

6.1 CEQA REQUIREMENTS

Section 15130 of the California Environmental Quality Act Guidelines (State CEQA Guidelines) requires that an environmental impact report (EIR) discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable." According to Section 15065, "Cumulatively considerable means that the incremental effects of an individual project are considerable when viewed in the connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects as defined in Section 15130." Sections 15130 and 15355 both stress cumulative impacts in the context of "closely related" projects and from projects "causing related impacts."

Pursuant to Section 15130(b) of the State CEQA Guidelines,

[t]he 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 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.

A project alternative is considered to have a significant cumulative effect if:

- ▶ the cumulative effects of related projects (past, current, and reasonably foreseeable future projects) without the proposed project are not significant and the proposed project's additional impact is substantial enough (i.e., is considerable), when added to the cumulative effects, to result in a significant impact; or
- ▶ the cumulative effects of related projects (past, current, and reasonably foreseeable future projects) without the proposed project are already significant and the proposed project's incremental effect is cumulatively considerable.

The term "considerable" is subject to interpretation. The standards used herein to determine whether an effect is considerable are that either the impact of the proposed project would contribute in any manner to the existing significant cumulative impact, or the cumulative impact would exceed an established threshold of significance when the proposed project's incremental effects are combined with similar effects from other projects.

When feasible, mitigation measures are to be developed that reduce the project's contribution to cumulative effects.

6.2 PROJECTS WITH EFFECTS SIMILAR TO THOSE OF THE PROPOSED PROJECT

The analysis of cumulative environmental impacts associated with the Feather River Levee Repair Project (FRLRP) addresses the potential incremental impacts of the three proposed project alternatives and associated project components in combination with similar effects of other past, present, and probable future projects. The geographic area considered in the analysis varies depending on the particular resource under consideration and the extent to which it could be influenced by the project. The rationale for the selection of each geographic area under consideration in the cumulative impact analysis is described first in this section. This discussion is followed by information on general development trends in the project area. The final subsection describes relevant individual past, present, and future projects and related studies.

6.2.1 GEOGRAPHIC SCOPE

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

- ▶ Land use—mostly regional (Yuba County), also some local (project site)
- ▶ Geology, soils, and mineral resources—local (project site)
- ▶ Water resources and river geomorphology—mostly local (project site; Feather, Yuba, and Bear Rivers), some regional (Sacramento River system)
- ▶ Fisheries—mostly local (project site; Feather, Yuba, and Bear Rivers), some regional (Sacramento River system)
- ▶ Terrestrial biological resources—mostly local (project site and surrounding areas), some regional
- ▶ Recreation—local (project site and adjacent lands)
- ▶ Aesthetic resources—immediate vicinity of project site
- ▶ Cultural resources—local area
- ▶ Air quality—regional (area under the jurisdiction of the Feather River Air Quality Management District [FRAQMD], consisting of Yuba and Sutter Counties)
- ▶ Noise—immediate project vicinity where project effects are noticeable
- ▶ Transportation and circulation—roadways in the project area

- ▶ Public services, utilities, and service systems—local facilities
- ▶ Paleontological resources—local area

The geographic context relevant to the consideration of most environmental effects of the three proposed project alternatives is as follows:

- ▶ Alternative 1, The Levee Strengthening Alternative—The existing Feather River left (east) bank levee from Project Levee Mile (PLM) 13.3 to PLM 26.1 (from approximately Pump Station No. 2 to the mouth of the Yuba River), and the Yuba River left (south) bank levee from PLM 0.0 to PLM 0.3 (from the confluence with the Feather River to the Union Pacific Railroad crossing at the State Route [SR] 70 bridge). The potential borrow site/detention basin area shown in Figure 4-1, “FRLRP Project Features.” Also, lands adjacent to each of these locations.
- ▶ Alternative 2, The Levee Strengthening and ASB Setback Levee Alternative—The existing Feather River left bank levee from PLM 13.3 to PLM 26.1 and the Yuba River left bank levee from PLM 0.0 to PLM 0.3. The Above Star Bend (ASB) setback levee alignment shown in Figure 4-1 between approximately Feather River PLM 17.1 and PLM 23.6. Lands between the setback levee alignment and the existing levee. The potential detention basin/soil borrow area site shown in Figure 4-1. Lands adjacent to each of these locations.
- ▶ Alternative 3, The Levee Strengthening and Intermediate Setback Levee Alternative—The existing Feather River left bank levee from PLM 13.3 to PLM 26.1 and the Yuba River left bank levee from PLM 0.0 to PLM 0.3. The intermediate setback levee alignment shown in Figure 4-1 between approximately Feather River PLM 17.1 and PLM 23.6. Lands between the setback levee alignment and the existing levee. The potential detention basin/soil borrow area site shown in Figure 4-1. Lands adjacent to each of these locations.

Alternatives 2 and 3 would affect high-flow conditions in the Feather River. Therefore, the listing of individual projects provided later in this section is focused on projects that could directly affect Feather River and Yuba River flood flows and flood protection, in addition to projects that could affect the areas in the vicinity of the project site.

As shown in the listing above, some types of project effects (e.g., land use, flood control, and air quality) are considered on a regional scale. The regional context for the cumulative impact analysis addressing these effects is described more generally rather than in relation to individual development projects, for the reasons discussed below.

Listing individual projects on the broader regional scale for the purposes of cumulative impact assessment would be impractical to attempt and is unnecessary given the nature of the regional impacts under consideration (e.g., agricultural land conversion, short-term air quality effects). Information on these resources is generally collected based on regional resource studies and plans; using these studies and plans, rather than developing lists of projects on a regional basis, ensures that all resource studies and development are considered.

Information on agricultural land conversion in Yuba County was obtained from the Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation. These

data are the most complete available on this topic and encompass the land use conversions attributable to all development projects.

The regional context for air quality emissions is the portion of the Northern Sacramento Valley Air Basin (NSVAB) under the jurisdiction of FRAQMD (i.e., Yuba and Sutter Counties), which administers federal, state, and local air quality management programs for Yuba County. The FRAQMD *Indirect Source Review Guidelines* and online CEQA guidance (Feather River Air Quality Management District 1998, 2006) provide recommended thresholds of significance for project-generated emissions. In accordance with these recommended thresholds, a project may be considered to pose a significant air quality impact if project-generated emissions are near or exceed the thresholds. Although cumulative impacts are not discussed in the guidelines, limits are provided that apply to individual projects regardless of pollutant emissions expected from other projects. Therefore, the air quality emissions of individual projects throughout FRAQMD are not discussed, but regional air pollution is considered.

6.2.2 DEVELOPMENT TRENDS IN THE YUBA COUNTY AREA

Because historical land use patterns underlie general present-day trends in regional and local flood protection efforts and environmental changes, information on historical development is summarized here to provide context for the discussion of cumulative impacts. This description is followed by a description of current trends in population and agricultural land conversion.

Historical Flood Control Efforts

Early levee construction was conducted primarily by landowners to address local flooding issues and did not consider the hydraulic impacts on other areas or the natural processes of the rivers. The early levees cut off areas of the floodplain and its water storage capacity, causing flood flows to greatly exceed the capacity of channels in many areas. The impacts of upstream hydraulic gold mining exacerbated the flooding problems. In the early 1900s, the federal and state governments began constructing systemwide flood management facilities that included levees, weirs, and bypass channels designed to protect lives and property, aid navigation, and flush sediment remaining from hydraulic mining. These conveyance facilities improved flood protection and navigation and allowed continued agricultural and urban development but constrained the rivers to specific alignments, significantly reducing channel meandering, and further isolated rivers from their historical floodplains. (U.S. Army Corps of Engineers and State of California Reclamation Board 2002.) As agricultural and urban development increased within the floodplain, more communities and properties were at risk of flooding, and improvements to the system were made periodically to meet local needs. Major modifications, reconstructions, and upgrades have been implemented by the U.S. Army Corps of Engineers (Corps) over the years in response to deficiencies identified during flood events.

Large-scale dam construction began in the 1930s and continued into the 1970s. Major dams include Oroville Dam on the Feather River and New Bullards Bar Dam and Englebright Dam on the Yuba River. These and other dams and reservoirs provide flood control benefits by reducing seasonal high flows so that downstream flood conveyance systems can operate more safely and effectively. They also provide numerous other benefits, such as recreational opportunities and water supply for municipal uses, crop irrigation, and energy generation.

Current Trends in Population Growth and Conversion of Agricultural Land

The population of Yuba County grew moderately in recent decades, increasing by 3.4% between 1990 and 2000. The Sacramento Area Council of Governments (SACOG) projects a more rapid population increase for the county in the coming years as approved master planned developments begin construction and transportation improvements stimulate further development in Yuba County. (Yuba County Community Development Department 2004.) This is evident from population growth since 2000 compared to population growth in the 1990s. According to U.S. Census records, the population in Yuba County grew from 58,228 in 1990 to 60,219 in 2000, an increase of 3.4% (California Department of Finance 2000). The current population as of January 1, 2006, is estimated to be 69,827 (California Department of Finance 2006), an increase of 16% since 2000.

The county's population is projected to reach approximately 97,561 by 2020 and 109,875 by 2025 (Sacramento Area Council of Governments 2004). The gain in new residents would be approximately 40,048 by 2025, or a little more than 35%. Yuba County and the cities within the county are facing numerous regional growth issues pertaining to air quality degradation, traffic generation, biological habitat loss, loss of farmland, and other environmental changes related to urban development.

Table 6-1, "Land Use Conversions Involving Important Farmland," shows the recent data compiled by the FMMP on land use conversions involving Important Farmland (Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance) in Yuba County. Although the FMMP data also include statistics on grazing land, these are not included in Table 6-1 because conversion of grazing land to nonagricultural uses is not used as a threshold of significance in CEQA and in the analysis of project effects.

As indicated by a comparison between the net totals for acreage changes and the total changes in acreage attributable to conversion to urban and built-up land, most of the reported conversions of Important Farmland are to FMMP land use categories other than "urban and built-up land." These other areas include "grazing land" and "other land." The majority of the acreage converted to "grazing land" was agricultural land being fallowed. "Other land" may include land uses such as feedlots and other rural uses, low-density rural residential, government lands, and road systems.

6.2.3 PAST, PRESENT, AND FUTURE PROJECTS

This section describes implemented, developed, or planned projects that may result in environmental effects similar to those of the FRLRP, such that these effects, when combined, constitute cumulative impacts. It also describes some important studies that are expected to provide the basis for development of future projects. The projects and studies are grouped into three general categories: flood control efforts, development projects, and ecosystem and habitat restoration efforts. These categories provide a basis for discussing general types of environmental effects, but components of these studies and projects could potentially belong in more than one category.

**Table 6-1
Land Use Conversions Involving Important Farmland**

| Changes in Important Farmland | Yuba County (Acres) |
|--------------------------------------------------------------------------|---------------------------------|
| Total Acreage of Important Farmland Inventoried | |
| 1992 | 93,662 |
| 1994 | 94,307–94,419* |
| 1996 | 95,336–95,347* |
| 1998 | 93,745–93,756* |
| 2000 | 90,176 |
| 2002 | 89,217 |
| 2004 | 86,880 |
| Total Losses and Gains of Important Farmland | |
| 1992–1994 | -69 + 714 = 645 net gain |
| 1994–1996 | -889 + 1,806 = 917 net gain |
| 1996–1998 | -2,428 + 837 = 1,591 net loss |
| 1998–2000 | -4,596 + 1,027 = 3,569 net loss |
| 2000–2002 | -2,530 + 1,574 = 956 net loss |
| 2002–2004 | -3,003 + 705 = 2,298 net loss |
| Amount of Important Farmland Converted to Urban and Built-Up Land | |
| 1992–1994 | 15 |
| 1994–1996 | 55 |
| 1996–1998 | 0 |
| 1998–2000 | 86 |
| 2000–2002 | 14 |
| 2002–2004 | 4 |

* Total number of acres inventoried for these years differs between Farmland Mapping and Monitoring Program reports because of changes in mapping methods.

