foundation; and excavated materials that do not meet levee embankment criteria) would be used in the reclamation of borrow sites or hauled off-site to a suitable disposal location. Hazardous materials (e.g., building materials containing lead paint or asbestos) encountered during the removal of residences and other structures would be disposed of in accordance with regulatory standards (see Mitigation Measures 4.15-b[1] and 4.15-b[2] in Section 4.15, “Hazards and Hazardous Materials”). The location of the landfill used for disposal of spoil material and other construction-related waste would be determined by the construction contractor at the time of construction activity based on capacity, type of waste, and other factors. Only those landfills determined to have the ability to accommodate the construction disposal needs of the alternatives would be used. It is likely that Kiefer Landfill, owned and operated by Sacramento County, would be used for all or a part of the construction waste. Kiefer Landfill, which accepts 10,815 tons per day (TPD) of solid waste, is located about 15 miles southeast of the city of Sacramento.
(approximately 40 miles southeast of the NCC south levee). With a permitted capacity of more than 117 million cubic yards through 2035 and a remaining capacity of nearly 113 million cubic yards as of 2005 (California Integrated Waste Management Board 2009), Kiefer Landfill would be able to accommodate the project’s construction disposal needs. Similarly, the Western Regional Landfill in Placer County, approximately 15 miles from the NCC, would be able to accommodate the project disposal requirements, accepting 1,900 TPD with a maximum permitted capacity of more than 36 million cy and a remaining capacity of more than 29 million cy (California Integrated Waste Management Board 2009). Project construction and operation would not cause existing regional landfill capacity to be exceeded; therefore, this temporary, short-term impact is considered less than significant. (Similar)

Mitigation Measure: No mitigation is required.

4.14.3 Residual Significant Impacts

Impacts associated with disruption to irrigation supply and utility services, and increases in solid waste generation as a result of the No-Action Alternative are uncertain. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore impacts that result from the No-Action Alternative would not be mitigated.

Implementation of the mitigation measures described in this section for the Proposed Action and the RSLIP Alternative would reduce the impacts of a potential temporary, short-term disruption of the irrigation supply and the provision of other utility services to less-than-significant levels; therefore, there would be no residual significant impacts.
4.15 HAZARDS AND HAZARDOUS MATERIALS

4.15.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.15.1.1 METHODOLOGY

This section addresses potential sources of hazards and risks associated with hazardous materials that may be associated with implementation of the Proposed Action and alternatives under consideration. This analysis is based on a review of:

- *Natomas Levee Improvement Program Initial Site Survey and Phase I Environmental Site Assessment, Volumes 6, 9, 10, 11, and 12* (Kleinfelder 2009a); and

- *Borrow Site Environmental Conditions: South Sutter Property (APNs 201-0250-015, 201-0270-002 and -037), Novak Property (APN 225-0090-040), Huffstutler/Johnson Trust Property (APNs 225-0110-019, -020, -037) Sacramento County, CA* (Kleinfelder 2009b; Appendix I).

Evaluation of the project’s potential impacts on Airport safety was based on a review of the regulations pertaining to the Phase 4a Project area, including the Airport’s WHMP (SCAS 2007) and the FAA’s Advisory Circular (AC) 150/5200-33B on hazardous wildlife attractants on or near airports (FAA 2007).

Potential sources of wildfire hazards and risks associated with implementation of the Proposed Action and alternatives under consideration were also evaluated. This evaluation was based on a review of historic local weather conditions, historic ignition sources, topography, vegetation, and fire history. Fire hazard severity zones, which are established by the California Department of Forestry and Fire Protection, were identified and compared to the Phase 4a Project area.

4.15.1.2 THRESHOLDS OF SIGNIFICANCE

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Action or alternatives under consideration were determined to result in a significant impact related to hazards and hazardous materials if they would do any of the following:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

- emit hazardous emissions or involve the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

- be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;

- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

- result in a safety hazard for people residing or working in a project area that is located within 2 miles of a public airport or public-use airport; or
result in a significant impact related to wildfire hazards if they would expose people or structures to a significant risk of loss, injury, or death from wildland fires.

There are no established thresholds for wildlife strikes. For this analysis, airport safety was analyzed within the Airport Critical Zone and the Airport Operations Area. The FAA recommends a separation distance of 10,000 feet between the Airport Operations Area and hazardous wildlife attractants (FAA 2007); this area is identified as the Critical Zone. Additionally, the FAA recommends a distance of 5 statute miles between the farthest edge of the Airport Operations Area and hazardous wildlife attractants (FAA 2007).

### 4.15.2 IMPACTS AND MITIGATION MEASURES

#### Impact 4.15-a: Accidental Spills of Hazardous Materials

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities and thus no accidental spills of hazardous materials related to this project would occur. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could upset stored hazardous materials and spread agricultural pesticides, oil, gasoline, and other hazardous materials in flood waters, creating hazardous conditions for the public and the environment. However, the potential for such an occurrence is uncertain, and the magnitude and duration of any related risks cannot be predicted. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. *(Currently Unknown)*

**Proposed Action and RSLIP Alternative**

Project-related construction and maintenance activities would involve the use of potentially hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, and cleaners (which could include solvents and corrosives in addition to soaps and detergents), that are commonly used in construction projects. Bentonite (a nonhazardous material) and/or cement would be used where cutoff walls are being constructed to remediate levee seepage conditions. Construction contractors would be required to use, store, and transport hazardous materials in compliance with Federal, state, and local regulations during project construction and operation. Risks to water quality associated with incidental releases of these materials on project sites are addressed in Section 4.6, “Water Quality.”

Compliance with the applicable regulations would reduce the potential for accidental release of hazardous materials during their transport and during project construction activities. Consequently, the risk of significant hazards associated with the transport, use, and disposal of these materials is low. This impact is considered less than significant. *(Similar)*

**Mitigation Measure:** No mitigation is required.
Impact 4.15-b: Exposure to Hazardous Materials Encountered at Project Sites

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to expose people to hazardous materials encountered at project sites. The Natomas Basin is largely agricultural and this type of land use can often involve the application of pesticides, residues of which may remain in soils for years. Soil testing performed by Kleinfelder in 2009 for the Phase 4a Project indicates the presence of pesticide residues, including arsenic, dieldrin, and toxaphene, within the Phase 4a Project footprint (Kleinfelder 2009b). Elevated concentrations of arsenic in soil can be a result of historic arsenic-containing pesticide application; however, arsenic can also occur naturally in certain soils, including those found in the Phase 4a Project footprint and throughout California (see Section 3.4.3, “Soils”; USGS 1984, DTSC undated as cited in Kleinfelder 2009b). The concentrations of this naturally occurring arsenic in the Phase 4a Project footprint soils exceed some screening levels (e.g., EPA Region 5 Ecological Screening Levels) (Kleinfelder 2009b). Humans may be exposed to these potentially hazardous materials through direct contact with soil, groundwater leaching, or exposure to airborne dust created by typical agricultural crop management practices, such as disking. Plants and animals may be exposed to these potentially hazardous materials through contact with surface soils or through contact with storm water or irrigation runoff that could carry the materials into ponds, drainages, and other waterways. Because of this risk, the continued presence of pesticide residues and the existing levels of arsenic in soil on land used for agricultural purposes is considered to be a potentially significant impact. (Similar)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding known sites of hazardous materials, potentially exposing the public and the environment to both known hazardous conditions (discussed in Section 3.15, “Hazards and Hazardous Materials”) and potentially unknown hazardous conditions in areas that have not been evaluated under a Phase I and/or II Environmental Site Assessment (ESA). Underseepage and boils, resulting from high river stages, may force groundwater to the surface within or adjacent to areas containing pesticide residues or contaminated soils. This could transport sediments containing hazardous materials from agricultural fields into waterways. However, the potential for such an occurrence is uncertain, and the magnitude and duration of any related risks cannot be predicted. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Potential Exposure to Existing, On-Site Hazardous Materials

As described in Section 3.15, “Hazards and Hazardous Materials,” Phase I ESAs have been completed for portions of the Phase 4a Project footprint. The Phase I ESAs disclose the potential presence of the following hazardous materials that may be encountered during project construction: arsenic, dieldrin, and toxaphene in the soil; asbestos in underground pipelines and building materials; lead-based paint in building materials; underground storage tanks (USTs) and aboveground storage tanks (ASTs); oil and gas wells; and PCBs in pole-mounted transformers (Kleinfelder 2009a). See Section 3.15, “Hazards and Hazardous Materials,” for the site-specific conditions at each Assessor’s Parcel Number (APN) included in the Phase I ESAs. Many parcels within the Phase 4a Project footprint have not yet been evaluated for the potential presence of hazardous materials. Areas that have not been evaluated include several parcels within the Fisherman’s Lake Borrow Area and the I-5 Borrow Area.
Soil testing analysis performed by Kleinfelder in 2009 for the Phase 4a Project indicates that pesticide residues, including arsenic, dieldrin, and toxaphene are present on several of the Phase 4a Project borrow sites (namely, the South Sutter, LLC borrow site in the Elkhorn Borrow Area and the Novak and Huffstutler Trust/Johnson properties in the Fisherman’s Lake Borrow Area) in concentrations exceeding the San Francisco Regional Water Quality Control Board’s (RWQCB’s) environmental screening levels (ESLs). Residual pesticide concentrations are generally at higher concentrations within the upper 6 to 18 inches of topsoil (see Section 3.15, “Hazards and Hazardous Materials,” for detailed information). As described above under the No-Action Alternative, soils in the Phase 4a Project footprint, and soils throughout California in general, are known to contain naturally occurring concentrations of arsenic (USGS 1984 and DTSC undated, as cited in Kleinfelder 2009b:Table 1). Construction workers could be exposed to pesticide residues in the soil by accidental ingestion of soil, absorption through the skin, or from inhalation of soil particles. The general public, however, could only be exposed to these pesticide residues through inhalation (dust) because they would not have direct contact with on-site, pesticide-laden soils (Kleinfelder 2009b).

Table 4.15-1 presents soil testing results for the South Sutter, LLC borrow site and the Novak and Huffstutler Trust/Johnson properties and compares these results to human health and ecological risk levels (see Section 3.15, “Hazard and Hazardous Materials,” for quantitative data). It is important to note that concentrations of pesticide residues found on these sites do not constitute a reportable condition because the pesticides appear to have been properly applied for agricultural purposes and were not detected at levels exceeding the California hazardous waste threshold limits, nor are they an imminent threat to public health, welfare, or the environment based on risk evaluations, as discussed below (Kleinfelder 2009b:5).

<table>
<thead>
<tr>
<th>Property</th>
<th>Arsenic</th>
<th>Dieldrin</th>
<th>Toxaphene</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Sutter, LLC</td>
<td>Less than Screening Levels</td>
<td>Less than Screening Levels</td>
<td>Less than Screening Levels</td>
</tr>
<tr>
<td>Novak property</td>
<td>Less than Screening Levels</td>
<td>Less than Screening Levels</td>
<td>Less than Screening Levels</td>
</tr>
<tr>
<td>Huffstutler Trust/Johnson property</td>
<td><strong>Exceeds Screening Levels</strong></td>
<td>Less than Screening Levels</td>
<td>Less than Screening Levels</td>
</tr>
</tbody>
</table>

**Table 4.15-1**

**Soil Testing Results**

**Human Health Risk (Construction Worker Contact)**

**Ecological Risk**

<table>
<thead>
<tr>
<th>Property</th>
<th>Arsenic</th>
<th>Dieldrin</th>
<th>Toxaphene</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Sutter, LLC</td>
<td>Less than Screening Levels</td>
<td>Less than Screening Levels¹</td>
<td>Less than Screening Levels¹</td>
</tr>
<tr>
<td>Novak property</td>
<td>Less than Screening Levels</td>
<td>Less than Screening Levels¹</td>
<td>Less than Screening Levels¹</td>
</tr>
<tr>
<td>Huffstutler Trust/Johnson property</td>
<td><strong>Exceeds Screening Levels</strong></td>
<td><strong>Exceeds Screening Levels</strong></td>
<td>Less than Screening Levels</td>
</tr>
</tbody>
</table>

¹ Ecological risk considered the average concentration compared to the project-specific screening levels of 11.3 mg/kg for arsenic; 0.0024 mg/kg for dieldrin; and 0.119 mg/kg for toxaphene.

Source: Compiled by AECOM in 2009 based on data provided in Kleinfelder 2009b:9, 11, and 13 and Tables 1 and 2

**Exposure of Construction Workers to Hazardous Materials through Direct Contact**

Only one site evaluated at the time of release of the Phase 4a DEIS/DEIR (August 2009)—the Huffstutler Trust/Johnson property—contains elevated levels of pesticide residues (i.e., arsenic) that could affect human health through direct contact, including accidental ingestion. Similar conditions with respect to pesticide residue

---

¹ Levels were compared to San Francisco RWQCB’s ESLs because the Central Valley RWQCB does not provide limits specific to the Central Valley.
may be found on other agricultural parcels in the Phase 4a Project footprint because much of the Natomas Basin has been and/or continues to be in agricultural use. Earthmoving activities on the Huffstutler Trust/Johnson property would expose construction workers to elevated levels of hazardous materials and would be considered a significant impact.

**Exposure of Construction Workers and the General Public to Hazardous Airborne Particulates through Inhalation**

Earthmoving activities may potentially expose construction workers to soils containing arsenic at concentrations that exceed preliminary human health risk screening levels. According to calculations performed by Kleinfelder, however, earthmoving activities are not expected to disperse concentrations of hazardous materials into the air that would exceed relevant ambient air quality limits for construction workers (see Table 4.15-2) (Kleinfelder 2009b:19–20). In addition, implementation of Mitigation Measure 4.11-a, “Implement Applicable District-Recommended Control Measures to Minimize Temporary Emissions of ROG, NOX, and PM10 during Construction,” would reduce fugitive dust emissions associated with earthmoving activities (Kleinfelder 2009:21). Thus, earthmoving activities, with implementation of appropriate dust control measures, would not affect human health or the general public, both because of the multiple conservative assumptions used to estimate the risk and because the general public would be further away than construction workers from construction activities (and dispersal into the air would further reduce ambient air concentrations). Without implementation of Mitigation Measure 4.11-a, however, exposure of construction workers and the general public to hazardous materials found on these sites would be significant impact.

<table>
<thead>
<tr>
<th>Maximum Detected Soil Concentration (mg/kg)</th>
<th>Forecasted Ambient Air Concentration (µg/m³) ¹</th>
<th>Ambient Air Thresholds (µg/m³) ²</th>
<th>Forecasted Ambient Air Concentration (µg/m³) ³</th>
<th>Ambient Air Thresholds (µg/m³) ⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.043</td>
<td>10</td>
<td>0.013</td>
<td>0.015</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>0.0001</td>
<td>500</td>
<td>0.00003</td>
<td>0.00053</td>
</tr>
<tr>
<td>Toxaphene</td>
<td>0.00022</td>
<td>250</td>
<td>0.000066</td>
<td>0.0076</td>
</tr>
</tbody>
</table>

Notes: mg/kg = milligram per kilogram µg/mg = microgram per milligram; EPA = U.S. Environmental Protection Agency

¹ Construction worker calculated ambient air concentrations based on the following equation: (soil concentration mg/kg x 1,000 µg/mg) / (Particulate Emission Factor of 1,000,000 m³/kg).

² Construction worker ambient air thresholds are from the U.S. Occupational Health and Safety Administration permissible exposure limits (as cited in Kleinfelder 2009b:Table 1).

³ Neighboring resident calculated ambient air concentrations are based on an 8-hour Fenceline Particulate Not Otherwise Specified Level of 0.3 mg/m³ and calculations cited in Kleinfelder 2009b: Table 3.

⁴ Neighboring resident ambient air thresholds are from the Office of Environmental Health Hazard Assessment reference exposure levels and EPA regional screening levels for air concentrations (as cited in Kleinfelder 2009b).

Source: Kleinfelder 2009b:19–20

**Exposure of Construction Workers to Hazardous Materials in Building Materials and Utilities, Oil and Gas Wells, USTs, and PCBs in Transformers**

Construction workers could encounter hazardous materials in building materials and utilities, oil and gas wells, USTs, and PCBs in transformers during levee construction, demolition activities, and borrow activities; therefore, construction workers could be exposed to unacceptable levels of hazardous materials associated with existing and former land uses during Phase 4a Project demolition and relocation activities. In addition, project demolition and
relocation activities also may create a potential for construction workers to be exposed to hazardous materials associated with existing and former agricultural and rural residential structures. These materials may include asbestos in underground pipelines, asbestos and lead-based paint in building materials, and/or PCBs in pole-mounted transformers. Finally, not all areas of the Phase 4a Project footprint have been evaluated with respect to the potential presence of hazardous materials. Therefore, this impact is considered to be significant.

Exposure of Ecological Receptors to Hazardous Materials

A review of preliminary risk screening levels indicates that concentrations of on-site pesticide residues could pose a risk to ecological receptors (i.e., wildlife in land and aquatic habitats). This exposure could occur through leaching of pesticide residues into groundwater or through runoff of soils containing pesticide residue into surface water bodies. Borrow activities would reduce the distance from the ground surface to the groundwater table by removing approximately 2–3 feet of soil. Respreading topsoil onto borrow sites could potentially increase the risk of pesticide residues and other contaminants leaching into the groundwater because the migration distance to the water table would be reduced (Kleinfelder 2009b:24-25). However, according to calculations performed by Kleinfelder, borrow material activities on the South Sutter, LLC borrow site and the Novak property would not be expected to affect groundwater or pose an unacceptable ecological risk, because the levels of potentially hazardous materials are less than project-specific screening levels and within DTSC’s normal concentrations for agricultural sites (Kleinfelder 2009b: 31). Because the Huffstutler Trust/Johnson property would be used for habitat following completion of borrow activities, there could be an ecological risk posed by arsenic and dieldrin (Kleinfelder 2009: 31). Even with implementation of 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,” which would reduce the potential for runoff of soils containing hazardous materials during construction, impacts after construction from respreading of topsoil containing pesticides residue would pose a risk to ecological receptors (Kleinfelder 2009b:32). Therefore, this impact is considered to be significant.

Impact Summary

Because sampling results at the Huffstutler Trust/Johnson property exceed construction worker contact levels of health risk for arsenic, construction workers could be exposed to unacceptable levels of hazardous materials associated with existing and former land uses during Phase 4a Project demolition and relocation activities. Upon completion of construction activities, respreading topsoil onto the Huffstutler Trust/Johnson property would pose a risk to ecological receptors. In addition, project demolition and relocation activities may also create a potential for construction workers to be exposed to hazardous materials associated with existing and former agricultural and rural residential structures. These materials may include asbestos in underground pipelines, asbestos and lead-based paint in building materials, and/or PCBs in pole-mounted transformers. Finally, not all areas of the Phase 4a Project footprint have been evaluated with respect to the potential presence of hazardous materials. Therefore, this impact is considered to be significant. (Similar)

Mitigation Measure 4.15-b(1): Implement Mitigation Measure 4.11-a, “Implement Applicable District-Recommended Control Measures to Minimize Temporary Emissions of ROG, NOX, and PM10 during Construction,” and 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”; and Complete Phase I and/or II ESAs and Implement Recommended Measures

Proposed Action and RSLIP Alternative

SAFCA shall implement Mitigation Measure 4.11-a, “Implement Applicable District-Recommended Control Measures to Minimize Temporary Emissions of ROG, NOX, and PM10 during Construction,” set forth in Section 4.11, “Air Quality.” In summary, this mitigation measure requires preparation of a construction emissions dust control plan in accordance with SMAQMD’s recommendations to reduce fugitive dust emissions. SAFCA and its primary construction contractors shall ensure that dust is not causing a nuisance beyond the property line of the construction site. This measure, in combination with the
measures, below, that constitute the remainder of Mitigation Measure 4.15(b)(1), would reduce the health risk impact to construction workers from inhalation of hazardous materials to a **less-than-significant** level by reducing the amount of potentially contaminated construction site dust to which construction workers would be exposed.2 *(Similar)*

SAFCA shall 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,” set forth in Section 4.6, “Water Quality.” In summary, this mitigation measure requires implementation of standard erosions, siltation, and good housekeeping best management practices; preparation and implementation of a Stormwater Pollution Prevention Plan; and compliance with the conditions of the NPDES general stormwater permit for construction activity. As discussed in Section 4.6, “Water Quality,” implementation of Mitigation Measure 4.6-a would reduce water quality impacts from temporary construction activities to a **less-than-significant** level because SAFCA would conform with applicable local and state regulations regulating construction discharges. *(Similar)*

Before the start of any construction activities, SAFCA shall ensure that Phase I ESAs are completed for all sites subject to ground disturbance, and that any additional site evaluations that be recommended in the Phase I ESAs are conducted. For the following sites where Phase I ESAs have been completed, the following additional evaluations (as recommended in the applicable Phase I ESAs) shall be completed prior to start of construction or earthmoving activities:

**APN 201-0330-019**

- Conduct a limited Phase II ESA to evaluate for pesticide residues, and the possible presence of petroleum and/or other hazardous materials associated with on-site ASTs and drums.

**APNs 225-0010-038, 225-0010-041, and 225-0010-043**

- Conduct a limited Phase II ESA to evaluate for pesticide residues, and the possible presence of petroleum and/or other hazardous materials associated AST tanks and an on-site vehicle.

- Conduct a geophysical survey to assess the presence of a possible UST and if present, collect soil and/or groundwater samples to evaluate if contamination exists.


- Conduct a limited Phase II ESA to evaluate for pesticide residues.

---

2 As discussed in Section 4.11, “Air Quality,” implementation of Mitigation Measure 4.11-a would reduce project-generated construction-related emissions in Sacramento County, but it is anticipated that the Phase 4a Project could nonetheless result in emissions that substantially contribute to a violation of the ambient air quality standard for PM_{10}. Although the impact would be reduced with implementation of this mitigation measure, construction-related emissions for PM_{10} would remain **significant and unavoidable** because there is no feasible mitigation that would fully reduce project-generated construction-related emissions of PM_{10} in Sacramento County to a less-than-significant level.
APN 225-0090-040 (Novak Property)

- As recommended in the Phase I ESA (Kleinfelder 2009a), a limited Phase II ESA was completed to evaluate for pesticide residues. The possible presence of petroleum and/or other hazardous materials associated with on-site ASTs, car batteries, burn areas, and drums shall be evaluated before the start of earth-moving activities.

APN 225-0090-069

- Conduct a limited Phase II ESA to evaluate for pesticide residues.
- Conduct a geophysical survey to assess the presence of a possible UST and if present, collect soil and/or groundwater samples to evaluate if contamination exists.

APNs 225-0101-003, 225-0101-004, 225-0101-005, 225-0101-006

- Conduct a limited Phase II ESA to evaluate for pesticide residues.
- Conduct a geophysical survey to assess the presence of a possible UST and if present, collect soil and/or groundwater samples to evaluate if contamination exists.

APN 225-0210-026

- Conduct a limited Phase II ESA to evaluate for pesticide residues and residual chemical concentrations related to petroleum product surface staining.

APNs 225-0110-019, 225-0110-020, and 225-0110-037 (Huffstutler Trust/Johnson Property)

- Conduct additional Phase II ESA work to further evaluate for potentially hazardous materials discussed in the Phase I ESA, including potential hydrocarbon contamination, miscellaneous refuse, unlabeled containers, and compounds found in aboveground and underground structures.
- Retain an Industrial Hygienist to prepare a Construction Worker Health and Safety Plan. The Construction Worker Health and Safety Plan Shall include, but shall not be limited to: personal protective equipment for workers, a delineation of the horizontal and vertical extent of elevated arsenic levels, a list of required monitoring equipment to be onsite during contaminated soil excavation (e.g., air quality meter), and proper procedures in the event that stained soil is encountered.
- Retain a qualified professional to conduct an Ecological Risk Assessment. The Ecological Risk Assessment shall include, but shall not be limited to: potential chemicals of concern, biological characterization of the site, identification of potential exposure pathways, ecological receptors, and recommendations for and implementation of remediation, if necessary.
APNs 201-0250-015, 201-0270-002, and 201-0270-037 (South Sutter, LLC Borrow Site)

- Conduct a Phase II ESA to evaluate for potentially hazardous materials discussed in the Phase I ESA, including potential miscellaneous refuse, unlabeled containers, and ASTs may have impacted the soil.

- Remove, as appropriate, items on site, such as the AST, car batteries, unlabeled storage tanks, debris, and water wells in accordance with regional, local, state, and Federal regulations.

Implementing this mitigation measure would reduce the potentially significant impact from exposure of construction workers and the general public to known hazardous materials at project sites under the Proposed Action and the RSLIP Alternative to a less-than-significant level because steps would be taken to reduce the opportunity of hazardous materials to become airborne or enter waterways; consultation with appropriate Federal, state, regional, and local agencies would occur; on-site contamination would be removed and properly disposed of by a licensed contractor in accordance with Federal, state, regional, and local regulations; and any additional site evaluations would be conducted and recommendations implemented. (Similar)

Mitigation Measure 4.15-b(2): Complete Investigations Related to the Extent to Which Soil and/or Groundwater May Have Been Contaminated in Areas Not Covered by the Phase I and/or II ESAs and Implement Required Measures (e.g., Site Management and/or Other Contingency Plans)

For parcels that will be used for Phase 4a Project borrow activities or where earthmoving activities would occur, SAFCA shall ensure that the contractor complete the following prior to start of construction and earthmoving activities:

- Prepare a site management plan, subject to SAFCA review and approval that contains protocols and procedures for excavation, use, disposal, and handling of soil containing pesticide residues or contaminants, and for identifying possible contamination during construction. The plan shall include measures for the safe transport, use, and disposal of pesticide residue impacted soil and building debris removed from the site. Soil reuse may include: containing portions of the affected topsoil within the core of seepage berms, with an overlay of clean soil to prevent surface runoff caused by rainfall erosion on the topsoil materials; rip, mix, and/or amend affected topsoil that is re-spread onto borrow sites, levee, and/or berm surfaces, to provide a plant growth medium and reduce the concentration of pesticide residues in the soil; establish native perennial grasses and other perennial vegetation cover (e.g., hay, alfalfa) on these planted surfaces to reduce sediment runoff that may be caused by rainfall erosion or surface irrigation; and improve the drainage of agricultural lands used as borrow/mitigation sites to reduce ponded water and minimize the discharge of sediments into nearby drainages. In the event that impacted groundwater is encountered during site excavation activities, the contractor shall report the chemical concentrations to the appropriate regulatory agencies, dewater the excavated area, and treat the groundwater to remove the chemicals before discharge. The contractor shall be required to comply with applicable Federal, state, regional, and local laws. The plan shall outline measures for specific handling and reporting procedures for hazardous materials and disposal of hazardous materials removed from the site at an appropriate off-site disposal facility. The plan shall include, but shall not be limited to: delineations of the horizontal and vertical extent and concentration of soil contamination; a list of required monitoring equipment to be onsite during soil
excavation (e.g., an air quality meter shall be used at the fenceline during dust-producing activities); sampling and analysis protocol for additional soil investigations; a list of necessary agencies to be contacted if chemical concentrations in water, air, and/or soil exceed set threshold limits; and a list of necessary permits, reports, or other compliance mechanisms.

- Retain an industrial hygienist to prepare a construction worker health and safety plan. The construction worker health and safety plan shall include, but not be limited to: personal protective equipment for workers, a delineation of the horizontal and vertical extent of elevated arsenic levels, a list of required monitoring equipment to be on-site during contaminated soil excavation (e.g., air quality meter), and proper procedures in the event that stained soil is encountered.

- Retain a qualified professional to conduct an ecological risk assessment on sites found to contain levels of contaminant exceeding pertinent ecological risk levels. The ecological risk assessment shall include, but not be limited to: potential chemicals of concern, biological characterization of the site, identification of potential exposure pathways, ecological receptors, and recommendations for and implementation of remediation, where feasible and practicable.

- Retain an air quality specialist to monitor the concentration of particulates of concern in the air at the project fenceline, adjacent to residential property to ensure compliance with Federal, state, regional, and local regulations, to the extent feasible and practicable. Airborne particulate monitoring should be performed in the on-site worker’s breathing zone using the Particulate Not Otherwise Specified (NOS) concentrations standard of 5 mg/m$^3$ as well as at the project boundaries using the Fenceline Particulate NOS goal of 0.3 mg/m$^3$.

- Retain a licensed contractor to remove USTs, ASTs, and stained soils in accordance with applicable Federal, state, regional, and local regulations.

- Retain a licensed contractor to remove and dispose of asbestos cement pipe found within the project area in accordance with applicable Federal, state, regional, and local regulations.

- Retain a licensed contractor to remove septic systems, water wells, and other underground structures, as needed, in accordance with applicable Federal, state, regional, and local regulations.

- Retain an asbestos specialist who is certified by the Cal/OSHA The asbestos specialist shall investigate whether asbestos-containing materials or lead-based paints are present before demolition of on-site buildings and utilities. If materials containing asbestos or lead are found, they shall be removed by an accredited contractor in accordance with EPA and Cal/OSHA standards. In addition, activities (construction or demolition) in the vicinity of these materials shall comply with Cal/OSHA asbestos and lead worker construction standards. The materials containing asbestos and lead shall be disposed of properly at an appropriate off-site disposal facility.

- Obtain an assessment conducted by the Sacramento Municipal Utility District and/or Pacific Gas & Electric Company pertaining to the contents of the existing pole-mounted transformers that would be relocated as part of the Phase 4a Project. The assessment shall determine whether existing on-site electrical transformers contain PCBs and whether there are records of spills from such equipment. If equipment containing PCBs...
is identified, the maintenance and/or disposal of the transformer shall be subject to the regulations of the Toxic Substances Control Act under the authority of the Sutter County Environmental Health Division and Sacramento County Environmental Management Department.

- Identify oil and gas well locations. Prepare and implement a California Department of Oil, Gas, and Geothermal Resources well review program, if necessary.

- Notify the appropriate Federal, state, regional, and local agencies, as required, if evidence of previously undiscovered soil or groundwater contamination (e.g., stained soil, odorous groundwater) is encountered during construction activities. Areas with chemical concentrations exceeding regulatory levels shall be cleaned up in accordance with recommendations made by the Sutter County Environmental Health Division, Sacramento Environmental Management Department, Central Valley RWQCB, DTSC or other appropriate Federal, state, regional, or local regulatory agencies as generally described above.


Implementing this mitigation measure would reduce the significant impact from exposure of unknown hazardous materials at the project site under the Proposed Action and the RSLIP Alternative to a less-than-significant level because potentially hazardous materials would be identified; a Site Management Plan that specifies remediation activities and procedures to appropriately identify, stockpile, handle, reuse and/or remove and dispose of hazardous materials would be prepared and implemented; monitoring activities would ensure that construction workers and the general public are not exposed to unsafe levels of hazardous substances; and hazardous substances that are encountered would be removed and properly disposed of by licensed contractors in accordance with Federal, state, regional, and local laws and regulations. (Similar)

Impact 4.15-c: Risk of Accidental Release of Jet Fuel from Construction Near an Existing Pipeline in Reach 11B of the Sacramento River East Levee

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for accidental upset of the jet fuel pipeline. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could damage the jet fuel pipeline. Because the effects of a levee failure are unpredictable and because the magnitude, extent, and severity of an accidental upset if it were to occur is too speculative, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)
Proposed Action and RSLIP Alternative

A 12-inch diameter pipeline that supplies jet fuel, primarily consisting of kerosene, from the Port of Sacramento to the Airport traverses the Phase 4a Project footprint through Reach 11B of the Sacramento River east levee. The pipeline, which is owned and operated by Wickland Pipelines, LLC, descends below the Sacramento River from West Sacramento and, near entry into the Natomas Basin, ascends for approximately 500 feet, where it remains approximately parallel to the ground surface at a depth of 5–10 feet below ground surface until reaching the Airport. A shut-off valve is located at the point where the pipeline becomes parallel to the ground surface, approximately 300 feet from the existing landside toe of the levee. Because a 500-foot-wide seepage berm may be required in Reach 11B, a new riser stem may be installed on the shut-off valve to maintain access to it (see Section 2.3.1.1, “Sacramento River East Levee,” for more detail). It is expected that installation of the riser stem could be completed without interfering with the distribution of jet fuel. Construction specifications for the riser extension would be reviewed by Wickland Pipelines, LLC, which would also supervise the construction activities affecting the pipeline.

Other construction activities that would take place in the vicinity of the pipeline would include relocation of power poles, ground clearance prior to construction of the levee improvements, placement of fill material and grading of levee and berm structures, and shallow (1 foot deep) excavation for the relocated Riverside (highline) canal. Construction of the seepage berm would involve grading and vegetation removal, followed by spreading and compacting of borrow material. Clearing and grading activities generally would not penetrate more than a few inches below the ground surface. However, the removal of several trees along Powerline Road by using backhoes could damage the pipeline through direct disturbance several feet below ground or by exerting uneven pressure to the pipeline.

Damage to the pipeline could result in a substantial release in jet fuel. According to Wickland Pipelines, LLC’s Oil Spill Contingency Plan, the worst case discharge scenario could result in the release of up to 32,172 gallons of jet fuel. A release of jet fuel could contaminate groundwater, surface water, soil, and air, and potentially affect aquatic and terrestrial wildlife and vegetation in the vicinity of the rupture. Additionally, release of jet fuel into the environment could cause a variety of adverse health effects to people within the vicinity, which could range from skin irritation to coma and death. Jet fuel also contains naphthalene, a chemical that may be carcinogenic to humans with repeated or prolonged exposure.

An accidental release could provide fuel for a potential fire. Construction equipment or construction practices could provide an ignition source for the jet fuel, particularly on days in which temperatures are higher, allowing for the fuel to vaporize. Depending upon the size, location, and extent of the release, a jet-fuel-fire could result in substantial loss, injury, or death, and produce chemicals that could adversely affect air quality (e.g., carbon monoxide, airborne solids) (Chevron Energy Research & Technology Company 2003).

Because there is a potential for accidental damage during construction to the jet fuel pipeline that could result in a spill of a hazardous substance into the environment that could adversely affect human health and the natural environment, this impact is considered to be potentially significant. (Similar)

Mitigation Measure 4.15-c: Review Design Specifications and Prepare and Implement an Impact Avoidance and Contingency Plan in Consultation with Wickland Pipelines, LLC

Prior to issuance of construction contract bid requests for the Phase 4a Project, SAFCA and its engineering and design consultants shall ensure that Wickland Pipelines, LLC has approved design specifications and impact avoidance and safety measures for construction activities within 50 feet of the jet fuel pipeline (CCR Title 8, Section 1541). Construction specifications to be approved with Wickland Pipelines, LLC include, but are not limited to, the type of construction and equipment (e.g., bulldozers, graders, excavators) and the location and depth of earth-moving activities near the pipeline (i.e., 50 feet). All excavation
and construction in the vicinity (i.e., 50 feet) of the jet fuel pipeline shall be undertaken in strict conformity with the most recent version of the Best Practices of the Common Ground Alliance available.

