

## CHAPTER 8

### ENVIRONMENTAL CONSEQUENCES STEPPED RELEASE PLAN

Under the Stepped Release Plan, the same flood control diagram would continue for the operation of Folsom Dam and Reservoir as for the No-Action Alternative. In addition, the emergency spillway release diagram would be modified to reflect use of surcharge storage.

**Folsom Dam.** Lower the five main spillway bays 15 feet and replace the main spillway gates, enlarge the eight existing river gates, and modify the three emergency spillway gates and strengthen the core of dikes 5 and 7 and Mormon Island Dam to permit increased surcharge storage.

**Lower American River.** Construct 25.6 miles of slurry wall in the core of the Federal and non-Federal levees along both banks of the lower American River, apply waterside erosion protection to critical reaches of the levees, raise 14 miles of levees, construct approximately 2 miles of new floodwall and approximately 2 miles of new levees, raise the Howe Avenue and Guy West bridges, and improve existing interior drainage outfalls to accommodate higher design flows in the American River.

**Downstream From American River.** Lengthen the Sacramento Weir and set back the north levee of the Sacramento Bypass 1,000 feet, strengthen 52 miles of levee in the Yolo Bypass, and construct 2 miles of new levee along the west bank of the Yolo Bypass at river mile 29.9. Strengthen 60 feet of the Yolo Short Line Railroad bridge across the Yolo Bypass and lengthen the Yolo Short Line Railroad across the Sacramento Bypass by 1,000 feet and strengthen and raise approximately 12 miles of levees along the east bank of the Sacramento River below Verona.

In addition, the Stepped Release Plan would include constructing the following environmental restoration and recreational features:

**Recreation Features.** These features include developing two new parks. Gateway Park is a 25-acre park on the north bank of the American River between State Route 160 and the Union Pacific Railroad; the 10-acre 7th Street Park is on the river's south bank at the terminus of 7th Street. A third recreation feature is construction of approximately 7 miles of bicycle/pedestrian trail and related recreational facilities along the south bank of the American River.

**Environmental Restoration Features.** The Stepped Release Plan includes a restoration plan consisting of wetland/riparian features in two portions of areas along the

American River Parkway: the 400-acre Woodlake area extending from the mouth of the NEMDC (Natomas East Main Drainage Canal) to Cal Expo and the 122-acre Urrutia Property adjacent to Discovery Park.

Restoration in the Woodlake area would include development of a slough/wetland complex on approximately 37 acres of land owned and managed by Sacramento County and conversion of 50 acres of non-oak upland habitat to riparian and wetland plant communities. Material excavated to create this restoration feature would be used to provide fill for a portion of the levee improvements called for under the Stepped Release Plan.

Restoration on the Urrutia property would consist of creating wetland/riparian habitat on land adjacent to the 57-acre pond which dominates the site. This pond has been excavated over time as part of mining on the property. Restoration would involve excavation and fill along the northern edge of the pond to create a series of shallow shelves extending from the water's edge along a gently sloping berm to adjacent high ground. These shelves would support an assemblage of emergent marsh habitat, and the sloping berm would be planted with riparian vegetation.

### OPERATIONAL IMPACTS

It is expected that under the Stepped Release Plan, the 1993 agreement (Agreement) between SAFCA and Reclamation would be indefinitely extended. For purposes of this final SEIS/EIR, it is assumed that, by virtue of this extension, the operation of Folsom Reservoir and the other CVP facilities north of the Delta would be permanently modified, as necessary, to meet the requirements of the flood control diagram (1993 Diagram) contained in the Agreement.

The No-Action ("permanent reoperation") Model incorporates these demand assumptions, but adjusts CVP operations to comply with the 1993 Diagram. The No-Action Alternative is in turn used as the basis for evaluating the adverse operational impacts associated with the Stepped Release Plan.

The operational impacts of concern are those related to the adjustments in CVP operations that would be needed to accommodate the requirements of the Stepped Release Plan flood control diagram. These impacts are the same as those described in the No-Action Alternative. The effects of floodflows on recreation and fish, vegetation, and wildlife are described in the following paragraphs.

**RECREATION****Lower American River**

Table 8-1 compares the flood control release schedules for the No-Action Alternative and Stepped Release Plan for a series of selected flood events. This comparison shows that releases from Folsom would be higher under the Stepped Release Plan for events ranging in annual frequency from about 1 in 5 years to 1 in 100 years.