Sources: California Department of Conservation 1996, 1998, 2000a, 2002a, 2004a, 2006

Flood Control Efforts

This section describes past, present, and future studies and projects that are related to flood control in the project vicinity. The section focuses on levee improvement projects in the project area and additional nonlevee flood control projects that are planned or under study. Many of the nonlevee flood control projects that are planned or under study were described in the Yuba-Feather Supplemental Flood Control Project (Y-FSFCP) programmatic EIR. Information from the Y-FSFCP programmatic EIR is summarized below; however, see the programmatic EIR for complete descriptions of these potential future flood control elements.

Some of the efforts discussed below are ongoing and provide recommendations and guidance for developing future flood control projects. In these instances, there is no specific, reasonably foreseeable project to include in the evaluation of cumulative impacts provided in Section 6.3, but these efforts are described here to provide a more complete context for understanding the relationship of the FRLRP to regional flood control efforts.

Emergency Levee Repairs

In February 2006, the Governor declared a state of emergency for California's levee system and signed Executive Order S-01-06 to allow the California Department of Water Resources (DWR) to repair critical levee erosion sites. Since that time, DWR has identified 29 critical erosion sites within the Sacramento River flood control system, in Colusa, Sacramento, Solano, Sutter, Yolo, and Yuba Counties.

Under a Memorandum of Understanding signed by the key federal permitting agencies (the National Marine Fisheries Service [NMFS], the U.S. Fish and Wildlife Service [USFWS], the Corps, and DWR, the federal agencies agreed to expedite federal permitting to ensure that critical repairs are completed. As part of the agreement, the State of California would be required to ensure that levee repair projects are planned to avoid jeopardizing threatened or endangered species and to maintain water quality, and that they consider other relevant environmental effects.

As of June 27, 2006, DWR had obtained all necessary environmental permits and regulatory approvals to repair the 29 critical levee erosion sites. Construction on most of the sites is planned to begin in July 2006 and be completed by November 2006. DWR will be responsible for repairing erosion at 19 levee sites, and the Corps will repair erosion on 10 levee sites. Most of the erosion repairs are expected to consist of placing rock on the water side of the levee. The repairs would reestablish the levee slope and the supporting toe structure, bringing the levee up to its original level of flood protection. At least four of the 29 sites will require a setback levee design. (DWR 2006a.)

In the FRLRP project vicinity, DWR plans to repair two erosion sites on the left (south) bank Bear River levee in Sutter County: one at River Mile (RM) 2.4 near Rio Oso, and one at RM 10.1 near Wheatland. Of the remaining sites, 21 are on the Sacramento River in Colusa, Sacramento, Sutter, and Yolo Counties; five are on Cache Creek in Solano and Yolo Counties; and one is on Steamboat Slough in Solano County. (DWR 2006b.)

Locally Planned Projects to Improve and Reconstruct Local Levees

Feather River Setback Levee at Star Bend Project

The proposed Feather River Setback Levee at Star Bend Project would be implemented by Sutter County. The project is located in Sutter County on the right (west) bank of the Feather River, less than 1 mile northeast of the intersection of SR 99 and Garden Highway. The project would construct a setback levee that would begin near Feather River RM 18.0 and extend in a southeasterly direction from the intersection of Star Bend Boulevard and the existing right bank Feather River levee at Levee District (LD) No. 1 Levee Mile 4.5 to the approximate intersection of Tudor Road with the right bank Feather River levee at LD 1 Levee Mile 3.75. The total

approximate length of the setback levee would be approximately 3,330 feet. The setback levee alignment is currently planted in orchards. Agricultural land in the setback levee alignment is designated by the FMMP as Prime Farmland and Farmland of Local Importance. This project is anticipated to begin construction in spring 2007. (EIP Associates 2006.)

Three Rivers Levee Improvement Authority Flood Control Improvements

The FRLRP is part of Phase 4 of Three Rivers Levee Improvement Authority's (TRLIA's) four-phase program of flood control improvements for southwestern Yuba County. Phase 1 was completed in 2004, construction of Phases 2 and 3 began in September 2005 and is expected to be completed in 2006, and the Yuba River (non-FRLRP) portion of Phase 4 is expected to be constructed in 2006. The improvements are intended to address factors that may compromise the integrity of the existing levees, including:

- ▶ deficiencies in levee height relative to the 100-year and 200-year storm events,
- ▶ levee through-seepage and underseepage, and
- ▶ wind and wave erosion on levee slopes.

The elements of the four work phases that are expected to contribute, along with the FRLRP, to cumulative flood control benefits and other cumulative environmental effects are listed below.

Phase 1 Improvements (2004)

- ▶ **Yuba River Levee:** Construction of a 50-foot-deep slurry cutoff wall through the top of the levee from SR 70 to a site that breached in 1986, a length of 2,200 feet.

Phase 2 Improvements (2005)

- ▶ **Yuba River Levee:** Construction of 90- and 300-foot-wide landside seepage berms to protect against underseepage.
- ▶ **Olivehurst Detention Basin:** Improvements to major drain channels in the Olivehurst basin, including widening and deepening of these channels, Clark Lateral and Clark Slough, to accommodate 100-year flows; construction of a detention basin to store floodwaters; modifications to the culvert under SR 70 to prevent backflow from the Bear River; and connection of a forcemain to a new stormwater pumping facility, which would be designed to pump the 100-year storm event out of the pond over a 3-day period.
- ▶ **Upper Western Pacific Interceptor Canal (WPIC) Levee:** Construction of a 500-foot-long, 38-foot-deep slurry cutoff wall and an 1,100-foot, 44-foot-deep slurry cutoff wall to minimize underseepage at Plumas Lake.
- ▶ **Lower WPIC Levee:** Construction of a landside toe ditch filled to provide protection against underseepage.
- ▶ **Upper Bear River Levee:** Reconstruction of 300 feet of levee and construction of rock slope protection at the confluence with the WPIC to provide erosion protection.

Phase 2 Improvements (2006)

- ▶ **Olivehurst Detention Basin:** Construction of a ring levee between SR 70 and the Clark Lateral levee.
- ▶ **WPIC Levee:** Construction of a levee crown raise to provide adequate freeboard.
- ▶ **Upper Bear River Levee:** Construction of a levee crown raise to provide adequate freeboard and a waterside impervious zone to prevent through-seepage. Removal of Pump Station No. 6 and installation of a new setback pump station to protect against underseepage at the Algodon Canal. Tie-in for the Bear River setback levee.

Phase 3 Improvements (2005)

- ▶ **Lower River Bear Levee:** The following activities were completed in 2005 as part of the Feather-Bear Rivers Levee Setback Project (F-BRLSP):
 - clearing, grubbing, and stripping of the setback levee foundation;
 - excavation and backfilling of approximately 9,500 feet of inspection trench;
 - construction of approximately 9,500 feet (430,000 square feet) of soil-bentonite slurry cutoff wall;
 - construction of a setback levee tie-in embankment with the existing Feather River levee; and
 - initial construction of detention basins.

Phase 3 Improvements (2006–2007)

- ▶ **Lower River Bear Levee:** The following activities are being completed in 2006 as part of the F-BRLSP:
 - demolition of existing structures within the levee setback area,
 - completion of planned tree removal in the setback area,
 - construction of the setback levee embankment,
 - installation of approximately 18 relief wells,
 - completion of construction of two detention basins with total capacity of 300 acre-feet,
 - removal of portions of the existing Bear and Feather River levees, and
 - construction of a floodplain swale to mitigate potential fish stranding.
- ▶ **Environmental Restoration:** Planting of more than 600 acres of native habitat types in the levee setback area and the existing Bear River floodway.

Phase 4 Improvements (2006–2007)

- ▶ **Upper Yuba Levee:** Construction of a cutoff wall between the Union Pacific Railroad track and Simpson Lane to protect against underseepage. Filling of a ditch along the water side of the Yuba River levee east of Simpson Lane near the Goldfields.

Recent and Planned U.S. Army Corps of Engineers Projects to Improve and Reconstruct Local Levees

Sacramento River Flood Control System Evaluation Phase II Project

In the 1990s, the Corps performed an extensive levee evaluation and reconstruction effort of the Feather and Yuba River levees as part of the Sacramento River Flood Control System Evaluation Phase II Project (System Evaluation). The purpose of the project was to restore the design level of flood protection provided by the levees. The Feather River levee crest was reestablished to its original grades, and a landside stability berm and drain were installed between PLM 20.1 and PLM 23.0 (north of Broadway). Remedial modifications for the 3-mile-long reach of the Feather River levee from Broadway to Star Bend (between PLM 17.1 and PLM 20.1) were also completed; this work consisted mainly of the installation of a 70-foot-deep slurry cutoff wall along the waterside toe of the levee. A shallower slurry cutoff wall was installed through the crest of the levee between PLM 16.6 and PLM 17.1 along Feather River Boulevard just downstream of Star Bend. A landside stability berm and drain were installed between PLM 15.9 and PLM 16.6 south of Star Bend. (Yuba County Water Agency 2003b.)

Marysville–Yuba City Mitigation Area: Adjacent to the Above Star Bend project area is the Marysville–Yuba City Mitigation Area, a site established and maintained by the Corps to mitigate the loss of habitat associated with the System Evaluation levee work in the Marysville and Yuba City areas. This project consolidates mitigation requirements resulting from work on levees into one large area for a better functioning system. The project site is 75.8 acres, which includes 2.2 acres of seasonal wetland and 73.6 acres of riparian forest and uplands. The project is near the southern portion of FRLRP project Segment 2 on a high terrace, above the average summer flows of the Feather River. The land had been under crop production for many years, but site conditions were favorable for riparian forest restoration as well as seasonal wetland creation. The seasonal wetland was incorporated to provide sufficient groundwater levels for the riparian forest. Additionally, a small bioengineered drainage was excavated between the river and wetland area to limit damage to the wetland from flood waters.

Yuba River Basin Investigation

In 1998, the Corps conducted a feasibility study to increase the level of flood protection for Yuba County. This project is referred to as the Yuba River Basin Investigation or the Yuba River Basin Project. The purpose of the levee improvements included in the project is to raise the probable nonfailure point of the existing levee system (defined as the highest water level at which it is highly likely that the levee would not fail) by strengthening the levees, and thus to increase the level of flood protection. The work consists of extensions and/or additions to the System Evaluation reconstruction work. Some of the Yuba River Basin Project work has already been completed in conjunction with the System Evaluation work, including work between Feather River PLM 20.1 and PLM 23.0, between PLM 16.6 and PLM 17.1, and between PLM 15.9 and PLM 16.6; additional improvements are planned, consisting of extensions and/or

additions to the System Evaluation reconstruction work. In 2003, new Corps underseepage guidelines led to reevaluation of the project, which substantially increased the estimated cost. Because of this cost increase, the project must be reauthorized by Congress. Congressional reauthorization is currently being sought. Project components would include deepening slurry cutoff walls, removing some berms, installing some new slurry cutoff walls, increasing the widths of some berms, adding impervious fill and drain blankets to the levees, relocating slurry cutoff walls from the levee toe to crown, and reshaping some levees (U.S. Environmental Protection Agency 2004).

Nonlevee Flood Control Projects

Oroville Facilities Relicensing Process

DWR constructed and operates the Oroville Facilities (dam, reservoir, powerhouse, afterbay, etc.). The facilities store and deliver water to municipal, industrial, and agricultural users and local senior water rights holders. In addition, the facilities are operated to provide power generation, improve water quality in the Sacramento–San Joaquin Delta, manage the Feather River floodwaters, provide recreation, and enhance fish and wildlife. The Oroville Facilities are operated under a license issued by the Federal Energy Regulatory Commission (FERC) on February 11, 1957, for a term of 50 years. The license for the facilities will expire on January 31, 2007. As required by the Federal Power Act and the FERC regulations, DWR (the licensee) filed an application for a new license on January 31, 2005, although studies, analysis, public outreach, and other activities related to relicensing were initiated well before the application was filed.