Prior to the start of earthmoving activities, an impact avoidance and contingency plan shall be prepared and implemented by SAFCA in consultation with Wickland Pipelines, LLC. The plan shall include, but shall not be limited to:

- a contingency plan for actions to take in the event of damage to the pipeline or release of jet fuel, which shall include chain of command and notification procedures, worker safety, pipeline security, wildlife care, response procedures, necessary permits for response actions, and waste handling and disposal;

- a worker health and safety plan and worker training that shall consider personal protective equipment, operations safety within 50 feet of the pipeline, and a contact list for reporting and obtaining medical service; and

- a method to provide the Airport with jet fuel in the event that the pipeline incurs substantial damage.

Agreements made between SAFCA, SAFCA’s contractor, and Wickland Pipelines, LLC shall be in compliance with applicable Federal and state regulations (e.g., Hazardous Liquid Pipeline Safety Act, Pipeline Safety Improvement Act of 2002, Cal OSHA regulations).

Implementing this mitigation measure would reduce the potential impact of accidental release of jet fuel due to damage of the jet fuel pipeline under the Proposed Action and the RSLIP Alternative to a less-than-significant level because excavation and construction activities within 50 feet of the jet fuel pipeline will be implemented in conformity with the Best Practices of the Common Ground Alliance, and an impact avoidance plan and design specifications would be agreed upon by SAFCA and Wickland Pipelines, LLC prior to issuance of construction bid requests, ensuring contractor compliance with avoidance and safety measures related to the jet fuel pipeline. (Similar)

**Impact 4.15-d: Interference with an Adopted Emergency Evacuation Plan**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to interfere with adopted emergency evacuation plans. There would be no impact. (Lesser)

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could damage roadways. Road closures could create increases in traffic levels that could interfere with the use of main roadways for emergency evacuation routes. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)
Proposed Action and RSLIP Alternative

The Proposed Action and the RSLIP Alternative would increase traffic on local roadways associated with construction trips. In addition, temporary road closures associated with levee improvements could cause or contribute to temporary increases in traffic levels as traffic is detoured or slowed on some local roadways and SR 99/70. Increased traffic congestion could interfere with the use of main roadways for emergency evacuation routes. This impact is considered significant. (Similar)

Mitigation Measure 4.15-d: Notify State and Local Emergency Management Agencies about Project Construction and Coordinate Any SR 99/70 Detours with these Agencies to Ensure That Any Need for Emergency Use Is Not Significantly Impaired

Proposed Action and RSLIP Alternative


Implementing this mitigation measure would reduce the impact from the potential interference with an adopted emergency evacuation plan under the Proposed Action and the RSLIP Alternative to a less-than-significant level because the appropriate state and local agencies would be involved in implementing detours to ensure acceptable traffic flow and reduce the risk of impairment to emergency evacuation routes. (Similar)

Impact 4.15-e: 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 Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to release hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A levee failure in the Natomas Basin could result in flooding that could damage the Natomas Basin in such a way that hazardous substances could be emitted or handled within one-quarter mile of an existing or proposed school. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

Natomas Middle School, located at 3700 Del Paso Road, is located within one-quarter mile of a portion of the Fisherman’s Lake Area. In addition, the Natomas Unified School District is planning to construct a high school and elementary school (West Lakeside) to be located on parcels within one-quarter mile of the Fisherman’s Lake Area. The Twin Rivers Unified School District is planning to open a high school to be located on the parcel containing the Twin Rivers Unified School District soil stockpile and adjacent to the Krumenacher Borrow Site. Construction and maintenance activities and borrow excavation would involve the use of potentially hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, and cleaners (which could include solvents and corrosives in addition to soaps and detergents), that are commonly used in construction projects. Additionally, undocumented contaminated soil or water may be found during construction. Because the potential exists for

---

FEIS Hazards and Hazardous Materials 4.15-14 NLIP Phase 4a Landslide Improvements Project USACE
exposure to both known and previously unknown hazardous materials within one-quarter mile of a school during construction activities, this impact is considered significant. *(Similar)*

**Mitigation Measure 4.15-e: Notify the Natomas Unified School District and Applicable Schools with Jurisdiction within One-Quarter Mile of Project Construction Activities**

**Proposed Action and RSLIP Alternative**

SAFCA shall provide written notification of the project to each of the affected schools and the Natomas and Twin Rivers Unified School Districts within 30 days prior to certification of this EIS/EIR and shall consult with the Natomas and Twin Rivers Unified School Districts regarding the potential impacts on schoolchildren from hazards associated with project implementation. SAFCA provided written notification on April 21, 2009, which occurred prior to certification of the EIR.

By fulfilling this mitigation measure, SAFCA reduced all previously identified significant impacts associated with hazardous materials emissions related to schools within one-quarter mile of the project area to a less-than-significant level because under CEQA, the notification process is considered to satisfy the requirements of CEQA (PRC Section 21151.4). *(Similar)*

**Impact 4.15-f: Temporary Aircraft Safety Hazards Resulting from Project Construction Activities Within or Near the Airport Critical Zone**

**No-Action Alternative**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to introduce a safety hazard within or near the Airport Critical Zone. There would be no impact. *(Lesser)*

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Extensive night lighting may be necessary near or within the Airport Critical Zone for emergency operations, which could pose a potential safety hazard. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. *(Currently Unknown)*

**Proposed Action and RSLIP Alternative**

The I-5 Borrow Area, a potential source of soil borrow for the Phase 4a Project, overlaps with the Airport Critical Zone *(Plate 2-6a)*. Extensive night lighting of construction work and security lighting of construction staging areas at night within these areas could interfere with nighttime aircraft landing operations and create a safety hazard related to aircraft landings. This impact is considered significant. *(Similar)*

**Mitigation Measure 4.15-f: Coordinate Work in the Critical Zone with Airport Operations and Restrict Night Lighting Within and Near the Runway Approaches**

**Proposed Action and RSLIP Alternative**

SAFCA and its primary construction contractors shall ensure that the following mitigation is implemented to avoid interference of construction activities with Airport operations.

- No borrow activities shall be conducted within the Airport Critical Zone during nighttime hours.
► All project-related nighttime lighting that is in, or is aligned with, the Airport runway approach zones (Sacramento River east levee Reaches 10–11A) shall be directed downward to avoid potential interference with nighttime aircraft operations.

► SAFCA shall ensure that the SCAS is informed in advance of the timing and nature of all construction activities within the Airport Critical Zone, and shall coordinate with SCAS during final project design to ensure that all appropriate safety precautions within the Airport Critical Zone are incorporated into the construction plans. Additionally, requirements provided by the FAA, not incorporated into this document, shall be followed.

► SAFCA shall submit the FAA form 7460-1, Notice of Proposed Construction or Alteration, which notifies the FAA of construction or alteration that might affect navigable airspace. This form must be submitted to the FAA at least 30 days before the earlier of the following dates: (1) the date the proposed construction or alteration is proposed to begin, or (2) the date an application for a construction permit is to be filed.

Implementing this mitigation measure would reduce the temporary aircraft safety hazard impact from project construction activities within or near the Airport Critical Zone under the Proposed Action and the RSLIP Alternative to a less-than-significant level, because all nighttime lighting would be directed downward and SAFCA would coordinate with SCAS to ensure that all appropriate safety precautions are taken within the Critical Zone. (Similar)

Impact 4.15-g: Potential for Higher Frequency of Collisions between Aircraft and Wildlife at Sacramento International Airport

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to increase the number of wildlife at the Airport. None of the proposed borrow site activities, dewatering, filling, canal replacement, removal and replacement of trees, or creation of habitat described for the Proposed Action and the RSLIP Alternative would occur. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. Flooding is likely to result in changes in land surface in some areas, and areas retaining water for long periods even after floodwaters have receded. These conditions could result in high numbers of birds being attracted to the lands around the Airport (which is in a low-elevation area in the Basin) in the months following flooding and the resumption of Airport operations, increasing the potential for collisions between aircraft and wildlife. Because the effects of a levee failure are unpredictable, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

The Airport has one of the highest numbers of reported wildlife strikes with aircraft of all California airports (SCAS 2007). Collisions between aircraft and wildlife compromise the safety of aircraft passengers and flight crews. In an attempt to reduce wildlife collisions with aircraft, SCAS has maintained and implemented the WHMP for more than 10 years at the Airport. The plan identifies routine maintenance, hazardous wildlife habitat
manipulation, and other land management activities as the most effective long-term preemptive measures for reducing wildlife hazards.

As described in FAA’s AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports*, the FAA recommends a separation distance of 10,000 feet between the Airport Operations Area and hazardous wildlife attractants (FAA 2007); this area is identified as the Airport Critical Zone. Additionally, the FAA recommends a distance of 5 statute miles between the farthest edge of the Airport Operations Area and hazardous wildlife attractants (FAA 2007). Open water and agricultural crops are recognized as being the greatest wildlife attractants in the Airport vicinity, and rice cultivation is considered the most incompatible agricultural crop because of its flooding regime. Wildlife attractants near the runways are of greatest concern because, nationally, 74% of bird-aircraft strikes occurred at or below 500 feet above ground level (Cleary, Dolbeer, and Wright 2004). The area within a 10,000-foot radius of the Airport Operations Area is where arriving and departing aircraft are typically operating at or below 2,000 feet, an altitude that also corresponds with most bird activity (SCAS 2007).

Generally, the Airport Critical Zone is currently used for agricultural purposes, a land use practice that is considered to attract hazardous wildlife. Implementation of the Phase 4a Project would not increase the amount of hazardous wildlife habitat. The I-5 Borrow Area, a potential source of soil borrow for the Phase 4a Project, overlaps with the Airport Critical Zone (Plate 2-6a). Any borrow sites used in this area would be returned to their previous agricultural land uses following borrow activities and would not be developed into new land uses that would attract hazardous wildlife, such as wetlands, water management facilities, or golf courses, as described in FAA’s AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports*. Following construction, the slopes of the proposed levee improvements and associated seepage berms, which overlap with the Airport Critical Zone in Reaches 10–11A of the Sacramento River east levee, would be seeded to create managed grassland.

Because the Phase 4a Project would not increase the amount of habitat considered to attract hazardous wildlife within the Airport Critical Zone, the Proposed Action and the RSLIP Alternative would result in a less-than-significant impact related to Airport and wildlife collisions. (Similar)

**Mitigation Measure: No mitigation is required.**

**Impact 4.15-h: Potential Exposure to Wildland Fires**

**No-Action Alternative**

**No Project Construction**

Under the No-Action Alternative, no construction activities would occur; therefore, no potential exists for the project to expose people or structures to wildland fires. There would be no impact. (Lesser)

**Potential Levee Failure**

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. A recently flooded area is not likely to be dry enough to sustain a fire that would pose significant risk of loss, injury, or death. However, if accumulated debris from uprooted vegetation or structures remained in place long enough to dry out, there would be a potential for increased fire hazard. However, the potential for such an occurrence is uncertain, and the magnitude of the effect cannot be predicted; therefore, a precise determination of significance is not possible and cannot be made. Because of this uncertainty, this potential impact is considered too speculative for meaningful consideration. (Currently Unknown)

**Proposed Action and RSLIP Alternative**

Although no “Very High Fire Hazard Severity Zones” are located in the project area, and the majority of Sutter and Sacramento Counties is located in either a “nonflammable” or “moderate” zone for wildland fires, the project
components would be constructed in locations where physical and weather conditions may combine to lead to a high risk of fire hazard. Construction equipment or construction practices could ignite fires that may result in wildland fires and expose people or structures to a significant risk of loss, injury, or death under some circumstances. This potential impact is considered significant. (Similar)

Mitigation Measure 4.15-h: Prepare and Implement a Fire Management Plan to Minimize Potential for Wildland Fires

**Proposed Action and RSLIP Alternative**

SAFCA and its primary contractors for engineering design and construction shall prepare and implement a fire management plan in coordination with the appropriate emergency service and/or fire-suppression agencies of the applicable local jurisdictions before beginning project construction. The plan shall describe fire prevention and response methods, including fire precaution, pre-suppression, and suppression measures that are consistent with the policies and standards of the affected jurisdictions. All materials and equipment required for implementation of the plan shall be maintained on-site. All construction personnel shall be made familiar with the contents of the plan before construction activities begin.

Implementing this mitigation measure would reduce the potential impact from exposure to wildland fires under the Proposed Action and the RSLIP Alternative to a less-than-significant level, because a plan to provide project-specific fire prevention and response would be implemented. (Similar)

### 4.15.3 Residual Significant Impacts

Impacts associated with spills of hazardous materials, exposure to hazardous materials or interference with emergency evacuation, increased hazards in the vicinity of the Airport or increased frequency of wildlife airstrikes, and increased wildfire hazards due to the No-Action Alternative are uncertain. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore, impacts that result from the No-Action Alternative would not be mitigated.

Implementation of the mitigation measures described in this section for the Proposed Action and the RSLIP Alternative would reduce all potential impacts associated with spills of hazardous materials, accidental risk of upset from potential damage to the jet fuel pipeline during construction, exposure to hazardous materials or interference with emergency evacuation, increased hazards in the vicinity of the Airport or increased frequency of wildlife airstrikes, and increased wildfire hazards to less-than-significant levels.
4.16 ENVIRONMENTAL JUSTICE

Environmental justice is defined by the U.S. Environmental Protection Agency (EPA) Office of Environmental Justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Fair treatment means that “no group of people, including racial, ethnic, or socioeconomic group, shall bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies.” Analysis of project effects on environmental justice is required by NEPA.

4.16.1 METHODOLOGY AND THRESHOLDS OF SIGNIFICANCE

4.16.1.1 METHODOLOGY

The following analysis is based on Environmental Justice, Guidance Under the National Environmental Policy Act, prepared by the Council of Environmental Quality (CEQ) and the Executive Office of the President (CEQ 1997). Although none of the published guidelines define the term “disproportionately high and adverse,” CEQ includes a non-quantitative definition stating that an effect is disproportionate if it appreciably exceeds the risk or benefit rate to the general population.

Under the CEQ guidelines, the first step in conducting an environmental justice analysis is to determine the presence of minority and low-income populations (CEQ 1997:25). The second step of an environmental justice analysis requires that the Federal agency determine if the Federal action would result in disproportionately high or adverse health or environmental effects (CEQ 1997:26). The CEQ guidance indicates that when determining whether the effects are high and adverse, agencies are to consider whether the risks or rates of impact “are significant (as employed by NEPA) or above generally accepted norms” (CEQ 1997:26). The CEQ offers a non-quantitative definition stating that an effect is disproportionate if it appreciably exceeds the risk or rate to the general population (CEQ 1997:26). The environmental justice analysis is based on a review of relevant demographic data to define the relative proportion of minority and low-income populations in the Natomas Basin in order to determine whether the Proposed Action or alternatives under consideration would result in environmental justice impacts on the relevant populations. (See Section 3.16, “Environmental Justice,” and Appendix H for the demographic data used to conduct this analysis.)

This section compiles demographic data on income and minority status for census block groups that occur in the Natomas Basin, and then compares these data with the demographic profiles of Sutter and Sacramento County to determine if the Natomas Basin contains significant minority or low-income populations. Table 3.16-1 presents the relative proportion of the population that responded as members of minorities or as low-income households during the 2000 Census. These data are based upon Appendix H, which compiles and explains the source of these data (U.S. Census Bureau 2006).

The Natomas Basin does not contain a significant low-income population, as indicated in Table 3.16-1 (e.g., greater than 50% of the total population or substantially greater than in Sacramento or Sutter Counties. The Sutter County portion of the Natomas Basin has a minority population that is less than 50% of the total (23.34%), and is also lower than the proportion of minorities in Sacramento and Sutter Counties. The Sacramento County portion of the Natomas Basin, however, does contain a significant minority population (60.35% of the total population for those census block groups).

4.16.1.2 THRESHOLDS OF SIGNIFICANCE

To prove a violation of Federal environmental justice principles, low-income populations, individuals belonging to minority populations, and/or minority populations (i.e., Native American or Alaskan Native, Asian or Pacific Islander, black, not of Hispanic origin, or Hispanic) must be affected by the project. According to CEQ, two types...
of environmental justice impacts may exist: disproportionately high and adverse human health effects and disproportionately high and adverse environmental effects. Determination of disproportionately high and adverse human health effects considers whether any of the following, described below, would exist.

- The health effects, which may be measured in risks and rates, are significant (as employed by NEPA), or above the generally accepted norm. Adverse health effects may include bodily impairment, infirmity, illness, or death.

- The risk or rate of hazard exposure by a minority population, low-income population, or Native American tribe to an environmental hazard is significant (as employed by NEPA) and appreciably exceed the risk or rate to the general population or other appropriate comparison group.

- The health effects occur in a minority population, low-income population, or Native American tribe affected by cumulative or multiple adverse exposures from environmental hazards.

Determination of a disproportionately high and adverse environmental effect considers whether any of the following, described below, would exist.

- There is or would be an impact on the natural or physical environment that significantly (as employed by NEPA) and adversely affects a minority population, low-income population, or Native American tribe. Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Native American tribes when those impacts are interrelated to impacts on the natural or physical environment.

- The environmental effects are significant (as employed by NEPA) and are or may be having an adverse impact on minority populations, low-income populations, or Native American tribes that appreciably exceed or is likely to appreciably exceed those on the general population or other appropriate comparison group.

- The environmental effects occur or would occur in a minority population, low-income population, or Native American tribe affected by cumulative or multiple adverse exposures from environmental hazards.

4.16.2 IMPACTS AND MITIGATION MEASURES

Impact 4.16-a: Potential to Have a Disproportionate High and Adverse Environmental Impact On Any Minority Or Low-Income Populations

No-Action Alternative

No Project Construction

Under the No-Action Alternative, no improvements would be made to the Natomas perimeter levee system and there would be no potential to have disproportionately high and adverse environmental impacts on any minority or low-income populations. There would be no impact. (Lesser)

Potential Levee Failure

Without improvements to the Natomas perimeter levee system, the risk of levee failure would remain high. If the primary location of flooding occurred in the Sacramento portion of the Basin, flooding could cause disproportionately impact to minority or low-income populations by causing displacement of people from their homes, disruption of business, damage to property, and injury or death. However, it is equally probable that a levee breach would occur in the northern half of the Basin (in Sutter County), which has relatively low population density and a low minority population in relation to the total population (23.34%). Determination of the location, and thus the impact of a levee breach is speculative. Therefore, a precise determination of significance is not
possible and cannot be made because the location and extent of the magnitude of the potential impact is unknown. Because of this uncertainty, this potential impact is considered to be too speculative for meaningful consideration. (Currently Unknown)

Proposed Action and RSLIP Alternative

The Phase 4a Project would reduce the risk of flooding to existing residential, commercial, and industrial land uses in the Natomas Basin. Although there are low-income and minority populations present in the Sacramento County portion of project area, as described above, the flood protection benefits of the project would accrue to all segments of the population in the Natomas Basin. Environmental impacts would be confined primarily to the work along the Sacramento River east levee, the NCC, and associated borrow sites. The large, concentrated population centers containing most of the residents of the Natomas Basin (and thus minority populations) occur east of I-5, in the southeastern portion of the Basin, in Sacramento County. While people residing in these population centers would benefit from the Proposed Action or RSLIP Alternative, most environmental impacts would not directly affect them because such effects would be confined to the project footprint and the immediate surrounding areas. Temporary exposure to construction noise, dust, and light and glare during project construction would be experienced within the project area. Air quality impacts, and the contribution to the health effects associated with poor air quality, would accrue to the entire air basin and thus would not disproportionately affect minority populations in the Sacramento County portion of the Natomas Basin. No permanent residential relocations would occur in low-income areas or areas with high minority populations. Therefore, the project would have no disproportionately high and adverse environmental impact on any minority or low-income populations in the Natomas Basin.

Executive Order 12898, which is described more fully in Chapter 6.0, “Compliance with Federal Environmental Laws and Regulations,” requires that the lead Federal agency consider the effects of an action on Native American tribes and determine if the adverse effects are disproportionate relative to the beneficial aspects of the action. As described in Section 4.8, “Cultural Resources,” many elements of the project have the potential to adversely affect cultural resources that possess particular cultural significance and value to Native American individuals and organizations that are culturally affiliated with the prehistoric inhabitants of the Natomas Basin. Construction of improvements such as seepage berms and cutoff walls, as well as the excavation of large quantities of borrow from a range of possible sites, has the potential to damage prehistoric archaeological assemblages, including interred skeletal remains. The ancestors of the Native American tribes that dwelled on the project site in the past may not necessarily experience the direct beneficial aspect of flood damage reduction in the Natomas region. This raises an environmental justice concern because the project could result in disturbance to and/or damage of cultural resources of importance to the Native American community, while the Native American community would not receive a proportionate benefit from flood damage reduction because they live in dispersed locations, largely outside of the Natomas Basin. This is a significant impact with respect to environmental justice. (Similar)

Mitigation Measure 4.16-a: Increase the Direct Benefits of the Project for the Ancestors of the Native American Tribes

As part of the Phase 4a Project, SAFCA proposes to acquire various properties in the Natomas Basin as compensation for the project’s potential impacts, as required under Federal and state laws. As part of the process for restoring these lands, SAFCA shall implement the following measures to address environmental justice and increase the direct benefits to the ancestors of the Native American tribes that would bear disproportionate adverse effects:

- consult with appropriate Native American representatives to identify plant species of value for traditional cultural uses;
consult with Native American representatives to identify traditional cultural activities that could occur on these lands, consistent with habitat conservation and safety objectives;

- to the extent feasible, include identified plant species in the planting palettes developed for habitat conservation;

- to the extent feasible, establish easements or other protective measures on these properties that include access for appropriate Native American representatives for plant gathering and other traditional cultural activities; and

- where feasible, also provide access to appropriate Native American representatives to the river front on acquired parcels that have access to the Sacramento River, provided that access does not permit the construction of physical structures on the levee, beaches, or in the river without prior approval from the appropriate regulatory agency.

Implementation of these measures would reduce the impact to a **less-than-significant** level because it would provide the ancestors of the Native American tribes with a benefit that would offset the disproportionate burden created by impacts to cultural resources of concern, and of great value to the Native American community, caused by the Proposed Action and the RSLIP Alternative. *(Similar)*

### 4.16.3 Residual Significant Impacts

In the event of a levee failure under the No-Action Alternative, impacts to minority or low-income populations or Native American tribes are uncertain. Because of this uncertainty, these potential impacts are considered too speculative for meaningful consideration. Additionally, mitigation measures cannot be required for the No-Action Alternative; therefore impacts that result from the No-Action Alternative would not be mitigated.

With implementation of the mitigation measures described in this section, project implementation would not result in any residual significant impacts related to environmental justice.
5 CUMULATIVE AND GROWTH-INDUCING IMPACTS, AND OTHER STATUTORY REQUIREMENTS

5.1 CUMULATIVE IMPACTS

The following analysis includes the overall cumulative impacts of the Natomas Levee Improvement Program (NLIP) Phase 4a Project taken together with other past, present, and probable (i.e., reasonably foreseeable) future projects producing related impacts, as required by NEPA implementing regulations (40 Code of Federal Regulations [CFR] 1508.7) and the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15130). The goal of such an exercise is twofold: first, to determine whether the effects of all such projects would be cumulatively significant; and second, to determine whether the Phase 4a Project individually would cause a “cumulatively considerable” (and thus significant) incremental contribution to any such cumulatively significant impacts. (See the State CEQA Guidelines [CCR Sections 15064(h), 15065(a)(3), 15130(a), 15130(b), and 15355(b)] and Communities for a Better Environment v. California Resources Agency (2002) 103 Cal.App.4th 98, 120.)

The Council on Environmental Quality (CEQ) regulations implementing provisions of NEPA define cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant, actions over time and differ from indirect impacts (40 CFR 1508.8). They are caused by the incremental increase in total environmental effects when the evaluated project is added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can thus arise from causes that are totally unrelated to the project being evaluated, and the analysis of cumulative impacts looks at the life cycle of the effects, not the project at issue.

Cumulative impacts are defined in the State CEQA Guidelines (CCR Section 15355) as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” A cumulative impact occurs from “the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects (see also CCR Section 15130[a][1]). Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time” (CCR Section 15355[b]).

Consistent with the State CEQA Guidelines (CCR Section 15130[a]), the following discussion of cumulative impacts focuses on significant and potentially significant cumulative impacts. The State CEQA Guidelines (CCR Section 15130[b]) state that:

The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

This section identifies the resources that would be significantly adversely affected by the project in combination with other actions, and assesses the extent of potential cumulative impacts. To frame the discussion of cumulative impacts, a description of relevant NLIP environmental documents that are incorporated by reference is provided below.
5.1.1 **GEOGRAPHIC SCOPE AND TIMEFRAME**

The geographic area that could be affected by the proposed project varies depending on the type of environmental issue being considered. When the effects of the proposed project are considered in combination with those other past, present, and future projects to identify cumulative impacts, the other projects considered may also vary depending on the type of environmental effects being assessed. The general geographic area associated with different environmental effects of the proposed project defines the boundaries of the area used for compiling the list of projects considered in the cumulative impact analysis. Table 5-1 presents the general geographic areas associated with the different resources addressed in this FEIS.

The timeframe for consideration of cumulative impacts is approximately 30 years, generally consistent with the timeframe for buildout of approved and proposed specific plan development projects in the Natomas Basin.

5.1.2 **APPROACH TO PHASE 4A PROJECT CUMULATIVE IMPACT ANALYSES**

The Phase 4a Project cumulative impact analysis incorporates by reference the cumulative impact analyses from previous NLIP environmental documents. Information that was not known at the time of preparation of the earlier documents is also presented in this chapter, as well as any cumulative impacts not previously covered in the earlier documents. The analysis specifically addresses the potential cumulative effects from the overlap of construction of the Phase 2, 3, and 4a Projects, if it occurs (i.e., a reasonable worst-case scenario). As discussed in Section 5.1.8, below, any overlapping construction of these three project phases may increase the severity of an environmental effect in the event that these phases are constructed simultaneously.

5.1.3 **SUMMARY OF CUMULATIVE IMPACT ANALYSES FROM PREVIOUS NATOMAS LEVEE IMPROVEMENT PROGRAM ENVIRONMENTAL DOCUMENTS**

This document analyzes the Phase 4a Project, in accordance with the requirements of NEPA and CEQA. Because this document provides project-level analysis that is tiered from previous program-level analysis, relevant material from the previous documents (listed below) is incorporated by reference in accordance with State CEQA Guidelines Section 15150(c). Incorporation by reference is encouraged by both NEPA (40 CFR 1500.4, 1502.21) and CEQA (State CEQA Guidelines CCR Section 15150). Both NEPA and CEQA require brief citation and summary of the referenced material and the public availability of this material. CEQA also requires citation of the state identification number (i.e., State Clearinghouse Number) of the previous EIRs cited.

This section summarizes the analysis of cumulative impacts conducted for (1) the funding mechanisms that provide funding for the project, (2) the NLIP as a whole, (3) the Phase 2 Project, and (4) the Phase 3 Project. The program-level and cumulative impact analyses contained in the following documents are incorporated by reference herein:

- *Environmental Impact Report on Local Funding Mechanisms for Comprehensive Flood Control Improvements for the Sacramento Area*, State Clearinghouse No. 2006072098 (SAFCA 2007a) (Local Funding EIR);

- *Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project*, State Clearinghouse No. 2007062016 (SAFCA 2007b) (Phase 2 EIR);

- *Environmental Impact Statement for 408 Permission and 404 Permit to Sacramento Area Flood Control Agency for the Natomas Levee Improvement Project* (USACE 2008) (Phase 2 EIS);
<table>
<thead>
<tr>
<th>Resource Area</th>
<th>Geographic Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Natomas Basin, with regional implications</td>
</tr>
<tr>
<td>Land use</td>
<td>Not applicable, because the only potential impacts on land use from the project relate to possible inconsistency with adopted land use plans and policies, and inconsistency with policies is not cumulative. Land use is not addressed further in this cumulative impact analysis</td>
</tr>
<tr>
<td>Socioeconomics, population and housing</td>
<td>Local (population and housing near the project site)</td>
</tr>
<tr>
<td>Geology, soils, and mineral resources</td>
<td>Individual construction sites and other ground disturbance sites within the Natomas Basin</td>
</tr>
<tr>
<td>Hydrology</td>
<td>Drainage system on the west and east sides of the Natomas Basin and individual grading sites</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>Sacramento River system in the vicinity of Natomas Basin</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Natomas Basin</td>
</tr>
<tr>
<td>Water quality</td>
<td>Ditches and canals on the west and east sides of the Natomas Basin, with implications for the Sacramento River system in the vicinity of Natomas Basin</td>
</tr>
<tr>
<td>Biological resources</td>
<td></td>
</tr>
<tr>
<td>Woodland habitat</td>
<td>Natomas Basin, with regional implications</td>
</tr>
<tr>
<td>Wildlife corridors</td>
<td>Natomas Basin, with regional implications</td>
</tr>
<tr>
<td>Sensitive aquatic habitat</td>
<td>Natomas Basin</td>
</tr>
<tr>
<td>Special status plant species</td>
<td>Natomas Basin, with regional implications</td>
</tr>
<tr>
<td>Special status wildlife species</td>
<td>Natomas Basin, with regional implications</td>
</tr>
<tr>
<td>Fish and aquatic habitats</td>
<td>Habitat at individual waterside improvement sites, with regional implications for species</td>
</tr>
<tr>
<td>Cultural resources</td>
<td>Individual ground disturbance sites, with regional implications</td>
</tr>
<tr>
<td>Paleontological resources</td>
<td>Individual ground disturbance sites within the Natomas Basin</td>
</tr>
<tr>
<td>Transportation and circulation</td>
<td>Roadway network in the Natomas Basin, with regional implications</td>
</tr>
<tr>
<td>Air quality</td>
<td>Regional (FRAQMD and SMAQMD); global for greenhouse gas emissions</td>
</tr>
<tr>
<td>Noise</td>
<td>Immediate vicinity of the individual sites of construction activity</td>
</tr>
<tr>
<td>Recreation</td>
<td>Local (facilities near construction sites)</td>
</tr>
<tr>
<td>Visual resources</td>
<td>Individual levee improvement sites and landscape level</td>
</tr>
<tr>
<td>Utilities and service systems</td>
<td>Local service areas</td>
</tr>
<tr>
<td>Hazards and hazardous materials</td>
<td>Individual construction and other ground disturbance sites</td>
</tr>
<tr>
<td>Airport safety</td>
<td>Airport</td>
</tr>
<tr>
<td>Wildlife hazards</td>
<td>Individual construction sites within the Natomas Basin</td>
</tr>
<tr>
<td>Environmental justice</td>
<td>Natomas Basin and affected Tribe</td>
</tr>
</tbody>
</table>

Notes: Airport = Sacramento International Airport; FRAQMD = Feather River Air Quality Management District; SMAQMD = Sacramento Metropolitan Air Quality Management District; NA = not applicable; SMAQMD = Sacramento Metropolitan Air Quality Management District

Source: Data compiled by AECOM in 2009
► Supplement to the Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project—Phase 2 Project, State Clearinghouse No. 2007062016 (SAFCA 2009) (Phase 2 SEIR); and


Portions of these documents, where specifically noted, are summarized throughout this FEIS. Printed copies of these documents are available to the public at SAFCA’s office at 1007 7th Street, 7th Floor, Sacramento, California, during normal business hours, and are also available on SAFCA’s Web site, at http://www.safca.org/Programs_Natomas.html.

The previous NLIP documents listed above included a programmatic and cumulative impact analysis of all NLIP project phases (1–4), including the phase now referred to as the Phase 4a Project. Refer to Chapter 1.0, “Introduction and Statement of Purpose and Need,” for a summary of each project phase and Table 1-3, which presents the proposed components and construction timing of the NLIP Phase 1, 2, 3, and 4 Projects.

These analyses of cumulative impacts from previous program- and project-level analysis are incorporated by reference for purposes of tiering the discussion of cumulative impacts for the Phase 4a Project in the following section.

5.1.3.1 Environmental Impact Report on Local Funding Mechanisms for Comprehensive Flood Control Improvements for the Sacramento Area (SAFCA 2007a)

Project Impacts that Would Not Be Cumulatively Considerable

In the Local Funding EIR (SAFCA 2007a), SAFCA analyzed the environmental effects associated with the creation of a new assessment district to fund necessary flood damage reduction measures in the Sacramento region. This funding supports projects including the NLIP and the Phase 4a Project, and thus analyzes, at a programmatic level, the environmental effects for a program of flood damage reduction projects in the region, including the NLIP (Phases 1–4).

For the following resource areas, SAFCA found that implementation of local funding mechanisms to fund the NLIP, among other projects, would not result in a cumulatively considerable contribution to the following significant impacts. These effects of the proposed project would not be added to the effects of other related projects because the effects were temporary, localized, or isolated:

► **Geology and Soils:** With the application of mitigation measures, temporary, localized soil erosion and topsoil loss resulting from the project’s grading and other earthmoving activities would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Hydrology:** Because of the project design, drainage disruption and alteration of runoff patterns from the proposed project would be limited to the project site; therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Water Quality and Fisheries and Aquatic Resources:** Through compliance with the existing regulatory regimes and the implementation of mitigation measures for instream habitat improvements and shaded riverine aquatic (SRA) habitats, the project’s impacts to water quality and fish resulting from past and present actions, the creation of an assessment district and subsequent funded improvements, as well as reasonably...
foreseeable future actions, would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Terrestrial Biological Resources:** SAFCA found that implementation of local funding mechanisms had the potential to contribute to the loss or degradation of sensitive habitats and to adversely affect special-status species (special-status plants, Swainson’s hawks, burrowing owls, other nesting raptors, giant garter snakes, valley elderberry longhorn beetle host plants, and others). Because SAFCA would implement avoidance and compensation measures in accordance with the requirements of the Federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and California Fish and Game Code Section 1602 (Streambed Alteration Agreement), and would include additional habitat protection and enhancement components, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Paleontological Resources:** Earthmoving activities resulting from projects funded by creation of local funding mechanisms could damage unknown unique paleontological resources. SAFCA determined the project would not result in a cumulatively considerable contribution to a significant cumulative impact because potential impacts would be located in discrete locations and would be mitigated.