**TABLE 8-1**

**Comparison of Projected Peak Outflows from Folsom Dam  
for Selected Flood Events**

	Alternative	
	No-Action Alternative 400/670 115,000 cfs (objective release)	Stepped Release Plan 400/670 145,000/180,000 cfs (objective release)
5-Year Peak Duration $\geq$ 25,000	60,000 3 days	75,000 2.3 days
10-Year Peak Duration $\geq$ 25,000	90,000 4 days	115,000 3.8 days
20-Year Peak Duration $\geq$ 25,000	115,000 5.5 days	145,000 5.4 days
50-Year Peak Duration $\geq$ 25,000	115,000 10 days	145,000 7.1 days
100-Year Peak Duration $\geq$ 25,000	115,000 15 days	145,000 10 days
200-Year Peak Duration	450,000 16 days	185,000 12 days
400 Year Peak Duration	560,000 19 days	492,000 15 days

These higher releases would increase downstream water-surface elevations, potentially damaging recreational facilities and related resources in the lower American River. However, the comparative differences in flow rates for the more frequent flood events are small. Under the No-Action Alternative, even the more frequent events would produce flow

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rates large enough to fully inundate the floodway. Thus, the higher releases under the Stepped Release Plan would raise water-surface elevations only in circumstances when recreation facilities in the lower American River would otherwise have been flooded; accordingly, the Stepped Release Plan would not result in any significant damages to recreational facilities when compared to the No-Action Alternative.

Operation of Folsom Dam would not alter flow patterns during nonflood periods in the lower American River. As under the No-Action Alternative, flows would, in general, continue to be higher in the late fall, winter, and early spring when Folsom Reservoir releases maintained the required flood space. Flows would be somewhat less in the late spring when flows are decreased to allow Folsom Reservoir to fill. The principal water-dependent recreation activities affected by these altered flows would be boating (including rafting, kayaking, and canoeing), swimming, and wading.

## **FISH, VEGETATION, AND WILDLIFE**

### **Lower American River**

Reservoir operation during flood events under the Stepped Release Plan would not significantly affect fish, vegetation, and wildlife resources. The Stepped Release Plan would require higher outflows from Folsom than would otherwise be required under the No-Action Alternative (as shown in table 8-1), under a selected range of flood events. However, these increases would occur only in circumstances when the floodway would otherwise be fully inundated. There would be no appreciable increase in the acreage subject to inundation or corresponding reduction in refugia.

## **CONSTRUCTION IMPACTS**

The improvements required under the Stepped Release Plan for Folsom Dam and the east levee of the Sacramento River in Natomas are the same as those evaluated for the Folsom Modification Plan. The impacts and required mitigation associated with construction of these improvements are discussed in detail in chapter 7. Accordingly, the following discussion focuses on the construction impacts associated with raising and strengthening portions of the Federal and non-Federal levees and constructing new levees and floodwalls in the lower American River; modifying interior drainage and water intake facilities in the American River flood plain, raising the Howe Avenue and Guy West bridges, and constructing closure structures where the Union Pacific Railroad traverses the Federal levees in the lower American River; lengthening the Sacramento Weir and Bypass; and substantially improving the levees in the Yolo Bypass and sloughs. The short- and long-term impacts associated with constructing these improvements would include temporary and permanent losses of wildlife habitat, including habitat considered essential to the maintenance of Federal and State-listed threatened and endangered species, reductions in water and air quality,

potential destruction of cultural resources, loss of farmland, increased noise and traffic, disruption of recreation, and impairment of visual resources. The following discussion evaluates the significance of these impacts and, where appropriate, identifies mitigation measures to reduce significant impacts to a "less than significant" level.

## RECREATION

### No-Action Condition

**Folsom Reservoir.** Folsom Reservoir supports numerous water-based activities such as boating, waterskiing, and fishing. The shoreline provides sandy swimming beaches, both formal (with lifeguard services) and informal. Surrounding Folsom Reservoir is a landscape with important scenic, natural, and cultural values. Recreational facilities include camping and picnic areas, boat launch ramps, restrooms, concessions, bicycle and mountain bike trails, and equestrian trails and staging areas.