DWR, federal and state agencies, Native American tribes, local government officials, and interested members of the public have actively participated in the relicensing process as a collaborative team to identify issues; plan studies; and consider potential protection, mitigation, and enhancement measure (PM&E) measures. DWR issued a National Environmental Policy Act (NEPA) Scoping Document 2 and Amended CEQA Notice of Preparation on February 25, 2003, to further the public's understanding of the Oroville Facilities and solicit comments on the scope of the environmental assessment of the project (California Department of Water Resources 2003). FERC is expected to issue a draft environmental impact statement under NEPA for the Oroville Facilities Relicensing in September 2006, with a final environmental impact statement to follow in March 2007. DWR anticipates releasing a draft EIR under CEQA in November 2006, with a final EIR to follow in March 2007. The proposed action/proposed project is the implementation of the new terms and conditions contained in the new FERC license and settlement agreement. Terms and conditions will include PM&E measures that could have direct or indirect effects on the environment. Some of these measures remain programmatic in nature, while others have been sufficiently developed for reasonably foreseeable environmental effects of the proposal to be identified. It is likely that any modified operations resulting from the FERC relicensing process would have less environmental impact than operations under the current 50-year license granted in 1957.

New Colgate Powerhouse Tailwater Depression Project

Implementation of the New Colgate Powerhouse tailwater depression project would overcome a physical limitation of the powerhouse that requires the curtailment of releases from New Bullards Bar Reservoir through the powerhouse during periods of higher flows.

Currently, when flow in the Yuba River exceeds about 10,000 cubic feet per second (cfs) (including spillway discharges from New Bullards Bar Dam), the river stage begins to submerge the turbines at New Colgate Powerhouse and affect turbine operation, resulting in the need to reduce the releases from the powerhouse. The powerhouse must be totally shut down when river flows exceed 25,000 cfs. Curtailing flows through the powerhouse during periods of high river flows reduces the allowable rate of release from New Bullards Bar Reservoir. As a consequence, the amount of reservoir flood storage that can be kept empty ahead of the flood peak is reduced. A tailwater depression system would overcome this limitation, thereby allowing releases to continue through the powerhouse during high flows and increasing the amount of reservoir flood storage space available to incoming floodwaters. This project was approved in 2002 and detailed design was completed in 2004, but has since been put on hold. Yuba County Water Agency (YCWA) intends to implement this project in the future when funding becomes available, but no defined schedule for project initiation has been identified.

Lake Oroville Surge Operations and Thermalito Afterbay Emergency Reoperation

The Lake Oroville surge operations (also called Oroville Dam modification) and Thermalito Afterbay emergency reoperation would involve improved flood storage capabilities at State Water Project (SWP) facilities on the Feather River. Surge of Lake Oroville was initially envisioned as using inflatable crest gates on the Oroville Dam emergency spillway to create additional temporary flood storage capability. It was subsequently determined that surcharging could be done by managing releases through the spillway gates, although spills over the emergency spillway would cause erosion. The proposed emergency reoperation of Thermalito Afterbay would use the operating pool at Thermalito Afterbay for flood control.

Both of these measures would need to be implemented by DWR, which operates the Oroville-Thermalito Complex. YCWA prepared technical memoranda on these proposals for DWR consideration (Yuba County Water Agency 2002a, 2002b) and recommends their implementation by DWR to improve flood control operations in the Yuba-Feather River Basin; however, DWR has no specific plans for their implementation.

Yuba-Feather River Forecast-Coordinated Operations Program

The Yuba-Feather River Forecast-Coordinated Operations (F-CO) Program is a cooperative planning and model development process directed toward strengthening flood control operations for the Yuba and Feather Rivers. This program is in the first stages of implementation. The program objective is to maintain flow targets at key downstream points on the Feather River during high-water events. This objective will be achieved through the following program components:

- ▶ integrating flood control operations of Lake Oroville, operated by DWR, with New Bullards Bar Reservoir, operated by YCWA;
- ▶ improving flood forecasting by installing new gauging stations and refining forecasting methods;

- ▶ developing a Decision Support System with enhanced communication protocols that will improve coordinated operations during major floods; and
- ▶ updating emergency management protocols for both YCWA and the SWP.

Conceived and approved by the YCWA flood control study team as an element of the Y-FSFCP, the program is being implemented cooperatively by YCWA, the National Weather Service, the Corps, and DWR. As of November 2005, nine of 12 planned new precipitation gauges had been installed throughout the watershed, two snow pillows were planned for installation by summer 2006, a new stream gauge had been installed on the North Fork Yuba River, and planning was under way for the installation of six additional stream gauges in the watershed (California Department of Water Resources 2005). Improved flood forecasting and coordination of the flood control operations of the Oroville and New Bullards Bar facilities are expected to provide significant regional flood control benefits downstream, particularly along the Yuba and Feather Rivers. One reasonably foreseeable application of F-CO is the use of improved inflow forecasts to initiate flood releases in advance of those required by Corps reservoir operating rules (i.e., before the encroachment of reservoir inflows into the flood reserve space), which will help reduce potential downstream flood flow peaks and make additional reservoir storage space available to incoming flows (Yuba County Water Agency 2003b).

New Bullards Bar Reservoir Outlet/Spillway Capacity Increase

The New Bullards Bar Outlet Capacity Increase was proposed and approved by YCWA as an element of the Y-FSFCP. As conceived, the project would entail doubling release capability at the bottom of the reservoir flood pool of New Bullards Bar Reservoir through the addition of a new upper-level outlet works to augment the existing dam outlets. The new outlet system would provide the physical means to release water in early stages of, or in advance of, a storm. Although YCWA completed a feasibility study for this element that included a project-level environmental review (Yuba County Water Agency 2003c), this flood control element was not carried forward into detailed design because of funding limitations. When implementation funding becomes available, YCWA intends to pursue a modified version of this element, the New Bullards Bar Spillway Capacity Increase.

Development Projects

This section provides a general description of major current and planned development projects in Yuba County. See “Current Trends in Population Growth and Conversion of Agricultural Land” above for information on total conversion of Important Farmland attributable to all projects since 1992. These projects are considered for purposes of this analysis to be “current” or “reasonably foreseeable.” Environmental clearances and permitting for some developments in the Plumas Lake Specific Plan and East Linda Specific Plan areas have been obtained and development in these areas has already begun. Development in the River Highlands Community Plan area is undergoing review by Yuba County (County).

Plumas Lake Specific Plan

The Plumas Lake Specific Plan would develop or redevelop approximately 5,300 acres in the vicinity of historic Plumas Lake. The specific plan area is located west of SR 70 between

Olivehurst and the Bear River, just east of the proposed FRLRP levee setback areas. The plan includes low-, medium-, and high-density residential development; shopping centers; business parks; and medical centers. Development began in 2002 and is expected to remain roughly constant (assuming that adequate flood protection can be provided), with construction occurring at a uniform pace, until full buildout in approximately 20 years. As of June 2005, 17 subdivision tract maps, representing 14,767 residential lots, had been approved or were being considered for County approval (Yuba County Community Development and Public Works 2005). The most recent available FMMP mapping shows approximately 2,700 acres in this development area classified as Important Farmland (California Department of Conservation 2002b).

East Linda Specific Plan

The East Linda Specific Plan would develop 1,760 acres, of which 1,330 acres would be residential development and 430 acres would be commercial development. The southwestern boundary of the plan area is about 3 miles northeast of the proposed FRLRP levee setback areas. The specific plan area is bounded by the Linda levee on the north, Erle Road on the south, Yuba College and urban areas of Linda on the west, and Griffith Avenue on the east. Planned land uses include schools, parks, and recreation/floodway easements. Development began in 2002 and is expected to remain roughly constant, with construction occurring at a uniform pace, until full buildout in approximately 20 years (Yuba County Water Agency 2003c). As of July 2005, eight subdivision tract maps, representing 2,482 residential lots, had been approved or were being considered for County approval (Yuba County Community Development and Public Works 2005). The most recent available FMMP mapping shows approximately 200 acres of Important Farmland in this area (California Department of Conservation 2002b).

River Highlands Community Plan

The River Highlands Community Plan, which was approved in December 1993, would develop approximately 22,600 acres, of which 14,115 acres would be residential development, 42 acres commercial development, 540 acres industrial development, 1,218 acres public land, 108 acres for schools, and 6,600 acres open space. The area is bordered by the Yuba River on the north, Nevada County on the east, and Beale Air Force Base on the south and west (Cotter, pers. comm., 2003). None of the River Highlands Community Plan area is designated as Important Farmland (California Department of Conservation 2002b). A draft specific plan for a portion of the community plan area, called Yuba Highlands, was submitted to the County in September 2002. The Yuba Highlands development would encompass approximately 3,000 acres and would be the first major development in the River Highlands Community Plan area. Development in the Yuba Highlands area would include a mix of land uses, including residential development at various densities, commercial development, industrial development, and open space. (Yuba Foothills Associates 2002.) The specific plan is being evaluated in an EIR, and the project is undergoing County review (Yuba County Community Development and Public Works 2005).

Other Recent Development Projects

Other development projects that were recently approved or are currently under consideration by the County include several small subdivisions in the Loma Rica/Browns Valley and Linda communities (e.g., East Linda Estates, Oak Grove Estates, Rothwell Estates), as well as eight

subdivisions, totaling approximately 2,200 residential units, in the North Arboga Study Area (e.g., Pheasant Point, Hawes Ranch Estates, Feather Glen, Thoroughbred Acres, Draper Ranch South, Village Greens) (Yuba County Community Development and Public Works 2005). In addition, EIRs are currently being prepared for an approximately 2,100-housing-unit mixed-use development that would be annexed into the Plumas Lake Specific Plan Area, and the Woodbury project near Olivehurst, a proposed 6,500-housing-unit mixed-use development.

The following are other development projects in Yuba County identified by the California Department of Conservation as having converted land classified by the FMMP as Important Farmland, grazing land, or other land to urban and built-up uses between 1998 and 2004 (California Department of Conservation 2000, 2002a, 2002b, 2004b):

- ▶ **Sacramento Valley Amphitheater**—converted approximately 25 acres of Important Farmland to public use near Olivehurst;
- ▶ **Pacific Millwork Processing Plant**—converted approximately 10 acres of Important Farmland to industrial use near Olivehurst;
- ▶ **three Mariani Fruit Packing Plants**—converted approximately 45 acres of Important Farmland to industrial uses north of Marysville;
- ▶ **expansion of the Yuba-Sutter Recovery Facility**—converted approximately 10 acres of grazing and other land to industrial use near Marysville;
- ▶ **Gold Village Housing Community**—converted approximately 30 acres of grazing and other land to residential use near Smartville;
- ▶ **American Wood Fibers Processing Plant**—converted approximately 15 acres of grazing and other land to industrial use near Olivehurst;
- ▶ **Norcal Moulding Processing Plant**—converted approximately 5 acres of grazing and other land to industrial use near Olivehurst;
- ▶ **expansion of Ostrom Road Landfill**—converted approximately 35 acres of grazing and other land to landfill near Beale Air Force Base;
- ▶ **expansion of the Sleep Train Amphitheatre parking lot**—converted irrigated farmland to urban land;
- ▶ **Wheatland Ranch Homes**—converted approximately 50 acres of grazing and other land to residential use in Wheatland;
- ▶ **development of new homes (no project name)**—converted approximately 20 acres of grazing and other land to residential use near Wheatland and west of SR 65;
- ▶ **Wal-Mart**—converted approximately 10 acres of grazing and other land to commercial use near Linda; and

- ▶ **Beale Heights**—converted approximately 15 acres of grazing and other land to residential use near Beale Air Force Base.

Additional development since 2004 has also resulted in the conversion of farmland. However, this information is not yet available from the California Department of Conservation.

Ecosystem and Habitat Restoration Efforts

Under the FRLRP, land uses in the proposed levee setback area in project Segment 2 could consist of agricultural operations and/or habitat restoration activities that are compatible with flood control objectives. No specific plans for habitat restoration in the levee setback area are proposed at this time, although this is considered a potential future use. It is possible that several hundred to more than 1,000 acres of habitat in the levee setback area could be restored at some time in the future. Therefore, this section describes major studies and projects related to habitat and floodplain management and restoration along the Sacramento, Feather, and Yuba Rivers and tributaries, the effects of which could combine with possible FRLRP restoration activities to result in cumulative effects.