► **Transportation and Circulation:** Construction activities related to levee and channel improvement projects would temporarily increase traffic levels on local and regional roadways, sometimes substantially. Considering that impacts on traffic would be localized, intermittent, and temporary, SAFCA found that projects funded by new local funding mechanisms would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Noise:** Construction noise effects associated with the proposed projects made possible by new local funding were considered to be significant and unavoidable, but because they would be localized, intermittent, and temporary, the incremental effects of the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Recreation:** The analysis focused on project effects on water-dependent recreational activities on the Lower American River and Sacramento River, and on impacts related to encroachment onto the American River Parkway land. Impacts on recreation were primarily related to foreseeable improvements to Folsom Dam. Effects of levee repair and strengthening and of erosion control activities would be limited to localized areas within the Sacramento area, which has an abundance of water-dependent and water-enhanced recreation opportunities. Temporary construction effects and minor permanent impacts would be minimized through replacement of parkway land, design modifications, and coordination with the public and recreation agencies ensuring that any residual effects would be minimized. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Utilities and Service Systems:** Implementation of flood damage reduction funded by new local funding mechanisms could result in impacts to utilities and service systems. The effects resulting from temporary disruptions to service would be geographically isolated and short in duration. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Hazards and Hazardous Materials:** If hazardous materials are encountered during construction of improvements funded by the new local funding mechanisms, effects would be localized and would not be expected to be additive with the effects of other actions. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.
**Project Impacts that Would Be Cumulatively Considerable**

As identified in the Local Funding EIR (SAFCA 2007a), implementation of local funding mechanisms (referred to below as “the project”) would result in a cumulatively considerable contribution to significant cumulative impacts for the following resource areas:

► **Agriculture and Land Use:** In combination with the permanent conversions of Important Farmland associated with past, current, and future projects, particularly in the Natomas area, the contribution caused by improvements funded by the project would be significant and unavoidable because there are no feasible means of replacing Important Farmland after it has been converted to nonagricultural uses. For these reasons, the project and related projects would result in a cumulatively considerable (i.e., significant) impact associated with agricultural land conversion, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

► **Cultural Resources:** SAFCA found that it is likely that known or unknown archaeological resources could be disturbed, and cultural resources damaged or destroyed during project-related construction activities. Significant and unavoidable losses of a unique archaeological resource as defined in Public Resources Code (PRC) Section 21083.2 could occur where excavations encounter archaeological deposits that cannot be removed or recovered (e.g., under levees). Historic resources could also be damaged or require removal from areas near flood damage reduction facilities under levee integrity program activities. If these resources would meet the definition of historical resources as defined in PRC Section 21084.1 or are eligible for listing on the National Register of Historic Places according to Section 106, their modification or destruction would be considered significant. Although mitigation would be implemented to reduce effects on potentially significant cultural resources, significant impacts, particularly on archaeological resources, may still occur. Losses of archaeological resources would add to an historical trend in the loss of these resources as artifacts of cultural significance and as objects of research importance. For these reasons, the project and related projects would result in a cumulatively considerable (i.e., significant) impact associated with cultural resources, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

► **Air Quality:** The project would fund construction of improvements which would result in significant and unavoidable temporary and short-term construction-related air quality impacts associated with generation of oxides of nitrogen (NOx) and respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM10), even with implementation of mitigation measures. Other medium-sized and large reasonably foreseeable projects, such as the anticipated developments in the Natomas area, would similarly contribute substantially to air quality impacts. Given the large scale of development that is expected in the Natomas Basin alone, as well as the nonattainment status of the Sacramento Valley Air Basin for ozone and PM10, cumulative construction-related air quality impacts are expected to be significant and unavoidable. For these reasons, the project and related projects would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

► **Visual Resources:** Levee improvements in the Natomas area funded by the project would include the removal of trees, other vegetation, and possibly agricultural structures where the levee toe needs to be widened or a berm would be constructed. Bank protection and long-term levee integrity program actions in this area could also require the removal of vegetation and other features that currently add to the rural and riverine character of views in the area. SAFCA found that these changes would contribute to the substantial degradation of scenic resources in Natomas and determined that changes to scenic resources resulting from the proposed project when combined with the past and anticipated future actions would be significant and unavoidable. For these reasons, the project and related projects would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.
5.1.3.2 Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project (SAFCA 2007b)

The construction of flood damage reduction measures in the Natomas Basin were analyzed in the Phase 2 EIR at a program- and a project-level. The improvements would provide 100-year flood damage reduction while laying the groundwork for creation of 200-year flood damage reduction over time (SAFCA 2007b).

Project Impacts that Would Not Be Cumulatively Considerable

For the following resource areas, SAFCA found that implementation of the Landside Improvements Project (referred to below as “the project”), including the Phase 4a Project, evaluated in the Phase 2 EIR (SAFCA 2007b), would not result in a cumulatively considerable contribution to the following significant cumulative impacts because the effects of the proposed project would not be added to the effects of other related projects as the effects were either temporary, localized, or isolated:

► Geology and Soils: SAFCA found that through the implementation of Best Management Practices (BMPs) during grading and other earthmoving activities would reduce the temporary and localized soil erosion and topsoil loss to a less-than-significant level. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Local Drainage: The widening of levees and construction of landside seepage berms along the Sacramento River east levee, associated modification of irrigation and drainage infrastructure, and borrow activities on large parcels could interfere with the functioning of drainage systems and alter surface drainage. Project design would incorporate measures to prevent a significant drainage disruption or alteration in runoff patterns, and any temporary effects would be limited to the vicinity of the individual disturbance sites. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Water Quality and Fisheries and Aquatic Resources: Construction activities have the potential to temporarily degrade water quality and fish habitat and populations through the direct release of soil and construction materials into water bodies or the indirect release of contaminants into water bodies through runoff. SAFCA determined that by complying with the regulatory regime and through design features for fish habitat and SRA habitat that the projects impacts on water quality and fish when added with past, present, and future projects, would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Terrestrial Biological Resources: Implementation of the proposed project has the potential to contribute to the loss or degradation of sensitive habitats and to adversely affect special-status terrestrial species (special-status plants, valley elderberry longhorn beetle, giant garter snake, Swainson’s hawk, burrowing owl, and others). These effects could contribute to species declines and losses of habitat that have led to the need to protect these species under the Federal ESA and CESA. Because SAFCA would implement minimization, avoidance, and compensation measures in accordance with the requirements of ESA, CESA, and other relevant regulatory requirements, and the project would include additional habitat protection and enhancement components, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Paleontological Resources: Earthmoving activities could damage unknown unique paleontological resources, but potential damage would occur in discrete locations and the significance would be reduced to a less-than-significant level with the incorporation of mitigation measure. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.
Transportation and Circulation: The proposed construction activities would temporarily increase traffic levels on local and regional roadways. Mitigation would be implemented to reduce effects to the extent feasible, but the proposed project would still result in substantial temporary increases in traffic in relation to the existing traffic load. Because of the limited potential for the traffic associated with the proposed project to combine with increased traffic from other probable future projects, and because of the short-term, intermittent nature of any cumulative traffic impacts, SAFCA determined that the project not result in a cumulatively considerable contribution to a significant cumulative impact.

Recreation: Effects of the proposed project on recreational uses would be limited to potential disturbance of access to facilities in the western part of the Natomas Basin during construction, potential temporary degradation in the quality of recreational experiences as a result of construction activity and noise, and potential removal of land at the City of Sacramento’s undeveloped Costa Park site from future recreational use. Because of the temporary nature of the construction effects, these effects are not considered substantial enough to make a cumulatively considerable contribution to a cumulative impact. The potential encroachment on the Costa Park site would be a localized effect that would be offset through compensation in the form of payment or land. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

Utilities and Service Systems: SAFCA found that disruption to utilities and services resulting from construction of the landside improvements would be localized and temporary. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

Hazardous Materials: With the implementation of mitigation, SAFCA found that the potential exposure of people or the environment to hazardous materials encountered during construction activity or to fire hazards would not expected to be additive with the effects of other past, present, and probable future actions. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

Hazards Related to Airport Operations: The potential for night lighting of project areas that would adversely affect aircraft operations is a function of the location of construction areas in relation to the Sacramento International Airport Critical Zone and the runway approaches. There are no other known projects that would affect lands within the Airport Critical Zone. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

Project Impacts that Would Be Cumulatively Considerable

As identified in the Phase 2 EIR (SAFCA 2007b), the Landside Improvements Project (referred to below as “the project”) would result in a cumulatively considerable contribution to significant cumulative impacts for the following resource areas:

Agricultural Resources: Implementation of the project would involve the permanent conversion of large acreages of Important Farmland (Prime Farmland and Farmland of Statewide Importance). SAFCA found that the conversion of agricultural land that would result from the project in combination with the past conversions and expected future conversions of Important Farmland in the Natomas Basin would be significant and unavoidable because it is not feasible to replace farmland by creating new farmland after it has been converted to nonagricultural uses. For these reasons, the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with agricultural land conversion, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

Cultural Resources: SAFCA determined that it is likely that known or unknown archaeological resources could be disturbed and cultural resources damaged or destroyed during construction activities for the
Historic resources could also be damaged or require removal from areas near flood damage reduction facilities under the proposed project. Losses of archaeological resources would add to a historical trend in the loss of these resources as artifacts of cultural significance and as objects of research importance. Despite the implementation mitigation measures, the project has the potential to result in a significant and unavoidable impact on cultural resources. For these reasons, the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with cultural resources, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

**Air Quality:** Probably future projects will 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 PM$_{10}$. When taken in total with other projects in the region, the project’s construction-related emissions was considered significant and unavoidable cumulatively considerable. For these reasons, the project and related projects would result in cumulatively considerable (i.e., significant) impacts associated with temporary and short-term air quality impacts (ozone and PM$_{10}$), and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

In comparison to criteria air pollutants, such as ozone and PM$_{10}$, carbon dioxide ($\text{CO}_2$) emissions persist in the atmosphere for a much longer period of time. Greenhouse gas (GHG) emissions generated by the proposed project would predominantly be in the form of $\text{CO}_2$. Project construction would result in a net increase in emissions to occur over a period of 3 years (2008–2010), despite the implementation of mitigation measures. While any increase in GHG emissions would add to the quantity of emissions that would contribute to global climate change, it is noteworthy that emissions associated with the proposed project occur over a finite period of time (3 years), as opposed to operational emissions, which would occur over the lifetime of a project. SAFCA determined that the project’s incremental contribution to climate change from construction emissions would be significant and unavoidable. For these reasons, the project and related projects would result in cumulatively considerable (i.e., significant) GHG impact and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

**Noise:** The project would have a temporary significant effect on noise levels experienced by the occupants of residences that are near sites of construction activity or haul routes for construction traffic. In some locations along the Sacramento River east levee, construction work could take place simultaneously as part of the proposed project on the landside of the Sacramento River east levee and/or the west end of the NCC and on the waterside of the levee as part of SAFCA’s bank protection project. These two projects, if constructed in the same locations during the same time periods, have the potential to cumulatively affect noise levels at residences on the waterside of the levee. SAFCA found that residents in these locations could be exposed simultaneously to increased noise levels from levee improvements on the landside of the levee and bank protection activities on the waterside, including during noise-sensitive hours. No feasible mitigation measures are available. For these reasons, the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with noise, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

**Visual Resources:** The project would include the removal of trees, other vegetation, and structures from the landside of the Sacramento River east levee within the footprint of the adjacent levee and berms, may include the removal of some vegetation and structural encroachments from the waterside of the Sacramento River east levee as part of encroachment removal actions, and would include the removal of trees from areas along the waterside of the NCC south levee. These changes would contribute to the substantial degradation of scenic resources in Natomas that are expected to result with various reasonably foreseeable development projects and expansion of Airport facilities. Although the 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, the contributions of the project to changes in the visual character and scenic resources of the Natomas Basin in
the near term, before the new plantings become well established, would be cumulatively considerable. This impact, in the near term, would be significant and unavoidable. For these reasons, the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with the degradation of visual resources, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

5.1.3.3 Environmental Impact Statement for 408 Permission and 404 Permit to Sacramento Area Flood Control Agency for the Natomas Levee Improvement Project (USACE 2008)

The environmental effects from SAFCA’s Phase 2 Project were analyzed in an EIS, for which USACE issued a record of decision (ROD) in January 2009.

Project Impacts that Would Not Be Cumulatively Considerable

For the following resource areas, USACE found that implementation of the NLIP, including the Phase 4a Project, would not result in making a cumulatively considerable contribution to a significant cumulative impact because the effects of the proposed project would not be added to the effects of other projects (i.e., no cumulative impact is expected to occur), or because the contribution of the project would not result in a cumulatively considerable contribution to a significant cumulative impact:

► Geology and Soils: Grading and other earthmoving activities could result in temporary, localized soil erosion and topsoil loss. These effects would be site specific, particularly with implementation of construction BMPs and any residual effects are not expected to be additive with the effects of any other activities. USACE determined that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Local Drainage: The widening of levees along the Sacramento River east levee, associated modification of irrigation and drainage infrastructure, and borrow activities on large parcels could interfere with the functioning of drainage systems and alter surface drainage. Project design would incorporate measures to prevent a significant drainage disruption or alteration in runoff patterns, and any temporary effects would be limited to the vicinity of the individual disturbance sites. Therefore, USACE determined that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Water Quality and Fish and Aquatic Habitat: The project would have the potential to degrade water quality and fish habitat by releasing soil and construction materials into directly into water bodies or through runoff. Implementation of BMPs and a storm water pollution prevention plan would ensure that these impacts are less than significant and would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Groundwater: USACE found that Phase 2 improvements would not have a significant effect on groundwater; however, the Phase 3, 4a, and 4b Projects have the potential to result in significant impacts on groundwater recharge. USACE further found that it would be unlikely that other projects described above would substantially adversely affect groundwater recharge, although as lands are converted from agricultural use to developed uses, some reduction in groundwater recharge from deep percolation of irrigation water can be expected. Mitigation measures require SAFCA to remediate direct and significant cumulative effects; therefore, this impact would not result in a cumulatively considerable contribution to a significant cumulative impact.

► Sensitive Aquatic Habitats: The project would include excavation and the placement of fill in sensitive aquatic habitats, resulting in both temporary and permanent effects. With the exception of TNBC-managed
lands and Airport mitigation sites that have been developed in the last decade, the overall trend in wetlands and other aquatic habitats within the Natomas Basin is a reduction in acreage and habitat values. Because the project would include the creation of acreages of waters of the United States that are expected to more than offset the filling and dewatering of waters of the United States included in the project, and because new jurisdictional habitats would be created and managed in a manner that minimizes maintenance disturbance and provides the essential functions of the habitats that would be lost, USACE determined that overall effects of the project would be beneficial. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Terrestrial Biological Resources:** Implementation of the project has the potential to contribute to the loss or degradation of sensitive habitats and to adversely affect special-status terrestrial species (special-status plants, valley elderberry longhorn beetle, giant garter snake, Swainson’s hawk, burrowing owl, and others). SAFCA determined that implementation of project components and mitigation measure would similarly ensure that potential adverse effects on other special-status species and on sensitive habitats are reduced to a less-than-significant level. Therefore, USACE determined that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Paleontological Resources:** Earthmoving activities could damage unknown unique paleontological resources, but potential damage would be limited by mitigation and would be limited to individual resources in discrete locations. USACE determined that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Transportation and Circulation:** Effects of construction activities on emergency access would be site-specific, intermittent, and temporary, and are not expected to be cumulatively considerable. The proposed construction activities would temporarily increase traffic levels on some local and regional roadways, but the majority of truck trips would take place off of public roads. In general, the temporary traffic increases associated with the proposed action would be limited to specific roadways. There are no other anticipated projects in the vicinity of the project that are likely to compound the significant temporary traffic effects of the project. Because of the limited potential for the traffic associated with the project to combine with increased traffic from other future projects, and because of the short-term, intermittent nature of any effects, USACE determined that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Noise:** The project would have a significant effect on noise levels experienced by the occupants of residences that are near sites of construction activity or haul routes for construction traffic. However, there are no other known projects in the vicinity of proposed project activity (borrow sites, rural roadways, and levee and canal construction areas) that would generate noise levels noticeably above ambient noise levels, which are generated by sources that include aircraft operations, truck traffic on area roadways, and agricultural activity. Therefore, the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Recreation:** Effects of the proposed project on recreational uses would be limited to potential disturbance of access to facilities in the western part of the Natomas Basin during construction, potential temporary degradation in the quality of recreational experiences as a result of construction activity and noise, and potential removal of land at the City of Sacramento’s undeveloped Costa Park site from future recreational use. USACE determined that the construction effects and access restrictions or degradation of the quality of recreational experiences would be temporary and therefore not cumulatively considerable. Potential encroachment on the Costa Park site would be a localized effect that would be offset through compensation in the form of payment or land. USACE determined there would be USACE determined that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.
► **Utilities and Service Systems:** Construction may damage irrigation systems and public utility infrastructure, resulting in temporary disruptions to service. Coordination with irrigation system users and consultation with service providers and implementation of appropriate protection measures would minimize the possibility that any significant effect would occur. Any such incidents would be isolated and would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Hazardous Materials:** Mitigation would be implemented to minimize the potential for exposure of people or the environment to hazardous materials encountered during construction activity or to fire hazards. If hazardous materials are encountered or a fire outbreak occurs, the effects would be localized and would not be expected to be additive with the effects of other projects. USACE determined that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

► **Hazards Related to Airport Operations:** The potential for night lighting of project areas to affect aircraft operations is a function of the location of construction areas in relation to the Airport Critical Zone and the runway approaches. Potential effects would be reduced through lighting restrictions and coordination with the Sacramento County Airport System (SCAS). The project has the possibility of causing increased bird strikes resulting from broad changes to managed land cover types in or near the Airport Critical Zone. There are no other known projects that would affect lands within the Airport Critical Zone. USACE found that the project would not result in a cumulatively considerable contribution to a significant cumulative impact.

**Project Impacts that Would Be Cumulatively Considerable**

As identified in the Phase 2 EIS (USACE 2008), the NLIP (referred to below as “the project”) would result in a cumulatively considerable contribution to significant cumulative impacts for the following resource areas:

► **Agricultural Resources:** Implementation of the project would involve the conversion of large acreages of Important Farmland (Prime Farmland and Farmland of Statewide Importance) to managed marsh and managed grassland at borrow sites, and would entail the conversion of portions of agricultural parcels to nonagricultural uses at levee toe widening, berm, and new canal alignment locations. The proposed project would result in the conversion of agricultural land to non-agricultural uses and, in combination with the conversions of Important Farmland in the Natomas Basin associated with past, current, and probable future projects. For these reasons, USACE determine that the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with agricultural land conversion, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

► **Cultural Resources:** Prehistoric human habitation sites are common in riverbank and floodplain areas, and burial sites are often encountered in the course of ground-disturbing activities. It is likely that known or unknown archaeological resources could be disturbed and cultural resources damaged or destroyed during construction activities for the project. Losses of a unique archaeological resource could occur where excavations encounter archaeological deposits that cannot be removed or recovered (e.g., under levees), or where recovery would not be sufficient to prevent the loss of significance of the cultural materials. Historic resources could also be damaged or require removal from areas near flood damage reduction facilities under the proposed project. If these resources would be eligible for National Register of Historic Places (NRHP) listing, their modification or destruction would be considered significant. Although mitigation would be implemented to reduce effects on potentially significant cultural resources, adverse effects, particularly on archaeological resources, may still occur. Losses of archaeological resources would add to a historical trend in the loss of these resources as artifacts of cultural significance and as objects of research importance. For these reasons, despite the implementation of mitigation measures, USACE determined that the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with cultural resources, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.
Air Quality: Future projects will contribute to air pollutant emissions in Sutter and Sacramento Counties and to the nonattainment status of the FRAQMD and the SMAQMD for ozone and respirable particulate matter 10 micrometers or less (PM$_{10}$). The project would cause an impact to air quality through construction emissions. For these reasons, USACE determined that the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with temporary with short-term construction-related ozone and PM$_{10}$ emissions, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

In comparison to criteria air pollutants, such as ozone and PM$_{10}$, CO$_2$ emissions persist in the atmosphere for a much longer period of time. GHG emissions generated by the proposed project would predominantly be in the form of CO$_2$. Project construction would result in a net increase in emissions to occur over a period of 3 years (2008–2010), despite the implementation of mitigation measure. Because of the intensity and duration of construction activities, and the lack of available mitigation measures to abate GHG emissions from heavy-duty construction equipment exhaust and on-road hauling emissions, the project’s construction emissions would be significant and unavoidable with respect to climate change. For these reasons, USACE determined that the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with GHGs, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

Visual Resources: The project would include the removal of trees, other vegetation, and structures from the landside of the Sacramento River east levee within the footprint of the adjacent setback levee and berms, may include the removal of some vegetation and structural encroachments from the waterside of the Sacramento River east levee as part of encroachment removal actions, and would include the removal of trees from areas along the waterside of the NCC south levee. The additional levee and bank protection improvements needed to achieve a 200-year level of flood damage reduction in the Natomas Basin along with SAFCA’s proposed levee integrity program would also require the removal of vegetation and other features that currently add to the rural and riverine character of views in the area. These changes would contribute to the substantial degradation of scenic resources in Natomas that are expected to result with various development projects and expansion of Airport facilities. Although the 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 several years to become well established. For these reasons, USACE determined that the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with changes in visual character and scenic resources, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact in the Natomas Basin in the near term.

5.1.3.4 Supplement to the Environmental Impact Report on the Natomas Levee Improvement Program, Landside Improvements Project—Phase 2 Project (SAFCA 2009)

After the November 2007 certification of the Phase 2 EIR, SAFCA made minor modifications to the design of the Phase 2 Project. The Phase 2 SEIR (SAFCA 2009) was prepared by SAFCA to evaluate these modifications; the SAFCA Board of Directors certified the SEIR in January 2009, at which time the Board also approved the modifications to the Phase 2 Project.

No new cumulative impacts were identified in the Phase 2 SEIR.
5.1.3.5 DRAFT ENVIRONMENTAL IMPACT STATEMENT/DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE NATOMAS LEVEE IMPROVEMENT PROGRAM PHASE 3 LANDSIDE IMPROVEMENT PROJECT (USACE AND SAFCA 2009)

The environmental effects from SAFCA’s Phase 3 Project were analyzed in an EIS/EIR. Two action alternatives were addressed: the Proposed Action (adjacent levee) and the Levee-Raise-in-Place Alternative.

Cumulative Impact Analysis: Project Impacts That Would Not Be Cumulatively Considerable

For the following resource areas, USACE and SAFCA found that implementation of the NLIP, including the Phase 4a Project, would not result in making a cumulatively considerable contribution to a significant cumulative impact because the effects of the project would not be added to the effects of other projects (i.e., no cumulative impact is expected to occur), or because the contribution of the project would not result in a cumulatively considerable contribution to a significant cumulative impact:

► **Geology and Soils:** Grading and other earthmoving activities could result in temporary, localized soil erosion and topsoil loss. These site-specific impacts would be less than significant, with implementation of construction BMPs, and any residual impacts are not expected to be additive with the effects of any other activities. USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

► **Hydrology and Hydraulics (Excluding Groundwater):** The project would not significantly alter water surface elevations in the project area or in the larger SRFCP, or contribute cumulatively to any such alteration. The widening of levees along the Sacramento River east levee, associated modification of irrigation and drainage infrastructure, and borrow activities on large parcels could interfere with the functioning of drainage systems and alter surface drainage. Project design would incorporate measures to prevent a significant drainage disruption or alteration in runoff patterns and any temporary impacts would be limited to the vicinity of the individual disturbance sites. Each related project that would discharge stormwater runoff would also be required to comply with NPDES discharge permits from the Central Valley RWQCB, which are designed to prevent significant water quality-related impacts. Therefore, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

► **Groundwater:** The impacts of the project include reduction in irrigated lands covered by the footprint of the proposed levee improvements, increase in recharge from the proposed canal improvements, and changes in land use and irrigation practices following excavation of soil and reclamation of the potential borrow sites. Overall, the project would have a small positive impact on groundwater supplies in the Natomas Basin and a small negative impact on groundwater east of the Natomas Basin based on existing conditions. There would be a small positive change in groundwater storage in the Natomas Basin with the project. Overall, the cumulative impact of the project on future groundwater conditions is predicted to be negligible. Therefore, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

► **Sensitive Aquatic Habitats:** The project would include excavation and the placement of fill in sensitive aquatic habitats, resulting in both temporary and permanent effects. With the exception of TNBC-managed lands and Airport mitigation sites that have been developed in the last decade, the overall trend in wetlands and other aquatic habitats within the Natomas Basin is a reduction in acreage and habitat values. Because the project would include the creation of ares of waters of the United States that are expected to more than offset the filling and dewatering of waters of the United States included in the project, and because new jurisdictional habitats would be created and managed in a manner that minimizes maintenance disturbance and provides the essential functions of the habitats that would be lost, USACE and SAFCA determined that
overall effects of the project on sensitive aquatic habitats would be beneficial. Therefore, neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

- **Paleontological Resources:** Earthmoving activities could damage unknown unique paleontological resources, but potential damage would be limited by implementation of mitigation measures, and would be limited to individual resources in discrete locations. Because of the low probability that any project would encounter unique, scientifically-important fossils, and the benefits that would occur from recovery and further study of those fossils if encountered, development of the related projects and other development in the region are not considered to result in a cumulatively considerable impact related to paleontological resources. Therefore, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

- **Transportation and Circulation:** Impacts of construction activities on emergency access would be site-specific, intermittent, and temporary, and are not expected to be cumulatively considerable. The proposed construction activities would temporarily increase traffic levels on some local and regional roadways, but the majority of truck trips would take place off of public roads. There are no other anticipated projects in the vicinity that are likely to compound the significant temporary traffic impacts of the project. Because of the limited potential for the traffic associated with the project to combine with increased traffic from other future projects, and because of the temporary, short-term, intermittent nature of any impacts, no cumulatively significant traffic impacts are expected to occur. Therefore, USACE and SAFAC determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

- **Noise:** Both action alternatives 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. A substantial number of residences are located adjacent to the NEMDC where cutoff walls would be installed. However, there are no other known projects in the vicinity of proposed project activity (borrow sites, rural roadways, levee and canal construction areas) that would generate noise levels noticeably above ambient noise levels, which are generated by sources that include aircraft operations, truck traffic on area roadways, and agricultural activity. Therefore, USACE and SAFCA determined that neither action alternative is expected to contribute to any significant cumulative noise impact. This localized impact would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Recreation:** Impacts of the project on recreational uses would be limited to potential temporary disturbance of access to facilities on the western, eastern, and southern perimeter of the Natomas Basin during construction; potential temporary degradation in the quality of recreational experiences as a result of construction activity and noise; and damage to recreational facilities on and adjacent to the NEMDC (Ueda Parkway bicycle trail and Gardenland Park). Reconstruction and restoration of damaged park facilities would be required. Because of the temporary nature of the construction impacts and the likelihood that any access restrictions or degradation of the quality of recreational experiences would last for less than one construction season in any location, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

- **Utilities and Service Systems:** Construction may damage irrigation systems and public utility infrastructure, resulting in temporary disruptions to service. Coordination with irrigation system users and consultation with service providers and implementation of appropriate protection measures would minimize the possibility that any significant effect would occur. Because utility and service system impacts would be fully mitigated on a project-by-project basis, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

- **Hazards and Hazardous Materials:** Mitigation would be implemented to minimize the potential for exposure of people or the environment to hazardous materials encountered during construction activity. If hazardous materials are encountered, the impacts would be localized and would not be expected to be additive.
with the impacts of other projects. Because hazards and hazardous materials impacts would occur on a project-specific basis rather than a cumulative basis, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

► **Airport Safety:** The potential for night lighting of project areas to affect aircraft operations is a function of the location of construction areas in relation to the Airport Critical Zone and the runway approaches. Potential impacts would be reduced through lighting restrictions and coordination with SCAS. The potential of the project to increase the possibility of collisions between aircraft and wildlife is a result of the project including broad changes to managed land cover types in or near the Airport Critical Zone. There are no other known projects that would affect lands within the Airport Critical Zone; therefore, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

► **Wildfire Hazards:** Mitigation would be implemented to minimize the potential for wildland fires. If a wildland fire outbreak occurs, the impacts would be localized and would not be expected to be additive with the impacts of other projects. Wildfire hazard impacts would occur on a project-specific basis rather than a cumulative basis, and any such incidents would be isolated; therefore, USACE and SAFCA determined that neither action alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

**Cumulative Impact Analysis: Project Impacts that Could be Cumulatively Considerable**

As identified in the Phase 3 DEIS/DEIR (USACE and SAFCA 2009), the NLIP (referred to below as “the project”) would result in a cumulatively considerable contribution to significant cumulative impacts for the following resource areas:

► **Agricultural Resources:** Implementation of the project would involve the conversion of large acreages of Important Farmland to managed marsh and managed grassland at borrow sites, and would entail the conversion of portions of agricultural parcels to nonagricultural uses for levee widening, seepage berms, and new canal alignment locations. The project would result in the conversion of agricultural land to non-agricultural uses in combination with the conversion of Important Farmland in the Natomas Basin associated with past, current, and probable future projects. For these reasons, USACE and SAFCA determined that both action alternatives and related projects would result in a cumulatively considerable impact associated with agricultural land conversion, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

► **Water Quality/Fisheries:** Construction activities have the potential to temporarily degrade water quality and fish habitat through the direct release of soil and construction materials into water bodies or the indirect release of contaminants into water bodies through runoff. Other projects, including the extensive array of development projects anticipated in the Natomas Basin and SAFCA’s bank protection projects, would have a similar potential to release materials into watercourses that support fish and other aquatic resources. In addition, vegetation that may provide SRA habitat would be removed under all alternatives. The implementation of BMPs and adherence to the conditions of a storm water pollution prevention plan would ensure that the requirements of the Clean Water Act and Porter-Cologne Water Quality Control Act are met. Given the temporary nature of any impacts and the protections afforded by regulatory programs under the Clean Water Act and Porter-Cologne Water Quality Control Act, any degradation of surface waters by construction activities of the Proposed Action and other projects would be minimized. Consequently, the potential impacts of project construction are not expected to make a considerable contribution to a significant cumulative impact on water quality, fish or fish habitat, or other aquatic species. Therefore, the Proposed Action would not result in a cumulatively considerable contribution to a significant cumulative impact.
Under the Levee Raise-in-Place Alternative, however, removal of woody vegetation from the waterside of the Sacramento River east levee to conform with USACE guidance regarding levee encroachments could have a substantial effect on SRA habitat along this levee. The loss of SRA habitat along the Sacramento River and reduction in input of woody debris associated with this removal could be a significant contribution to historical loss; it is unknown whether adequate mitigation could be provided to compensate for this impact. Given these circumstances, USACE and SAFCA determined that the Levee Raise-in-Place Alternative could result in a cumulatively considerable contribution to a significant cumulative impact.

**Terrestrial Biological Resources:** Implementation of the project has the potential to contribute to the loss or degradation of sensitive habitats and to adversely affect special-status terrestrial species (special-status plants, valley elderberry longhorn beetle, giant garter snake, northwestern pond turtle, Swainson’s hawk and other special-status birds, and burrowing owl). Implementation of the Proposed Action and mitigation measures would ensure that the impacts of the project are reduced or avoided in accordance with the requirements of the ESA and CESA and other regulatory programs that protect habitats. The project incorporates habitat creation, modification, and preservation components designed to offset the project’s adverse impacts. In addition, mitigation measures require further development of these habitat improvement components, including preparation and approval of management plans. Successful implementation of these mitigation measures would result in permanent protection and management of giant garter snake habitat, including creation and enhancement of connectivity between giant garter snake populations in the Natomas Basin, which is expected to result in an overall improvement of habitat conditions for giant garter snakes in the Basin. An increase in permanently protected foraging habitat for Swainson’s hawk, eventual increase in potential nesting habitat, and preservation of existing nest sites would also maintain or improve current conditions for this species in the Natomas Basin. Implementation of the Proposed Action and mitigation measures would similarly ensure that potential adverse impacts on other special-status species and on sensitive habitats would not result in a cumulatively considerable contribution to a significant cumulative impact on terrestrial biological resources.

Because of its inclusion of erosion control improvements at one site along the Sacramento River east levee, the Levee Raise-in-Place Alternative would involve removal of as much as 22.5 acres of riparian woodland on the waterside of the levee. 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 setback levee footprint on the landside of the levee under the Proposed Action, and it is uncertain whether adequate compensation could be developed for the extensive loss of mature waterside vegetation under this alternative. USACE and SAFCA determined that it is possible that the Levee Raise-in-Place Alternative could result in a potentially significant and unavoidable impact on terrestrial biological resources and that this impact would result in a cumulatively considerable contribution to a significant cumulative impact.

**Cultural Resources:** Prehistoric human habitation sites are common in riverbank and floodplain areas, and burial sites are often encountered in the course of ground-disturbing activities. It is likely that known or unknown archaeological resources could be disturbed and cultural resources damaged or destroyed during construction activities for the project. Losses of a unique archaeological resource could occur where excavations encounter archaeological deposits that cannot be removed or recovered (e.g., under levees), or where recovery would not be sufficient to prevent the loss of significance of the cultural materials. Historic resources could also be damaged or require removal from areas near flood damage reduction facilities under the proposed project. If these resources would be eligible for NRHP listing, their modification or destruction would be considered significant. Although mitigation would be implemented to reduce effects on potentially significant cultural resources, adverse effects, particularly on archaeological resources, may still occur. Losses of archaeological resources would add to a historical trend in the loss of these resources as artifacts of cultural significance and as objects of research importance. For these reasons, despite the implementation of
mitigation measures, USACE and SAFCA determined that both action alternatives would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

► **Air Quality:** Future projects will contribute to air pollutant emissions in Sutter and Sacramento Counties and to the nonattainment status of the FRAQMD and the SMAQMD for ozone and PM$_{10}$. The project would cause an impact to air quality through construction emissions. For these reasons, USACE determined that the project and related projects would result in cumulatively considerable (i.e., significant) impact associated with temporary with short-term construction-related ozone and PM$_{10}$ emissions, and the project would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

In comparison to criteria air pollutants, such as ozone and PM$_{10}$, CO$_2$ emissions persist in the atmosphere for a much longer period of time. GHG emissions generated by the proposed project would predominantly be in the form of CO$_2$. Project construction would result in a net increase in emissions to occur over a period of 3 years (2008–2010), despite the implementation of mitigation measure. Because of the intensity and duration of construction activities, and the lack of available mitigation measures to abate GHG emissions from heavy-duty construction equipment exhaust and on-road hauling emissions, the project’s construction emissions would be significant and unavoidable with respect to climate change. For these reasons, USACE and SAFCA determined that both action alternatives would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

► **Visual Resources:** Both action alternatives would include the removal of trees, other vegetation, and structures from the landside and/or waterside of the Sacramento River east levee within the footprint of the adjacent setback levee and berms, and may include the removal of some vegetation and structural encroachments from the waterside of the Sacramento River east levee as part of encroachment removal actions. 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. The 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; however, would require several years to become well established. Therefore, the Proposed Action would make a cumulatively significant contribution to changes in the visual character and scenic resources of the Natomas Basin in the near term. This impact would be significant and unavoidable in the near term, but less than significant in the long term and would not result in a cumulatively considerable contribution to a significant cumulative impact. The Levee-Raise-in-Place Alternative, however, would result in the loss of high-aesthetic-value woodlands along the waterside of the levee. Because the replacement plantings would be placed in the landside of the levee, this alternative would make a considerable contribution to a significant cumulative long-term impact associated with the loss of waterside woodlands.