**Lower American River.** Earthen levees 20 to 30 feet high border much of the lower half of the American River Parkway and block out surrounding urban development and activity. These physical barriers and extensive stands of mature riparian forest give the parkway a "wilderness in the city" quality. The Jedediah Smith Trail provides bicycle, pedestrian, and equestrian trails from Discovery Park to Folsom Reservoir and is one of the parkway's most popular features. The trail also connects with the Sacramento River Trail and Old Sacramento State Historic Park. The 23 miles of river below Nimbus Dam is included in both the State and Federal Wild and Scenic River systems. The lower American River is a major site for recreational boating, including rafting, kayaking, and canoeing. Swimming and wading are other popular water-dependent activities.

**Downstream From American River.** Recreation along the Sacramento River is almost exclusively water-related.

### Significance Criteria

Impacts to recreational resources were considered significant if construction would cause substantial long-term disruption of an existing recreational activity which is institutionally recognized.

### Impacts

**Folsom Reservoir.** There would be no construction impacts to recreation in the Folsom Reservoir area. The spillway would be lowered and the gates modified by installing a watertight bulkhead or stoplog system to allow work to be done without requiring the reservoir to be maintained below the new spillway crest. This would lessen impacts to recreational uses at Folsom Reservoir.

**Lower American River.** Under the Stepped Release Plan, construction of project improvements would temporarily adversely affect recreation uses in the American River Parkway by restricting access to existing recreational facilities, including parking facilities. These restrictions would be necessary because of construction and modification of the levee system and raising of the Howe Avenue and Guy West bridges. Improvements to the levee system would restrict access because parking lots within the parkway would be used as staging areas for construction equipment. Raising the Howe Avenue and Guy West bridges would affect access because both bridges are used for bicycle travel, and portions of the Jedediah Smith Trail would be closed or rerouted during construction. Because the levee construction would take approximately 4 years, these impacts are considered temporary but significant.

Levee modification should not affect the designation of the lower American River as a recreation river under the Wild and Scenic Rivers Act because construction would be restricted to the levees themselves. No construction is proposed for the parkway interior, so the visual character of the area would not change.

Recreation use would be affected by the raising of the Howe Avenue bridge and the Guy West bridge. Both bridges are used for bicycle travel; closing the Guy West pedestrian bridge would affect bicycling the most. Portions of the Jedediah Smith Trail in the parkway near the bridge approaches would be closed or rerouted during construction work on the bridges.

Construction of the two new parks should not significantly affect recreation use, as this area is not currently an easily accessible site. The impact to recreational enjoyment from vegetative loss due to construction would be minimal because park designs avoid vegetative impacts except to grassland areas. In addition, the presence of agricultural fields at the Gateway Park site would allow parking areas to be constructed without destroying native cover.

Construction of a bicycle trail near Richards Boulevard and Gateway Park would not significantly affect existing recreation activities because the proposed facilities are not within an easily accessible area of the parkway. Providing additional recreation facilities is considered a beneficial impact of the project.

Levee modifications along the lower American River (levee raising, slurry walls, new levees) would allow increasing the objective release to 180,000 cfs from the existing 115,000 cfs release during extreme storms. This increase in flow would not cause an increase in damages to the trail system over damages experienced under the No-Action Alternative, since the trails are under water with the No-Action Alternative at 115,000 cfs.

After high flows, recreational use of trails and parks would be interrupted until repairs were made or cleanup completed. Low-lying portions of the bicycle trail that are prone to wash out at high flows would be particularly affected. Some vegetation would also

be altered due to higher flows affecting, at least temporarily, the visual quality the riverine environment to recreationists.

Vegetation loss due to levee raising and slurry wall construction would be restricted to grassland areas which would be replaced as part of the construction contract. Levee revetment would remove grasses and the few trees on or very near the levee face. After the revetment is placed, the area would be covered with soil and hydroseeded, so there would be no visual impacts to recreation. The loss of substantial vegetation, such as oak woodland and riparian forest, would be restricted primarily to the new levee construction sites beginning upstream from river mile 15 on the left bank. These new levees would be constructed away from the trail system, so recreation use of the trails would not be affected.