CALFED Bay-Delta Program

Initiated in 1995, the CALFED Bay-Delta Program (CALFED) is a collaboration among state and federal agencies and the state's leading urban, agricultural, and environmental interests to address and resolve environmental and water management problems associated with the San Francisco Bay/Sacramento–San Joaquin Delta (Bay-Delta) system. The mission of CALFED is to develop and implement a long-term comprehensive plan that would restore ecological health and improve water management for beneficial uses. CALFED addresses four interrelated, interdependent programs concurrently: water supply reliability, water quality, ecosystem restoration, and levee system integrity.

The Feather and Yuba Rivers are addressed in the Ecosystem Restoration Program (ERP). The ERP effort presents the visions for ecological management zones in the Bay-Delta system and their ecological management units. The Feather River/Sutter Basin Ecological Management Zone includes Feather River and Yuba River Ecological Management Units.

The visions for the Feather River Ecological Management Unit include the following (CALFED Bay-Delta Program 2000):

- ▶ Improve natural spawning populations of spring- and fall-run chinook salmon and steelhead. This involves improving spring (March) flows below Oroville in dry and normal water years, improving spring-through-fall base flows, providing suitable water temperatures for summer rearing, and improving spawning and rearing habitat in the lower river below Oroville.
- ▶ Reactivate or maintain important ecological processes that create and sustain habitats for anadromous fish. The most important processes include floodplain and flood processes and a natural streamflow pattern in the river, to which most of the anadromous and resident native fishes are adapted.

The visions for the Yuba River Ecological Management Unit include the following (CALFED Bay-Delta Program 2000):

- ▶ Improve spring streamflows for spawning runs of spring-run chinook salmon (potentially), steelhead, sturgeon, and American shad.
- ▶ Evaluate gravel recruitment and sediment transport processes, stream-channel configuration, and riparian habitats in the lower Yuba River floodplain to improve anadromous and resident fish production and survival.

The CALFED ERP also includes an Upper Yuba River Studies Program, the purpose of which is to determine whether the introduction of wild chinook salmon and steelhead to the upper Yuba River watershed is biologically, environmentally, and socioeconomically feasible over the long term. The studies program is ongoing, with regular work group meetings. Removal of Englebright Dam is a key alternative that will be evaluated. Although major funding has been provided for this program, baseline study results are not available and the feasibility study of alternatives has not yet begun (Upper Yuba River Studies Program 2005). This project is not considered reasonably foreseeable because it is not sufficiently developed.

There are several specific CALFED projects that have been completed or are ongoing that would have effects that may combine with those of the three FRLRP alternatives. The following past, current, and reasonably foreseeable CALFED projects would have effects closely related to those of the three project alternatives:

- ▶ South Yuba River Coordinated Watershed Management Plan;
- ▶ Development of Implementation Plan for Lower Yuba River Anadromous Fish Habitat Restoration;
- ▶ Sacramento River Conservation Area Program;
- ▶ Sacramento River Floodplain Acquisition and Riparian Restoration (three projects);
- ▶ Sacramento River Meander Restoration;
- ▶ Floodplain Acquisition, Management, and Monitoring on the Sacramento River;
- ▶ Floodplain Acquisition and Subreach/Site-Specific Management Planning on the Sacramento River (Red Bluff to Colusa);
- ▶ Riparian Habitat Restoration on the Sacramento River—Verona to Collinsville;
- ▶ Sacramento River Gravel Restoration Project;
- ▶ Watershed Management Planning for Sacramento River Riparian Program;
- ▶ Yolo Bypass Habitat Restoration Study;
- ▶ Cosumnes Floodplain Acquisition and Restoration;

- ▶ Inundation of a Section of the Yolo Bypass to Restore Sacramento Splittail and other Native Species; and
- ▶ Cosumnes/Mokelumne Corridor Floodplain Acquisitions, Management, and Restoration Planning.

Fundamental goals of these projects are to improve fisheries, riparian habitat, stream channel and floodplain functions, and/or watershed environments. Although some adverse environmental impacts may result from these projects in total, especially with respect to agricultural production, these projects would improve the function and integrity of the riverine and riparian ecosystem. Several projects would also improve flood conveyance capacity.

Lower Yuba River Fisheries Technical Working Group

The Lower Yuba River Fisheries Technical Working Group is a stakeholder group that concentrates on efforts to improve the fishery and environment in the lower Yuba River below Englebright Dam. Members include YCWA, Pacific Gas and Electric Company (PG&E), USFWS, NMFS, the California Department of Fish and Game (DFG), DWR, CALFED, the South Yuba River Citizens League, Friends of the River, the California Sportfishing Protection Alliance, Cordua Irrigation District, Reclamation District (RD) 784, and other stakeholders. The goal of the group is to improve lower Yuba River fish resources by restoring ecosystem processes and minimizing stressors to fish populations. Emphasis is on anadromous fish populations. The working group is examining options for improving salmon and steelhead passage around Daguerre Point Dam and is developing an Implementation Plan for Lower Yuba River Anadromous Fish Habitat Restoration (South Yuba River Citizens League 2006, Yuba County Water Agency 2002c).

Yuba County Water Agency Fisheries-Related Projects and Investigations

YCWA has implemented several fisheries studies and enhancement projects on its own, as well as through the Lower Yuba River Fisheries Technical Work Group. The past, current, and reasonably foreseeable projects are as follows (Yuba County Water Agency et al. 2004):

- ▶ Browns Valley Irrigation District and Cordua-Hallwood Irrigation District fish screen installation;
- ▶ Narrows 2 Powerplant Intake Extension Project to conserve cold water for salmon and steelhead;
- ▶ Narrows 2 Powerplant Flow Bypass System Project to reduce flow fluctuations and reductions;
- ▶ Narrows 2 Powerplant flow ramping modifications to minimize ramping;
- ▶ incorporation of fishery enhancement flows in regular operations and water transfers;
- ▶ use of New Bullards Bar Reservoir's lower outlet on a year-round basis to provide coldwater flows for salmon and steelhead;

- ▶ off-stream channel investigation in the Yuba Goldfields for salmon rearing;
- ▶ funding of Yuba County Fish and Game Commission projects;
- ▶ funding of arctic coolers for County school program to rear fish;
- ▶ installation, operation, and maintenance of Yuba River and Feather River temperature monitoring equipment;
- ▶ reconstruction of a DFG fence on the Yuba River;
- ▶ annual chinook salmon spawning escapement surveys (1991–present);
- ▶ annual monitoring and evaluation of the effects of water transfers on juvenile and adult salmon and steelhead (2001–present);
- ▶ a comprehensive program to evaluate the effectiveness of flow fluctuation criteria from the State Water Resources Control Board’s Water Right Decision 1644 and Revised Decision 1644 in protecting redds and fry from dewatering and stranding;
- ▶ funding for research by a graduate student from the University of California, Davis, on juvenile steelhead distribution and abundance in the lower Yuba River (2001–2002);
- ▶ ongoing field monitoring to assist YCWA with flow scheduling to protect salmon and steelhead redds and juveniles from dewatering and stranding;
- ▶ research on the life history and run composition of steelhead in the lower Yuba River, funded jointly by CALFED, USFWS, and YCWA (2001–present);
- ▶ an implementation plan for the Lower Yuba River Anadromous Fish Habitat Restoration Program;
- ▶ participation in the Lower Yuba River Temperature Coordinating Committee, Lower Yuba River Fisheries Technical Working Group, Yuba-Feather Work Group, and CALFED Upper Yuba River Studies Program; and
- ▶ Olivehurst Floodplain Federal Emergency Management Agency (FEMA) certification.

River Partners

River Partners, formerly the Sacramento River Partners, works in conjunction with numerous federal, state, and local entities: DFG; the California Department of Parks and Recreation; California State University, Chico; Glenn-Colusa Irrigation District; the Corps; USFWS; the State Wildlife Conservation Board; the Great Valley Center L.E.G.A.C.I. Program; the California Waterfowl Association; Sacramento River National Wildlife Refuge; and San Joaquin River National Wildlife Refuge. The goal of River Partners is to create “high-quality wildlife habitat for the benefit of the environment and local communities” by using a variety of techniques to restore riparian areas along the Sacramento and San Joaquin Rivers and their tributaries while protecting agricultural investments. Projects focus on:

- ▶ restoring riparian habitat;
- ▶ reconnecting and linking fragmented habitats;
- ▶ providing erosion control for the riverbanks;
- ▶ building and strengthening relationships between partner entities, local and county governments, and local farmers;
- ▶ providing recreational opportunities, such as hunting, hiking, and bird watching, at some project areas;
- ▶ educating the public on the benefits of habitat restoration;
- ▶ providing research opportunities; and
- ▶ enhancing scenic views with mature riparian habitat.

Approximately 19 projects in the Sacramento River system are complete or in progress; project areas range in size from approximately 2.5 acres to 1,361 acres. Project sites in the Sacramento River system are generally between the Hamilton City Pumping Plant in Glenn County and 10 miles north of Colusa in Colusa County. The O'Connor Lake Project with DFG entails the restoration of riparian habitat on 228 acres dominated by invasive nonnative species at the O'Connor Lake Ecological Preserve on the Feather River. Project funding is from various sources, including CALFED, the Wildlife Conservation Board, USFWS, DFG, Glenn-Colusa Irrigation District, and the U.S. Bureau of Reclamation. (Sacramento River Partners 2002, 2005.) It is reasonably foreseeable that River Partners will continue these efforts and restore additional habitats, although specific additional projects are unknown.

Sacramento River Conservation Area

The Nature Conservancy and its partners USFWS, the California Wildlife Commission, and DFG, along with stakeholders, have undertaken riparian restoration of a continuous 100-mile-long stretch of the Sacramento River between Red Bluff and Colusa. Aspects of the project include implementing large-scale riparian habitat restoration, creating a sustainable farming program, and restoring the river's hydrology and bank condition (including possibly setting back levees) to improve the ability of the river to move freely within its meander belt. The goal of the project is to improve the Sacramento River's ecological health, protect the area's plant and wildlife species, and demonstrate examples of successful integrated land use (Sacramento River Conservation Area Forum 2002).

The Nature Conservancy is purchasing floodprone riverside farmland from willing sellers where agricultural production is declining. It restores land within these areas while developing site-specific plans, including conservation easements, set-aside agreements, bank protection, landowner protections, and floodplain management strategies; developing a program to improve permit and regulatory coordination and consistency; developing educational and outreach programs; and supporting monitoring and research programs. (The Nature Conservancy 2002.) It

is reasonably foreseeable that The Nature Conservancy will continue these efforts and make additional purchases of land for conservation; however, specific details are unknown.

Feather River Coordinated Resource Management Group

The Feather River Coordinated Resource Management (FRCRM) group is a partnership of 22 public and private groups that formed in 1985 to collectively improve watershed health in the upper Feather River watershed above Lake Oroville. The FRCRM has focused on cumulative watershed effects on water quality, desertification, and reductions in biodiversity on public and private lands. It has used education, restoration technology, and demonstration projects to encourage cooperation and participation in its efforts (Feather River Coordinated Resource Management 2006).

More than 50 watershed projects have been completed since 1989 in the upper Feather River watershed, including Wolf Creek, Red Clover Creek, Black Rock Creek, Boulder Creek, Greenhorn Creek, Clarks Creek, Carmen Creek, Hosselkus Creek, Elizabethtown Creek, North Canyon Creek, and Last Chance Creek. Projects have included urban stream restoration, meadow rewatering, construction of check dams, and bank stabilization. Projects planned for 2006 include ongoing monitoring of upper Last Chance Creek, reevaluation of the Spanish Creek gravel sampling project, and continued channel restoration on Red Clover Creek. The FRCRM group will continue these efforts in accordance with concepts outlined in the Feather River Watershed Management Strategy. (Feather River Coordinated Resource Management 2006.)