### 5.1.4 SAFCA NATOMAS LEVEE IMPROVEMENT PROGRAM

The SAFCA NLIP includes:

► NLIP Natomas Cross Canal South Levee Phase 1 Improvements (Phase 1 Project),
► Post-2010 NLIP Seepage Remediation Projects,
► NLIP Bank Protection Project/Erosion Control Projects,
► Phase 2 Project,
► Phase 3 Project,
► Phase 4a Project (the subject of this FEIS), and
► Phase 4b Project (the subject of a future, separate EIS/EIR).
5.1.4.1 Potential Simultaneous Construction of the Phase 2, 3, and 4a Projects

The Phase 2 Project was analyzed in the Phase 2 EIR, Phase 2 SEIR, and Phase 2 EIS; and the Phase 3 Project was analyzed in the Phase 3 DEIS/DEIR (see Section 1.5.4.2, “Phase 2 Project,” and Section 1.5.4.3, “Phase 3 Project”). The environmental impacts of the Phase 2 and 3 Projects are summarized in Table 2-1 in Section 2.2.3, “No-Action Alternative—NLIP Phase 1, 2, and 3 Projects Implementation Only.” As noted in the above-referenced sections, the Phase 2 and 3 Projects 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. Because the Phase 2 EIS process was lengthier than originally anticipated, most of Phase 2 Project construction, which was originally planned for 2008, actually began in 2009 and would extend into 2010, which then could coincide with construction of the Phase 3 Project. Construction of the Phase 4a Project is expected to begin in 2010 and to be completed in 2011, assuming receipt of all required environmental clearances, permits, and approvals for project implementation. If permitted, the Phase 4a Project could be constructed at the same time as the Phase 3 Project and with up to 30% of the Phase 2 Project. Table 5-2 lists the impacts that overlapped construction would intensify in the event that the Phase 2 (up to 30%), 3, and 4a Projects are constructed simultaneously, and summarizes the effect of this overlap. The mitigation measures required for each impact identified in the environmental document for each project phase would be adopted by SAFCA and implemented. Quantitative analysis of potential air quality impacts resulting from this potential concurrent construction scenario is provided in Section 4.13, “Air Quality.”

<table>
<thead>
<tr>
<th>Phase 4a Project Impact and Significance Conclusion</th>
<th>Effect on Impact from Overlapping Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact 4.7-f: Impacts on Swainson’s Hawk and Other Special-Status Birds (Significant and Unavoidable)</td>
<td>Visual and noise disturbance of active nests could be increased where the Phase 3 and 4a Projects are adjacent to each other in Reaches 9B–10 of the Sacramento River east levee. This impact could also occur in the event that Phase 4a Project haul trucks would transport soil material from the Elkhorn Borrow Area south using the landside off-road haul route through the overlap between the Phase 3 and 4a Projects’ construction sites in Reaches 9B–10 of the Sacramento River east levee. The potential effects on nesting of special-status birds from overlapping construction are speculative in nature, but this possible occurrence would tend to intensify this impact, which would remain significant and unavoidable.</td>
</tr>
<tr>
<td>Impact 4.7-h: Impacts on Other Special-Status Wildlife Species, Including Burrowing Owl and Northwestern Pond Turtle (Less than Significant with Mitigation Incorporated)</td>
<td>Same as above for Impact 4.7-f.</td>
</tr>
<tr>
<td>Impact 4.10-a: Temporary Increase in Traffic on Local Roadways (Significant and Unavoidable)</td>
<td>Construction of the Phase 3 and 4a Projects may overlap in terms of use of borrow areas during the same construction season; however, the two project phases would use different haul routes and therefore would not add to each other’s traffic loads on public roads.</td>
</tr>
<tr>
<td>Impact 4.10-c: Temporary Disruption of Emergency Service Response Times and Access (Less than Significant with Mitigation Incorporated)</td>
<td>Overlap of the Phase 2, 3 and 4a Projects’ construction-related temporary road closures could result in temporary increases in traffic levels as traffic is detoured or slowed on some local roadways and SR 99/70 potentially interfering emergency access and evacuation routes. Temporary construction closures, including an approximately 8- to 12-week closure of one lane of Garden Highway would interfere with emergency access to these locations.</td>
</tr>
<tr>
<td>Phase 4a Project Impact (and Significance Conclusion)</td>
<td>Effect on Impact from Overlapping Construction</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Impact 4.11-a: Temporary Emissions of ROG, NOₓ, and PM₁₀ during Construction (Significant and Unavoidable)</td>
<td>The combination of construction equipment from the Phase 2, 3, and 4a Projects operating simultaneously would generate greater total emissions compared to the emissions generated by construction of a single Phase 2, 3, or 4a Project. See Section 4.11, “Air Quality,” for quantitative analysis. This impact would be significant and unavoidable.</td>
</tr>
<tr>
<td>Impact 4.11-b: General Conformity with the Applicable Air Quality Plan (Less than Significant with Mitigation Incorporated)</td>
<td>Construction-generated emissions were estimated under the worst-case assumption that the Phase 2, 3, and 4a Projects would be constructed in the same year. See Section 4.11, “Air Quality,” for quantitative analysis. This impact would be potentially significant.</td>
</tr>
<tr>
<td>Impact 4.12-c: Temporary, Short-term Exposure of Residents to Increased Traffic Noise Levels from Truck Hauling Associated With Borrow Activity (Significant Unavoidable Impacts for exterior residential noise standards)</td>
<td>Construction of the Phase 3 and 4a Projects may overlap in terms of use of borrow areas during the same construction season; however, the two project phases would use different haul routes and therefore would not add to each other’s traffic noise on public roads. In the event that Phase 4a Project haul trucks would transport soil material from the Elkhorn Borrow Area south using the landside off-road haul route through the overlap between the Phase 3 and 4a Projects’ construction sites in Reaches 9B–10, an increase in noise could result along the Sacramento River east levee. Sensitive noise receptors in this area, however, are located on the opposite side (waterside) of the levee, and would be shielded.</td>
</tr>
<tr>
<td>Impact 4.14-a Potential Temporary Disruption of Irrigation Water Supply and Impact 4.14-b Potential Disruption of Utility Service (Less than Significant with Mitigation Incorporated)</td>
<td>Detailed project design would include consultation with all known service providers to identify infrastructure locations and appropriate protection measures, and consultation would continue during construction to ensure avoidance/protection of facilities as construction proceeds to minimize service disruptions. The extent and intensity of project construction activities may affect service providers’ abilities to quickly repair damage and/or restore interrupted service.</td>
</tr>
<tr>
<td>Impact 4.15-d: Interference with an Adopted Emergency Evacuation Plan (Less than Significant with Mitigation Incorporated)</td>
<td>The Proposed Action and the RSLIP Alternative would increase traffic on local roadways associated with construction trips. In addition, temporary road closures associated with levee improvements could cause or contribute to temporary increases in traffic levels as traffic is detoured or slowed on some local roadways and SR 99/70. Increased traffic congestion could interfere with the use of main roadways for emergency evacuation routes. The extent and intensity of project construction activities may affect emergency service providers’ abilities maintain evacuation routes.</td>
</tr>
</tbody>
</table>

Notes: DFG = California Department of Fish and Game; ROG = reactive organic gases; RSLIP Alternative = Raise and Strengthen Levee in Place Alternative; NOₓ = oxides of nitrogen; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less

Source: Data compiled by AECOM in 2009
5.1.4.2 Phase 4a and 4b Projects

As described in Section 1.5.4, “Natomas Levee Improvement Program Environmental Documentation,” the environmental impacts of the Phase 4a and 4b Project improvements were evaluated at a program level in the Local Funding EIR (SAFCA 2007a), Phase 2 EIR (SAFCA 2007b), and Phase 2 EIS (USACE 2008). The Phase 4 Project consists of two sub-phases to provide the flexibility to construct the Phase 4 Project over more than one construction season. Both of the sub-phases have their own independent utility, can be accomplished with or without the other sub-phase, and provide additional flood risk reduction benefits to the Natomas Basin whether implemented individually or collectively. This FEIS provides a project-level evaluation of the direct, indirect, and cumulative effects of the Phase 4a Project. The environmental impacts of the Phase 4b Project will be evaluated in a separate, future EIS/EIR.

5.1.5 RELATED PROJECTS IN THE NATOMAS BASIN

Past, present, and probable future projects, as described in the Local Funding EIR (also addresses Phase 1 Project), Phase 2 EIR, and Phase 2 EIS, are those projects that have already been constructed, are currently under construction, or are in various stages of planning but that have yet to initiate construction. Some of these projects are planned to be under construction during the period in which the Phase 4a Project would be under construction (anticipated 2010–2011), while others are expected to be developed after 2011. These projects are organized into the following five categories, as in the previous environmental documents:

► SAFCA Natomas Levee Improvement Program elements,
► other flood damage reduction system improvements,
► Sacramento International Airport Master Plan,
► development projects, and
► utility infrastructure projects.

The related projects included in the previous documents are listed below by category with their current (as of June 2009) approval/construction status. Since preparation of the earlier documents, a few additional related projects have become reasonably foreseeable. Those new projects are described in detail below. Those projects in which there have been no substantial changes are only listed.

5.1.5.1 SAFCA Natomas Levee Improvement Program

The elements of the SAFCA NLIP are listed above under Section 5.1.4.

5.1.5.2 Other Flood Damage Reduction System Improvements

Other flood damage reduction system improvement projects previously addressed are:

► SAFCA Levee Integrity Program: As part of its long-term program to improve the Natomas Basin levee system, SAFCA expects to continue waterside and landside levee strengthening efforts, including increasing bank protection, levee armoring, levee toe stabilization, and flattening of landside levee slopes. Specific construction activities are not yet planned, designed, or funded, and their timing is not known.

► California Department of Water Resources/USACE Repairs to Critical Erosion Sites: On February 24, 2006, Governor Arnold Schwarzenegger declared a state of emergency for California’s levee system. Soon after, he signed Executive Order S-01-06, directing the California Department of Water Resources to identify and repair eroded levee sites on the State/Federal levee system to prevent catastrophic flooding and loss of life. To date, nearly 250 levee repair sites have been identified, and repairs to more than 100 of the most critical sites have been completed. Two of these sites are along the bank of the Sacramento River east levee between the NCC and...
the American River. Rock toe protection has been installed at these sites. These improvements do not overlap temporally with construction for the Proposed Action and alternatives under consideration.

- SCAS Management of Land Acquired via the SAFCA/SCAS Land Exchange: As noted in Section 2.3.9, “Land Exchange Between Sacramento Area Flood Control Agency and Sacramento County Airport System,” SAFCA and SCAS would carry out a land exchange as part of the Phase 4a Project that would support expansion of Airport bufferlands along the eastern edge of the proposed new Elkhorn Irrigation Canal and provide SAFCA additional habitat mitigation land along the upper portion of the Sacramento River east levee outside of the 10,000 foot Airport Critical Zone. This exchange would involve SAFCA’s acquisition of three SCAS properties (totaling approximately 68 acres) on each side of SAFCA’s Lausevic property in Reach 4A of the Sacramento River east levee. In exchange, SCAS would acquire the remainder of the Horangic and Binford-DeYoung properties (totaling approximately 45 acres and located within the 10,000 foot Airport Critical Zone) that would not be developed as part of the Phase 2 and 3 Projects. SCAS would manage these properties in accordance with FAA AC 150/5200-33B, Hazardous Wildlife Attractants on or Near Airports (FAA 2007). Any changes in land use required to comply with AC 150/5200-33B that may affect agricultural resources or habitat would be addressed by SCAS through future, separate environmental review.

5.1.5.3 Sacramento International Airport Master Plan

The Sacramento International Airport Master Plan (SCAS 2007) is an adopted plan; phases previously addressed in the documents listed in Section 5.1.3 are:

- SMF Master Plan Phase 1 (2007–2013) (currently under construction),
- SMF Master Plan Phase 2 (2014–2020), and
- SMF Master Plan Phase 4a (After 2020).

5.1.5.3 Development Projects

The following development projects were previously addressed in the documents listed in Section 5.1.3:

- Camino Norte Project (annexation hearing anticipated December 2010),
- Greenbrair (annexation completed May 2008),
- Sutter Pointe Specific Plan (EIR certified and specific plan adopted June 2009), and
- Metro Airpark Specific Plan (approved plan).

The following development projects that were not previously addressed include:

- Natomas Panhandle Annexation: The City of Sacramento is currently processing a proposal to annex a strip of land (approximately 595 acres) located adjacent to the eastern edge of the NNCP area. Specifically, the area is located north of Del Paso Road, south of Elkhorn Boulevard, west of East Levee Road and Sorento Road, and east of the North Natomas Community Plan area. This area is proposed to be developed as a Planned Unit Development with a variety of low-, medium-, and high-density residential uses (total of 3,075 residential units), commercial uses, an elementary school, a middle/high school, and recreation and park spaces. Streets, water and sewer lines, and drainage facilities would be installed as part of the proposed development. The annexation hearing for this project is anticipated in summer 2010.

- West Lakeside: As detailed in the Memorandum of Understanding for the Natomas Joint Vision, the City of Sacramento has been identified as the appropriate agent for planning new growth in Natomas (City of Sacramento and County of Sacramento 2002). An application for development within the Joint Vision area is on file for the West Lakeside project, but there has been no recent activity on the application. The Natomas Unified School District is currently proposing a high school on the site. No other applications for the Joint...
Vision area have been filed and its future development potential is in the early consideration stage by the City of Sacramento and Sacramento County.

5.1.5.4 Utility Infrastructure Projects

The following utility infrastructure projects were previously addressed in the documents listed in Section 5.1.3:

- American Basin Fish Screen Habitat Improvement Project (ROD issued April 2009),
- Western Area Power Administration Transmission Line/Sacramento Area Voltage Support Project (in environmental review),
- Placer Parkway Corridor Preservation Project (implementation anticipated by 2020),
- Downtown-Natomas-Airport Light Rail Transportation Project (environmental review complete for first segment, construction anticipated to commence in late summer 2009 and project to be operational by late 2010),
- Sacramento Municipal Utility District Power Line–Elkhorn Substation Capacity Expansion Project (in construction),
- Sacramento River Water Reliability Study (ongoing), and
- Upper (anticipated to be completed in 2010) and Lower Northwest Interceptor Projects (completed).

5.1.6 Projects Requiring USACE 33 United States Code 408 Authorization

As described previously in Chapter 1.0, “Introduction and Statement of Purpose and Need,” to implement the Proposed Action, SAFCA is requesting permission from USACE pursuant to Section 14 of the Rivers and Harbors Act of 1899 (Title 33 of the United States Code, Section 408 [33 USC 408]), hereinafter referred to as “Section 408,” to alter a Federal project levee. There are other projects in the Sacramento and San Joaquin River systems where USACE has completed Section 408 authorizations, is currently processing requests for Section 408 authorizations, or expects to receive requests for Section 408 authorizations in the near future. These projects are listed below in Table 5-3.

5.1.7 Cumulative Impact Analysis: Project Impacts that Would Not Be Cumulatively Considerable

This section describes cumulative effects of all past, present, and probable future projects in relation to SAFCA’s Phase 4a Project that were found not to be cumulatively considerable. For the following resource areas, the Proposed Action and the RSLIP Alternative would not be expected to make a cumulatively considerable contribution to an impact because it is expected that the project impacts would not be added to the impacts of other projects (i.e., no cumulative impact is expected to occur), or because the proposed project’s contribution to any potential cumulative impact would be isolated or very minor and not cumulatively considerable.

- Geology, Soils, and Mineral Resources: Grading and other earthmoving activities associated with the Proposed Action and the RSLIP Alternative could result in temporary, localized soil erosion and topsoil loss. These site-specific impacts would be less-than-significant, with implementation of construction BMPs (Mitigation Measure 4.4-a[1]), and any residual impacts are not expected to be additive with the effects of any
### Table 5-3
Other Section 408 Projects

<table>
<thead>
<tr>
<th>Flood Damage Reduction Project or System</th>
<th>Project Title</th>
<th>Lead Agency/Agencies</th>
<th>Status of Section 408 Request</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Previously Approved Section 408 Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Feather River Segment 1 and 3 Improvements</td>
<td>Three Rivers Levee Improvement Authority</td>
<td>Approved</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Feather River Segment 2 Improvements</td>
<td>Three Rivers Levee Improvement Authority</td>
<td>Approved</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Natomas Cross Canal and Sacramento River modifications – Phase 2 Project</td>
<td>SAFCA</td>
<td>Approved</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Feather River Levee Setback at Star Bend</td>
<td>Levee District 1 of Sutter County</td>
<td>Approved</td>
</tr>
<tr>
<td><strong>Ongoing Section 408 Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Natomas Levee Improvement Program – Phase 3 Project</td>
<td>SAFCA</td>
<td>Decision anticipated early 2010</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Natomas Levee Improvement Program – Phase 4a Project (evaluated in this FEIS)</td>
<td>SAFCA</td>
<td>Decision anticipated 2010</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Natomas Levee Improvement Program – Phase 4b Project</td>
<td>SAFCA</td>
<td>Decision anticipated 2010</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>River Islands</td>
<td>Califía, LLC</td>
<td>Decision anticipated 2010</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>2010 Improvements</td>
<td>West Sacramento Flood Control Agency</td>
<td>Decision anticipated spring 2010</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>2011 Improvements</td>
<td>West Sacramento Flood Control Agency</td>
<td>Decision anticipated winter 2011</td>
</tr>
<tr>
<td><strong>Anticipated Future Section 408 Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Joaquin River Flood Control System</td>
<td>Levee Seepage Area Project</td>
<td>Reclamation District 17</td>
<td>Decision anticipated 2011</td>
</tr>
<tr>
<td>San Joaquin River Flood Control System</td>
<td>Urban Protection Project</td>
<td>San Joaquin Area Flood Control Agency</td>
<td>Decision anticipated 2011</td>
</tr>
<tr>
<td>Sacramento River Flood Control Project</td>
<td>Bay Delta Conservation Plan</td>
<td>California Department of Water Resources</td>
<td>Decision anticipated 2011</td>
</tr>
</tbody>
</table>

Source: Data provided by USACE in 2009 and compiled by AECOM in 2009

Other activities. Each project would implement construction BMPs. Therefore, implementation of the proposed project and related projects would not result in a cumulatively considerable contribution to a significant cumulative impact on geology and soils because the impact would be temporary and soil erosion and loss of topsoil would be localized. Most of the Natomas Basin has been designated MRZ-1, where it has been determined that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence (City of Sacramento 2009). Some small MRZ-3-designated zones, where the significance of mineral deposits in that area cannot be evaluated from existing data, are located in the northwestern and southeastern parts of the Basin. One of these designated MRZ-3 zones includes a portion of the proposed Fisherman’s Lake Borrow Area, where SAFCA would excavate borrow material, potentially
removing economically valuable minerals, if they are present. However, given that the presence of economically valuable minerals in MRZ-3 zones is undetermined, the cumulative condition in the Natomas Basin is unknown. Therefore, the potential contribution of the Phase 4a Project to this impact is too speculative for meaningful consideration.

**Hydrology and Hydraulics (Groundwater is addressed below):** As discussed in Section 4.5, “Hydrology and Hydraulics,” and in Appendix C1, a hydraulic impact analysis was performed to analyze the cumulative impacts of combining the proposed project with federally authorized “early implementation” improvements to Folsom Dam and improvements to the Sacramento River Flood Control Project’s (SRFCP’s) urban levees aimed at providing urban areas outside the Natomas Basin with 200-year flood damage reduction. The project would not significantly alter water surface elevations in the project area or in the larger SRFCP, or contribute cumulatively to any such alteration. The widening of levees along the Sacramento River east levee, associated modification of irrigation and drainage infrastructure, and borrow activities on large parcels could interfere with the functioning of drainage systems and alter surface drainage. Project design would incorporate measures to prevent a significant drainage disruption or alteration in runoff patterns (Mitigation Measure 4.5-b), and any temporary impacts would be limited to the vicinity of the individual disturbance sites. Each related project that would discharge stormwater runoff would also be required to comply with NPDES discharge permits from the Central Valley RWQCB, which are designed to prevent significant water quality-related impacts. Therefore, implementation of the Proposed Action or the RSLIP Alternative and related projects would not result in a cumulatively considerable contribution to a significant cumulative impact.

**Groundwater:** The evaluation of potential groundwater impacts prepared by Luhdorff & Scalmanini Consulting Engineers (LSCE) investigated the impacts of the Proposed Action, in combination with existing and projected land and water use changes in the Natomas Basin and on the Basin’s groundwater budget (see Appendix C2 for the full report, which was prepared in May 2009). The impacts of the Proposed Action under the Phase 4a Project include a small net loss in deep percolation (16 acre feet per year [afy]) because of a reduction in irrigated lands as a result of conversion of irrigated agricultural lands to non-irrigated grasslands, and the relocation of Riverside Canal. The simulation conducted for the NLIP, however, shows that without the Proposed Action there is an overall reduction in groundwater storage of 4,971 afy in the Natomas Basin. With the Proposed Action, the decrease in groundwater storage would be slightly smaller (3,376 afy). Subsurface outflow from the Natomas Basin to the east would decrease slightly (from 21,738 afy to 20,731 afy) as a result of the Proposed Action. Overall, implementation of all phases of the NLIP would have a small positive impact on groundwater supplies in the Natomas Basin and a small negative impact on groundwater east of the Natomas Basin relative to existing conditions.

The results of the 2030 simulation without the Proposed Action show a positive change in groundwater storage in the Natomas Basin of 1,572 afy. With the Proposed Action, the results indicate that, on average, SAFCA’s construction activities would have a positive effect on groundwater levels in the Natomas Basin, resulting in an additional increase in storage of 348 afy (to 1,920 afy). The proposed cutoff walls would cause a small increase in groundwater outflow (from 1,200 to 1,238 afy). To evaluate impacts to groundwater levels from the addition of a proposed cutoff wall in Reach 4B of the Sacramento River east levee, which was not evaluated in the May 2009 report, LSCE prepared a supplemental technical memorandum (Appendix C4), which concluded that the groundwater impacts that would result from the addition of a cutoff wall in Reach 4B would not have a measurable effect on groundwater conditions in the area and would not change the conclusion reached in the original groundwater evaluation. LSCE also prepared a supplemental technical memorandum (Appendix C5) that evaluates impacts to groundwater levels from the construction and operation of 5 wells to provide a water supply to habitat mitigation sites. The analysis determined that the limited groundwater extraction from these 5 wells would not be sufficient to cause overdraft or affect Basinwide groundwater levels. Overall, the cumulative impact of the Proposed Action on future groundwater conditions is predicted to be negligible. The cumulative contribution of the RSLIP Alternative to cumulative impacts on groundwater would be similar to that of the Proposed Action. Therefore, neither the Proposed
Action nor the RSLIP Alternative would result in a cumulatively considerable contribution to a significant cumulative impact.

- **Sensitive Aquatic Habitats:** With the exception of TNBC-managed lands and Airport mitigation sites that have been developed in the last decade, the overall trend in wetlands and other aquatic habitats within the Natomas Basin is a reduction in acreage and habitat functions. As described in the NBHCP, approximately one-fourth to one-fifth of the 53,000-acre Basin contained areas of seasonal open water or riparian scrub historically, as indicated by 1908 mapping. Since 1914, land reclamation and reclamation facilities, canals, levees, and pumping stations have allowed over 80% of the Basin to be converted to agricultural production, with irregular small-scale topographic features of the earlier landscape having largely been eliminated by agriculture. As part of this conversion, the drainage pattern of the Basin was altered to collect runoff into canals, from which it is pumped into the surrounding canals and Sacramento River. Except on TNBC parcels and other mitigation lands, natural vegetation in the Basin is now primarily found along irrigation canals, drainage ditches, pastures, and uncultivated fields.

The Phase 4a Project Proposed Action would result in permanent impacts to less than approximately 19.76 acres and temporary impacts to 1 acre of wetlands and other waters of the United States. Proposed mitigation for these impacts includes the creation of at least 1 acre of irrigation/drainage canal or 1 acre of seasonal wetland for every acre that is lost and/or that irrigation/drainage function shall be replaced (Mitigation Measure 4.7-c). The mitigation ratio that is ultimately required will be determined by USACE through the Section 404 permitting process. Features planned in the Phase 4a Project (under both action alternatives) would provide aquatic habitat that has been designed to offset the effects described above. These features include the creation of approximately 15 acres of aquatic habitat resulting from construction of the relocated and extended Riverside Canal and creation of up to 100 acres of managed marsh in the vicinity of Fisherman’s Lake, much of which would meet the criteria for waters of the United States, including wetlands.

Overall, because the Proposed Action would include the creation of waters of the United States that are expected to be more extensive than those filled by the project, and because implementing this mitigation measure would ensure that new jurisdictional waters would be managed in a manner that minimizes maintenance disturbance and provides the essential functions of the habitats that would be lost, the Proposed Action, with implementation of Mitigation Measure 4.7-c, would be beneficial, and thus would not result in a cumulatively considerable contribution to a significant cumulative impact.

Impacts to waters of the United States under the RSLIP Alternative would be similar to the Proposed Action except that there would be erosion control improvements implemented along the river bank at the waterside toe of the Sacramento River east levee. This alternative would result in permanent impacts to less than approximately 28.35 acres and temporary impacts to 1 acre of wetlands and other waters of the United States. The proposed mitigation for these impacts would be the same as described for the Proposed Action. With implementation of Mitigation Measure 4.7-c, this alternative would be beneficial, and thus would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Paleontological Resources:** Under the Proposed Action and RSLIP Alternatives, earthmoving activities could damage unknown unique paleontological resources, but potential damage would be limited by implementation of Mitigation Measure 4.9-a, and would be limited to individual resources in discrete locations. Because of the low probability that any project would encounter unique, scientifically-important fossils, and the benefits that would occur from recovery and further study of those fossils if encountered, development of the related projects and other development in the region are not considered to result in a cumulatively considerable impact related to paleontological resources. Therefore, the Phase 4a Project and related projects would not result in a cumulatively considerable contribution to a significant cumulative impact.
Transportation and Circulation: Impacts of construction activities on emergency access would be site-specific, intermittent, and temporary, and are not expected to be cumulatively considerable. The proposed construction activities would temporarily increase traffic levels on some local and regional roadways, but the majority of haul truck trips would take place off of public roads. Temporary traffic increases associated with the Proposed Action—in addition to Phase 3 Project construction and up to 30% of Phase 2 Project construction that would also take place in 2010—would be limited to the roadways shown on Plate 2-7. There are no other anticipated projects in the vicinity that are likely to compound the significant temporary traffic impacts of the project. Because of the limited potential for the traffic associated with the project to combine with increased traffic from other future projects, and because of the temporary, short-term, intermittent nature of any impacts, no cumulatively significant traffic impacts are expected to occur. Therefore, the Proposed Action would not result in a cumulatively considerable contribution to a significant cumulative impact. For the same reasons as the Proposed Action, the RSLIP Alternative would not result in a cumulatively considerable contribution to a significant cumulative impact.

Recreation: No recreational facilities are present within the Phase 4a Project area; therefore, the Proposed Action and the RSLIP Alternative would not contribute to significant cumulative impacts on recreational facilities.

Light and Glare: The Proposed Action would involve nighttime construction lighting that would be clearly visible from nearby residences. Nighttime lighting related to 24/7 construction in particular could create a new source of substantial light or glare that would adversely affect nighttime views in the area. However, construction-related nighttime lighting would be localized and temporary and there are no other projects in the area that would contribute to a cumulative increase in light and glare. The Proposed Action would not make a considerable contribution to a significant cumulative impact. For the same reasons as the Proposed Action, the RSLIP Alternative would not result in a cumulatively considerable contribution to a significant cumulative impact.

Utilities and Service Systems: Construction activities may damage irrigation systems and public utility infrastructure, resulting in temporary disruptions to service. Coordination with irrigation system users and consultation with utility and service system providers and implementation of appropriate protection measures (Mitigation Measures 4.14-a and 4.14-b) would minimize the possibility that any significant effect would occur. Because utility and service system impacts would be fully mitigated on a project-by-project basis, implementation of either the Proposed Action or the RSLIP Alternative along with other related flood facility improvement projects would not result in a cumulatively considerable contribution to a significant cumulative impact.

Hazards and Hazardous Materials: Mitigation would be implemented to minimize the potential for exposure of people or the environment to hazardous materials encountered during construction activity (Mitigation Measure 4.15-b). If hazardous materials are encountered, the impacts would be localized and would not be expected to be additive with the impacts of other projects. Because hazards and hazardous materials impacts would occur on a project-specific basis rather than a cumulative basis, implementation of either the Proposed Action or the RSLIP Alternative along with other related projects would not result in a cumulatively considerable contribution to a significant cumulative impact.

Airport Safety: The potential for night lighting of project areas to affect aircraft operations is a function of the location of construction areas in relation to the Airport Critical Zone and the runway approaches. Potential impacts would be reduced through lighting restrictions and coordination with SCAS (Mitigation Measure 4.15-e). Neither the Proposed Action nor the RSLIP Alternative would result in changes to managed land cover types in or near the Airport Critical Zone; therefore, these alternatives would not increase attractive habitat for hazardous wildlife in the Airport Critical Zone. There are no other known projects that would affect lands within the Airport Critical Zone, therefore implementation of either the Proposed Action or the
RSLIP Alternative along with other related projects would not result in a cumulatively considerable contribution to a significant cumulative impact.

- **Wildfire Hazards:** Mitigation would be implemented to minimize the potential for wildland fires (Mitigation Measures 4.15-g). If a wildland fire outbreak occurs, the impacts would be localized and would not be expected to be additive with the impacts of other projects. Because wildfire hazard impacts would occur on a project-specific basis rather than a cumulative basis, and any such incidents would be isolated, therefore implementation of either the Proposed Action or the RSLIP Alternative along with other related projects would not result in a cumulatively considerable contribution to a significant cumulative impact.

### 5.1.8 **Cumulative Impact Analysis: Project Impacts that Could be Cumulatively Considerable**

The following subsections discuss the potential for the Proposed Action and the RSLIP Alternative to result in cumulatively considerable incremental contributions to the following cumulatively significant impacts:

- agricultural resources,
- water quality/fisheries,
- terrestrial biological resources,
- cultural resources,
- air quality,
- noise, and
- visual resources.

The contribution to cumulatively considerable impacts was made by considering all project components, proposed construction of such improvements, excavation of borrow from the sites listed in Table 2-10, use of roadways in the Basin, and temporary and permanent changes in land cover and vegetation.

### 5.1.8.1 **Agricultural Resources**

**Proposed Action**

As described in Section 4.2, “Agricultural Resources,” the estimated maximum total of Important Farmland that is expected to be permanently converted as a result of implementation of the Proposed Action under the Phase 4a Project would total 676 acres, for a total of approximately 1,350 acres for the entire NLIP.

The Phase 4b Project is expected to result in the conversion of some additional Important Farmland to non-agricultural uses in Reaches 16 of the Sacramento River east levee; however, lands adjacent to the levee in Reaches 17–20 are largely urbanized and are not classified as Important Farmland. Further, the land acquired by SACAS from SAFCA as part of the land exchange described in Section 5.1.5.2, above, would be managed by SCAS in accordance with FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports* (FAA 2007). Because agricultural crops tend to attract hazardous wildlife during some phase of production, the FAA recommends against the use of Airport property for agricultural production. Therefore, use of this land as Airport bufferlands would likely result in an incremental decrease (approximately 50–100 acres) in the amount of agriculture production in the Natomas Basin (Sacramento and Sutter Counties). Land in Sacramento County would likely be changed from row crop production to grassland or fallow agriculture (undeveloped land), and land in Sutter County would likely be converted from field crop to a grassland/woodland mix that provides nesting and foraging habitat for bird species.

The Natomas Basin has already experienced the conversion of a substantial area of agricultural land, much of it Prime Farmland and other categories of Important Farmland, to residential and commercial development. The
Natomas Basin is the focus of much of the growth planning in the Sacramento area, in both Sutter County and Sacramento County, and substantial losses of Important Farmland to urban development are expected to continue in this area. As noted in Section 3.2.2, “Agricultural Resources,” Important Farmland in the Natomas Basin totaled approximately 40,000 acres in 2006, the last year for which California farmland mapping data are available, representing 6% of the total of approximately 715,000 acres of Important Farmland mapped by the Farmland Mapping and Monitoring Program in Sutter and Sacramento Counties in 2006. Of this amount, approximately half is expected to be converted to developed uses and half maintained in agriculture or in a condition compatible with future agricultural use (i.e., undeveloped) within TNBC parcels, Airport north bufferlands, lands anticipated to be maintained in an undeveloped condition as part of the Joint Vision, and land managed by SAFCA. The loss of an additional approximately 20,000 acres in the Natomas Basin would continue an overall trend of net loss of Important Farmland that has been documented in Sutter and Sacramento Counties for each consecutive 2-year interval of mapping by the California Department of Conservation from 1992 through 2006. As described elsewhere in this FEIS, development of land in the Natomas Basin is consistent with regional land use planning efforts (see Section 5.2, “Growth Inducement”) which promote the concentration of urban growth within the borders of existing cities and their immediate adjacent areas, including the Natomas Basin specifically, and discourage both sprawling development and development expansion into existing nonurbanized floodplains that would result in greater regional conversion of agricultural land to nonagricultural uses. (See Section 5.2, “Growth Inducement”; Section 6.11, “Executive Order 11988, Floodplain Management”; and Section 6.14, “Farmland Protection Policy Act,” for more discussion of this issue.)

Nevertheless, the Proposed Action would result in the conversion of agricultural land to nonagricultural uses and, in combination with the conversions of Important Farmland in the Natomas Basin associated with past, current, and future projects, would result in cumulatively considerable (i.e., significant) impact associated with agricultural land conversion, and the Proposed Action would result in a cumulatively considerable incremental contribution to this cumulatively significant impact.

**Raise and Strengthen Levee in Place Alternative**

The RSLIP Alternative has a narrower landside footprint than does the Proposed Action. However, because of the increased requirement for woodland habitat creation, the RSLIP Alternative would convert approximately 593 acres of Important Farmland to nonagricultural uses. The conversion of Important Farmland within the canal footprints and borrow sites would be similar to the conversion associated with the Proposed Action. Therefore, the contribution of the RSLIP Alternative to the cumulative loss of Important Farmlands, would be similar to the Proposed Action, and would result in cumulatively considerable (i.e., significant) incremental contribution to this cumulatively significant impact.