6.3 CUMULATIVE IMPACT ANALYSIS

Chapter 5, “Environmental Analysis,” identifies potential direct and indirect environmental effects of the three FRLRP project alternatives. These effects are assessed in this section in terms of their potential to combine with similar environmental effects of the other projects (past, current, and reasonably foreseeable) listed above, resulting in cumulative impacts. The analysis is focused on considering the potential for those impacts identified in Chapter 5 to contribute considerably to cumulative impacts after mitigation.

As explained earlier in this chapter in the section “Geographic Scope,” the extent of the geographic area that may be affected with implementation of the FRLRP varies depending on the resource under consideration. Not all projects discussed above would contribute, along with the FRLRP, to cumulative environmental effects. Also, Section 15130(a)(1) of the State CEQA Guidelines states that an EIR “should not discuss impacts which do not result in part from the project evaluated in the EIR.” Therefore, for each discussion below, the past, present, and reasonably foreseeable future projects that are considered are limited to those having potential effects similar to those of the proposed project that would affect the same geographic area as the FRLRP.

6.3.1 LAND USE

Alternative 1 – The Levee Strengthening Alternative

Under Alternative 1 placement of seepage/stability berms (primarily in project Segment 2), relocation of Pump Station No. 3, and construction of a detention basin could result in the conversion of up to approximately 180 acres of Prime Farmland to nonagricultural uses.

As shown in Table 6-1 in “Current Trends in Population Growth and Conversion of Agricultural Land,” in Section 6.2 above, the latest FMMP data indicate that from 1992 through 2004, Yuba County experienced a net loss of Important Farmland (consisting of land classified as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance) totaling approximately 2,300 acres out of approximately 87,000 acres inventoried. Gains in Important Farmland were recorded for the county for the 1992–1994 and 1994–1996 periods; these were slightly more than offset by losses in the 1996–1998 period. Both losses and gains were recorded for the 1998–2000 and 2000–2002 periods, resulting in a total net loss for both of these periods. Both losses and gains were recorded for the most recent reported period, 2002–2004, with a total net loss of 2,298 acres for this period.

Comparison of these statistics with those in the lower part of Table 6-1 shows that most of the acreage lost was not converted to urban and built-up uses. Other possible mechanisms for the loss of Important Farmland as recorded by the FMMP are conversions to grazing land or the fallowing of farmland. Although land may be converted from grazing or fallow lands back to Important Farmland in future reporting periods, the trends in development and population growth in the region, described in Section 6.2.2, “Development Trends in the Yuba County Area,” indicate that net increases in Important Farmland, like those recorded in the 1992–1994 and 1994–1996 periods, are unlikely. Some future farmland conversion would take place in the Plumas Lake Specific Plan and East Linda Specific Plan areas, which are planned for gradual buildout over approximately the next 20 years. Additional development proposals in the project region currently being evaluated could also result in further farmland conversions. Locally, the F-BRLSP downstream on the Feather River and lower Bear River is converting approximately 300 acres of agricultural land in the levee setback area to habitat. On a regional scale, the Sacramento Valley has lost Important Farmland to environmental restoration (along river corridors) and urban development (areas surrounding existing cities). Additionally, it is reasonably foreseeable that there will be future environmental restoration and urban development projects in the Sacramento Valley, given the restoration programs and urban development currently under way.

Installation of seepage/stability berms under Alternative 1 and construction of the proposed detention basin would contribute to the cumulative conversion of Important Farmland to nonagricultural uses locally and regionally. Although mitigation is included in Section 5.1, “Land Use,” that would help to reduce the potential impact on Important Farmland, the direct impact would not be reduced to a less-than-significant level, and this alternative would make a considerable contribution to this existing cumulative impact that would be significant and unavoidable.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 and the relocation of Pump Station No. 3 would be the same as the effects described previously (for all project segments) for Alternative 1.

Implementation of the ASB levee setback in Segment 2 would conflict with specific County policies for the preservation of agricultural land where the setback levee would result in the removal of agricultural land from production. Uses of the levee setback area may be inconsistent with current zoning. Inconsistencies with County land use policies and zoning are considered significant direct impacts on land use. However, these effects are project specific and limited to a local site; therefore, they are not considered to contribute to a cumulative impact.

The ASB levee footprint and levee easements in project Segment 2 would permanently convert a total of approximately 210 acres of Prime Farmland, 35 acres of Farmland of Statewide Importance, and 2 acres of Unique Farmland to nonagricultural uses. Construction of a detention basin would likely occur on up to several hundred acres of land that is currently in agricultural use.

Land uses in the levee setback area could consist of agricultural operations and/or habitat restoration activities that are compatible with flood control objectives. No specific plans for habitat restoration in the setback area are proposed at this time, although this is considered a potential future use. For purposes of the analysis in this EIR, and to assess the highest level of impacts, it is conservatively assumed that the entire levee setback area would be used for habitat restoration, and would therefore include the conversion of up to approximately 1,025 acres of Prime Farmland, 10 acres of Farmland of Statewide Importance, and 10 acres of Unique Farmland to nonagricultural uses.

The cumulative conversion of agricultural land in the project region to nonagricultural uses is characterized above in the discussion of Alternative 1. The levee setback and detention basin construction would contribute to the cumulative conversion of Important Farmland to nonagricultural uses locally and regionally. Although mitigation is included in Section 5.1, “Land Use,” that would help to reduce the potential impact on Important Farmland, the direct impact would not be reduced to a less-than-significant level, and this alternative would make a considerable contribution to this existing cumulative impact that would be significant and unavoidable. It should be noted, however, that any lands that might be converted to habitat may not necessarily be lost in perpetuity from agricultural use, as occurs with urban development. While the conversion from agriculture to habitat would be long term, it would not necessarily be permanent. This would not be the case if the conversion to habitat were tied to a permitting or mitigation requirement, or if there were some other legal mechanism in effect calling for the habitat to be retained in perpetuity.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in Segment 2 would be the same as the effects described previously for Alternative 2.

However, the levee setback area would be somewhat smaller under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment.

The intermediate levee setback footprint and levee easements in Segment 2 would permanently convert approximately 210 acres of Prime Farmland, 10 acres of Farmland of Statewide Importance, and 5 acres of Unique Farmland to nonagricultural uses, and would potentially convert up to several hundred additional acres of Important Farmland for the proposed detention basin. As discussed for the ASB levee setback above, it is conservatively assumed for the analysis in this EIR that the entire levee setback area would be used for habitat restoration, and would therefore include the conversion of up to approximately 700 acres of Prime Farmland, 10 acres of Farmland of Statewide Importance, and 10 acres of Unique Farmland to nonagricultural uses.

For the reasons described above, the intermediate levee setback and detention basin construction would contribute to the cumulative conversion of Important Farmland to nonagricultural uses locally and regionally. Although mitigation is included in Section 5.1 that would help to reduce the potential impact on Important Farmland, the direct impact would not be reduced to a less-than-significant level, and this alternative would make a considerable contribution to this existing cumulative impact that would be significant and unavoidable. As noted above, however, any lands that might be converted to habitat would not necessarily be lost in perpetuity from agricultural use, as occurs with urban development, unless a mitigation or regulatory requirement were to call for permanent preservation of the habitat.

6.3.2 GEOLOGY, SOILS, AND MINERAL RESOURCES

Alternative 1 – The Levee Strengthening Alternative

Although levee repair and strengthening activities would disturb earth, thereby potentially accelerating erosion, construction disturbance would be temporary, and soils in disturbed areas would be vegetated or otherwise stabilized after construction is complete. In addition, part of Alternative 1 includes correction of existing erosion problem areas on the water side of the Feather River left bank levee in project Segment 2. Based on these conditions, there is only a minimal risk of soil erosion hazard, if any, associated with levee repair and strengthening activities. In addition, there are no other planned projects in the local area that would result individually or cumulatively in significant erosion hazards. Therefore, Alternative 1 would not make a cumulatively considerable contribution to any significant impacts related to soil erosion hazards.

Up-to-date engineering methods would be used during levee repair and strengthening activities, ensuring that the stability of the existing Feather and Yuba River levees would increase over existing conditions and that the risks of geologic/soils/seismic related failure would be lower. This is a beneficial effect. With the F-BRLSP, other TRLIA flood control projects, the Corps levee improvements conducted as part of the System Evaluation Project and as a result of the Yuba River Basin Investigation, and the other levee improvements planned for the area by YCWA, a similar beneficial effect would occur on a cumulative level. The FRLRP would contribute to this cumulative beneficial effect.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1.

Although construction activities associated with construction of the ASB setback levee would disturb earth, thereby potentially accelerating erosion, construction disturbance would be temporary and soils in disturbed areas would be vegetated or otherwise stabilized after construction is complete. In addition, the levee setback area is nearly level and is well drained, and the risk of erosion and associated hazards is slight. Some soil erosion could also occur during flood operations when flows pass through the levee setback area, but because velocities would be low, erosion potential is not considered high. In addition, vegetative cover in the levee setback area (agriculture or habitat) would reduce the potential for erosion. Consequently, there is only a minimal risk of soil erosion hazard, if any, associated with the proposed levee setback. In addition, there are no other planned projects in the local area that would result individually or cumulatively in significant erosion hazards. Therefore, the ASB levee setback would not make a cumulatively considerable contribution to any significant soil erosion impact.

The setback levee would be engineered and constructed to modern standards with appropriate seepage control features, making it more stable than the existing levee and decreasing the risk of levee failure associated with geologic/soils/seismic hazards. This is a beneficial effect. With the F-BRLSP, other TRLIA flood control projects, the Corps levee improvements conducted as part of the System Evaluation Project and as a result of the Yuba River Basin Investigation, and the other levee improvements planned for the area by YCWA, a similar beneficial effect would occur on a cumulative level. The FRLRP would contribute to this cumulative beneficial effect.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. The impacts associated with construction of the setback levee in Segment 2 would be the same as the effects described previously for Alternative 2. For the reasons described above, the intermediate levee setback would not result in a considerable contribution to any significant adverse cumulative soil erosion hazard impacts, and would contribute to a beneficial cumulative impact related to reduced geologic/soils/seismic hazards in combination with other flood control projects.

6.3.3 WATER RESOURCES AND RIVER GEOMORPHOLOGY

Alternative 1 – The Levee Strengthening Alternative

Levee repair and strengthening activities could allow soil and sediment to enter local waterways via erosion, resulting in adverse effects on water quality and contamination of waterways by toxic substances. Mitigation described in Section 5.3, “Water Resources and River Geomorphology,” however, would ensure that appropriate erosion control and spill containment measures would be implemented to minimize any potential for water quality effects. Because these measures would be incorporated into construction practices, this potential temporary effect

would be less than significant both as a direct impact and as a potential contribution to any cumulative impact. In addition, other levee reconstruction and repair efforts conducted by the Corps along the left bank Feather and Yuba River levees in recent years and planned for future implementation have been and will be required to incorporate similar measures to ensure the protection of water quality from potential sedimentation and effects of toxic spills. All projects in the area that would result in the disturbance of more than 1 acre of land are also required to implement a Stormwater Pollution Prevention Plan (SWPPP) through the National Pollutant Discharge Elimination System (NPDES) permit process. The SWPPP must include measures to control erosion and protect water quality. For these reasons, levee repair and strengthening activities would not make a cumulatively considerable contribution to any significant cumulative impact on water quality.

Levee repair and strengthening would also provide a levee that would be more reliable and less subject to seepage than the existing levee. These changes would improve local flood protection providing a beneficial effect. Levee repair and strengthening would combine with the effects of other recent and planned flood control projects to result in a cumulatively beneficial effect on flood protection in the Feather-Yuba River Basin above the confluence of the Feather and Bear Rivers.

Levee repairs and strengthening of the existing levee would not change Feather River flood stage elevations; therefore, these activities would not result in any long-term changes to the existing drainage pattern of the project site, would not affect the rate or amount of surface runoff in the project area, and would not reduce water supply or alter regional or local hydrology. Therefore, the FRLRP would not make a considerable contribution to any potential cumulative effects on sediment deposition, water supply, or geomorphic processes.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. Impact conclusions related to soil, sediment, and contaminants entering local waterways would also apply to the setback levee in Segment 2.

Potential changes in land use associated with the ASB levee setback would not adversely affect local water demand and supply and may, in fact, cause demand to decrease. Effects of the levee setback related to sediment deposition in the ASB levee setback area are not expected to be measurable. No other known projects would contribute to similar potential effects in a manner that would result in a significant cumulative impact. Therefore, there would be no cumulative effect on water supply or sediment deposition to which the levee setback would make a considerable contribution.

The ASB setback levee would cross existing drainage infrastructure and sever parts of the drainage system for the local area. Drainage patterns within the levee setback area could be changed by project implementation as well. Measures included in Section 5.3 would preclude any adverse effects of a levee setback on local drainage. These effects are project specific and limited to a local site; therefore, they are not considered to contribute to a cumulative impact.

Implementation of the ASB levee setback could result in changes in geomorphic processes by altering velocities in the existing floodway in this area and upstream, leading to decreased shear stresses from Star Bend to just below Shanghai Bend (project Segment 2) and increased shear stresses at Shanghai Bend (Segment 3) and some distance upstream on both the Feather River and the Yuba River. However, increases in shear stresses would be minor and would not result in erosion of the levee system or substantial increases in the mobilization and/or deposition of sediments. None of the other projects included in this cumulative analysis, when considered together with the FRLRP, would contribute substantially to potential effects associated with increased shear stresses. Therefore, no significant cumulative impact would occur.

With a reduction in water surface elevations at and above the ASB levee setback area, peak flows in the Feather River downstream of the setback levee would increase slightly, from 271,938 cfs to 272,406 cfs during the 1-in-100 AEP event, an increase of less than 1%. Modeling results indicate that the slight increase in flows would result in an increased water surface elevation of 0.02 foot in the Feather River from the southern end of the setback levee alignment to the confluence with the Bear River. For the 1-in-200 AEP event, the flows would increase from 347,031 cfs to 348,879 cfs, an increase of less than 1%. The water surface elevation in the Feather River from the southern end of the setback levee alignment to the confluence with the Bear River is expected to increase by 0.08 foot as a result of the increased flow. These increases in downstream floodwater flows with the ASB levee setback are small (less than 1%), and the increases in downstream flood stage elevation would be less than 1 inch for the 1-in-100 and 1-in-200 AEP events. In addition, with implementation of the F-CO (see description of the F-CO in Section 6.2.3, “Past, Present, and Future Projects”), any increases in downstream flood stage elevations associated with the ASB levee setback would be less than described above. The impact of this very slight increase in risk would be less than significant.

The recent and proposed development projects listed in Section 6.2.3, including development of the Plumas Lake Specific Plan, East Linda Specific Plan, and River Highlands Community Plan areas, have the potential to incrementally increase runoff associated with storm events by increasing impervious surfaces within the Feather-Yuba River watershed. However, these developments are required to mitigate these increases in runoff through the construction and operation of detention basins. Any increase in runoff volumes from these developments that reaches the surrounding rivers during storm events would be a minor incremental contribution to river flows and would not result in a significant cumulative impact. Because the increased risk of downstream flooding associated with the ASB levee setback would also be minor, this effect is considered to be inconsequential in a cumulative context as well as in a direct sense. Therefore, the ASB levee setback would not be considered to contribute to a significant cumulative impact on potential downstream flooding associated with changes in downstream hydrology.

Setting back the left bank Feather River levee along the ASB setback levee alignment would decrease flood stages on the river. The levee setback would also provide a well-designed, well-constructed levee that would be more reliable and less subject to seepage than the existing levee. These changes would improve local flood protection, providing a beneficial effect. The ASB levee setback would combine with the effects of other recent and planned flood control projects to result in a cumulatively beneficial effect on flood protection in the Feather-Yuba River Basin above the confluence of the Feather and Bear Rivers.

Potentially hazardous materials related to agricultural activities could be transported downstream when the ASB levee setback area becomes inundated during flood events. These materials could contaminate floodwater and adversely affect river water quality. However, measures described in Section 5.3 would reduce the potential for the release of hazardous materials. For this reason, the levee setback is not expected to result in a considerable contribution to a cumulative water quality impact.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. The impacts associated with the construction of the setback levee in project Segment 2 would be the same as or very similar to the effects described previously for Alternative 2. However, the levee setback area would be somewhat smaller under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment.

Modeling results indicate that with a reduction in water levels at and above the intermediate levee setback area, peak flows in the Feather River downstream of the setback levee would increase slightly, from 271,938 cfs to 272,262 cfs during the 1-in-100 AEP event, an increase of less than 1%. This slight increase in flow is expected to result in a 0.02-foot increase in the water surface elevation in the Feather River from the southern end of the setback levee alignment to the confluence with the Bear River. For the 1-in-200 AEP event, modeling results show that the flows would increase from 347,031 cfs to 348,624 cfs, an increase of less than 1%. The water surface elevation in the Feather River from the southern end of the setback levee alignment to the confluence with the Bear River is expected to increase by 0.07 foot as a result of the increased flow. These increases in downstream floodwater flows with the intermediate levee setback are small (less than 1%), and the increases in downstream flood stage elevation would be less than 1 inch for the 1-in-100 and 1-in-200 AEP events. In addition, with implementation of the F-CO, any increases in downstream flood stage elevations associated with the intermediate levee setback would be less than described above. The impact of this very slight increase in risk would be less than significant.

For the reasons described above, the intermediate levee setback is not expected to result in a considerable contribution to any significant cumulative impacts related to water resources and river geomorphology.

6.3.4 FISHERIES

Alternative 1 – The Levee Strengthening Alternative

Levee repair and strengthening activities could cause sedimentation and contamination of waterways by toxic substances and adversely affect fish in the Feather and Yuba River channels and downstream. Mitigation described in Section 5.3, “Water Resources and River Geomorphology,” and repeated in Section 5.4, “Fisheries,” would ensure that appropriate erosion control and spill containment measures would be implemented to minimize any effects on fish habitat and fish populations associated with sedimentation or contamination. Because these measures would be incorporated into construction practices, this potential temporary effect

would be less than significant both as a direct impact and as a potential contribution to any cumulative impact. In addition, other levee reconstruction and repair efforts conducted and planned for the Feather, Yuba, and Bear River levees by the Corps, TRLIA, and/or other agencies have been and will be required to incorporate similar measures to ensure the protection of water quality and fish habitat from potential sedimentation and effects of toxic spills, in accordance with existing regulations. Also, all projects in the area that would result in the disturbance of more than 1 acre of land are required to implement a SWPPP through the NPDES permit process. The SWPPP must include measures to control erosion, prevent releases of contaminants, and protect water quality.

For these reasons, levee repair and strengthening activities would not make a cumulatively considerable contribution to any significant impact associated with sedimentation and introduction of toxic materials into fish habitat.

Any direct effects of construction activities on overhead cover or woody material that could degrade fish habitat would be negligible, and any potential contribution to a cumulative effect on these habitat features would also be negligible.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. Impact conclusions related to sedimentation and introduction of toxic materials into fish habitat would also apply to the setback levee in Segment 2.

Flood operations with implementation of the ASB levee setback have the potential to result in the stranding and mortality of fish, including protected species, in areas within the expanded floodway (i.e., levee setback area) where water collects and fish become trapped as floodwaters recede. This effect, if not mitigated, could combine with the deleterious effects of more than 150 years of past actions in the Sacramento River Basin that have reduced populations of chinook salmon and steelhead in the region enough that these are now designated special-status species. Levee projects in general have had a significant cumulative effect on these species. However, to reduce the potential for fish to become stranded in the levee setback area, a drainage and grading plan for the area would be developed and implemented in consultation with DFG, NMFS, and USFWS as described in Section 5.4 of this EIR. The plan would ensure that the project design incorporates appropriate features to minimize the potential for stranding and ensure that only a minor incidental loss of fish would result from the levee setback (a loss expected to be offset by increases in growth and survival of juvenile fish that would use new habitat created in the levee setback area). For these reasons, the ASB levee setback would not contribute considerably to any significant cumulative adverse effect on fish populations.

It is unknown at this time how much, if any, of the levee setback area might be converted to riparian, wetland, or other habitat if the ASB setback levee is constructed. If this potential land use is implemented in the future, the levee setback area would provide a riparian and aquatic habitat corridor, providing additional floodplain habitat for fish along the Feather and Yuba Rivers and potentially improving the success of fish species that use the area. This potential benefit could make a considerable contribution to cumulative benefits to fish that may be derived

from projects that expand the floodplain corridor that are being implemented in the Sacramento River system, including the F-BRLSP (currently under construction), River Partners, and Sacramento River Conservation Area efforts described above, as well as potential future projects that may be developed through the CALFED Upper Yuba River Studies Program and the Lower Yuba River Fisheries Technical Working Group. Overall, downward trends in fish populations are reversing, largely because of the substantial efforts being made for salmon and steelhead recovery. The ASB levee setback could contribute to this trend and, given the mitigation described in Section 5.4, could contribute to species recovery. Consequently, the ASB levee setback would not contribute to a significant adverse cumulative impact on fisheries.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in Segment 2 would be the same as the effects described previously for Alternative 2.

However, the intermediate levee setback would affect a smaller land area than would be affected by the ASB setback levee. Like the ASB levee setback, the intermediate levee setback would not result in a considerable contribution to any significant adverse cumulative impact with the implementation of mitigation measures. The intermediate levee setback would result in a smaller setback area with less potentially available floodplain habitat than the ASB levee setback, resulting in a slightly reduced potential beneficial impact on fisheries.

6.3.5 TERRESTRIAL BIOLOGICAL RESOURCES

Alternative 1 – The Levee Strengthening Alternative

Levee repair and strengthening activities would have less-than-significant project-specific impacts, without the need for mitigation, on the following resources: general biological resources, special-status bird species other than raptors, Pacific western big-eared bat, and wildlife corridors. The project would not provide a substantial contribution to any potential significant cumulative impacts related to these resources.

As stated in Section 5.5, “Terrestrial Biological Resources,” construction activities associated with Alternative 1 could have potential adverse effects on the following resources: jurisdictional waters of the United States and riparian habitat, special-status plants, valley elderberry longhorn beetle, northwestern pond turtle, giant garter snake, and Swainson’s hawk and other nesting raptors. Mitigation included in Section 5.5 would be implemented to address potential direct effects on these resources. Any unavoidable effects on waters of the United States and riparian habitat would be addressed through restoration or replacement according to methods and terms agreed upon through consultation with the Corps and/or DFG, ensuring no net loss of the affected resources. Surveys, maintenance of buffer areas where practicable, and other avoidance measures described in the mitigation presented in Section 5.5 would ensure minimization of any potential temporary effects of construction on valley elderberry longhorn beetles, northwestern pond turtles, giant garter snakes, and nesting Swainson’s hawks and other raptors and their habitats.

Any other projects would be required to implement measures similar to those that would be undertaken for Alternative 1 to ensure minimization of impacts on these potentially affected species, most of which are protected by the federal Endangered Species Act (ESA) and/or sections of the California Fish and Game Code, including the California Endangered Species Act (CESA). Past and ongoing levee repair efforts being conducted by the Corps, TRLIA, and others have provided relatively large habitat restoration areas such as the Corps Marysville–Yuba City Mitigation Area and habitat restoration associated with the F-BRLSP. These restoration areas provide a cumulative benefit to terrestrial biological resources that assists in compensating for any adverse cumulative impacts.

Based on the foregoing, Alternative 1 would not be considered to make a considerable contribution to any significant adverse cumulative effects on terrestrial biological resources.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. Impact conclusions related to all terrestrial biological resources addressed in Section 5.5 would also apply to the setback levee in Segment 2. For the reasons discussed above for various biological resources where significant impacts are mitigated to less-than-significant levels, the impacts under Alternative 2 would not make a considerable contribution to any significant cumulative effects on terrestrial biological resources.