**5.1.8.2 Water Quality**

Construction activities have the potential to temporarily degrade water quality through the direct release of soil and construction materials into water bodies or the indirect release of contaminants into water bodies through runoff. Other projects in areas designated for development in adopted general plans in the Natomas Basin and SAFCA’s bank protection projects, would have a similar potential to release materials into waterways.

**Proposed Action**

The implementation of BMPs and adherence to the conditions of a storm water pollution prevention plan (Mitigation Measures 4.6-a and 4.6-b) would ensure that the requirements of the Clean Water Act and Porter-Cologne Water Quality Control Act are met. Given the temporary nature of any impacts and the protections afforded by regulatory programs under the Clean Water Act and Porter-Cologne Water Quality Control Act, any degradation of surface waters by construction activities of the Proposed Action and other projects would be minimized. Consequently, the potential impacts of project construction are not expected to make a considerable
contribution to a significant cumulative impact on water quality. In a similar fashion, other projects in the Natomas Basin would be required to implement similar measures to prevent adverse impacts to water quality.

**Raise and Strengthen Levee in Place Alternative**

This alternative differs from the Proposed Action primarily in the nature of proposed changes to the Sacramento River east levee which would be raised and widened in place. Unlike the Proposed Action, this alternative does not require construction of a new drainage system along Garden Highway in Reaches 10–11B of the Sacramento River east levee, or construction of an associated drainage swale with the potential to degrade surface water quality in the Sacramento River. Other project elements are the same under this alternative as the Proposed Action. Although construction activity under the RSLIP Alternative has the potential to temporarily degrade water quality through the direct release of soil and construction materials into water bodies or the indirect release of contaminants into water bodies through runoff, this alternative would be subject to Mitigation Measure 4.6-a. Implementation of this mitigation would reduce the impact for the RSLIP Alternative on water quality to a level that is less than significant. The RSLIP Alternative would not result in a cumulatively considerable contribution to a significant cumulative impact.

**5.1.8.3 Fisheries**

Construction activities have the potential to temporarily degrade water quality through the direct release of soil and construction materials into water bodies or the indirect release of contaminants into water bodies through runoff. Other projects, including the extensive array of development projects anticipated in the Natomas Basin and SAFCA’s bank protection projects, would have a similar potential to release materials into waterways that support fish and other aquatic resources. Potential sedimentation, increased turbidity, or the release and exposure of contaminants could adversely affect fish and aquatic habitats. In addition, vegetation that may provide SRA habitat would be removed to some extent under all alternatives. As noted in Section 3.7.2.1, under “Fisheries,” modifications of the channels bordering the Natomas Basin have resulted over time in homogenous, trapezoidal channels lacking in-stream structure with narrow and sparse bands of riparian vegetation that provide only limited SRA habitat functions and limited recruitment of large woody debris. Combined, these alterations have resulted in marginal habitat conditions that provide only limited habitat functions for most native fish species and other aquatic organisms.

**Proposed Action**

The implementation of BMPs and adherence to the conditions of a storm water pollution prevention plan (Mitigation Measures 4.6-a and 4.6-b) would ensure that the requirements of the Clean Water Act and Porter-Cologne Water Quality Control Act are met and degradation of surface waters by construction activities of the Proposed Action and other projects would be minimized. Consequently, the potential impacts of project construction are not expected to make a considerable contribution to a significant cumulative impact on habitats that support fish and other aquatic resources. In a similar fashion, other projects in the Natomas Basin would be required to implement similar measures to prevent adverse impacts to fisheries. Consequently, the Proposed Action would not result in a cumulatively considerable contribution to a significant cumulative impact.

**Raise and Strengthen Levee in Place Alternative**

Unlike the Proposed Action, this alternative does not require construction of a new drainage system along Garden Highway in Reaches 10–11B of the Sacramento River east levee, or construction of an associated drainage swale, with associated potential to degrade fish habitat in the Sacramento River. Other project elements are the same under this alternative as the Proposed Action. While construction activity under the RSLIP Alternative has the potential to temporarily degrade water quality and fish habitat through the direct release of soil and construction materials into water bodies or the indirect release of contaminants into water bodies through runoff, this alternative would be subject to Mitigation Measure 4.6-a. Implementation of this mitigation would reduce the
impact for the RSLIP Alternative on water quality to less than significant. This alternative, however, would have a greater impact on SRA due to the removal of 21 acres of waterside woodlands (discussed below). SAFCA’s bank protection project would incorporate features that would compensate for temporary impacts on SRA habitat and result in long-term increases in nearshore and SRA cover values relative to pre-project conditions, creating beneficial effects. However, this effort would not fully compensate for the temporary loss of SRA habitat functions for fish during construction and revegetation. Therefore, the RSLIP Alternative would result in cumulatively considerable contribution to a significant cumulative impact on fisheries resources.

5.1.8.2 TERRESTRIAL BIOLOGICAL RESOURCES

Implementation of the project has the potential to contribute to the loss or degradation of sensitive habitats and to adversely affect special-status terrestrial species (special-status plants, valley elderberry longhorn beetle, giant garter snake, northwestern pond turtle, Swainson’s hawk and other special-status birds, and burrowing owl). Potential impacts of the Proposed Action and the RSLIP Alternative related to wildlife would be associated with vegetation removal needed to clear the path for the Phase 4a Project, construction disturbances of wildlife and their habitats, as well as permanent loss of habitat for the affected species. These impacts could contribute to species declines and losses of habitat that have led to the need to protect these species under the Federal ESA and the CESA.

Proposed Action

As described above, the proposed land swap between SAFCA and the Airport could result in a change in the amount of bird foraging habitat in the Natomas Basin (Sacramento and Sutter Counties). Land in Sacramento County would likely be changed from row crop production to grassland or fallow agriculture (undeveloped land), thus resulting in an overall decrease in the quantity and quality of foraging habitat in the Basin. Land in Sutter County would likely be converted from field crop to a grassland/woodland mix, which would increase the nesting and foraging habitat for bird species. Although the details of the agreement have not yet been finalized and may not for some time, it is conceivable that the swap may result in a zero net loss of foraging habitat and an increase in nesting habitat for birds.

Proposed NCMWC projects, including the Sankey Diversion and Fish Screen Project, would also result in habitat and wildlife disturbances during construction. The Sankey Diversion would include permanent loss of habitat for some special-status species, including giant garter snake, but an appropriate habitat replacement and management plan is being developed in consultation with USFWS and DFG to provide adequate compensation for the loss. Despite construction-related adverse impacts from the fish screen project, the overall impact would be beneficial and habitat quality would improve and thus, would not result in a cumulatively considerable contribution to a significant cumulative impact.

The Airport Master Plan includes a number of components that are anticipated to result in adverse impacts on sensitive habitats and special-status species. The majority of these impacts would be associated with Phases 2 and 3 of the Airport Master Plan, which would not commence until 2014. Adverse impacts in all phases could include a combination of permanent habitat loss and construction-related impacts. There could also be impacts from expanded long-term operation of the Airport. SCAS has identified some habitat enhancement and protection measures that would be implemented to compensate for adverse impacts, and additional measures are anticipated to be identified as subsequent NEPA/CEQA evaluation and regulatory permitting is completed.

Significant adverse impacts on special-status species and sensitive habitats would be associated with the extensive future urban growth expected to occur in the Natomas Basin. This growth would continue to reduce the amount of habitat available to support populations of special-status species. Potential adverse impacts from future approved expansion within the Basin have been addressed through the development of the NBHCP, and successful implementation of the NBHCP would ensure that there is no overall adverse impact on special-status species from
Implementation of these projects. Similarly, an HCP is being implemented for the Metro Air Park Project. Additional urban expansion is being promoted through the Joint Vision, which would result in development and open space conservation within the Sacramento County portion of the Natomas Basin that was not covered in the NBHCP. Potential impacts on biological resources from implementation of this potential future development are at various stages of evaluation. Projects would be required to incorporate adequate impact avoidance and minimization measures and permanent habitat conservation to mitigate and compensate for the anticipated adverse impacts.

Implementation of the Proposed Action under the Phase 4a Project and mitigation measures in Section 4.7, “Biological Resources,” of this EIS/EIR would ensure that the impacts of the project are reduced or avoided in accordance with the requirements of the ESA and CESA and other regulatory programs that protect habitats, such as Section 404 of the Clean Water Act and Section 1602 of the California Fish and Game Code. As discussed in Chapter 2.0, “Alternatives,” the project incorporates habitat creation, modification, and preservation components designed to offset the project’s adverse impacts. In addition, mitigation measures require further development of these habitat improvement components, including preparation and approval of management plans. Successful implementation of these mitigation measures would result in permanent protection and management of giant garter snake habitat, including creation and enhancement of connectivity between giant garter snake populations in the Natomas Basin, expected to result in an overall improvement of conditions for giant garter snakes in the Basin. An increase in permanently protected foraging habitat for Swainson’s hawk, eventual increase in potential nesting habitat, and preservation of existing nest sites would also maintain or improve current conditions for this species in the Natomas Basin. Implementation of the Proposed Action and mitigation measures would similarly ensure that potential adverse impacts on other special-status species and sensitive habitats would not result in a cumulatively considerable contribution to a significant cumulative impact on terrestrial biological resources.

Successful implementation of the NBHCP depends on a number of assumptions that could be jeopardized by implementation of other projects and activities in the Basin, including the Proposed Action and the various cumulative projects. The Proposed Action has been designed to support achievement of the goals and objectives of the NBHCP, and implementation of Mitigation Measure 4.7-k would ensure that the Proposed Action does not jeopardize successful implementation of the NBHCP.

The Proposed Action would include minimization, avoidance, and compensation measures in accordance with the requirements of ESA, CESA, and other relevant regulatory requirements, as well as additional habitat protection and enhancement components. As a result of these measures, the Proposed Action would not contribute to a cumulatively significant impact on terrestrial biological resources, including special-status species.

**Raise and Strengthen Levee in Place Alternative**

Because of its inclusion of erosion control improvements at five sites along the Sacramento River east levee in Reaches 10–11B, and in order to comply with USACE encroachment guidance, the RSLIP Alternative would involve a slightly different set of impacts to terrestrial biological resources than the Proposed Action. The narrower landside levee footprint of the RSLIP Alternative would avoid some losses of woodland and grassland habitat that would be unavoidable under the Proposed Action. However, under the RSLIP Alternative, as much as 21 acres of riparian woodland on the waterside of the levee in Reaches 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 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 the requirements of ESA, CESA, 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. Therefore, it is possible that the RSLIP Alternative could result in a potentially significant and unavoidable impact on terrestrial biological resources, including special-status bird species for which the waterside trees provide important nesting habitat. This impact would result in a cumulatively considerable contribution to a significant cumulative impact.

5.1.8.3 CULTURAL RESOURCES

Proposed Action

Prehistoric human habitation sites are common in riverbank and floodplain areas, and burial sites are often encountered in the course of ground-disturbing activities. It is likely that known or unknown archaeological resources could be disturbed and cultural resources damaged or destroyed during construction activities for the Proposed Action. Losses of a unique archaeological resource could occur where excavations encounter archaeological deposits that cannot be removed or recovered (e.g., under levees), or where recovery would not be sufficient to prevent the loss of significance of the cultural materials. Historic resources could also be damaged or require removal from areas near flood damage reduction facilities under the Proposed Action. However, USACE and the SHPO have concurred that most identified historic resources lack significance that might make them eligible for listing on the NRHP or the California Register of Historic Resources. Although mitigation would be implemented to reduce impacts on potentially significant cultural resources, adverse impacts, particularly on prehistoric archaeological resources, may still occur. Losses of archaeological resources would add to a historical trend in the loss of these resources as artifacts of cultural significance and as objects of research importance. For these reasons, despite the implementation of Mitigation Measures 4.8-b, 4.8-c, and 4.8-d, the Proposed Action has the potential to result in a significant and unavoidable impact. Thus, the Proposed Action would result in a cumulatively considerable contribution to a significant cumulative impact.

Raise and Strengthen Levee in Place Alternative

Because the elements of the RSLIP Alternative would be the same as described for the Proposed Action except for the method of levee raising and rehabilitation, cumulative impacts associated with the RSLIP Alternative would be similar to that of the Proposed Action and, therefore, would result in a cumulatively considerable contribution to a significant cumulative impact.

5.1.8.4 AIR QUALITY

Proposed Action

Future projects will contribute to air pollutant emissions in Sutter and Sacramento Counties and to the nonattainment status of FRAQMD and SMAQMD for ozone and PM$_{10}$. The Proposed Action would cause a temporary impact on air quality through construction emissions. When taken in total with other projects in the region, this impact would be significant and unavoidable, and would result in a cumulatively considerable contribution to a significant cumulative impact on air quality in the region.

Currently, the California Air Resources Board (ARB), FRAQMD, or SMAQMD, have not identified a significance threshold for analyzing GHG emissions generated by a proposed project or a methodology for analyzing cumulative impacts related to global warming. Although the state of California has identified GHG reduction goals through adoption of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, the effect of GHG emissions as they relate to global climate change is inherently a cumulative impact issue. Although the emissions of one single project would not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulatively considerable contribution to a significant cumulative impact with respect to global climate change.
To meet AB 32 goals, California would need to generate less GHGs than current levels. It is recognized, however, that for most projects there is no simple metric available to determine if a single project would substantially increase or decrease overall GHG emission levels.

The primary objective of AB 32 is to reduce California’s contribution to global warming by reducing California’s total annual production of GHG emissions. The impact that GHG emissions have on global climate change does not depend on whether they were generated by stationary, mobile, or area sources or whether they were generated in one region or another. Thus, the net change in total GHG levels generated by a project or activity is the best metric for determining whether a project would contribute to global warming. In the case of the Proposed Action and the alternatives under consideration, if the size of the increase in emissions from the project is considered to be substantial, then the impact of the project would be cumulatively considerable.

In comparison to criteria air pollutants, such as ozone and PM_{10}, CO_{2} emissions persist in the atmosphere for a much longer period of time. GHG emissions generated by the Proposed Action would predominantly be in the form of CO_{2}. Project construction would result in a net increase in emissions to occur over a period of 3 years (2010–2012), despite the implementation of Mitigation Measure 4.11-a. While any increase in GHG emissions would add to the quantity of emissions that would contribute to global climate change, it is noteworthy that emissions associated with the Proposed Action occur over a finite period of time (3 years), as opposed to operational emissions, which would occur over the lifetime of a project. The project would have no net increase in operational GHG emissions. Nonetheless, because of the intensity and duration of construction activities, and the lack of available mitigation measures to abate GHG emissions from heavy-duty construction equipment exhaust and on-road hauling emissions, the project’s construction emissions would make an incremental contribution to climate change.

Previous GHG analyses conducted for the Phase 2 EIR (SAFCA 2007), Phase 2 EIS (USACE 2008), and Phase 3 DEIS/DEIR (USACE and SAFCA 2009) concluded that the project’s contribution to cumulative GHG impacts would be considerable and would be a significant and unavoidable cumulative impact (see Sections 5.1.3.2 and 5.1.3.3, above). The quantification methodologies and threshold concepts from the California Air Pollution Control Officers Association (CAPCOA) in the CEQA & Climate Change document (CAPCOA 2008), from the California Office of Planning and Research (OPR) in the Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions (OPR 2009), and from the California Air Resources Board (ARB) in the recently adopted AB32 Scoping Plan (ARB 2008a) and the Preliminary Draft Staff Proposal Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act (ARB 2008b), have allowed further refinement of the GHG analysis in this EIS/EIR. Using this guidance, it is possible to discuss the project’s emissions of GHG in a larger context.

As calculated in Appendix F, construction of the Phase 2, 3, and 4a Projects would generate approximately 12,159 tons (11,031 metric tons) of CO_{2} during 2010 associated with mobile equipment exhaust. CO_{2} emissions in subsequent years (2011–2012) would be equal to or less than in 2010.

To establish additional context in which to consider the order of magnitude of project-generated GHG emissions, it may be noted that facilities (i.e., stationary, continuous sources of GHG emissions) that generate greater than 25,000 metric tons CO_{2}/year are mandated to report GHG emissions to the California Air Resources Board (ARB) pursuant to AB 32. In addition, a threshold of 10,000 metric tons CO_{2}/year was recommended by the Market Advisory Committee for inclusion in a GHG cap and trade system, a threshold of 10,000 metric tons CO_{2}/year adopted by the South Coast Air Quality Management District for stationary/industrial projects, and a draft preliminary threshold of 7,000 metric tons of CO_{2e}/year for industrial projects by ARB. Absent any agency-adopted threshold for GHG emissions, it is notable that the Proposed Action would generate emissions substantially less than 25,000 metric tons CO_{2}/year (and other recommended targets). This information is presented for informational purposes, and it is not the intention of SAFCA to adopt 25,000 metric tons CO_{2}/year as a numeric threshold. Rather, the intention is to put
project-generated GHG emissions in the appropriate statewide context in order to evaluate the contribution to the global impact of climate change. Since publication of the DEIS/DEIR, SMAQMD has also recently released draft BMPs for consideration as practical alternatives to reduce construction-generated GHG emissions. As part of Mitigation Measure 4.11-a, “Implement Applicable District-Recommended Control Measures to Minimize Temporary Emissions of ROG, NOX, and PM10 during Construction,” SAFCA would implement a range of measures to reduce GHG emissions, which may include the following:

► improve fuel efficiency from construction equipment by reducing unnecessary idling (modify work practices, install auxiliary power for driver comfort); performing equipment maintenance (inspections, detect failures early, corrections); training equipment operators in proper use of equipment; using the proper size of equipment for the job; and using equipment with new technologies (repowered engines, electric drive trains);

► use alternative fuels for generators at construction sites such as propane or solar, or use electrical power;

► encourage and provide carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes;

► reduce electricity use in the construction office by using compact fluorescent bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones;

► recycle or salvage non-hazardous construction and demolition debris (goal of at least 75% by weight);

► use locally sourced or recycled materials for construction materials (goal of at least 20% based on costs for building materials, and based on volume for roadway, parking lot, and sidewalk and curb materials); and

► develop a plan to efficiently use water for adequate dust control.

Therefore, because the project’s emissions would be temporary and short-term in nature and far below the minimum standard for reporting requirements under AB 32, and because the project would implement a range of measures to reduce GHG emissions, the project’s GHG emissions would not result in a cumulatively considerable contribution to a significant cumulative impact on GHG emissions and global climate change.

Raise and Strengthen Levee in Place Alternative

The RSLIP Alternative would require a similar level of trips for hauling material than the Proposed Action. In addition, construction of the RSLIP Alternative would result in approximately 8,079 tons (7,329 metric tons) of CO2 emissions during 2010. This would be well below 25,000 metric tons CO2/year, the minimum GHG emissions level for facility mandatory reporting to ARB pursuant to AB 32. For the same reasons described under the Proposed Action, would not result in a cumulatively considerable contribution to a significant cumulative impact on global climate change under the RSLIP Alternative.

5.1.8.5 Noise

Proposed Action

The Proposed Action 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. A substantial number of residences are located adjacent to the Sacramento east levee where cutoff walls would be installed. However, there are no other known projects in the vicinity of proposed project activity (borrow sites,
rural roadways, levee and canal construction areas) that would generate noise levels noticeably above ambient noise levels, which are generated by sources that include aircraft operations, truck traffic on area roadways, and agricultural activity. Therefore, the Proposed Action is not expected to contribute to a significant cumulative noise impact. This localized impact would not result in a cumulatively considerable contribution to a significant cumulative impact.

**Raise and Strengthen-Levee-in-Place Alternative**

Under the RSLIP Alternative, levee improvement activity would occur directly along the Sacramento River east levee at many locations adjacent to residences on the waterside of Garden Highway, and to a lesser extent, the landside of the levee. The combined effect of noise from simultaneous construction of erosion control improvements on the waterside and levee improvements on the landside would be amplified and would affect a small number of residences on Garden Highway in the vicinity of the erosion control site, causing a project-level significant impact. However, this impact could be decreased by scheduling construction of the erosion control improvements to occur before or after the nearby levee improvement work. Furthermore because these impacts would be temporary, they would not be combined with future ongoing noise impacts, if any. Therefore, the RSLIP Alternative would not result in a cumulatively considerable contribution to a significant cumulative impact.

**5.1.8.6 VISUAL RESOURCES**

**Proposed Action**

The Proposed Action would include the removal of trees, 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 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 several years to become well established. Therefore, the Proposed Action would make a cumulatively significant contribution to changes in the visual character and scenic resources of the Natomas Basin in the near term. This impact would be significant and unavoidable in the near term, but less than significant in the long term. The long-term impact is anticipated to be less than significant, and the effects from the Proposed Action would not result in a cumulatively considerable contribution to a significant cumulative impact on visual resources in the long term.

**Raise and Strengthen-Levee-in-Place Alternative**

The RSLIP Alternative would result in similar impacts to visual resources as the Proposed Action except that the Sacramento River east levee would be raised and widened in place, requiring greater removal of riparian woodlands on the waterside of these levee reaches to conform with USACE guidance regarding levee encroachments. Tree removal for the relocation and extension of Riverside Canal would be the same as under the Proposed Action; however, overall fewer landside trees would be removed than under the Proposed Action. The RSLIP Alternative, however, would result in the loss of high-aesthetic-value woodlands along the waterside of the levee. Because the replacement plantings would be planted in the landside of the levee, these actions would result in cumulatively considerable near-term and long-term contributions to changes in the visual character and scenic resources of the Natomas Basin, which would be greater than the cumulative impact under the Proposed Action. This alternative would make a considerable contribution to a significant cumulative long-term impact associated with the loss of waterside woodlands.
5.2 GROWTH INDUCEMENT

Both NEPA (40 CFR 1508[a] and [b]) and CEQA (State CEQA Guidelines [CCR Section 15126.2(d)]) require an examination of the direct and indirect impacts of the proposed project, including the potential of the project to induce growth leading to changes in land use patterns and population densities and related impacts on environmental resources. Specifically, CEQA states that the EIR shall:

Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also, discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result, for instance, if implementing a project resulted in any of the following:

► substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises);

► substantial short-term employment opportunities (e.g., construction employment) that indirectly stimulates the need for additional housing and services to support the new temporary employment demand; and/or

► removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., construction of a major sewer line with excess capacity through an undeveloped area).

Growth inducement itself is not an environmental effect, but it may foreseeably lead to changes in land use patterns and population densities and related impacts on environmental resources.

Within the project area, population growth and urban development are driven by local, regional, and national economic conditions. Local land use decisions are within the jurisdiction of the cities and counties within the project area: the City of Sacramento and Sacramento and Sutter Counties. Each of these agencies has adopted a general plan consistent with state law. These general plans provide an overall framework for growth and development within the jurisdiction of each agency, including the project area. Although each of these agencies is a member of SAFCA, as a joint powers agency, SAFCA is limited to exercising powers common to all of its constituent members, including RD 1000 and American River Flood Control District, neither of which has any land use planning authority. Accordingly, SAFCA has no authority to permit development and has only limited authority to impose conditions on the development that is permitted.

This section summarizes the growth-inducing effects that were previously evaluated for the NLIP. NEPA and CEQA documents that are incorporated by reference here include the same documents listed above in Section 5.1.3, “Summary of Cumulative Impact Analyses from Previous NLIP Environmental Documents,” with the State Clearinghouse numbers as required by the State CEQA Guidelines (CCR Section 15150[d]). In addition, the following document, which analyzes the growth-inducing effects of the NBHCB, is hereby incorporated by reference and summarized below: Draft Environmental Impact Report/Environmental Impact Statement, Natomas
Basin Habitat Conservation Plan (City of Sacramento 2002). Printed copies of this document are available at SAFCA’s office at 1007 7th Street, 7th Floor, Sacramento, California.

These documents evaluated expected growth that could occur with implementation of the local general plans for the City of Sacramento and Sacramento and Sutter Counties. They also considered growth projected in the SACOG Blueprint, which is a joint vision for regional growth through the year 2050, endorsed by the SACOG counties (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba) and the 22 cities within these counties. The State Plan of Flood Control, which would require new development to have a minimum of 200-year flood damage reduction, was described in relation to the Proposed Action. Using the above information, which is incorporated by reference, combined with an evaluation of residual flood damage, SAFCA concluded that there is substantial evidence that the project evaluated for the NLIP as a whole would accommodate anticipated growth in the project area in a manner that would be consistent with adopted local and regional growth management plans and with an emerging State Plan of Flood Control. The growth-inducing effects of the NBHCP were completely analyzed in the adopted and approved HCP EIR (City of Sacramento 2002). This document indentified no growth-inducing effects associated with the creation and ongoing operation of the HCP (City of Sacramento 2002:4-168). Thus, the Phase 4a Project, which is a component of the NLIP, while accommodating planned regional growth is not growth inducing itself. This finding is hereby incorporated by reference.

5.3 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

NEPA requires that an EIS include a discussion of the relationship between short-term uses of the environment and long-term productivity. Within the context of this FEIS, “short-term” refers to the construction period, while “long-term” refers to the operational life of the project and beyond.

Project construction would result in short-term construction-related effects such as interference with local traffic and circulation, and increased air emissions, ambient noise levels, dust generation, and disturbance of wildlife. These effects would be temporary, occurring only during construction, and are not expected to alter the long-term productivity of the natural environment. Project implementation would also result in long-term effects, including permanent loss of farmland, changes in visual resources, and adverse effects on existing waters, wetlands, and woodland habitat.

Project implementation would also assist in the long-term productivity of the environment by improving the levee system that protects the Natomas Basin by providing at least a 100-year level of flood damage reduction by the end of 2010 and a 200-year level of protection by the end of 2012, and reducing wildlife hazards in the vicinity of the Airport. In addition, it would also preserve and improve, over the long term, important habitat upon which the Natomas Basin species of concern to USFWS and DFG depend, by increasing acreages, connectivity, and habitat quality of wetlands and other waters of the United States in the Basin.

These long-term beneficial effects of the Phase 4a Project would outweigh its potentially significant short-term impacts to the environment.

5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that an EIS include a discussion of the irreversible and irretreivable commitments of resources which may be involved should the project be implemented. Similarly, the State CEQA Guidelines require a discussion of the significant irreversible environmental changes that would be caused by the project should it be implemented.
The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled, or those that are consumed or reduced to unrecoverable forms. Project implementation would result in the irreversible and irretrievable commitment of energy and material resources during project construction and maintenance, including the following:

- construction materials, including such resources as soil and rocks;
- land and water area committed to new/expanded project facilities; and
- energy expended in the form of electricity, gasoline, diesel fuel, and oil for equipment and transportation vehicles that would be needed for project construction, operation, and maintenance.

The use of these nonrenewable resources is expected to account for only a small portion of the region’s resources and would not affect the availability of these resources for other needs within the region. Construction activities would not result in inefficient use of energy or natural resources. Construction contractors selected would use best available engineering techniques, construction and design practices, and equipment operating procedures. Long-term project operation would not result in substantial long-term consumption of energy and natural resources.
This chapter summarizes the Federal environmental laws and regulations that apply to the Phase 4a Project, aside from NEPA, and describes the Phase 4a Project’s compliance with those laws and regulations.

6.1 CLEAN WATER ACT (SECTION 404)

The U.S. Environmental Protection Agency (EPA) is the lead Federal agency responsible for water quality management. The Clean Water Act of 1972 (CWA) is the primary Federal law that governs and authorizes water-quality control activities by EPA as well as the states. Various elements of the CWA address water quality, as discussed below.

CWA Section 404 establishes a requirement for a project proponent to obtain a permit from the U.S. Army Corps of Engineers (USACE) before engaging in any activity that involves discharge of dredged or fill material into “waters of the United States,” including wetlands. Fill material means material placed in waters of the United States where the material has the effect of replacing any portion of a water of the United States with dry land, or changing the bottom elevation of any portion of a water of the United States. Examples of fill material include but are not limited to rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and material used to create any structure or infrastructure in waters of the United States. Waters of the United States include navigable waters of the United States; interstate waters; all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce; tributaries to any of these waters; and wetlands that meet any of these criteria or that are adjacent to any of these waters. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Jurisdictional wetlands must meet three criteria: hydrophytic vegetation, hydric soil, and wetland hydrology. In addition, under Section 404, jurisdictional wetlands must: be adjacent to traditional navigable waters; directly about relatively permanent waters; or have a significant nexus with a traditional navigable water.

Before USACE can issue a permit under CWA Section 404, it must determine that the project is in compliance with the CWA Section 404(b)(1) Guidelines. The Section 404(b)(1) Guidelines specifically require that “no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences” (CFR Title 40, Section 230.10[a] [40 CFR 230.10(a)]). To comply with this provision, the applicant is required to evaluate opportunities that would result in less adverse impact on the aquatic ecosystem. A permit cannot be issued for a project, therefore, in circumstances where a less environmentally damaging practicable alternative exists that would fulfill the project purpose. An alternative is practicable if it is available and capable of being done after cost, existing technology, and logistics are taken into consideration in light of the overall project purpose as determined by USACE. If it is otherwise a practicable alternative, an area not presently owned by the project applicant(s) that could reasonably be obtained, used, expanded, or managed to fulfill the purpose of the proposed activity may be considered.

As described in Section 4.7, “Biological Resources,” implementation of either the Proposed Action or Raise and Strengthen Levee in Place (RSLIP) Alternative would require an individual permit from USACE under Section 404 of the CWA for the discharge of fill into waters of the United States, including wetlands. USACE verified the wetland delineation prepared for the Phase 2 Project on July 24, 2008. The Sutter Pointe and Dunmore borrow sites were surveyed for wetlands as part of the Phase 3 Project wetland delineation. A preliminary jurisdictional determination form was issued by USACE in November 2008 for the Phase 3 Project area. A supplemental wetland delineation report for the Phase 3 Project was submitted to USACE in April 2009 and a Phase 4a Project
wetland delineation report was submitted to USACE in August 2009. This FEIS will be used to support USACE’s decision whether to grant SAFCA an individual permit for the Proposed Action or RSLIP Alternative.

6.2 RIVERS AND HARBORS ACT OF 1899, AS AMENDED

6.2.1 SECTION 14

Under Section 14 of the Rivers and Harbors Act of 1899 (33 United States Code [USC] 408), referred to as “Section 408,” the Secretary of the Army, on the recommendation of the Chief of Engineers, may grant permission for the alteration of a Federal project levee by a non-Federal entity if the alteration is not injurious to the public interest and does not impair the usefulness of the project. This FEIS will be used to support USACE’s decision whether to grant permission for the Phase 4a Project pursuant to Section 408.

6.2.2 SECTION 10

Under Section 10 of the Rivers and Harbors Act of 1899, work in, over, or under navigable waters of the United States is regulated by USACE. Navigable waters of the United States are defined as those waters subject to the ebb and flow of the tide shoreward to the mean high-water mark and those that are currently used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. The jurisdiction of USACE under CWA overlaps and extends beyond the geographic scope of its jurisdiction under the Rivers and Harbors Act. USACE permitting authority under the Rivers and Harbors Act is not subject to EPA oversight or any other restrictions specific to the CWA, and, in some cases the Rivers and Harbors Act alone will apply to waters. A permit from USACE is required prior to any work in, over, or under navigable waters of the United States.

As part of the Phase 4a Project, modifications to Reclamation District (RD) 1000 Pumping Plants Nos. 3 and 5 involve raising and extending discharge pipes, replacing or modifying pumps and motors, and performing other seepage remediation, including relocation of the stations away from the levee to accommodate raising the discharge pipes above the 200-year design flood elevation. Modifications to NCMWC’s Riverside Pumping Plant includes raising and extending discharge pipes, and modifying or replacing the existing Riverside Pumping Plant pumps and motors to reflect raising the discharge pipes above the 200-year design flood elevation. These Phase 4a Project elements would be subject to permission from USACE under Section 10. Under the RSLIP Alternative, proposed rip rap would also be subject to permission from USACE under Section 10.

6.3 FISH AND WILDLIFE COORDINATION ACT OF 1934, AS AMENDED

The Fish and Wildlife Coordination Act (FWCA) ensures that fish and wildlife receive consideration equal to that of other project features for projects that are constructed, licensed, or permitted by Federal agencies. The FWCA requires that the views of the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the applicable state fish and wildlife agency (in this case, the California Department of Fish and Game [DFG]) be considered when impacts are evaluated and mitigation needs determined.

USACE is coordinating with USFWS, NMFS, and DFG to determine the effects of the Proposed Action on fish and wildlife in the project area. USFWS will provide USACE with a FWCA report. USACE and SAFCA provided USFWS, NMFS, and DFG with copies of the Phase 4a DEIS/DEIR for review and comment. None of these agencies provided comments on the Phase 4a DEIS/DEIR. USACE will provide a copy of this FEIS to these agencies for review and comment.

6.4 ENDANGERED SPECIES ACT OF 1973, AS AMENDED

Pursuant to the Federal Endangered Species Act (ESA), USFWS and NMFS have regulatory authority over Federally listed species. Under ESA, a permit to “take” a listed species is required for any Federal action that may
harm an individual of that species. Take is defined under ESA Section 9 as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Under Federal regulation, take is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. ESA Section 7 outlines procedures for Federal interagency cooperation to conserve Federally listed species and designated critical habitat. Section 7(a)(2) requires Federal agencies to consult with USFWS and/or NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species.

SAFCA held meetings to discuss project features with USFWS during the NLIP alternatives formulation and CEQA compliance process (see Section 7.3, “Coordination with Other Federal, State, and Local Agencies”). USACE and SAFCA subsequently held informal consultation meetings in January through September 2008 to clarify project details and discuss information needs for ESA permitting.

In October 2008, a programmatic Biological Opinion (BO) was issued by USFWS for the NLIP with incidental take authorization for the Phase 2 Project; an amended BO was issued in May 2009. A Biological Assessment (BA) for the Phase 4a Project is under development and will be similar to the Phase 2 and 3 Project BAs. The Phase 4a Project BA will request incidental take authorization for these respective project phases and will be appended to the programmatic BO. An appendage to the programmatic BO for the Phase 3 Project was issued by USFWS in September 2009, and a Letter of Concurrence of Determination of Not Likely to Adversely Affect from NMFS was issued in January 2010.

USACE and SAFCA provided USFWS, NMFS, and DFG with copies of the Phase 4a DEIS/DEIR for review and comment. None of these agencies provided comments on the Phase 4a DEIS/DEIR. USACE will provide a copy of this FEIS to these agencies for review and comment.

6.5 MIGRATORY BIRD TREATY ACT OF 1918

The Migratory Bird Treaty Act (MBTA) implements a series of international treaties that provide for migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…” (16 USC 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and personal property.

Compliance with the MBTA is being addressed through compliance with the ESA and the California Endangered Species Act (CESA). The Phase 4a Project incorporates mitigation measures that would help ensure that construction activities do not result in the take of migratory birds, as discussed in Section 4.7, “Biological Resources.”

6.6 BALD EAGLE PROTECTION ACT OF 1940

The Bald Eagle Protection Act provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds.