Implementation of the ASB levee setback has the potential to contribute considerably to a cumulative benefit to terrestrial biological resources through restoration actions that would enhance the riverine ecosystem along the Feather River. If the restoration of wetlands, enhancement of floodway riparian communities, or restoration of open grassland, for example, is included in future land management of the levee setback area, regional benefits could result, including increasing the effective amount of habitat available to species and helping to reverse habitat fragmentation. These efforts, in combination with other restoration projects described in Section 6.2.3, would combine to enhance regional migratory corridors; provide larger habitat units for wildlife and species that require large home ranges; and provide greater opportunities for separate populations to interbreed, potentially increasing species' genetic diversity.

Based on the foregoing, Alternative 2 would not be considered to make a considerable contribution to any significant adverse cumulative effects on terrestrial biological resources.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in project Segment 2 would be the same as the effects described previously for Alternative 2. The levee setback area would be somewhat smaller under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment. Like the ASB levee setback, the intermediate levee setback would not result in a considerable contribution to any significant adverse cumulative impact on terrestrial biological resources.

6.3.6 RECREATION

Alternative 1 – The Levee Strengthening Alternative

Levee repair and strengthening activities may have minor and temporary (less-than-significant) direct effects on recreational resources, such as hunting, boating, and nature viewing, in areas adjacent to or near the existing Feather River levee alignment in the existing river channel. No substantial long-term changes in recreational opportunities would be associated with repair and strengthening of the existing Feather and Yuba River levees. Feather River flood stage elevations would not change, the project site would be restored and reclaimed as appropriate to preexisting conditions after completion of construction activities, and recreational opportunities are expected to be available to the extent that these opportunities are available under preproject conditions. Levee repair and strengthening activities would not contribute to any potential significant cumulative impacts on recreation.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1.

Construction of the ASB setback levee may have minor and temporary (less-than-significant) direct effects on recreational resources, such as hunting, boating, and nature viewing, in areas adjacent to or near the levee setback area in the existing Feather River channel. Implementation of the ASB levee setback in Segment 2 would also contribute to a less-than-significant impact associated with potential losses of wildlife from flooding in the setback area that could adversely affect long-term hunting opportunities or other recreational activities. The ASB setback levee would not contribute to any potential significant cumulative impacts on recreation.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in Segment 2 would be the same as the effects described previously for Alternative 2. For the reasons described above, the intermediate setback levee would not contribute to any potential significant cumulative impacts on recreation.

6.3.7 AESTHETIC RESOURCES

Alternative 1 – The Levee Strengthening Alternative

Levee repair and strengthening activities would temporarily reduce the aesthetic qualities of views by introducing earthmoving equipment and other construction equipment, materials, and work crews into the viewshed of recreationists, motorists on SR 70 and Feather River Boulevard, workers in nearby farming areas, and residents of the area. However, aesthetic conditions would be the same after construction as before the levee repairs. Construction of a detention basin east of Feather River Boulevard would permanently alter views, especially where orchards may be removed.

However, this change would not substantially affect the quality of views. No scenic vistas would be affected. Because construction activities would be temporary and would affect few viewers, and the essential character of views of the area would not change, repair and strengthening of the Feather and Yuba River levees would not contribute to any potential significant cumulative aesthetic impacts.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. Effects of detention basin construction east of Feather River Boulevard would be the same as described for Alternative 1.

Construction of the proposed ASB setback levee would temporarily reduce the aesthetic qualities of views by introducing earthmoving equipment and other construction equipment, materials, and work crews into the viewshed of recreationists, motorists on SR 70 and Feather River Boulevard, workers in nearby farming areas, and residents of the area. However, because construction activities would be temporary and would affect few viewers, this impact would be less than significant.

Long-term changes in aesthetic conditions associated with the presence of the setback levee would not change the essential character of views of the area in Segment 2 (rural, bordering a floodway with riparian components) or the quality of those views (moderate aesthetic value) and would not substantially affect a scenic vista. Because construction activities would be temporary and would affect few viewers, and the essential character of views of the area would not change with the presence of the setback levee, the ASB levee setback would not contribute to any potential significant cumulative aesthetic impacts.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. The setback levee area would be somewhat smaller under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment. The intermediate setback levee would not make a considerable contribution to any potential significant cumulative impacts on aesthetic resources for the same reasons as stated above.

6.3.8 CULTURAL RESOURCES

Alternative 1 – The Levee Strengthening Alternative

Table 5.8-2, “Summary of Cultural Resources in the Project Area,” in Section 5.8, “Cultural Resources,” presents a list of previously identified and newly identified resources in and directly adjacent to the FRLRP project area, along with the National Register of Historic Places and California Register of Historical Resources eligibility status of each resource. Mitigation described in Section 5.8 would ensure the protection in place, or the recovery and subsequent protection, of any significant cultural resources determined to be present in the existing Feather or Yuba River levee alignment or elsewhere in the project area that could be damaged by project-

related activities. These management actions would ensure that the value of any significant cultural resource would be preserved. They also would ensure that project activities would not contribute to any significant impact on cultural resources that may have occurred as a result of disturbance or destruction of prehistoric sites likely to have taken place before the enforcement of protections afforded by current laws such as CEQA.

In addition, activities associated with the proposed levee strengthening (e.g., construction of slurry cutoff walls) and related activities (e.g., relocation of Pump Station No. 3, construction of the detention basin) have the potential to encounter and possibly damage unknown as-yet-undiscovered subsurface cultural resources. Mitigation described in Section 5.8 would be initiated to prevent any significant impacts on cultural resources from occurring.

Implementing mitigation measures provided in Section 5.8 would ensure that construction under Alternative 1 would not incrementally contribute to any significant cumulative impacts on important cultural resources in the project region. These measures are fairly standard to ensure compliance with Section 15064.5 of the State CEQA Guidelines and related provisions of the Public Resources Code, and it is assumed that similar measures would be applied to related projects, and other projects in the region, as appropriate. Where federal agency approvals are required to implement projects, moreover, additional protection would also be anticipated under the National Historic Preservation Act, which is commonly implemented by federal agencies, making measures such as those described herein fairly standard as well.

For these reasons, repair and strengthening of the Feather and Yuba River levees would not incrementally contribute to a significant cumulative effect on cultural resources.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1.

Mitigation described in Section 5.8 would ensure the protection in place, or recovery and subsequent protection, of any significant cultural resources determined to be present in the ASB levee setback area or elsewhere in the project area that could be damaged by project-related activities. In addition, construction of the ASB setback levee in Segment 2 and related activities (e.g., use of the soil borrow area/detention basin location) have the potential to encounter and possibly damage unknown as-yet-undiscovered subsurface cultural resources. Mitigation described in Section 5.8 would be initiated to prevent any significant cumulative impacts on cultural resources from occurring.

For the reasons discussed above, the ASB setback levee would not incrementally contribute to a significant cumulative effect on cultural resources.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback

levee in project Segment 2 would be the same as the effects described previously for Alternative 2. However, the levee setback area would be somewhat smaller under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment, resulting in less ground disturbance, and therefore less potential for disturbing unknown cultural resources. For the reasons described above, the intermediate levee setback would not incrementally contribute to a significant cumulative effect on cultural resources.

6.3.9 AIR QUALITY

Virtually all pollutant emissions associated with the three proposed project alternatives would be the result of construction-related activity; any operational emissions would be extremely minor and would not contribute measurably to cumulative air quality emissions. Therefore, this evaluation focuses only on the pollutants of concern that would be associated with construction-related emissions: reactive organic gases (ROG), oxides of nitrogen (NO_x), and particulate matter greater than 10 microns in diameter (PM₁₀).

The FRAQMD portion of the NSVAB is designated as a nonattainment area with respect to the state standards for ozone (1-hour) and PM₁₀. Yuba and Sutter Counties are designated as a nonattainment area with respect to the state standards for ozone (1-hour) and PM₁₀, and are either in attainment or unclassified for the remaining state standards. Yuba and Sutter Counties are either in attainment or unclassified for federal standards (Feather River Air Quality Management District 2006).

Any project that is constructed in the FRAQMD has the potential to add traffic and other pollution-emitting sources that would contribute to the cumulative degradation of air quality in the region. This is particularly true of large-scale housing and commercial developments, such as development of the Plumas Lake Specific Plan, East Linda Specific Plan, and River Highlands Community Plan areas. At the same time, vehicles throughout the region are continuously being modernized as consumers replace older vehicles, and the newer vehicles have improved air emission levels. Furthermore, FRAQMD is required to make progress toward compliance with federal clean air standards. It can be assumed that policies and regulatory programs (requirements for best available control technology) will minimize air quality impacts over time; however, it cannot be stated with certainty that future air quality, with growth projected to occur throughout the region (see “Current Trends in Population Growth and Conversion of Agricultural Land” above), will be better in the future than it is today.

Because of the nature of conditions that affect air quality, impacts on air quality are considered on a regional basis; in the case of the project area, this region covers at least Yuba County and Sutter County, which is under FRAQMD jurisdiction. It is neither practical nor reasonable to consider a complete list of all projects that would affect this large region. Rather, attainment plans form the basis of projecting and resolving adverse air quality conditions throughout the region.

Alternative 1 – The Levee Strengthening Alternative

Construction-related emissions associated with levee repair and strengthening activities would result in emissions of toxic air contaminants (TACs) associated with the operation of diesel-

powered construction equipment. This impact would be less than significant because several factors would limit the exposure of sensitive receptors to TACs: the distance of receptors from the project site, the limited amount of emissions, the temporary nature of exposure, or a combination of these factors. Therefore, implementation of Alternative 1 would not incrementally contribute to any potential cumulative impacts related to TAC exposure.

Construction-related emissions associated with Alternative 1 are expected to temporarily and periodically exceed one or more of the FRAQMD thresholds for ROG, NO_x, and PM₁₀. FRAQMD's *Indirect Source Review Guidelines* and CEQA guidance (Feather River Air Quality Management District 2006) provide mitigation measures for reducing these short-term air quality impacts, as described in Section 5.9, "Air Quality." The direct impact would be temporary and intermittent and would be reduced by implementation of these measures; however, because of the potential magnitude of pollutant emissions and the amount by which they may exceed FRAQMD's recommended daily thresholds, implementing this mitigation would not reduce the impact to a less-than-significant level. In addition, it can be assumed that the construction period for Alternative 1 would overlap with construction periods or implementation phases of other projects in the Yuba County and Sutter County areas and throughout the basin, such as construction or occupation of the major development areas and other levee repair projects noted above. Each individual project would contribute measurably to adverse air quality conditions, therefore also contributing to nonattainment of FRAQMD air quality standards and resulting in a significant cumulative air quality impact. There is no feasible mitigation available that would cause all FRAQMD air quality standards to be met by the time construction of the FRLRP takes place.

Despite the implementation of the required mitigation, construction-related emissions under Alternative 1 would contribute substantially to nonattainment of FRAQMD air quality standards, resulting in a significant contribution to a significant and unavoidable cumulative impact.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. Impacts related to TACs under Alternative 1 would apply to all three project segments under Alternative 2.

Construction-related emissions associated with construction of the ASB setback levee in Segment 2 are expected to temporarily and periodically exceed one or more of the FRAQMD thresholds for ROG, NO_x, and PM₁₀. However, these emissions would be expected to be greater than under Alternative 1 because construction of the setback levee, removal of the existing levee, and the need to develop additional soil borrow areas would result in a larger construction area and disturbed surface and hauling of greater volumes of soil. As described above, implementation of mitigation measures would not reduce the impact to a less-than-significant level.

In addition, it can be assumed that the construction period for the ASB levee setback would overlap with construction periods or implementation phases of other projects in the Yuba County and Sutter County areas and throughout the basin, such as construction or occupation of the

major development areas and other levee projects noted above. Each individual project would contribute measurably to adverse air quality conditions, therefore also contributing to nonattainment of FRAQMD air quality standards and resulting in a significant cumulative air quality impact. There is no feasible mitigation available that would cause all FRAQMD air quality standards to be met by the time construction of the FRLRP takes place.

Despite the implementation of the required mitigation, construction-related emissions under Alternative 2 would contribute substantially to nonattainment of FRAQMD air quality standards, resulting in a significant contribution to a significant and unavoidable cumulative impact.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in project Segment 2 would be the same as the effects described previously for Alternative 2. However, the levee setback area would be somewhat smaller under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment, resulting in slightly less construction-related emissions. For the reasons described above, the effects of the intermediate setback levee on air quality, despite the implementation of the required mitigation, would contribute to nonattainment of FRAQMD air quality standards, resulting in a significant contribution to a significant and unavoidable cumulative impact.

6.3.10 NOISE

The discussion of cumulative noise effects is focused on the areas near the existing and proposed setback levee alignments where noise from construction activities would combine with noise from other projects and exceed established thresholds for sensitive receptors.

Alternative 1 – The Levee Strengthening Alternative

Construction work for Alternative 1 is expected to generate noise levels that, even with mitigation, would exceed the thresholds for sensitive receptors. At least one residence is within about 150 feet of the existing Feather River levee along project Segment 1 and multiple residences are within 150 feet of the existing levee in Segment 3. These significant noise increases would be short term and intermittent, corresponding to periods when numerous pieces of construction equipment are operating simultaneously at locations close enough to the residence to produce noise at nuisance levels. Implementation of mitigation described in Section 5.10, “Noise,” would reduce the potential temporary noise impact, but not to a less-than-significant level.

Noise is a localized occurrence and attenuates with distance. Therefore, only future cumulative development projects in the direct vicinity of the FRLRP project site would have the potential to add to anticipated project-generated noise, thus resulting in cumulative noise impacts. However, projects considered in this cumulative analysis that have the potential to be under construction concurrently with the FRLRP are located more than 2,000 feet from the FRLRP project site at a minimum, and some are located miles from the site. The closest “cumulative project” is the

Plumas Lake Specific Plan area, which, at its nearest points, is located between 2,000 and 3,000 feet east of project Segments 1 and 2. However, if construction activities associated with Alternative 1 and the Plumas Lake Specific Plan were to occur concurrently, it is possible that construction noise associated with these projects together could combine to result in greater noise levels at some of the dispersed rural residences in the area than noise levels from each project alone. Therefore, a significant cumulative noise impact could occur and the FRLRP would make a substantial contribution to this impact.

Mitigation to reduce construction noise generation is included in the FRLRP. It is assumed that similar mitigation is included for the Plumas Lake Specific Plan. No further feasible mitigation measures are available to reduce cumulative construction noise at sensitive receptors to less-than-significant levels.

Alternative 1 would result in a less-than-significant impact related to generation of groundborne vibration during construction. Groundborne vibration attenuates rapidly with distance and projects must be in close proximity to each other (within the range of approximately 100 feet, depending on the type of equipment generating the vibration) to simultaneously contribute to vibration levels at the same location. There are no opportunities for projects addressed in this cumulative analysis to interact with the FRLRP in regard to groundborne vibration, and no cumulative impact would occur.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1. Impacts associated with groundborne vibration described for Alternative 1 would also apply to all project segments under Alternative 2.

The ASB setback levee alignment in Segment 2 is located closer to the Plumas Lake Specific Plan area than the existing levee alignment. Therefore, there is greater potential for a cumulative impact related to construction noise to occur. As discussed above for Alternative 1, under Alternative 2 construction of the FRLRP could provide a substantial contribution to a significant and unavoidable cumulative impact related to construction noise.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be similar to the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in Segment 2 would be similar to the effects described previously for Alternative 2. For the reasons described above, construction of the FRLRP under Alternative 3 could provide a substantial contribution to a significant and unavoidable cumulative impact related to construction noise.

6.3.11 TRANSPORTATION AND CIRCULATION

Alternative 1 – The Levee Strengthening Alternative

Construction-related traffic, commute trips, and haul truck trips associated with levee repair and strengthening activities would cause a moderate (less-than-significant) temporary increase in traffic on Feather River Boulevard, SR 70, and local roadways that provide access to the project alignment (e.g., Anderson Avenue, Country Club Avenue, Riverside Drive).

Alternative 1 could also temporarily increase traffic hazards on Feather River Boulevard near the existing Feather River levee alignment; however, mitigation measures described in Section 5.11, “Transportation and Circulation,” would be implemented to ensure that any potential hazards are minimized. There are no known projects that would contribute substantially to increased traffic on these roadways or that would contribute substantially to a localized potential increase in traffic hazards on Feather River Boulevard during the anticipated FRLRP construction period. The East Linda Specific Plan and River Highlands Community Plan areas are sufficiently distant from the project area that construction and added population in these areas is not expected to contribute traffic on local roadways that would be affected by project construction. Traffic associated with construction work and new residential and commercial development in the Plumas Lake Specific Plan area would likely result in a moderate increase in short-term and long-term traffic on Feather River Boulevard and an increase in traffic on SR 70. During the construction period for Alternative 1, some of the traffic increases associated with construction in the Plumas Lake Specific Plan area and with other construction projects for levee improvements in the area may coincide with the construction traffic that would be generated by the proposed project. As described in Section 5.11, construction-related trips would not exceed the thresholds established by the Institute of Traffic Engineers (ITE) for temporary traffic increases and would not represent a substantial increase in traffic levels on these roadways or other local roads. Therefore, this traffic would not be considered to contribute substantially to traffic volumes, either directly or when considered in combination with other projects. Levee repair and strengthening and relocation of Pump Station No. 3 would not make a cumulatively considerable contribution to any significant cumulative impact associated with transportation and circulation.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1.

Because of the construction of the ASB setback levee, Alternative 2 would generate a greater number of construction-related trips than Alternative 1. Such trips would be associated with the transport of larger quantities of borrow material. However, the trip generation from all sources would not exceed the thresholds established by ITE for temporary traffic increases and would not represent a substantial increase in traffic levels on these roadways or other local roads. Construction of the ASB setback levee could also temporarily increase traffic hazards on Feather River Boulevard near the levee alignment. Implementation of mitigation measures described in Section 5.11 would ensure that any potential hazards are minimized. For the reasons described

above, and in the discussion of Alternative 1, construction of the ASB setback levee would not make a cumulatively considerable contribution to any significant cumulative impact associated with transportation and circulation.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in project Segment 2 would be the same as the effects described previously for Alternative 2. Trip generation from all sources is expected to be approximately the same under Alternative 3 as under Alternative 2. For the reasons described above, construction of the intermediate setback levee would not make a cumulatively considerable contribution to any significant cumulative impact associated with transportation and circulation.

6.3.12 PUBLIC SERVICES, UTILITIES, AND SERVICE SYSTEMS

Alternative 1 – The Levee Strengthening Alternative

Although reasonable attempts have been made to determine the locations of public utility infrastructure in the project area, and preliminary surveys have been conducted, the potential exists for additional buried infrastructure elements that have not already been identified to be located near or crossing the levee. Construction activities could cause minor accidental damage to both identified and unidentified utility infrastructure, resulting in temporary disruptions to service. However, detailed design of the levee repairs would include consultation with all potential 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. Therefore, the potential for accidental damage to utility infrastructure during construction is remote, and if damage were to occur, disruptions to service would be short term and temporary until repairs were completed. Implementation of Alternative 1 would not result in substantial interference with utility infrastructure and services. Similar precautions would be expected to be taken during construction of other projects considered in this cumulative analysis, with a similar low likelihood of disruptions to service, and any disruptions, if they were to occur, would be short term and temporary. Therefore, no significant cumulative impact related to disruptions of utility service during construction is expected to occur. If such a cumulative impact were significant, the FRLRP would not contribute substantially to the impact.

The increased traffic on Feather River Boulevard associated with levee repair and strengthening activities could increase emergency response times and otherwise make access to the area more difficult for emergency service providers. Areas of higher density development occur near the northern end of Feather River Boulevard in project Segment 3, and at the southern end in the Plumas Lake area in Segment 1. It is important that access to areas along Feather River Boulevard remains open for emergencies related to late-season flood events, and particularly for potential fire-control events during the dry season. Mitigation described in Section 5.12, “Public Services, Utilities, and Service Systems,” would ensure avoidance of this potential impact, and

levee repairs and strengthening would not make a considerable contribution to any potential cumulative impacts related to emergency access.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1.

Implementation of the ASB levee setback could result in damage to public utility infrastructure and service disruption in the levee setback area. Although service providers have been contacted for information on the locations of utility infrastructure and preliminary surveys of the facilities have been conducted, it is possible that some utilities that could be affected by project implementation may not have been identified. Infrastructure remaining in the levee setback area could be damaged by construction of the setback levee, by use of a proposed soil borrow area, or by the passage of floodwaters through the setback area, possibly resulting in interruption of service.

As discussed above, the increased traffic on Feather River Boulevard associated with levee repair and strengthening activities could increase emergency response times and otherwise make access to the area more difficult for emergency service providers. Construction traffic on Feather River Boulevard would potentially be greater under Alternative 2 than under Alternative 1 because a larger number of haul truck trips would be associated with construction of the setback levee.

Mitigation described in Section 5.12, however, would ensure avoidance of potential impacts on public utility infrastructure, utility service disruptions, and interference with emergency response. The ASB setback levee would not make a considerable contribution to any potential cumulative impacts on public services, utilities, and service systems.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in project Segment 2 would be the same as the effects described previously for Alternative 2. However, the extent of affected utilities would be somewhat less under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment, resulting in a smaller setback area. For the reasons described above, the intermediate setback levee would not contribute to any potential significant cumulative impacts on public services, utilities, and service systems.

6.3.13 PALEONTOLOGICAL RESOURCES

Alternative 1 – The Levee Strengthening Alternative

Activities associated with the proposed levee strengthening (e.g., construction of slurry cutoff walls) and related activities (e.g., relocation of Pump Station No. 3, construction of a detention basin) have the potential to encounter and possibly damage unknown paleontological resources.

If any previously undiscovered paleontological resources are found in the levee alignment, at the pump station, or at the soil borrow/detention basin sites as a result of construction activity, mitigation described in Section 5.13, “Paleontological Resources,” would be initiated that would prevent any significant impacts on paleontological resources from occurring. Therefore, implementation of Alternative 1 would not make a considerable contribution to any potential cumulative impacts on paleontological resources.

In addition, a potential cumulative net benefit on paleontological resources in the region could occur because construction activity may encounter resources that would otherwise go undiscovered. The protection of those resources would allow future study that would contribute to the body of scientific knowledge.

Alternative 2 – The Levee Strengthening and ASB Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1.

Construction of the ASB setback levee in Segment 2 and related activities (e.g., use of the soil borrow area/detention basin) have the potential to encounter and possibly damage unknown paleontological resources. If any previously undiscovered paleontological resources are found in the ASB levee setback area or in the soil borrow area/detention basin as a result of construction activities, mitigation described in Section 5.13 would be initiated to prevent any significant impacts on paleontological resources from occurring. Therefore, implementation of Alternative 2 would not make a considerable contribution to any potential cumulative impacts on paleontological resources.

As described above, a potential cumulative net benefit to paleontological resources in the region could occur because construction activity may encounter resources that would otherwise go undiscovered. The protection of those resources would allow future study that would contribute to the body of scientific knowledge.

Alternative 3 – The Levee Strengthening and Intermediate Setback Levee Alternative

Impacts associated with the repair and strengthening of the existing Feather and Yuba River levees in project Segments 1 and 3 would be the same as the effects described previously (for all project segments) for Alternative 1, and the impacts associated with construction of the setback levee in project Segment 2 would be the same as the effects described previously for Alternative 2. However, the levee setback area would be somewhat smaller under Alternative 3 than under Alternative 2 because the intermediate setback levee alignment is located farther to the west than the ASB setback levee alignment, resulting in less potential for disturbance of unknown paleontological resources. For the reasons described above, the intermediate levee setback would not contribute to any potential significant cumulative impacts on paleontological resources.