The Phase 4a Project area does not contain bald eagle or golden eagle nesting habitat, and the Phase 4a Project would not result in the take of bald or golden eagles. The Phase 4a Project incorporates mitigation measures that would ensure that construction activities do not result in the take of any raptors, as discussed in Section 4.7, “Biological Resources.”
6.7 CLEAN AIR ACT OF 1963, AS AMENDED

The Federal Clean Air Act (CAA) required EPA to establish national ambient air quality standards (NAAQS). EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}), carbon monoxide (CO), nitrogen dioxide (NO_{2}), sulfur dioxide (SO_{2}), and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP).

Under the CAA, the primary responsibility for planning for attainment and maintenance of the NAAQS rests with the state and local agencies. Accordingly, state and local air quality agencies are also designated as the primary permitting and enforcement authorities for most CAA requirements. During preparation of the Phase 2 EIR, the air management districts with jurisdiction over the project area, the Feather River Air Quality Management District (FRAQMD) and the Sacramento Metropolitan Air Quality Management District (SMAQMD), were given the opportunity to comment on the project with regard to the scope and content of the Phase 2 EIR in relation to each agency’s statutory responsibilities and regulatory oversight of the project. In addition, FRAQMD was also consulted through several written and verbal exchanges regarding its air emissions regulations. SMAQMD provided written comments on the Phase 2 EIR, and revisions to the air quality information were incorporated into the Phase 2 Final EIR based on this input.

The air quality effects analysis and associated mitigation measures in this FEIS are consistent with the approach that was used in the Phase 2 EIR, Phase 2 EIS, and Phase 3 DEIS/DEIR. Mitigation Measure 4.11-a in this FEIS directs SAFCA to implement control measures recommended by FRAQMD and SMAQMD to minimize temporary emissions of reactive organic gases (ROG), oxides of nitrogen (NO_{x}), and PM_{10} during project construction, and comply with all applicable rules and regulations of FRAQMD and SMAQMD. As described under Impact 4.11-b, the Proposed Action (including implementation of proposed mitigation measures) would not exceed the EPA’s general conformity *de minimis* thresholds or hinder the attainment of air quality objectives in the local air basin with mitigation implementation. Nonetheless, USACE is coordinating with EPA and has prepared a conformity determination for the Phase 4a Project, which is required before a ROD can be issued for the Phase 4a Project.

USACE and SAFCA provided FRAQMD and SMAQMD with copies of the Phase 4a DEIS/DEIR for review and comment. FRAQMD did not submit comments on the Phase 4a DEIS/DEIR. SMAQMD submitted comments, which are included in Appendix J of this FEIS along with USACE’s and SAFCA’s response. USACE will provide a copy of this FEIS to both agencies for review and comment.

6.8 NATIONAL HISTORIC PRESERVATION ACT OF 1966, AS AMENDED

Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 Code of Federal Regulations [CFR] 800, as amended in 2004) require Federal agencies to consider the potential effects of their proposed undertakings on historic properties. Historic properties are cultural resources that are listed on, or are eligible for listing on, the National Register of Historic Places (NRHP) (36 CFR 800.16[1]). Undertakings include activities directly carried out, funded, or permitted by Federal agencies. Federal agencies must also allow the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the proposed undertaking and its potential effects on historic properties.

As noted in Section 2.8, “Cultural Resources,” inventories of all Phase 4a Project features that involve ground-disturbing work in native soils, including borrow locations, are ongoing; SAFCA will also complete evaluations, findings of effect, and treatment of identified resources where required. The project incorporates treatment measures to protect resources listed on or eligible for listing on the NRHP, as discussed in Section 4.8, “Cultural Resources.” Determinations of the specific mitigation measures to be implemented will be made by USACE and
SAFCA in consultation with the SHPO as part of the determination and eligibility and effect process, as required by NHPA Section 106. Implementation of the selected mitigation measures will be ensured through the execution of a Programmatic Agreement (PA). Signatories to the PA are SAFCA, USACE, and the SHPO. The ACHP has been consulted and waived participation as a signatory to the PA.

The PA addresses the scope of the Area of Potential Effect (APE) and provides that the APE will be defined for each project phase. The APE for each phase will be submitted with the cultural resources inventory reports, and will be consulted upon by SHPO. If areas are added to the project development activities subsequent to the SHPO concurrence on the map of the APE for a specific phase, SAFCA will complete an inventory of historic properties within the expanded APE. If historic properties that would be adversely affected by the project are identified in cultural resources inventories, SAFCA will prepare a Historic Properties Treatment Plan (HPTP) for review and written approval by USACE and the SHPO for those specific properties. Areas of archaeological sensitivity will be monitored in accordance with the HPTPs. A final report documenting the results of work prepared under the HPTPs will be submitted to USACE and the SHPO. The PA provides for public notice and consultation with Native Americans and the public. The signed and executed PA is included in Appendix E1.

The regulations implementing Section 106 hold that:

Compliance with the procedures established by an approved programmatic agreement satisfies the agency’s section 106 responsibilities for all individual undertakings of the program covered by the agreement until it expires or is terminated by the agency, the president of NCSHPO when a signatory, or the Council (36 CFR Part 800.14[b][2][iii]).

The regulations further clarify that execution of agreement documents under 36 CFR Part 800.6, Resolution of Adverse Effects (including programmatic agreements adopted under that section per 36 CFR Part 800.14[b][3]) evidence satisfaction of Section 106 (36 CFR Part 800.6[b][3]):

A memorandum of agreement executed and implemented pursuant to this section evidences the agency official’s compliance with section 106 and this part and shall govern the undertaking and all of its parts. The agency official shall ensure that the undertaking is carried out in accordance with the memorandum of agreement.

Thus, execution of the PA, which was prepared through the process provided in 36 CFR Part 800.6 evidences USACE’s compliance with Section 106. This does not mean that technical management activities under the PA are complete; they in fact are ongoing, as described above.

Appendix E2 contains a number of documents that are part of the record demonstrating Section 106 compliance. These include the following:

► June 7, 2007, letter from SAFCA’s project archaeologist to the Native American Heritage Commission (NAHC) requesting a list of Native American individuals and organizations to contact regarding the project;

► June 19, 2007, response letter from the NAHC to SAFCA’s project archaeologist supplying a list of the requested individuals and organizations;

► June 21, 2007, letters from SAFCA’s project archaeologist to Native American individuals and organizations soliciting concerns and any information about cultural resources in the project area;

► July 9, 2007, telephone record of conversation between SAFCA’s project archaeologist and Rose Enos (referred to by the NAHC as “Miwok/Maidu”) regarding Ms. Enos’ general concern regarding avoidance of burial sites and request to be contacted if work is conducted on such sites;

► January 2008 letter (and enclosures) from USACE to the SHPO initiating Section 106 consultation;
6.9 AMERICAN INDIAN RELIGIOUS FREEDOM ACT

The American Indian Religious Freedom Act of 1978 is also applicable to Federal undertakings. This act established “the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions…including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites” (Public Law 95-431). Consultations with Native Americans to determine concerns regarding the Phase 4a Project are discussed in Section 7.2, “Native American Consultation.”

6.10 WILD AND SCENIC RIVERS ACT

The Wild and Scenic Rivers Act (16 USC 1271 et seq.) establishes a National Wild and Scenic Rivers System for the protection of rivers with important scenic, recreational, fish and wildlife, and other values. Rivers are classified as wild, scenic, or recreational. The act designates specific rivers for inclusion in the System and prescribes the methods and standards by which additional rivers may be added. The lower American River is included in the System and is designated as “Recreational.”

None of the internal water features of the project are tributary to the lower American River or any other river included in the System. Therefore, the Phase 4a Project would have no effect on Wild and Scenic Rivers.

6.11 EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT

Executive Order (EO) 11988, Floodplain Management (May 24, 1977), directs Federal agencies to issue or amend existing regulations and procedures to ensure that the potential effects of any action it may take in a floodplain are evaluated and that its planning programs and budget requests reflect consideration of flood hazards and floodplain management. The purpose of this directive is “to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” Guidance for implementation of EO 11988 is provided in the floodplain management guidelines of the U.S. Water Resources Council (40 CFR 6030; February 10, 1978) and in A Unified National Program for Floodplain Management, prepared by the Federal Interagency Floodplain Management Taskforce.
Recognizing that improving the Natomas Basin perimeter levee system would indirectly support population growth within the Basin, USACE in 1991 conducted extensive studies of the feasibility of constructing a cross levee spanning the Basin from east to west to limit the extent of flood protection improvements and associated floodplain development to the southern one-half to two-thirds of the Basin. The present study reconsidered a cross-levee measure. For the reasons described in Section 2.1.5.1, “Alternatives Evaluated and Rejected in Previous SAFCA NLIP Environmental Documents,” this flood protection alternative has been determined to be impracticable and unlikely to prevent the urbanization of the northern portion of the Basin without a very costly program for acquiring flowage easements and retiring development rights on the lands north of the cross levee. Consequently, improvements to the Natomas Basin perimeter levee system have been determined by USACE, the State, and SAFCA to be the feasible method of providing adequate flood protection to existing development within the Basin and to the planned development. Although improving the perimeter levee system would fail to discourage further development within the Basin, this action is consistent with efforts by the State of California to comprehensively address floodplain development and flood risk on a regional scale. This comprehensive approach differentiates between flood protection requirements for urbanized and nonurbanized floodplain areas and will direct urban development away from those floodplains where a 200-year level of flood protection cannot be achieved while ensuring that this level of protection is provided for already heavily populated areas such as the Natomas Basin.

The Phase 4a Project would reduce the risk of flood damage and minimize the impact of floods on human health, safety, and welfare by strengthening existing flood damage reduction infrastructure (see Section 4.5, “Hydrology and Hydraulics,” for a discussion of the methodology and analysis of the Phase 4a Project’s potential flood-related impacts). As noted in Section 2.5.1, “Residual Risk of Flooding,” implementation of the Phase 4a Project would substantially lessen the probability of a flood in the Basin due to levee failure; however, the Natomas Basin would remain subject to a residual risk of flooding under both of the action alternatives. SAFCA would be required to maintain an ongoing residual risk management program, as described in Section 2.5.1. The Phase 4a Project would also create natural habitat that would serve ecological functions associated with natural floodplains (see Section 2.3.4, “Habitat Improvements”). Because there is no practicable alternative to the urban floodplain development indirectly associated with the project, the project would reduce flood damage and provide habitat values, and SAFCA would maintain an ongoing residual risk management program, it satisfies EO 11988.

In 1982, the Interagency Task Force on Floodplain Management published additional guidance on the implementation of EO 11988. Additional standards were developed to protect human safety, health, and welfare. These standards apply to “critical actions,” which are defined by the Water Resources Council Floodplain Management Guidelines as “any activity for which even a slight chance of flooding would be too great. The critical action floodplain is defined as the 500-year floodplain.”

To assist in determining whether a proposed action is a “critical action,” the following questions must be answered. If any answer is in the affirmative, the proposed action is considered a “critical action,” and therefore subject to a higher standard.

► If flooded, would the proposed action create an added dimension to the disaster, as could be the case for liquefied natural gas terminals and facilities producing and storing highly volatile, toxic, or water-reactive materials?

► Given the flood warning lead-time available, would the occupants of buildings such as hospitals, schools, and nursing homes be insufficiently mobile to avoid loss of life and injury?

► Would essential and irreplaceable records, utilities, and/or emergency services be lost or become inoperative if flooded? (Interagency Task Force on Floodplain Management 1982)

The NLIP is a program of levee improvements; it would not place sensitive land uses (e.g., hazardous materials storage facilities, senior care facilities, hospitals, schools, etc.) within a floodplain. Further, as described in
Section 5.2, “Growth Inducement,” and elsewhere in this FEIS, SAFCA does not have any authority over what types of land uses would be placed in the Natomas Basin, with or without implementation of the NLIP. Therefore, SAFCA has concluded that the NLIP is not a “critical action.”

Notwithstanding SAFCA’s determination that the NLIP is not a “critical action” pursuant to EO 11988, the following eight-step process was followed as directed in the Water Resources Council Floodplain Management Guidelines for implementation of EO 11988 (these procedures are excerpted from USACE’s ER 1165-2-26). Responses follow in italics.

a) Determine if the proposed action is in the base flood plain.

Yes, the NLIP, of which the Phase 4a Project is a component, is a program of levee improvements in the Natomas Basin, which is in the 100-year floodplain.

b) If the action is in the base flood plain, identify and evaluate practicable alternatives to the action or to location of the action in the base flood plain as outlined in paragraph 7 above.

See Chapter 2.0, “Alternatives,” of this FEIS. Also, see Appendix B1, “Alternatives Formulation and Screening Details.”

c) If the action must be in the flood plain, advise the general public in the affected area and obtain their views and comments.

Public involvement activities undertaken for the Phase 4a Project are described in Chapter 7.0, “Consultation and Coordination,” of this FEIS. NEPA-/CEQA-required notices have been mailed to affected property owners throughout the environmental review process, soliciting input on the content of the environmental documents and noticing various public meetings. Additionally, notices have also been posted in the Sacramento Bee announcing various public meetings. USACE and SAFCA have also participated in numerous meetings and calls with affected property owners on an individual basis to discuss project concerns. Public comments received on the NOI/NOP were addressed in the DEIS/DEIR; public comments received on the DEIS/DEIR were addressed in the FEIR and are addressed in this FEIS; and public comments received on the FEIS will be addressed in the ROD.

d) Identify beneficial and adverse impacts due to the action and any expected losses of natural and beneficial flood plain values. Where actions proposed to be located outside the base flood plain will affect the base flood plain, impacts resulting from these actions should also be identified.

Potential impacts associated with the Phase 4a Project are identified in Chapter 4.0, “Environmental Consequences and Mitigation Measures,” of this FEIS. The Phase 4a Project also includes the creation of natural habitat that would serve ecological functions associated with natural floodplains (see Section 2.3.4, “Habitat Improvements,” of the FEIS). As stated above, the Phase 4a Project would be located within the Natomas Basin; no project components would be located outside of the Basin.

e) If the action is likely to induce development in the base flood plain, determine if a practicable non-flood plain alternative for the development exists, as outlined in paragraph 7, above.

See Chapter 5.2, “Growth Inducement,” of this FEIS. The NLIP, including the Phase 4a Project, while accommodating planned regional growth, is not growth-inducing itself.

f) As part of the planning process under the Principles and Guidelines, determine viable methods to minimize any adverse impacts of the action including any likely induced development for which there is no practicable alternative and methods to restore and preserve the natural and beneficial flood plain values. This should include reevaluation of the “no action” alternative.
Mitigation measures are identified throughout this FEIS and will be implemented as part of the Phase 4a Project to minimize the project’s potentially adverse impacts (see Chapter 4.0, “Environmental Consequences and Mitigation Measures,” of this FEIS). As noted above, the Phase 4a Project includes the creation of natural habitat that would serve ecological functions associated with natural floodplains (see Section 2.3.4, “Habitat Improvements,” of this FEIS). The No-Action Alternative is described in Section 2.2, “No-Action Alternative,” of this FEIS. Impacts of the No-Action Alternative are identified throughout Chapter 4.0, “Environmental Consequences and Mitigation Measures,” of this FEIS.

If the final determination is made that no practicable alternative exists to locating the action in the flood plain, advise the general public in the affected area of the findings.

See response to item c, above.

Recommend the plan most responsive to the planning objectives established by the study and consistent with the requirements of the Executive Order stated in paragraph 6 above.

SAFCA’s project objectives adopted in connection with the NLIP are: (1) provide at least a 100-year level of flood protection to the Natomas Basin as quickly as possible, (2) provide 200-year protection to the Basin over time, and (3) avoid any substantial increase in expected annual damages as new development occurs in the Basin. The NLIP, including the Phase 4a Project, is responsive to the EO 11988 objective of “avoidance, to the extent possible, of long-and short-term adverse impacts associated with the occupancy and modification of the base flood plain and the avoidance of direct and indirect support of development in the base flood plain wherever there is a practicable alternative” because it would not induce development in the floodplain (objective a); would reduce the hazard and risk associated with floods (objective b) thereby minimizing the impacts of floods on human safety, health, and welfare (objective c); and would restore and preserve the natural and beneficial values of the base floodplain (objective d).

6.12 EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS

The purpose of EO 11990 is to “minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.” To meet these objectives, EO 11990 requires Federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. EO 11990 applies to: acquisition, management, and disposition of Federal lands and facilities construction and improvement projects which are undertaken, financed or assisted by Federal agencies; and Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities. SAFCA has taken actions to minimize project effects on wetlands where possible and to create new wetlands as part of the project, and has applied for a CWA Section 404 permit from USACE. The replacement of Elkhorn Reservoir with a new sediment basin, part of the Phase 2 Project, is being designed to incorporate setbacks from the adjacent slough to minimize disturbance of wetlands there.

Implementation of the Phase 4a Project as proposed would ensure no net loss of aquatic resource function and services through SAFCA’s proposed compensatory mitigation. Wetlands and other waters of the United States that would be created as part of the project are described in Section 2.3.4, “Habitat Improvements.” Wetlands that would be created as part of the project include marsh habitat in a portion of the Fisherman’s Lake Borrow Area after being reclaimed, for which SAFCA has developed a preliminary design.
6.13 EXECUTIVE ORDER 12898, FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

EO 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (59 Federal Register 7629 [1994]) requires Federal agencies to identify and address disproportionately high and adverse health or environmental effects on minority populations, low-income populations, and Native Americans that may result from any proposed action. The Council on Environmental Quality (CEQ) has oversight of the Federal government’s compliance with the EO. To facilitate compliance, CEQ prepared and issued, in association with EPA, “Environmental Justice Guidance Under the National Environmental Policy Act” (CEQ December 1997). The Environmental Justice Guidance provides six principles by which environmental justice issues should be identified and addressed (CEQ 1997:9):

1. Consider the composition of the affected area to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action, and if so, determine if human health or environmental affects would be disproportionately high on those populations.

2. Consider relevant public health data and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards including historical patterns of exposure to hazards.

3. Recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the action.

4. Develop effective public participation strategies.

5. Assure meaningful community representation in the process.

6. See tribal representation in the process.

While not currently residing in the local project vicinity as a distinct population group, Native American tribes are known to have lived in the project study area in the past and there is evidence of their occupation of the project study area. The sites of occupation by Native American tribes are considered culturally significant and, therefore, are addressed in this FEIS.

See Section 3.3.16 and 4.16, “Environmental Justice,” for more information on project effects of minority and low-income populations, as well as on Native American tribes.

6.14 FARMLAND PROTECTION POLICY ACT

The Natural Resources Conservation Service (NRCS) is the agency primarily responsible for implementing the Federal Farmland Protection Policy Act (FPPA). The purpose of the FPPA is to minimize Federal contributions to the conversion of farmland to nonagricultural uses by ensuring that Federal programs are administered in a manner compatible with state government, local government, and private programs designed to protect farmland.

NRCS administers the FPPA, which is a voluntary program that provides funds to help purchase development rights to keep productive farmland in agricultural uses. The program provides matching funds to state, local, or tribal government entities and nongovernmental organizations with existing farmland protection programs to purchase conservation easements. Participating landowners agree not to convert the land to nonagricultural uses and retain all rights to the property for future agriculture. A minimum 30-year term is required for conservation easements, and priority is given to applications with perpetual easements. NRCS provides up to 50% of the fair market value of the easement (NRCS 2004).
Implementation of the Proposed Action or RSLIP Alternative would require converting areas of farmland along the Natomas Basin perimeter levee system to non-agricultural uses. Additional areas of farmland would be used as sources of soil borrow material. The topsoil on these lands would be retained and replaced after several feet of underlying soil is removed, and most of these lands would continue to be farmable, although some would be converted to marsh habitat. In addition, mitigation intended to reduce project effects on farmland is included in this EIS/EIR. Also, the proposed modifications of the agricultural irrigation and drainage infrastructure included in the action alternatives would support the maintenance of agricultural practices on the west side of the Natomas Basin.

The project complies with the FPPA because it provides for compensation for unavoidable direct conversion of agricultural land to nonagricultural uses, would provide infrastructure that would support the continuation of agricultural uses on the west side of the Natomas Basin, and is consistent with state and regional planning efforts that will protect farmland on a regional scale from development. Consultation with the NRCS (including submittal of the Farmland Conservation Impact Rating form) does not apply to Federal activities involving permitting and licensing (see 7 CFR 658) and therefore is not required for the project.

6.15 WILDLIFE HAZARDS ON OR NEAR AIRPORTS

The FAA addresses control of hazardous wildlife in Advisory Circular (AC) 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports* (FAA 2007). The FAA provides direction on where public-use airports should restrict land uses that have the potential to attract hazardous wildlife. FAA recommends a distance of 10,000 feet separating wildlife attractants and aircraft movement areas. The area within a 10,000-foot radius of the Airport Operations Area is designated as the Critical Zone. The FAA definition of wildlife attractants in AC 150/5200-33B includes human-made or natural areas, such as poorly drained areas, retention ponds, agricultural activities, and wetlands. AC 150/5200-33B recommends against the use of airport property for agricultural production within a 5-mile radius of the Airport Operations Area unless the income from the agricultural crops is necessary for the economic viability of the airport.

Section 2.3.5, “Aviation Safety Components,” describes FAA’s regulatory interest in managing wildlife attractants within 5 miles of the edge of the Airport’s Area of Operations. Potential borrow sites within this area have been identified based on balancing multiple management priorities (including flood risk reduction, aviation safety, and habitat conservation) and minimizing the cost and environmental effects of borrow haulage activities. Within the 10,000-foot Airport Critical Zone, management of the grasslands created by borrow operations would also be consistent with the Airport’s *Wildlife Hazard Management Plan* (Sacramento County Airport System 2007).

6.16 FEDERAL EMERGENCY MANAGEMENT AGENCY

6.16.1 LEVEE REQUIREMENTS

For a levee accredited by the Federal Emergency Management Agency (FEMA) as providing a 100-year level of flood protection, the levee must be shown to satisfy several criteria, including protection of the embankment against erosion. Specific requirements are contained in Code of Federal Regulations Title 44, Section 65.10.

6.16.2 FLOOD ZONE DESIGNATIONS

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community’s Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. In January 2008, FEMA proposed remapping the Natomas Basin as an AE zone, with the designation to take effect in December 2008. FEMA defines AE zones as areas with a 1% annual chance of flooding. The designation would result in the requirement that the bottom floor of all
new buildings be constructed at or above base flood elevation—as little as 3 feet in some areas of Natomas but up to 20 feet above the ground level in much of the Basin. It is therefore anticipated that this designation would effectively stop any projects that are not issued building permits by the time the new map takes effect. An alternative to this designation, the A99 zone, may be applied where it can be shown that an area with a 1% annual chance of flooding will be protected by a Federal flood damage reduction system where construction has reached specified legal requirements. The main requirements are that 100% of the cost of the flood protection system restoration project must be authorized, 60% must be appropriated, 50% must be expended, and “critical features” must be under construction and 50% completed (FEMA 2007). Construction is not constrained and there are no FEMA-specified building elevation requirements with an A99 designation. Mandatory flood insurance purchase requirements apply to both designations, however.

6.17 SUSTAINABLE FISHERIES ACT

In response to growing concern about the status of United States fisheries, Congress passed the Sustainable Fisheries Act of 1996 (Public Law [PL] 104-297) to amend the Magnuson-Stevens Fishery Conservation and Management Act (PL 94-265), the primary law governing marine fisheries management in the Federal waters of the United States. Under the Sustainable Fisheries Act, consultation is required by NMFS on any activity that might adversely affect essential fish habitat (EFH). EFH includes those habitats that fish rely on throughout their life cycles. It encompasses habitats necessary to allow sufficient production of commercially valuable aquatic species to support a long-term sustainable fishery and contribute to a healthy ecosystem. The Sacramento River and the lowermost segment of the NEMDC have been designated as Essential Fish Habitat by the Pacific Fishery Management Council.

Phase 4a Project-related impacts to EFH in the Sacramento River are discussed in Section 4.7, “Biological Resources,” and mitigation measures are identified.

6.18 RESOURCE CONSERVATION AND RECOVERY ACT

The primary Federal agency regulating the generation, transport, and disposal of hazardous substances is EPA, under the authority of the Resource Conservation and Recovery Act (RCRA). RCRA established an all-encompassing Federal regulatory program for hazardous substances that is administered in California by the Department of Toxic Substances Control (DTSC). Under RCRA, DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous substances. RCRA was amended in 1984 by the Hazardous and Solid Waste Amendments of 1984, which specifically prohibits the use of certain techniques for the disposal of various hazardous substances. The Federal Emergency Planning and Community Right-to-Know Act of 1986 imposes hazardous materials planning requirements to help protect local communities in the event of accidental release.

Based on an extensive records search, no known hazardous materials sites are located within the specific sites proposed for project-related excavation; however, multiple sites were identified along the Sacramento River east levee with possible contamination issues. In addition, hazardous substances may exist within the Natomas Basin and/or be brought in and used for project construction. The Phase 4a Project’s potential impacts related to hazards and hazardous materials are described under Impact 4.15-b in Section 4.15, “Hazards and Hazardous Materials.”

6.19 UNIFORM RELocation ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT

All or portions of parcels within the Phase 4a Project footprint would need to be acquired for project construction. Federal, state, local government agencies, and others receiving Federal financial assistance for public programs and projects that require the acquisition of real property, must comply with the policies and provisions set forth in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended in 1987.
(42 USC 4601 et seq.) (Uniform Act), and implementing regulation, Title 49 CFR Part 24. Relocation advisory services, moving costs reimbursement, replacement housing, and reimbursement for related expenses and rights of appeal are provided for in the Uniform Act.

Project implementation would require acquisition of property in the Phase 4a Project footprint to construct flood damage reduction facilities and habitat improvements (applies to both the Proposed Action and the RSLIP Alternative); and closure of Garden Highway in 1.5- to 2-mile segments for approximately 8–12 weeks at a time, preventing access to residences in these areas and, thus, potentially requiring affected residents to relocate during that time period (applies only to the RSLIP Alternative).

Property acquisition and relocation services, compensation for living expenses for temporarily relocated residents, and negotiations regarding any compensation for temporary loss of business would be accomplished in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act.

### 6.20 FEDERAL EARTHQUAKE HAZARDS REDUCTION ACT

In October 1997, the U.S. Congress passed the Earthquake Hazards Reduction Act to “reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program.” To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of agency responsibilities, program goals, and objectives.

NEHRP’s mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through postearthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRPA designates FEMA as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and USGS.

The closest active fault to the Phase 4a Project area is located approximately 15 miles to the northwest, as shown in Table 3.4-1. Because there are no active faults within or near the Phase 4a Project footprint, the risk of fault ground rupture is low. In addition, geotechnical investigations of borrow materials and flood risk reduction improvements are designed in consideration of the longevity of the levee system, including secondary seismic hazards such as shaking, liquefaction, subsidence, and seiches.
7 CONSULTATION AND COORDINATION

This chapter summarizes public and agency involvement activities undertaken by USACE and SAFCA that have been conducted to date, are ongoing, and/or will be conducted for this project, and which satisfy NEPA and CEQA requirements for public scoping and agency consultation and coordination.

Additionally, Native American consultation activities are described.

7.1 PUBLIC INVOLVEMENT UNDER NEPA AND CEQA

7.1.1 NOTICE OF INTENT, NOTICE OF PREPARATION, AND SCOPING MEETING

On March 27, 2009, USACE and SAFCA issued a notice of intent (NOI) and notice of preparation (NOP), respectively, for preparing the Phase 4a DEIS/DEIR. In addition to the State Clearinghouse’s distribution of the NOP to potentially interested state agencies, copies of the NOP were mailed to a distribution list of approximately 1,000 recipients, including Federal, state, regional, and local agencies; non-profit and private organizations; homeowners associations; partnerships; businesses; and individual residents in the project area to solicit input as to the scope and content of the Phase 4a DEIS/DEIR (see Section 7.4, “List of Recipients”). The NOI and NOP are included in Appendix A1.

A joint NEPA/CEQA public scoping meeting was held on April 13, 2009 from 4:30 to 6:30 p.m. at the South Natomas Community Center (Activity Room) in Sacramento, California, to brief interested parties on the Phase 4a Project, and obtain the views of agency representatives and the public on the scope and content of the Phase 4a DEIS/DEIR. Appendix A2 contains the public outreach materials for the April 13, 2009 scoping meeting.

Verbal and written comments were received during the scoping meeting, and additional written comments from agencies and individuals were received throughout the CEQA scoping period, which ended on April 27, 2009. There is no mandated time limit for the NEPA scoping period. All comment letters received during the scoping period are included in Appendix A1 and are summarized in Table 7-1.

<table>
<thead>
<tr>
<th>Table 7-1</th>
<th>Written Comments Received on the NOI/NOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commenter</td>
<td>Date</td>
</tr>
<tr>
<td>U.S. Department of Homeland Security, FEMA Region IX</td>
<td>April 1, 2009</td>
</tr>
<tr>
<td>► Recommends that USACE and SAFCA review the effective Flood Insurance Rate Maps, revised December 8, 2009, for Sacramento County and maps revised December 2, 2008, for Sutter County.</td>
<td></td>
</tr>
<tr>
<td>► Notes that Sacramento and Sutter Counties are participants in the National Flood Insurance Program (NFIP) and are subject to floodplain management building requirements.</td>
<td></td>
</tr>
<tr>
<td>► Summarizes the NFIP floodplain management building requirements.</td>
<td></td>
</tr>
<tr>
<td>► Recommends contacting the Sacramento and Sutter Counties’ floodplain managers for more information on local floodplain management building requirements.</td>
<td></td>
</tr>
<tr>
<td>► Notes that waterways in the project area are subject to tidal influence and considered navigable for bridge permitting purposes.</td>
<td></td>
</tr>
<tr>
<td>► Requests that the Coast Guard be included on the mailing list and in the NEPA scoping process.</td>
<td></td>
</tr>
<tr>
<td>► Notes that under the provisions of the General Bridge Act of 1946 clearances for bridges over navigable waters of the U.S. must be approved by the Commandant of the U.S. Coast Guard. Notes that the applicant should be directed to contact the U.S. Coast Guard office for guidance on bridge permitting and application process.</td>
<td></td>
</tr>
<tr>
<td>► Notes that the U.S. Coast Guard agrees to serve as a Cooperating Agency for satisfying NEPA requirements and from a navigational standpoint and should be listed as such in the Draft and Final EIS.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 7-1
**Written Comments Received on the NOI/NOP**

<table>
<thead>
<tr>
<th>Commenter</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Department of Conservation, Division of Land Resource Protection</td>
<td>June 26, 2008</td>
</tr>
<tr>
<td>► Indicates intent to comment by April 28, 2009.</td>
<td></td>
</tr>
<tr>
<td>State Department of Conservation, Division of Land Resource Protection</td>
<td>June 4, 2009</td>
</tr>
<tr>
<td>► Requests that the EIR provide location and extent of Important Farmland in and adjacent to the project area.</td>
<td></td>
</tr>
<tr>
<td>► Requests that the EIR describe current and past agricultural use of the project area and provide data on types of crops grown, yields, and sales values.</td>
<td></td>
</tr>
<tr>
<td>► Recommends use of economic multipliers to assess the total contribution of the site’s potential or actual agricultural production to the local, regional, and state economies.</td>
<td></td>
</tr>
<tr>
<td>► Recommends that the EIR provide type, amount, and location of farmland conversion that would result either directly or indirectly from the project and address growth inducing effects.</td>
<td></td>
</tr>
<tr>
<td>► Recommends that the EIR describe the project’s impacts on current and future agricultural operations, including land-use conflicts, increased in land value, taxes, and vandalism.</td>
<td></td>
</tr>
<tr>
<td>► Recommends that the EIR describe the incremental impacts leading to cumulative impacts on agricultural land.</td>
<td></td>
</tr>
<tr>
<td>► Notes that impacts on agricultural resources may be quantified using of established thresholds of significance using the California version of the U.S. Department of Agriculture Land Evaluation and Site Assessment model.</td>
<td></td>
</tr>
<tr>
<td>► Recommends the use of agricultural conservation easements at least a 1:1 ratio for size and quality of land to compensate for permanent conversion of agricultural land.</td>
<td></td>
</tr>
<tr>
<td>► Notes that under CCR 15206(b)(3) a project is of statewide, regional, or area-wide significance if it will cause cancellation of Williamson Act contracts for a parcel of 100 acres or more.</td>
<td></td>
</tr>
<tr>
<td>► Recommends that the EIR include a map with the location of agricultural preserves and Williamson Act contracted land and that the EIR provide the number of Williamson Act acres, according to Important Farmland type that would be affected.</td>
<td></td>
</tr>
<tr>
<td>► Recommends that the EIR discuss Williamson Act contracts that may be terminated as a result of the project and probable impacts on nearby properties in the context of growth inducement brought about by land value changes.</td>
<td></td>
</tr>
<tr>
<td>► Recommends that the EIR address proposed uses of lands in the project area that will remain under Williamson Act contract and notes that uses must meet compatibility standards in Government Code Sections 51238-51238.3.</td>
<td></td>
</tr>
<tr>
<td>► Recommends that the EIR discuss any proposed general plan designation or zoning within agricultural preserves affected by the project.</td>
<td></td>
</tr>
<tr>
<td>► Notes that notification provisions for public agency acquisition of Williamson Act contracted lands are in Government Code Section 51291(b) and that acquisition by a public agency must comply with Government Code Section 51290-51295.</td>
<td></td>
</tr>
<tr>
<td>California State Lands Commission</td>
<td>April 8, 2009</td>
</tr>
<tr>
<td>► Notes that the California State Lands Commission (CSLC) has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable river, sloughs, and lakes and retains residual and review authority for “sovereign lands” legislatively granted in trust to local jurisdictions.</td>
<td></td>
</tr>
<tr>
<td>► Notes that all tidelands, submerged lands, and beds of navigable waterways are subject to the Public Trust easement.</td>
<td></td>
</tr>
<tr>
<td>► Notes that the use of any tidelands, submerged lands, or beds of navigable waters for any part of the project requires that the applicant first obtain a lease from CSLC.</td>
<td></td>
</tr>
<tr>
<td>► Requests greenhouse gas emissions information consistent with the California Global Warming Solutions Act (Assembly Bill 32) and subsequent legislation.</td>
<td></td>
</tr>
<tr>
<td>State of California Governor’s Office of Planning and Research, State Clearinghouse and Planning Unit</td>
<td>March 27, 2009</td>
</tr>
<tr>
<td>► Courtesy notice that specifies that responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency.</td>
<td></td>
</tr>
<tr>
<td>Sacramento County Department of Transportation</td>
<td>April 6, 2009</td>
</tr>
<tr>
<td>► Requests that the project proponent enter into a maintenance agreement with the Maintenance and Operations Section of Sacramento County Department of Transportation (SACDOT) to cover the maintenance and repair of any roadway damaged by the project’s construction activities.</td>
<td></td>
</tr>
<tr>
<td>► Requests that the proposed roadway closure and detour plans be coordinated with SACDOT staff.</td>
<td></td>
</tr>
<tr>
<td>Commenter</td>
<td>Date</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Sutter County</td>
<td>April 6, 2009</td>
</tr>
<tr>
<td>Sacramento Metropolitan Air Quality Management District</td>
<td>April 13, 2009</td>
</tr>
<tr>
<td>City of Sacramento Department of Transportation</td>
<td>May 1, 2009</td>
</tr>
<tr>
<td>Rio Linda and Elverta Recreation and Park District</td>
<td>April 21, 2009</td>
</tr>
<tr>
<td>Sacramento Area Bicycle Advocates</td>
<td>April 20, 2009</td>
</tr>
<tr>
<td>Wickland Pipelines, LLC</td>
<td>April 13, 2009</td>
</tr>
<tr>
<td>Ed Bianchi</td>
<td>April 13, 2009</td>
</tr>
<tr>
<td>Frances Tennant</td>
<td>April 13, 2009</td>
</tr>
</tbody>
</table>

Source: Compiled by AECOM in 2009
7.1.2 **ISSUANCE OF THE PHASE 4a DEIS/DEIR AND SAFCA’S FEIR**

The Phase 4a DEIS/DEIR was distributed for public and agency review and comment, in accordance with NEPA and CEQA requirements. The review period began on August 28, 2009 and closed on October 13, 2009.

SAFCA held a public meeting before the SAFCA Board of Directors on September 17, 2009 at 3:00 p.m., at which it received input from agencies and the public on the Phase 4a DEIS/DEIR. 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 J, “Responses to Comments on the DEIS/DEIR,” of this FEIS.

SAFCA prepared a separate FEIR, which the SAFCA Board of Directors certified in November 2009.

7.1.3 **NEXT STEPS IN THE ENVIRONMENTAL REVIEW PROCESS**

USACE will circulate this FEIS for 30 days prior to taking action on the project and issuing its record of decision (ROD). The ROD will identify USACE’s decision regarding the alternatives considered, address substantive comments received on this FEIS, and determine whether the Proposed Action complies with Sections 408, 404, and 10.

7.1.4 **OTHER PUBLIC OUTREACH ACTIVITIES**

To help the community stay informed about current project activities, information is provided in a variety of ways:

► USACE and SAFCA each maintain Web sites (http://www.spk.usace.army.mil and http://www.safca.org/Programs_Natomas.html, respectively) that contain public documents related to the NLIP. Additionally, SAFCA’s Web site contains public notices, project maps, schedule updates, news articles, SAFCA Board of Director meeting agendas and meeting summaries, and other project-related materials;

► SAFCA periodically mails Executive Director Updates to property owners located adjacent to the NLIP project footprint;

► NLIP updates are provided at the monthly SAFCA Board of Directors meetings, which typically occur on the third Thursday of each month. These meetings are held at the Sacramento County Board of Supervisors Chambers at 700 H Street, Sacramento, California, 95814 and begin at 3:00 p.m.; and

► Additionally, SAFCA has held several meetings with landowner groups and other interest groups during conceptual project design and will continue to meet with these groups to address concerns and interests.

7.1.5 **MAJOR 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 on Garden Highway residents (including potential 24/7 cutoff wall construction along the Sacramento River east levee);

► concerns regarding 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 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. SAFCA intends to voluntarily apply the design and construction provisions in the agreement to all Sacramento River east levee components of the project. Agreements made by SAFCA in the settlement regarding construction practices are incorporated into the project or reflected, as appropriate, in the mitigation measures in this FEIS.

Other issues, including potential 24/7 cutoff wall construction along the Sacramento River east levee, vegetation and tree removal, relocation of 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 DEIS/DEIR. Additionally, SAFCA continues 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 SEIR under CEQA. 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 lawsuit and in comment letters submitted on the Phase 3 DEIS/DEIR, including the issues described above. In July 2009, the Association for the Environmental Preservation of the Garden Highway dismissed its lawsuit.

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.

7.2 NATIVE AMERICAN CONSULTATION

7.2.1 SECTION 106 COMPLIANCE

USACE is the lead agency for Native American consultation under NEPA. On May 1, 2008, the California State Historic Preservation Officer (SHPO) signed the Programmatic Agreement (PA) among USACE, SAFCA, and SHPO, regarding the issuance of permission under the authority of Section 408 and Section 404 for the NLIP Landside Improvements Project. USACE consulted the Ione Band of Miwok Indians, the Shingle Springs Band of Miwok Indians, and the United Auburn Indian Community, and invited them to concur in this PA. On June 23, 2008, the Central Valley Flood Protection Board concurred in the PA. The PA envisioned that preparation of inventory reports for consultation between USACE and SHPO for identification of Areas of Potential Effect (APEs) would be based on phases of construction work. USACE, SAFCA, and SHPO compiled a list of members of the interested public who were provided notice of this PA. The Section 106 process requires that USACE make good faith efforts to identify and take into account the opinions and preferences of local Native Americans with cultural ties to the APE, as well as the public for historic preservation actions taken in accordance with the PA. Native American monitors have been assisting SAFCA in the treatment of Native American human remains and items associated with Native American burials discovered during project activities in accordance with California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5(b) and 7050.5(c).
In April 2008, in response to requests from the project archaeologists, the Native American Heritage Commission (NAHC) identified a Most Likely Descendant (MLD) for discoveries of human remains at CA-Sac-485/H, Mr. John Tayaba of the Shingle Springs Rancheria. Mr. Tayaba is being consulted with regard to the disposition of prehistoric remains encountered in preliminary archaeological investigations in the project area. Shingle Springs Rancheria is a Federally recognized tribe and is actively participating in consultation regarding the identification and treatment of cultural resources subject to Section 106 of the National Historic Preservation Act.

In implementing the provisions of the PA, USACE archaeologists, SAFCA, SAFCA’s project archaeologists, and tribal representatives meet weekly to discuss project progress, and the general approach to inventory, evaluation, and treatment of cultural resources for the project. Discussions include specific consideration of preferred construction methods from a tribal perspective, and treatment of identified and significant resources. Section 106 consultation is ongoing, and conducted in close coordination with Native Americans.

7.2.2 **NATIVE AMERICAN CONSULTATION UNDER CEQA**

SAFCA is the lead agency for Native American consultation under CEQA. During the scoping period for the Phase 2 Project, SAFCA’s project archaeologists sent a letter of inquiry to the NAHC on June 12, 2007, asking for information or concerns regarding the project area, as well as a list of individuals or organizations that might have information or concerns regarding the project area. On June 19, 2007, Debbie Pilas-Treadway of the NAHC responded and indicated that no known sites were found in the Sacred Lands File that were located within the project area or in the immediate vicinity. Ms. Pilas-Treadway also provided the project archaeologists with a list of individuals who could be contacted concerning cultural resources in the project area. These individuals were sent contact letters on June 21, 2007, with information regarding the proposed project and a request for any information they might provide or concerns that they might have about the project. No written responses were received; therefore, follow-up phone calls were made on July 9, 2007. Only one individual, Rose Enos (referred to by the NAHC as “Miwok/Maidu”), answered. Ms. Enos expressed general concern regarding avoidance of burial sites and asked to be contacted if work is conducted on such sites. Messages were left for the remaining people on the contact list; however, no response from any of these individuals was received.

In addition, Randy Yonemura of the Ione Band of the Miwok was contacted in January 2008 for information on areas of concern. Mr. Yonemura led an archaeologist on a field visit of the project area and provided anecdotal information on areas of potential Native American burials. Since spring 2008, Native American monitors have been observing archaeological field efforts, as appropriate, and offering insight and advice regarding cultural resources finds. SAFCA and USACE continue to consult closely with the MLD designated under California Public Resources Code 5097.98 regarding the effect of the NLIP on cultural resources of concern to the Native American community.

7.3 **COORDINATION WITH OTHER FEDERAL, STATE, REGIONAL, AND LOCAL AGENCIES**

Chapter 6.0, “Compliance with Federal Environmental Laws and Regulations,” describes the project’s compliance with applicable Federal laws and regulations, including consultation to date with various agencies. The following briefly summarizes these consultation and coordination efforts.

7.3.1 **COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION AND THE SACRAMENTO COUNTY AIRPORT SYSTEM**

The Federal Aviation Administration (FAA) is acting as a cooperating agency under NEPA for the Phase 4a Project. USACE and SAFCA met with the FAA and the Sacramento County Airport System (SCAS) on September 10, 2008, regarding project features within the Sacramento International Airport (Airport) north bufferlands. The FAA and SCAS have noted that the Airport has developed the Airport’s *Wildlife Hazard*
Management Plan (WHMP), with which the Phase 4a Project would comply, to the extent practicable and feasible, to ensure aviation safety. Further, the FAA and SCAS have expressed concern that the project, if inappropriately designed, could change existing vegetation and wildlife habitat in ways that could attract wildlife hazardous to aviation safety and increase wildlife-aircraft collisions.

The FAA continues to be involved in reviewing environmental documents related to the Landside Improvements Project. USACE and SAFCA meet with the FAA as needed to discuss design of project components as it relates to the Airport and to ensure that the project would not interfere with implementation of the WHMP. SCAS provided comments on the Phase 4a DEIS/DEIR, which are included in Appendix J of this FEIS along with USACE’s and SAFCA’s response.

### 7.3.2 RESOURCE AGENCY COORDINATION

Over the course of project planning and environmental review for the NLIP Landside Improvements Project, USACE and SAFCA have coordinated informally with the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), the California Department of Fish and Game (DFG), and The Natomas Basin Conservancy (TNBC). Table 7-2 includes permits and other resource agency coordination activities for current and future NLIP project construction phases. A copy of the programmatic Biological Opinion and USACE Jurisdictional Determinations are included in Appendix D.

<table>
<thead>
<tr>
<th>Table 7-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>NLIP Resource Agency Coordination¹</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit/Authorization/Approval</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programmatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USFWS</td>
<td>Programmatic Biological Opinion</td>
<td>Issued October 2008; Amendment issued May 2009; Appendage issued September 2009</td>
</tr>
<tr>
<td>DFG, Central Valley RWQCB, USACE, and USFWS</td>
<td>Long Term Management Plan Approval</td>
<td>Granted May 2009</td>
</tr>
<tr>
<td><strong>Phase 2 Project</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USACE</td>
<td>Section 408 Permission</td>
<td>Granted January 2009</td>
</tr>
<tr>
<td>USACE</td>
<td>Section 404 Permit</td>
<td>Issued January 2009; amendment issued May 2009²; 2nd amendment issued August 2009; 3rd amendment anticipated February 2010</td>
</tr>
<tr>
<td>Central Valley RWQCB</td>
<td>Section 401 Water Quality Certification</td>
<td>Issued January 2009</td>
</tr>
<tr>
<td>DFG</td>
<td>Section 2081 Incidental Take Authorization</td>
<td>Issued May 2009</td>
</tr>
<tr>
<td>NMFS</td>
<td>Concurrence of Determination of Not Likely to Adversely Affect</td>
<td>January 2009</td>
</tr>
<tr>
<td>DFG</td>
<td>Section 1602 Streambed Alteration Agreement</td>
<td>Issued January 2009</td>
</tr>
<tr>
<td>USFWS</td>
<td>Biological Opinion</td>
<td>Issued October 2008; Amendment issued May 2009</td>
</tr>
<tr>
<td>USFWS</td>
<td>Fish and Wildlife Coordination Act Report</td>
<td>October 2008</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>SMARA Exemption</td>
<td>Granted February 2009</td>
</tr>
<tr>
<td>Sutter County</td>
<td>SMARA Exemption</td>
<td>Granted February 2009</td>
</tr>
<tr>
<td>DFG, Central Valley RWQCB, USACE, and USFWS</td>
<td>MMP</td>
<td>Approval granted May 2009</td>
</tr>
<tr>
<td>SWRCB</td>
<td>Section 402 NPDES General Construction Permit</td>
<td>Notice of Intent filed March 2009</td>
</tr>
<tr>
<td><strong>Phase 3 Project²</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USACE</td>
<td>Section 408 Permission</td>
<td>Under review, permission anticipated March 2010</td>
</tr>
<tr>
<td>USACE</td>
<td>Section 404 Permits²</td>
<td>Phase 3a permit received October 2009; Phase 3b permit anticipated March 2010</td>
</tr>
<tr>
<td>USACE</td>
<td>Section 10 Permit</td>
<td>Phase 3a permit received October 2009; Phase 3b permit anticipated March 2010</td>
</tr>
</tbody>
</table>

¹ For current and future NLIP project construction phases.
² Additional permits are under review as of this writing; anticipated dates are noted as available.
### Table 7-2
#### NLIP Resource Agency Coordination

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit/Authorization/Approval</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Valley RWQCB</td>
<td>Section 401 Water Quality Certifications&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Certifications received in September 2009 for Phase 3a and January 2010 for Phase 3b</td>
</tr>
<tr>
<td>DFG</td>
<td>Section 2081 Incidental Take Authorization</td>
<td>In preparation, authorization anticipated March 2010</td>
</tr>
<tr>
<td>DFG</td>
<td>Section 1602 Streambed Alteration Agreement&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Landside canal footprint agreement received September 2009; later stages anticipated February–April 2010</td>
</tr>
<tr>
<td>USFWS</td>
<td>Biological Opinion</td>
<td>Biological Opinion received September 2009</td>
</tr>
<tr>
<td>NMFS</td>
<td>Concurrence of Determination of Not Likely to Adversely Affect (Phases 3b and 4a combined only)</td>
<td>January 2010</td>
</tr>
<tr>
<td>USFWS</td>
<td>Fish and Wildlife Service Coordination Act Report</td>
<td>Draft received June 2009, final received October 2009</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>SMARA Exemption</td>
<td>Exemption granted November 2009 for South Sutter, LLC</td>
</tr>
<tr>
<td>DFG, Central Valley RWQCB, USACE, and USFWS</td>
<td>MMP</td>
<td>Approved by USACE September 2009; approved by all other agencies October 2009</td>
</tr>
<tr>
<td>SWRCB</td>
<td>Section 402 NPDES General Construction Permit Notice of Intent submitted November 2009</td>
<td></td>
</tr>
</tbody>
</table>

#### Phase 4a Project

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit/Authorization/Approval</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>USACE</td>
<td>Section 408 Permission</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>USACE</td>
<td>Section 404 Permit</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>USACE</td>
<td>Section 10 Permit</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>Central Valley RWQCB</td>
<td>Section 401 Water Quality Certification</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>DFG</td>
<td>Section 2081 Incidental Take Authorization</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>DFG</td>
<td>Section 1602 Streambed Alteration Agreement</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>USFWS</td>
<td>Biological Opinion</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>NMFS</td>
<td>Determination of Not Likely to Adversely Affect (Phases 3b and 4a combined only)</td>
<td>January 2010</td>
</tr>
<tr>
<td>USFWS</td>
<td>Fish and Wildlife Service Coordination Act Report</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>Sacramento County</td>
<td>SMARA Permit and Exemption</td>
<td>Exemption granted November 2009 for most of the Fisherman’s Lake Borrow Area, including Novak; Sacramento County determined that the northeastern corner of the Fisherman’s Lake Borrow Area (called the Natomas Urban Development site) would require a SMARA permit</td>
</tr>
<tr>
<td>DFG, RWQCB, USACE, and USFWS</td>
<td>MMP</td>
<td>Anticipated spring 2010</td>
</tr>
<tr>
<td>SWRCB</td>
<td>Section 402 NPDES Permit</td>
<td>Anticipated spring 2010</td>
</tr>
</tbody>
</table>

#### Phase 4b Project – Anticipated 2010–2011<sup>5</sup>

Notes: USFWS = U.S. Fish and Wildlife Service; NMFS = National Marine Fisheries Service; DFG = California Department of Fish and Game; RWQCB = Regional Water Quality Control Board; USACE = U.S. Army Corps of Engineers; SMARA = Surface Mining and Reclamation Act; MMP = Mitigation and Monitoring Plan; SWRCB = State Water Resources Control Board; NPDES = National Pollutant Discharge Elimination System

<sup>1</sup> Although Phase 1 Project permitting and regulatory requirements were fulfilled, they are not included in this table because construction is complete.

<sup>2</sup> The Phase 2 Project Section 404 permit was amended based on the Amended Phase 2 Biological Opinion.

<sup>3</sup> The Phase 3 Project Section 404 permit and 401 certification has been separated into 2 subphases (a and b).

<sup>4</sup> The Phase 3 Project 1602 Streambed Alteration Agreement will be separated into (at least) 3 stages.

<sup>5</sup> The Phase 4b Project will require similar permits and regulatory approvals/authorizations as the Phase 2, 3, and 4a Projects, with the exception of a Section 404 permit, which would only be required for the Phase 4b Project if Federal authorization is not obtained and SAFCA chooses to proceed with Phase 4b Project implementation without Federal participation.

Source: Data compiled by AECOM in 2009
7.4 List of Recipients

7.4.1 Elected Officials and Representatives

- Doris Matsui, Congresswoman, 5th Congressional District
- Tom McClintock, Congressman, 4th Congressional District
- Roger Dickinson, Sacramento County Supervisor, District 1
- Jimmie Yee, Sacramento County Supervisor, District 2
- Susan Peters, Sacramento County Supervisor, District 3
- Roberta MacGlashan, Sacramento County Supervisor, District 4
- Don Nottoli, Sacramento County Supervisor, District 5
- James Gallagher, Sutter County Supervisor, District 5
- Mayor Kevin Johnson, Sacramento City Council
- Ray Tretheway, Sacramento City Council, District 1
- Sandy Sheedy, Sacramento City Council, District 2
- Steve Cohn, Sacramento City Council, District 3
- Rob Fong, Sacramento City Council, District 4
- Lauren Hammond, Sacramento City Council, District 5
- Kevin McCarty, Sacramento City Council, District 6
- Robbie Waters, Sacramento City Council, District 7
- Bonnie Pannell, Sacramento City Council, District 8
- William Kristoff, West Sacramento City Council

7.4.2 Government Departments and Agencies

United States Government

- Bureau of Indian Affairs, Pacific Regional Office
- Federal Aviation Administration
- Federal Emergency Management Agency, Region IX
- National Marine Fisheries Service
- Natural Resources Conservation Service
- U.S. Bureau of Reclamation, Central Valley Operations
- U.S. Coast Guard
- U.S. Department of Agriculture, National Rural Development Council
- U.S. Environmental Protection Agency, Division 9
- U.S. Fish and Wildlife Service

Tribal Government

- Shingle Springs Rancheria

State of California

State agencies that will receive the document via the State Clearinghouse are marked (*)

- California Bay-Delta Authority
- California Air Resources Board*
- California Department of Boating and Waterways, Regulations Unit
- California Department of Conservation*
- California Department of Education*
- California Department of Fish and Game, Region 2
California Department of General Services*
California Department of Health Services*
California Department of Transportation, District 3*
California Department of Toxic Substances Control*
California Department of Water Resources
California Environmental Protection Agency
California Integrated Waste Management Board*
California Regional Water Quality Control Board, Central Valley Region*
Central Valley Flood Protection Board
Native American Heritage Commission
Office of Emergency Services*
Office of Historic Preservation, State Historic Preservation Officer
Office of Planning and Research, State Clearinghouse
State Lands Commission, Division of Environmental Planning and Management
State Water Resources Control Board*

REGIONAL, COUNTY, CITY, AND OTHER LOCAL AGENCIES

Amador County
American River Flood Control District
Butte County
Central Valley Flood Control Association
City of Davis
City of Sacramento
City of Sacramento Department of General Services
City of Sacramento Department of Parks and Recreation
City of Sacramento Department of Transportation Engineering Services
City of Sacramento Department of Utilities
City of Stockton
City of West Sacramento
City of Woodland
Colusa County
Contra Costa County
El Dorado County
Feather River Air Quality Management District
Natomas Central Mutual Water Company
Natomas Unified School District
Placer County
Placer County Water Agency
Port of Sacramento
Reclamation District 150
Reclamation District 307
Reclamation District 537
Reclamation District 730
Reclamation District 785
Reclamation District 900
Reclamation District 999
Reclamation District 1000
Reclamation District 1001
Reclamation District 1500
Reclamation District 1600
Reclamation District 2035
► Reclamation District 2068
► Regional Water Authority
► Rio Linda and Elverta Recreation and Park District
► Robla School District
► Sacramento Area Council of Governments
► Sacramento Area Sewer District
► Sacramento County
► Sacramento County Airport System
► Sacramento County Clerk/Recorder
► Sacramento County Department of Environmental Management
► Sacramento County Department of Environmental Review and Assessment
► Sacramento County Department of Regional Parks
► Sacramento County Department of Transportation
► Sacramento County Department of Water Resources
► Sacramento County Local Agency Formation Commission
► Sacramento County Municipal Services Agency
► Sacramento County Planning and Community Development Department
► Sacramento County Water Agency
► Sacramento Metropolitan Air Quality Management District
► Sacramento Metropolitan Fire District
► Sacramento Municipal Utility District
► Sacramento Regional County Sanitation
► San Joaquin County
► San Joaquin County Flood Control and Water Conservation District
► Solano County
► Sutter County
► Sutter County Clerk of the Board
► Sutter County Department of Public Works
► Sutter County Environmental Health Services
► Sutter County Planning Department
► Sutter County Resource Conservation District
► Sutter County Water Resources Division
► Three Rivers Levee Improvement Authority
► Twin Rivers Unified School District
► Yolo County
► Yolo County Flood Control and Water Conservation District
► Yolo County Parks and Natural Resources Management Division
► Yolo County Planning and Public Works Department
► Yuba County
► Yuba County Water Agency
► Yuba-Sutter County Farm Bureau

7.4.3 **Nonprofit Organizations, Partnerships, Private Organizations, and Businesses**

► Alamar Restaurant
► APCO Worldwide
► California Native Plant Society, Sacramento Valley Chapter
► Cassidy & Associates
► Citizens for Good Government
► Community Watchdog Committee
► Creekside Natomas Neighborhood Association
Dawson and Associates
Delta Citizens Municipal Advisory Council
Downtown Partnership
Environmental Council of Sacramento
Friends of the River
Friends of the Sacramento River Greenway
Friends of the Swainson’s Hawk
Garden Highway Community Association
Gardenland-Northgate Neighborhood Association
The Gualco Group
Habitat 2020
Heritage Park Homeowners Association
Law Offices of Gregory Thatch
Metro Airpark
Natomas Chamber of Commerce
Natomas Community Association
Natomas Park Master Association
North Natomas Alliance
North Natomas Community Association
Pacific Gas & Electric Company
Planning & Conservation League
Port of Sacramento
Regency Park Community Association
Rio Linda Union School District
Rio Ramaza Marina
River Oaks Community Association
River Oaks Ranch in Natomas, LLC
Sacramento Area Bicycle Advocates
Sacramento Association of Realtors
Sacramento Builders Exchange
Sacramento County Farm Bureau
Sacramento County Taxpayers
Sacramento Groundwater Authority and Regional Water Authority
Sacramento Metro Chamber
Sacramento Public Library, Central Library, Federal Documents
Sacramento River Property Owners Association
Save Our Sandhill Cranes
Save the American River Association
Sierra Club, Mother Lode Chapter
Steinberg & Associates
Sutter County Resource Conservation District
Swabbies
Terrace Park Neighborhood Association
The Natomas Basin Conservancy
The Nature Conservancy, Sacramento River Program
Urban Creeks Council
Valley View Acres Community Association
Water Forum
West Natomas Community Association
West Sacramento Chamber of Commerce
Wickland Pipelines, LLC
7.4.4 MEDIA

► Daily Recorder
► Folsom Telegraph
► N Magazine
► Natomas Journal
► Sacramento Bee
► Sacramento Business Journal
► Sacramento News & Review

7.4.5 INDIVIDUAL PROPERTY OWNERS

► Names withheld for privacy
8 REFERENCES

ARB. See California Air Resources Board.
BBN. See Bolt Beranek and Newman Inc.
Caltrans. See California Department of Transportation.
CAPCOA. See California Air Pollution Control Officers Association.
Central Valley RWQCB. See Central Valley Regional Water Quality Control Board.
CNDDB. See California Natural Diversity Database.
DFG. See California Department of Fish and Game.
DWR. See California Department of Water Resources.
EPA. See U.S. Environmental Protection Agency.
FAA. See Federal Aviation Administration.
FEMA. See Federal Emergency Management Agency.
FHWA. See Federal Highway Administration.
FRAQMD. See Feather River Air Quality Management District.
HUD. See U.S. Department of Housing and Urban Development.
ITE. See Institute of Transportation Engineers.
LSCE. See Luhdorff & Scalmanini, Consulting Engineers.
NMFS. See National Marine Fisheries Service.
NRCS. See Natural Resources Conservation Service.
OPR. See Governor’s Office of Planning and Research.
PSMFC. See Pacific States Marine Fisheries Commission.
SAFCA. See Sacramento Area Flood Control Agency.
SACOG. See Sacramento Area Council of Governments.
Sacramento LAFCo. See Sacramento County Local Agency Formation Commission.
SCAS. See Sacramento County Airport System.
SGA. See Sacramento Groundwater Authority.
SMAQMD. See Sacramento Metropolitan Air Quality Management District.
EXECUTIVE SUMMARY


1.0 INTRODUCTION AND STATEMENT OF PURPOSE AND NEED


### 2.0 ALTERNATIVES

Federal Aviation Administration. 2007. Advisory Circular (AC) 150/5200-33B, Hazardous Wildlife Attractants on or Near Airports.


3.1  GENERAL SITE CONDITIONS

None.

3.2  AGRICULTURAL RESOURCES


3.3  LAND USE, SOCIOECONOMICS, AND POPULATION AND HOUSING


Sacramento County Airport System. 2007. *Sacramento International Airport Master Plan.* Sacramento, CA.


### 3.4 GEOLOGY AND SOILS

Anderson, Byron C. Senior Engineer Geologist. Kleinfelder West, Inc, Sacramento, CA. June 26, 2008—letter to John Bassett regarding a preliminary evaluation of naturally occurring asbestos that may be present in the Natomas Levee Improvement Project area including Sacramento and Sutter Counties, California.


Merry, Scott. Kleinfelder, Inc. Tucson, AZ. July 16, 2009—telephone conversation with Marianne Lowenthal of EDAW regarding soil samples within the Phase 4a Project footprint.


### 3.5 HYDROLOGY AND HYDRAULICS


### 3.6 WATER QUALITY

3.7 BIOLOGICAL RESOURCES


California Department of Fish and Game. 1994. Staff Report on Mitigation for Impacts to Swainson’s hawks (Buteo swainsoni) in the Central Valley of California. Sacramento, CA.


California Natural Diversity Database. 2007. Results of electronic record search. California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch. Sacramento, CA.

______. 2008. Results of electronic record search. California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch. Sacramento, CA.


Moyle, P. B., R. M. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. *Fish Species of Special Concern of California*. California Department of Fish and Game. Rancho Cordova, CA.


3.8 CULTURAL RESOURCES


Dames & Moore. 1993. Department of Parks and Recreation Series 523 Site Record forms for CA-Sac-16H. On file, North Central Information Center, California State University, Sacramento, CA.

3.9 PALEONTOLOGICAL RESOURCES


3.10 TRANSPORTATION AND CIRCULATION


3.11 AIR QUALITY

References 8-14 USACE


### 3.12 NOISE


Follas, Dale. Associate Planner. Sutter County Planning Department, Yuba City, CA. September 7, 2007—telephone conversation with Chris Shields of EDAW regarding noise ordinance in Sutter County.


Sutter County. 1996 (May). *County of Sutter General Plan 2015 Background Report*. Community Services Department. Yuba City, CA.


### 3.13 VISUAL RESOURCES


3.14 UTILITIES AND SERVICE SYSTEMS

Butler, Myles. General Manager. Wickland Pipelines, LLC. March 12, 2009—email to Marianne Lowenthal regarding engineering details of the Wickland Pipeline located within the Project Footprint.


3.15 HAZARDS AND HAZARDOUS MATERIALS


3.16 ENVIRONMENTAL JUSTICE


4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

4.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS


4.2 AGRICULTURAL RESOURCES


4.3 LAND USE, SOCIOECONOMICS, AND POPULATION AND HOUSING


### 4.4 GEOLOGY AND SOILS


### 4.5 HYDROLOGY AND HYDRAULICS


### 4.6 WATER QUALITY


### 4.7 BIOLOGICAL RESOURCES


California Natural Diversity Database. 2008. Results of electronic record search. California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch. Sacramento, CA.


4.8 CULTURAL RESOURCES


4.9 PALEONTOLOGICAL RESOURCES


4.10 TRANSPORTATION AND CIRCULATION


Klinker, Dan, Associate Civil Engineer. Alternative Modes Coordinator. Sacramento County Department of Transportation, Sacramento, CA. May 22, 2009—e-mail message to Melinda Rivasplata of EDAW regarding designated bicycle routes within the Phase 4a Project area.


4.11 AIR QUALITY


4.12 NOISE


California Department of Transportation. 2002 (February 20). Transportation Related Earthborne Vibrations. Sacramento, CA.


4.13 VISUAL RESOURCES


4.14 UTILITIES AND SERVICE SYSTEMS

4.15 HAZARDS AND HAZARDOUS MATERIALS


4.16 ENVIRONMENTAL JUSTICE


5.0 CUMULATIVE AND GROWTH-INDUCING IMPACTS, AND OTHER STATUTORY REQUIREMENTS

California Air Pollution Control Officers Association. 2008. CEQA & Climate Change.

California Air Resources Board. 2008a (October). Climate Change Proposed Scoping Plan.


City of Sacramento and County of Sacramento. 2002 (December 10). Resolution No. 2002-830. A Resolution Authorizing the City Manager to Execute a Memorandum of Understanding Between the City and County


Sacramento County Airport System. 2007. Sacramento International Airport Master Plan. Sacramento, CA.


6.0 COMPLIANCE WITH FEDERAL ENVIRONMENTAL LAWS AND REGULATIONS


7.0 CONSULTATION AND COORDINATION

None.
This FEIS was prepared by EDAW at the direction of USACE and SAFCA, with assistance from MBK Engineers, HDR Engineering, Mead & Hunt, and Wood Rodgers.

The following is a list of the individuals who prepared sections of this FEIS, provided significant background materials, or participated in preparing this FEIS.

### U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth Holland</td>
<td>Social Science Environmental Manager</td>
<td>24 years</td>
</tr>
<tr>
<td>Kathleen Dadey, Ph.D.</td>
<td>Chief, California Delta Branch, Regulatory</td>
<td>16 years</td>
</tr>
<tr>
<td>Michael Dunphy</td>
<td>Biological Science Environmental Manager</td>
<td>12 years</td>
</tr>
<tr>
<td>Dan Tibbits, P.E.</td>
<td>Programs and Project Manager</td>
<td>18 years</td>
</tr>
<tr>
<td>Daniel Bell</td>
<td>Archaeologist</td>
<td>31 years</td>
</tr>
<tr>
<td>Greg Kukas, P.E.</td>
<td>Acting Chief, Hydrology and Hydraulics Branch</td>
<td>15 years</td>
</tr>
<tr>
<td>Lisa Clay</td>
<td>Assistant District Counsel</td>
<td>21 years</td>
</tr>
</tbody>
</table>

### SACRAMENTO AREA FLOOD CONTROL AGENCY

Timothy Washburn, J.D. ...........................................................................................................Director of Planning
John Bassett, P.E. ...................................................................................... Director of Engineering, Project Manager
Peter Buck.........................................................................................................................Natural Resource Supervisor

### AECOM

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualifications and Experience</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phil Dunn</td>
<td>B.S. Zoology; M.S. Fisheries Biology; 29 years experience</td>
<td>Principal-in-Charge, Senior Reviewer/Advisor</td>
</tr>
<tr>
<td>Francine Dunn</td>
<td>B.A. Environmental Studies; 25 years experience</td>
<td>Principal, NEPA/CEQA Task Leader, EIS/EIR Project Manager</td>
</tr>
<tr>
<td>David Rader</td>
<td>B.A. Print Journalism; M.A. Business Economics; 6 years experience</td>
<td>NEPA/CEQA Assistant Project Manager, Alternatives, Transportation and Circulation</td>
</tr>
<tr>
<td>Sarah Henningsen</td>
<td>B.S. Community and Regional Development; 6 years experience</td>
<td>NEPA/CEQA Project Coordinator, Executive Summary, Introduction and Statement of Purpose and Need, Compliance with Federal Environmental Laws and Regulations, Consultation and Coordination</td>
</tr>
<tr>
<td>Name</td>
<td>Qualifications and Experience</td>
<td>Participation</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Melinda Rivasplata</td>
<td>B.A. Environmental Biology; 26 years experience</td>
<td>Agricultural Resources; Land Use, Socioeconomics, and Population and Housing; Visual Resources; Cumulative and Growth-Inducing Impacts, and Other Statutory Requirements</td>
</tr>
<tr>
<td>Marianne Lowenthal</td>
<td>B.S. Environmental Toxicology; 3 years experience</td>
<td>Geology and Soils, Utilities and Service Systems, Hazards and Hazardous Materials</td>
</tr>
<tr>
<td>Wendy Copeland</td>
<td>B.S. Plant Science; M.S. Plant Pathology; 9 years experience</td>
<td>Geology and Soils Senior Reviewer, Paleontological Resources</td>
</tr>
<tr>
<td>Ellen Fyock</td>
<td>B.S. Marketing; M.S. Environmental Science; 2 years experience</td>
<td>Hydrology and Hydraulics, Water Quality</td>
</tr>
<tr>
<td>Karen Appell</td>
<td>B.S. Agricultural and Biological Engineering; Graduate Certificate in Water Resources Engineering; 10 years experience</td>
<td>Hydrology and Hydraulics, and Water Quality Senior Reviewer</td>
</tr>
<tr>
<td>Stephanie Jentsch</td>
<td>B.A. Psychology; M.S. Wildlife and Fisheries Science; 5 years experience</td>
<td>Biological Resources</td>
</tr>
<tr>
<td>Ann Chrisney</td>
<td>B.S. Animal Science; M.S. Natural Resources; 27 years experience</td>
<td>Biological Resources</td>
</tr>
<tr>
<td>Chris Fitzer</td>
<td>B.A. Geography (Environmental Concentration); M.A. Environmental Planning (Watershed/ Water Resources Concentration); 14 years experience</td>
<td>Fisheries</td>
</tr>
<tr>
<td>Mike Eng</td>
<td>B.S. Ecology; B.A. English; 6 years experience</td>
<td>Permitting Task Leader, Biological Resources</td>
</tr>
<tr>
<td>Leo Edson</td>
<td>B.S. Biological Studies; 25 years experience</td>
<td>Biological Resources Senior Reviewer</td>
</tr>
<tr>
<td>Mike Aviña</td>
<td>B.A. Anthropology; J.D. Law; 13 years experience</td>
<td>Cultural Resources, Environmental Justice</td>
</tr>
<tr>
<td>Steve Heipel</td>
<td>B.S. Anthropology; 37 years experience</td>
<td>Cultural Resources Senior Reviewer</td>
</tr>
<tr>
<td>Jake Weirich</td>
<td>B.S. Sound Engineering; 4 years experience</td>
<td>Air Quality and Noise</td>
</tr>
<tr>
<td>Honey Walters</td>
<td>B.S. Environmental Science; M.S. Atmospheric Science; 12 years experience</td>
<td>Air Quality and Noise Senior Reviewer</td>
</tr>
<tr>
<td>Lisa Clement</td>
<td>B.S. Environmental and Resource Sciences; 10 years experience</td>
<td>Geographic Information Systems</td>
</tr>
<tr>
<td>Phi Ngo</td>
<td>B.A. Communication (GIS Minor); 4 years experience</td>
<td>Geographic Information Systems</td>
</tr>
<tr>
<td>Julie Nichols</td>
<td>B.A. Political Science; M.S. Journalism; 20 years experience</td>
<td>Technical Editing</td>
</tr>
<tr>
<td>Christy Seifert</td>
<td>B.A. English; 11 years experience</td>
<td>Technical Editing</td>
</tr>
<tr>
<td>Lorrie Jo Williams</td>
<td>B.S. Design; 22 years experience</td>
<td>Graphics</td>
</tr>
<tr>
<td>Name</td>
<td>Qualifications and Experience</td>
<td>Participation</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Christy Anderson</td>
<td>B.A. Fine Art; 30 years experience</td>
<td>Graphics</td>
</tr>
<tr>
<td>Deborah Jew</td>
<td>23 years experience</td>
<td>Word Processing, Document Production</td>
</tr>
<tr>
<td>Amber Giffin</td>
<td>16 years experience</td>
<td>Word Processing, Document Production</td>
</tr>
</tbody>
</table>

**MBK ENGINEERS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualifications</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph D. Countryman, P.E.</td>
<td>B.S. Civil Engineering; 43 years experience</td>
<td>Hydraulic Modeling Review</td>
</tr>
<tr>
<td>Ric Reinhardt, P.E.</td>
<td>B.S. Civil Engineering; M.S. Civil Engineering; 14 years experience</td>
<td>Hydraulic Modeling Review</td>
</tr>
<tr>
<td>Mike Archer, P.E.</td>
<td>B.S. Civil Engineering; M.S. Civil Engineering; 26 years experience</td>
<td>Hydraulic Modeling</td>
</tr>
</tbody>
</table>

**HDR ENGINEERING**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualifications</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christopher Krivanec, P.E., G.E.</td>
<td>B.S. Civil Engineering; M.S. Civil Engineering (Geotechnical); M.E. Civil Engineering (Geotechnical); 17 years experience</td>
<td>Project Manager for Sacramento River East Levee Design</td>
</tr>
</tbody>
</table>

**MEAD & HUNT**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualifications</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steve Sullivan, P.E.</td>
<td>B.S. Civil Engineering; 28 years experience</td>
<td>Project Manager for Canal Design and Borrow Investigation</td>
</tr>
</tbody>
</table>

**WOOD RODGERS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualifications</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jonathan Kors, P.E.</td>
<td>B.S. Civil Engineering; 12 years experience</td>
<td>Project Manager for Natomas Cross Canal South Levee, Pleasant Grove Creek Canal West Levee, and Natomas East Main Drainage Canal West Levee Design</td>
</tr>
</tbody>
</table>
## 10 INDEX

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986 Flood</td>
<td>1-14</td>
</tr>
<tr>
<td>1997 Flood</td>
<td>1-13, 1-16</td>
</tr>
<tr>
<td>Agriculture</td>
<td>ES-3, ES-8, 1-19, 1-27, 2-22, 2-63, 2-72, 2-80, 2-81, 2-99, 3-6, 3-12, 3-16, 3-17, 3-20, 3-28, 3-39, 3-49, 3-59, 3-102, 3-103, 4-2-3, 4-2-4, 4-5-17, 4-7-3, 5-3, 5-6, 5-27, 5-30, 5-32, 6-11, 7-2, 7-10</td>
</tr>
<tr>
<td>Air Quality</td>
<td>ES-1, ES-11, ES-19, ES-39, ES-40, 1-2, 1-37, 1-39, 1-40, 1-41, 1-42, 2-14, 2-26, 2-76, 2-111, 3-79, 3-80, 3-81, 3-82, 3-84, 3-85, 3-87, 3-99, 4-1-6, 4-1-11, 4-11-2, 4-11-3, 4-11-4, 4-11-5, 4-11-6, 4-11-7, 4-11-10, 4-11-11, 4-11-13, 4-11-14, 4-11-15, 4-11-16, 4-11-18, 4-15-5, 4-15-7, 4-15-9, 4-15-10, 4-15-13, 4-16-3, 5-3, 5-4, 5-6, 5-9, 5-13, 5-18, 5-20, 5-21, 5-29, 5-35, 5-36, 6-4, 7-3, 7-11</td>
</tr>
<tr>
<td>Airport Critical Zone</td>
<td>ES-47, 1-26, 1-27, 2-28, 2-36, 2-97, 2-100, 4-13-4, 4-13-5, 4-15-2, 4-15-15, 4-15-16, 4-3-2, 4-7-25, 5-8, 5-12, 5-16, 5-23, 5-29, 6-12</td>
</tr>
<tr>
<td>Airport north bufferlands</td>
<td>ES-15, 1-6, 1-34, 1-35, 2-22, 2-28, 2-36, 2-73, 2-74, 3-3, 3-20, 3-67, 4-10-2, 4-10-3, 4-1-4, 1-5, 4-2-3, 4-3-2, 4-7-21, 5-30</td>
</tr>
<tr>
<td>Airport West Ditch</td>
<td>1-35, 2-20, 3-109</td>
</tr>
<tr>
<td>Airport. See Sacramento International Airport.</td>
<td></td>
</tr>
<tr>
<td>American River Common Features Project</td>
<td>ES-1, ES-5, 1-1, 1-16</td>
</tr>
<tr>
<td>American River Watershed Investigation</td>
<td>1-14, 1-15, 1-44, 3-60, 3-62, 3-64</td>
</tr>
<tr>
<td>ARWI. See American River Watershed Investigation.</td>
<td></td>
</tr>
<tr>
<td>Borrow site</td>
<td>ES-4, ES-15, ES-16, ES-30, 1-35, 1-36, 1-45, 2-8, 2-20, 2-22, 2-23, 2-24, 2-27, 2-36, 2-37, 2-43, 2-44, 2-45, 2-46, 2-47, 2-52, 2-53, 2-54, 2-64, 2-72, 2-73, 2-74, 2-75, 2-76, 2-77, 2-83, 2-85, 2-86, 2-87, 2-103, 2-104, 2-105, 2-106, 2-110, 3-20, 3-37, 3-39, 3-60, 3-62, 3-93, 3-95, 3-105, 4-1-3, 4-1-4, 4-1-5, 4-1-6, 4-2-1, 4-2-2, 4-2-3, 4-2-4, 4-2-5, 4-2-6, 4-2-7, 4-3-5, 4-3-6, 4-4-2, 4-4-3, 4-4-4, 4-4-5, 4-5-15, 4-5-17, 4-6-3, 4-7-1, 4-7-15, 4-7-17, 4-7-23, 4-7-26, 4-7-34, 4-8-9, 4-8-10, 4-8-11, 4-9-2, 4-10-2, 4-10-3, 4-10-6, 4-10-7, 4-10-8, 4-11-1, 4-11-17, 4-12-4, 4-12-5, 4-12-6, 4-12-7, 4-12-11, 4-13-3, 4-14-5, 4-15-1, 4-15-4, 4-15-6, 4-15-9, 4-15-10, 4-15-15, 4-15-17, 4-16-3, 5-12, 5-13, 5-15, 5-16, 5-17, 5-30, 5-37, 6-1, 6-11, 7-3</td>
</tr>
<tr>
<td>Burrowing owl</td>
<td>1-24, 3-47, 3-50, 4-7-32, 4-7-33, 4-7-34, 4-7-35, 4-7-43, 5-5, 5-7, 5-11, 5-17</td>
</tr>
<tr>
<td>California Air Resources Board</td>
<td>1-40, 3-79, 3-80, 3-81, 3-82, 3-86, 3-87, 4-11-8, 4-11-9, 4-11-10, 4-11-12, 4-11-17, 5-35, 5-36, 5-37, 7-10</td>
</tr>
</tbody>
</table>
California Department of Fish and Game ........................................ 1-39, 1-40, 1-41, 2-49, 2-93, 2-96, 2-97, 3-33, 3-34, 3-42, 3-45, 3-49, 3-50, 3-51, 3-52, 3-54, 3-100, 4.3-4, 4.6-4, 4.7-4, 4.7-5, 4.7-9, 4.7-10, 4.7-11, 4.7-13, 4.7-17, 4.7-18, 4.7-23, 4.7-24, 4.7-26, 4.7-27, 4.7-28, 4.7-29, 4.7-30, 4.7-32, 4.7-33, 4.7-35, 4.7-38, 4.7-39, 4.7-44, 5-21, 5-33, 5-40, 6-2, 6-3, 7-7, 7-8, 7-9, 7-10

California Endangered Species Act ............................................ ES-28, ES-29, ES-31, 1-41, 1-45, 2-76, 3-33, 3-40, 3-42, 3-51, 3-54, 4.7-10, 4.7-11, 4.7-14, 4.7-18, 4.7-23, 4.7-29, 4.7-30, 4.7-33, 4.7-38, 5-5, 5-8, 5-18, 5-32, 5-33, 5-34, 6-3

California Fish and Game Code ................................................ ES-1, ES-28, ES-29, ES-31, 1-2, 1-41, 2-16, 2-76, 3-33, 3-34, 3-42, 3-43, 3-44, 3-50, 4.7-4, 4.7-10, 4.7-14, 4.7-29, 5-5, 5-33

California Surface Mining and Reclamation Act ................................................ ES-1, ES-3, ES-5, ES-6, ES-8, ES-19, ES-27, 1-1, 1-2, 1-11, 1-16, 1-26, 1-31, 1-32, 1-33, 1-34, 1-35, 1-36, 1-37, 1-38, 1-40, 2-10, 2-14, 2-15, 2-16, 2-17, 2-69, 3-29, 3-40, 3-41, 3-43, 4.7-14, 4.7-15, 4.7-17, 5-2, 5-10, 5-26, 5-32, 6-1, 6-9, 6-10, 7-4, 7-5, 7-7, 7-8

Central Valley Flood Protection Board Encroachment Permit .......................................................... 3-25

CESA. See California Endangered Species Act.

Clean Water Act Section 401 ................................................. ES-1, ES-6, ES-27, 1-2, 1-33, 1-37, 1-42, 2-15, 2-16, 3-29, 3-30, 3-41, 4.7-17, 7-7, 7-8

Clean Water Act Section 402 ................................................. ES-1, 1-2, 3-29, 7-7, 7-8

Clean Water Act Section 404 ................................................. ES-1, ES-3, ES-5, ES-6, ES-8, ES-19, ES-27, 1-1, 1-2, 1-11, 1-16, 1-26, 1-31, 1-32, 1-33, 1-34, 1-35, 1-36, 1-37, 1-38, 1-40, 2-10, 2-14, 2-15, 2-16, 2-17, 2-69, 3-29, 3-40, 3-41, 3-43, 4.7-14, 4.7-15, 4.7-17, 5-2, 5-10, 5-26, 5-32, 6-1, 6-9, 6-10, 7-4, 7-5, 7-7, 7-8

Clean Water Act Section 408 ................................................. ES-1 ES-6, ES-7, ES-8, ES-19, 1-1, 1-11, 1-16, 1-26, 1-31, 1-37, 1-32, 1-33, 1-34, 1-38, 2-10, 2-14, 3-24, 5-2, 5-10, 5-23, 5-24, 6-2, 7-4, 7-5, 7-7, 7-8

Cultural resources .................................................. ES-11, ES-18, ES-19, ES-35, 1-39, 2-8, 2-13, 2-22, 2-25, 2-26, 2-76, 2-111, 2-115, 3-57, 3-58, 3-59, 3-60, 3-61, 3-62, 3-63, 3-64, 3-65, 3-66, 3-112, 4.1-1, 4.1-6, 4.1-7, 4.2-3, 4.8-1, 4.8-4, 4.8-5, 4.8-6, 4.8-9, 4.8-10, 4.8-13, 4.9-3, 4.14-4, 4.16-3, 4.16-4, 5-3, 5-6, 5-9, 5-13, 5-18, 5-29, 5-34, 6-4, 6-5, 6-6, 7-6

Cumulative impact .................................................. ES-19, 1-39, 1-43, 2-65, 4.1-3, 4.5-10, 4.7-25, 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, 5-10, 5-11, 5-12, 5-14, 5-15, 5-16, 5-17, 5-18, 5-19, 5-24, 5-25, 5-26, 5-27, 5-28, 5-29, 5-31, 5-32, 5-33, 5-34, 5-35, 5-37, 5-38, 5-39, 7-2

DFG. See California Department of Fish and Game.

Elkhorn Borrow Area .................................................. ES-15, 1-35, 2-36, 2-73, 2-74, 2-75, 2-76, 4.1-4, 4.1-5, 4.2-3, 4.2-4, 4.7-15, 4.7-21, 4.8-5, 4.10-2, 4.10-3, 4.10-6, 4.15-4, 5-20, 5-21

Elkhorn Main Irrigation Canal .................................................. 1-29, 3-27

Executive Order 11988, Floodplain Management ................................................ 3-12, 3-24, 5-30, 6-7
Executive Order 11990, Protection of Wetlands .......................................................... 3-33, 6-9

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations .................................................. 3-110, 4.16-3, 6-10

FAA. See Federal Aviation Administration.

Farmland Protection Policy Act .................................................................................. 3-6, 5-30, 6-11

Federal Aviation Administration .............................................................................. ES-4, 1-27, 1-39, 1-40, 2-97, 2-100, 3-108, 3-109, 4.7-2, 4.15-1, 4.15-2, 4.15-16, 4.15-17, 5-23, 5-30, 6-11, 7-7, 7-10

Federal Emergency Management Agency ......................................................... ES-5, ES-7, ES-8, ES-16, ES-17, 1-11, 1-13, 1-14, 1-18, 1-19, 2-3, 2-16, 2-20, 2-36, 2-99, 2-110, 3-24, 4.2-1, 4.3-7, 4.5-12, 6-12, 6-14, 7-1, 7-10

FEMA. See Federal Emergency Management Agency.

FIRM. See Flood Insurance Rate Map.

Flood Insurance Rate Map .................................................................................... 6-12, 7-1

Folsom Dam Modification Project .......................................................................... 1-16

Folsom Dam Reoperation ......................................................................................... 1-15


General Re-evaluation of the Common Features Project ..................................... 2-15

GGS. See Giant Garter Snake.

GGS/Drainage Canal ............................................................................................... 1-34, 1-35, 2-20, 2-24, 2-28, 2-70, 2-71, 2-79, 2-98, 4.5-16, 4.7-2, 4.7-3, 4.7-13, 4.7-22, 4.11-4, 4.11-6

Giant garter snake ...................................................................................................... ES-6, ES-8, ES-15, ES-17, ES-29, ES-30, 1-18, 1-28, 1-36, 1-37, 2-17, 2-18, 2-20, 2-21, 2-25, 2-28, 2-64, 2-73, 2-77, 2-78, 2-79, 2-80, 2-81, 2-85, 2-86, 2-89, 2-91, 2-97, 3-40, 3-46, 3-48, 4.2-4, 4.5-15, 4.7-2, 4.7-3, 4.7-4, 4.7-12, 4.7-13, 4.7-14, 4.7-15, 4.7-19, 4.7-20, 4.7-21, 4.7-22, 4.7-23, 4.7-24, 4.7-34, 4.7-45, 4.11-4, 4.11-6, 5-5, 5-8, 5-11, 5-18, 5-32, 5-33

Groundwater ............................................................................................................. ES-2, ES-7, ES-15, ES-26, ES-27, ES-45, 1-19, 1-35, 1-36, 1-45, 2-23, 2-36, 2-67, 2-68, 2-70, 2-71, 2-81, 2-86, 2-96, 2-103, 3-28, 3-29, 3-30, 3-31, 3-32, 3-33, 3-102, 4.5-1, 4.5-11, 4.5-14, 4.5-15, 4.5-16, 4.5-17, 4.6-1, 4.6-2, 4.6-4, 4.6-6, 4.6-7, 4.12-5, 4.12-6, 4.12-9, 4.13-4, 4.15-3, 4.15-6, 4.15-8, 4.15-9, 4.15-10, 4.15-11, 4.15-12, 5-3, 5-11, 5-14, 5-15, 5-26, 6-1, 7-13

Growth inducement ................................................................................................. 5-38, 5-39, 7-2

Habitat creation and management ....................................................................... ES-16, 1-34, 1-35, 1-36, 2-20, 2-36, 2-103

Hazardous Materials ............................................................................................... ES-7, ES-11, ES-45, ES-47, 1-19, 1-39, 2-14, 2-27, 2-28, 2-111, 3-98, 3-99, 3-100, 3-101, 3-103, 3-104, 3-105, 3-106, 3-107, 4.3-2,
Historic-era resources ................................................................. 2-25, 4.8-7

Human remains .................................................................. ES-11, ES-18, 2-13, 3-58, 3-67, 3-68, 3-69, 4.1-6, 4.1-7, 4.8-1, 4.8-5, 4.8-11, 4.8-12, 4.8-13, 7-6

Important Farmland ................................................ ES-18, ES-19, ES-22, 2-22, 2-113, 3-6, 3-8, 3-12, 4.1-6, 4.1-7, 4.2-1, 4.2-2, 4.2-3, 4.2-4, 4.2-5, 4.2-8, 5-6, 5-9, 5-13, 5-17, 5-29, 5-30, 7-2

Joint Federal Project ................................................................. 1-17, 4.5-2

Levee height ................................................ ES-1, ES-6, ES-7, ES-9, 1-1, 1-11, 1-12, 1-16, 1-17, 1-19, 1-37, 2-3, 2-5, 2-11, 2-15, 2-29, 2-41, 2-48, 2-51, 2-52, 2-104, 4.5-2, 4.5-10, 4.5-11, 4.5-12, 4.5-13, 4.5-14

NAHC. See Native American Heritage Commission.

NALP. See North Area Local Project.

National Pollutant Discharge Elimination System .............. ES-1, ES-25, ES-27, ES-33, ES-45, 1-2, 1-42, 2-76, 3-31, 4.4-3, 4.6-3, 4.6-5, 4.6-6, 4.7-38, 4.7-41, 4.15-6, 4.15-7, 5-15, 5-26, 7-8, 7-9

Native American Heritage Commission ................................. 3-58, 3-69, 4.8-1, 4.8-11, 4.8-13, 6-6, 7-6, 7-10

Natomas Basin Habitat Conservation Plan .............................. ES-4, ES-10, ES-19, ES-23, ES-34, 1-12, 1-28, 2-29, 2-50, 2-51, 2-53, 2-63, 2-65, 2-80, 2-97, 2-98, 2-103, 3-2, 3-3, 3-4, 3-5, 3-27, 3-96, 4.7-3, 4.7-7, 4.7-15, 4.7-16, 4.7-22, 4.7-25, 4.7-27, 4.14-1, 4.14-2, 5-32, 6-2, 7-11


Natomas Cross Canal ................................ ES-2, ES-4, ES-5, ES-6, ES-7, ES-10, ES-12, ES-14, ES-15, ES-16, ES-17, ES-37, 1-3, 1-6, 1-11, 1-12, 1-13, 1-14, 1-15, 1-17, 1-19, 1-29, 1-31, 1-34, 1-35, 1-36, 1-38, 2-12, 2-14, 2-19, 2-22, 2-23, 2-25, 2-27, 2-28, 2-29, 2-36, 2-37, 2-50, 2-51, 2-52, 2-69, 2-74, 2-103, 2-109, 2-113, 2-114, 3-1, 3-2, 3-17, 3-24, 3-27, 3-28, 3-32, 3-40, 3-41, 3-42, 3-43, 3-51, 3-52, 3-53, 3-55, 3-56, 3-57, 3-59, 3-65, 3-77, 3-78, 3-93, 3-95, 3-111, 4.2-3, 4.4-3, 4.5-2, 4.5-12, 4.5-13, 4.5-14, 4.5-16, 4.6-1, 4.6-2, 4.6-4, 4.7-2, 4.7-7, 4.7-21, 4.7-22, 4.7-34, 4.7-36, 4.7-37, 4.7-41, 4.8-6, 4.8-9, 4.8-12, 4.10-3, 4.10-4, 4.10-9, 4.11-1, 4.11-3, 4.11-4, 4.11-6, 4.11-15, 4.11-16, 4.11-17, 4.12-5, 4.12-13, 4.13-3, 4.14-6, 4.16-3, 5-10, 5-14, 5-22
Natomas East Main Drainage Canal ........................................... ES-4, ES-6, ES-7, ES-17, 1-3, 1-11, 1-12, 1-15, 1-31, 1-34, 1-35, 1-36, 1-37, 1-38, 2-19, 2-23, 2-24, 2-27, 2-28, 2-44, 2-66, 3-1, 3-6, 3-17, 3-28, 3-32, 3-36, 3-45, 3-59, 3-65, 3-68, 3-71, 3-77, 3-78, 4.5-2, 4.5-3, 4.5-4, 4.5-5, 4.5-6, 4.5-7, 4.5-8, 4.5-9, 4.5-11, 4.5-12, 4.5-13, 4.10-3, 4.11-4, 4.11-6, 5-16, 6-12

NBHCP. See Natomas Basin Habitat Conservation Plan.

NCC. See Natomas Cross Canal.

NCMWC. See Natomas Central Mutual Water Company.

NEMDC. See Natomas East Main Drainage Canal.

Noise impact ............................................................ 3-89, 3-90, 4.12-1, 4.12-3, 4.12-4, 4.12-12, 4.12-14, 5-16, 5-37


North Area Local Project .................................................. ES-7, 1-6, 1-11, 1-13, 1-14, 1-15, 1-16, 1-19, 2-15

Northwestern Pond Turtle .................................................. ES-32, ES-33, 2-25, 3-46, 3-49, 4.7-33, 4.7-34, 5-20

NPDES. See National Pollutant Discharge Elimination System.

Paleontological resources ................................................ ES-11, ES-36, 1-39, 2-14, 2-26, 2-111, 3-72, 3-75, 4.9-1, 4.9-2, 4.9-3, 4.9-4, 5-3, 5-5, 5-8, 5-11, 5-15, 5-27

PGCC. See Pleasant Grove Creek Canal.

Pleasant Grove Creek Canal .............................................. ES-4, ES-6, ES-7, ES-17, 1-3, 1-6, 1-11, 1-15, 1-31, 1-34, 1-35, 1-37, 1-38, 2-19, 2-22, 2-23, 2-24, 2-27, 2-28, 2-113, 2-114, 3-1, 3-5, 3-59, 3-61, 3-65, 3-77, 3-78, 4.1-5, 4.5-2, 4.5-3, 4.5-4, 4.5-5, 4.5-7, 4.5-8, 4.5-9, 4.5-13, 4.7-15, 4.10-3, 4.11-4, 4.11-6


Porter-Cologne Water Quality Control Act ................................ 3-31, 3-32, 3-42, 3-44, 5-17, 5-31, 5-32

Reduced Natomas Urban Levee Perimeter .................................................. ES-9, 2-11

Right-of-way acquisition .................................................. ES-16, 1-34, 1-35, 1-36, 2-36, 2-103, 2-110

Rivers and Harbors Act of 1899 ............................................. ES-1, 1-2, 3-24, 5-24, 6-2

Riverside Main Irrigation Canal ............................................. 1-29, 3-27

U.S. Fish and Wildlife Service .................. 1-28, 1-41, 1-45, 2-93, 2-96, 2-97, 3-15, 3-35, 3-40, 3-45, 3-47, 3-48, 3-51, 3-52, 3-53, 3-54, 3-56, 4.3-4, 4.7-3, 4.7-5, 4.7-9, 4.7-10, 4.7-11, 4.7-13, 4.7-17, 4.7-18, 4.7-23, 4.7-24, 4.7-26, 4.7-27, 4.7-28, 4.7-30, 4.7-31, 4.7-32, 4.7-33, 4.7-35, 4.7-39, 4.7-44, 5-33, 5-40, 6-2, 6-3, 7-7, 7-8, 7-9, 7-10
Sacramento County Airport System .......... ES-8, ES-11, ES-16, 1-9, 1-22, 1-25, 1-30, 1-32, 1-35, 2-13, 2-28, 2-36, 2-16, 2-18, 2-31, 2-33, 2-35, 2-37, 2-39, 2-80, 2-85, 2-98, 2-99, 2-100, 2-104, 2-110, 2-113, 3-13, 3-15, 3-17, 3-98, 3-108, 3-109, 4-2-1, 4-3-1, 4-5-14, 4-7-10, 4-7-23, 4-7-25, 4-7-30, 4-7-33, 4-15-1, 4-15-16, 4-15-17, 5-12, 5-16, 5-22, 5-23, 5-29, 5-30, 5-33, 5-39, 6-12, 7-7, 7-11

Sacramento International Airport ................. ES-4, ES-7, ES-8, ES-10, ES-11, ES-15, ES-16, ES-23, ES-42, ES-43, ES-47, 1-6, 1-12, 1-18, 1-19, 1-23, 1-26, 1-27, 1-28, 1-34, 1-35, 1-36, 1-40, 2-12, 2-13, 2-16, 2-20, 2-22, 2-28, 2-36, 2-47, 2-63, 2-65, 2-69, 2-73, 2-74, 2-77, 2-97, 2-98, 2-99, 2-100, 3-1, 3-2, 3-3, 3-13, 3-14, 3-15, 2-30, 2-33, 3-33, 3-36, 3-59, 3-62, 3-64, 3-67, 3-77, 3-79, 3-81, 3-82, 3-93, 3-94, 3-98, 3-107, 3-108, 3-109, 4-1-4, 4-1-5, 4-2-3, 4-3-1, 4-3-2, 4-3-9, 4-6-6, 4-7-10, 4-7-21, 4-7-23, 4-7-25, 4-7-30, 4-7-33, 4-7-35, 4-10-1, 4-10-2, 4-10-3, 4-10-9, 4-12-2, 4-12-3, 4-12-4, 4-12-13, 4-12-14, 4-13-4, 4-13-5, 4-14-3, 4-14-4, 4-14-5, 4-15-2, 4-15-12, 4-15-13, 4-15-15, 4-15-16, 4-15-17, 4-15-18, 4-15-19, 5-4, 5-8, 5-10, 5-11, 5-12, 5-14, 5-15, 5-16, 5-19, 5-22, 5-23, 5-24, 5-27, 5-29, 5-30, 5-32, 5-33, 5-37, 5-40, 6-11, 7-3, 7-7


Sacramento Valley Air Basin .................................................................................. 3-81, 4-11-13, 4-11-14, 5-6

SCAS. See Sacramento County Airport System.

Seepage berm .................................. ES-12, ES-14, ES-16, 2-5, 2-6, 2-8, 2-13, 2-14, 2-19, 2-20, 2-29, 2-36, 2-41, 2-43, 2-44, 2-45, 2-46, 2-47, 2-49, 2-53, 2-74, 2-75, 2-78, 2-85, 2-93, 2-100, 2-103, 2-104, 2-106, 2-109, 4-2-2, 4-2-3, 4-3-6, 4-4-3, 4-5-15, 4-6-1, 4-6-6, 4-7-25, 4-7-26, 4-8-6, 4-8-7, 4-8-8, 4-8-12, 4-12-4, 4-12-5, 4-14-4, 4-15-10, 4-15-12, 4-16-3, 5-7, 5-17

Seepage remediation .................................. ES-2, ES-6, ES-12, ES-14, ES-15, 1-34, 1-35, 1-38, 2-5, 2-14, 2-19, 2-29, 2-41, 2-47, 2-49, 2-53, 2-65, 2-103, 2-104, 3-17, 4-5-14, 4-6-6, 4-7-8, 4-7-16, 4-8-9, 4-8-12, 6-2

SIP. See State Implementation Plan.

SMARA. See California Surface Mining and Reclamation Act.

Soils ......................................................... ES-24, 1-15, 1-39, 2-5, 2-22, 2-46, 2-47, 2-54, 2-72, 2-75, 2-86, 2-111, 3-11, 3-18, 3-21, 3-23, 3-35, 3-46, 3-49, 3-67, 3-69, 3-106, 3-107, 3-108, 4-4-1, 4-4-2, 4-4-4, 4-6-3, 4-7-36, 4-8-2, 4-8-10, 4-14-5, 4-15-3, 4-15-4, 4-15-5, 4-15-6, 4-15-10, 5-3, 5-5, 5-7, 5-10, 5-14, 5-24, 5-25, 6-5

State Implementation Plan .................................................. 3-80, 3-87, 3-99, 4-11-13, 4-11-14, 6-4

Stormwater Pollution Prevention Plan .................................. ES-25, ES-27, ES-33, ES-45, 3-31, 4-4-3, 4-6-2, 4-6-3, 4-7-38, 4-15-6, 4-15-7

Stormwater ........................................ ES-25, ES-26, ES-27, ES-33, ES-45, 1-11, 1-27, 1-31, 1-34, 1-35, 1-42, 2-19, 2-23, 2-43, 2-98, 2-109, 3-31, 3-32, 3-43, 4-4-3, 4-5-6, 4-5-11, 4-6-1, 4-6-2, 4-6-4, 4-6-5, 4-7-38, 4-7-40, 4-7-41, 4-7-42, 4-15-6, 4-15-7, 5-15, 5-26

SWPPP. See Stormwater Pollution Prevention Plan.
The Natomas Basin Conservancy...................................................... 1-6, 1-28, 1-30, 2-25, 2-68, 2-71, 2-73, 2-74, 2-77, 2-78, 2-79, 2-80, 2-81, 2-85, 2-97, 2-98, 2-99, 2-100, 3-1, 3-2, 3-4, 3-5, 3-11, 3-15, 3-28, 3-35, 3-36, 3-39, 3-40, 3-45, 3-47, 3-48, 3-49, 3-50, 3-51, 3-95, 3-104, 3-108, 4.3-3, 4.3-4, 4.7-1, 4.7-2, 4.7-16, 4.7-20, 4.7-22, 4.7-24, 4.7-33, 4.7-42, 4.7-43, 4.7-44, 5-11, 5-15, 5-27, 5-30, 7-7, 7-13

TNBC. See The Natomas Basin Conservancy.

Traffic noise levels ................................................................. ES-18, 4.1-6, 4.1-7, 4.12-1, 4.12-10, 4.12-11, 4.12-14

Utilities .................................... ES-11, ES-44, 1-23, 1-39, 2-5, 2-14, 2-16, 2-27, 2-48, 2-67, 2-68, 2-99, 2-111, 3-96, 3-102, 3-103, 3-104, 4.2-5, 4.2-7, 4.3-5, 4.7-28, 4.10-4, 4.14-1, 4.14-3, 4.14-4, 4.15-6, 4.15-11, 5-3, 5-6, 5-8, 5-12, 5-16, 5-28, 6-8, 7-11

Water Quality ............................................................. ES-1, ES-2, ES-6, ES-26, ES-27, 1-2, 1-37, 1-39, 1-40, 1-42, 2-23, 2-48, 2-76, 2-80, 2-81, 2-86, 2-111, 3-30, 3-31, 3-32, 3-33, 3-43, 3-100, 3-105, 4.3-8, 4.4-3, 4.5-14, 4.5-17, 4.6-1, 4.6-2, 4.6-3, 4.6-4, 4.6-5, 4.6-6, 4.6-7, 4.7-36, 4.7-38, 4.7-39, 4.7-40, 4.7-41, 4.7-44, 4.14-1, 4.15-2, 4.15-4, 4.15-7, 5-3, 5-5, 5-7, 5-11, 5-15, 5-17, 5-26, 5-29, 5-31, 5-32, 6-1, 7-8, 7-9, 7-10

Waters of the United States ........................................................ ES-29, ES-30, 4.7-14, 4.7-15, 4.7-18

Wetlands ............................................................... 2-3, 2-24, 2-113, 2-115, 3-31, 3-33, 3-39, 3-40, 3-43, 3-46, 3-47, 3-48, 3-108, 4.2-3, 4.6-3, 4.7-1, 4.7-5, 4.7-15, 4.7-16, 4.7-17, 4.7-18, 5-11, 5-15, 5-27, 5-39, 5-40, 6-1, 6-9, 6-10, 6-11

Wildland fire.................................................................................. 2-28, 2-77, 3-109, 4.15-2, 4.15-18, 5-17, 5-29

Woodland ............ ES-2, ES-10, ES-16, ES-18, ES-19, ES-20, ES-23, ES-28, ES-29, ES-31, ES-32, ES-34, ES-43, 1-35, 2-3, 2-5, 2-12, 2-20, 2-22, 2-24, 2-25, 2-27, 2-36, 2-46, 2-71, 2-72, 2-73, 2-77, 2-78, 2-79, 2-80, 2-81, 2-83, 2-85, 2-93, 2-96, 2-97, 2-99, 2-100, 2-113, 2-115, 3-2, 3-3, 3-4, 3-5, 3-35, 3-36, 3-37, 3-39, 3-42, 3-43, 3-46, 3-47, 3-48, 3-49, 3-50, 3-75, 3-76, 3-93, 3-94, 3-97, 4.2-1, 4.2-3, 4.2-4, 4.3-3, 4.3-4, 4.5-3, 4.5-5, 4.5-6, 4.5-7, 4.5-8, 4.5-9, 4.5-16, 4.5-17, 4.7-2, 4.7-3, 4.7-4, 4.7-5, 4.7-6, 4.7-7, 4.7-8, 4.7-9, 4.7-10, 4.7-11, 4.7-12, 4.7-13, 4.7-14, 4.7-24, 4.7-20, 4.7-25, 4.7-26, 4.7-27, 4.7-28, 4.7-29, 4.7-30, 4.7-31, 4.7-32, 4.7-33, 4.7-44, 4.7-45, 4.9-3, 4.13-1, 4.13-2, 4.13-3, 4.13-5, 5-3, 5-10, 5-14, 5-18, 5-19, 4.7-42, 4.7-43, 5-30, 5-32, 5-34, 5-37, 5-38, 5-39, 7-11

Yolo Bypass Improvements ........................................................... ES-9, 2-11