Downstream From American River. The levee work along the Sacramento River would not interfere with recreation associated with the Sacramento River, because the work would be done exclusively along the landside levee slope. No impacts to recreation are expected as a result of this work.

### Mitigation

Lower American River. Potentially significant impacts on recreation associated with loss of access to the bicycle trail could be reduced to a less than significant level by routing recreation traffic around construction sites. Alternate routes would be established prior to construction and should be clearly marked. In the event alternate routes cannot be established within the American River Parkway, public notification would be made prior to trail closure. The notification should include an estimate of the duration of trail closure and suggest alternative routes of travel outside the parkway.

Impacts associated with loss of access to parking facilities within the parkway could be mitigated by providing notification prior to closure and directing recreationists to other parking areas along the parkway.

In conclusion, bicycle trail use impacts would be mitigated by routing recreationists around construction sites, notifying them of parking lot and bridge closures, and suggesting alternative parking areas.

## **LOWER AMERICAN RIVER RECREATION PLAN**

The Stepped Release Plan includes construction of the following lower American River facilities: a bicycle bridge over the flood gates across Del Paso Boulevard; two day-use parks with associated boat launch, fishing pier, and parking facilities for cars and boat trailers; and new trails for bicycle, interpretive, and equestrian use.

- **Gateway Park**

The 25-acre Gateway Park would be along the right bank of the American River between State Route 160 and the Union Pacific Railroad tracks. The primary purpose of the park would be for increased water-related and water-dependent recreation. Environmental restoration features for enhancing the outdoor quality of the park would also be added during the park planning and design phase.

- **7th Street Park**

A 10-acre park would be located at the northern terminus of 7th Street adjacent to the American River Parkway. This would be a neighborhood park with playground equipment and river access to connect downtown Sacramento with the parkway.

- **New Trails**

The new trail extends the bicycle trail along the south side of the American River linking Tiscornia Park with Sacramento State University. Other smaller trails would be constructed for interpretive use and hiking.

## **FISHERIES**

### **No-Action Condition**

**Folsom Reservoir.** The flexible 400,000/670,000 acre-foot Folsom Reservoir flood control operation under the Stepped Release Plan is the same operation used with the No-Action Alternative; therefore, both would have the same two adverse effects on resident warmwater species. First, the water-surface elevation in Folsom Reservoir is reduced by an average of 39.3 feet between June and September, a critical time in year-class development. Such drawdowns eliminate an average of 2,567 surface acres of water (25.6 percent of total), much of which is in sheltered coves containing flooded terrestrial vegetation. This loss of juvenile rearing habitat resulting from summer drawdown is thought to have the greatest negative effect on annual production of fish in Folsom Reservoir (D. Lee, DFG, pers. comm., 1994). Second, fluctuations in water levels cause dewatering and flooding of nests and reduce the spawning success. As a result, annual production of bass, sunfish, crappie, bullhead, and catfish is low, and the population of these species tends to be marginal compared to those found in similar natural reservoirs that do not suffer such wide fluctuations in water level.

**Lower American River.** The aquatic resources supporting the fishery in the lower American River are considered to be only marginal for anadromous fish production, especially during low-flow years.

Increased water temperature, decreased water quality, reductions in the quantity and quality of spawning gravel, and a decline in hatchery production contribute to this potential reduction of the anadromous fishery resource.

Fall-run chinook salmon continue to be the primary species of management concern in the lower American River. This reflects the consensus reached by participants in Environmental Defense Fund et al. versus East Bay Municipal Utility District (Hodge Decision)—a consensus which included as management priorities ". . . maximize the in-river production (that is, spawning, juvenile survival) of chinook salmon in the Lower American River" and ". . . maximize the in-river production of steelhead trout to the extent that it does not interfere with chinook salmon management." However, because NMFS received a petition on February 14, 1994, to list steelhead trout throughout its range in Washington, Idaho, Oregon, and California, the issue of management priorities in the lower American River merits additional discussion.

High water temperature during summer and fall is the environmental factor that is the most limiting to natural production of steelhead trout in the lower American River (Snider and Gerstung, 1986; DFG, 1991c). Historically, steelhead trout migrated upstream to their primary spawning and rearing areas in the upper forks of the American River and its tributaries. In these upper reaches of the American River system, juvenile steelhead trout reared for at least 1 year before migrating downstream to the Pacific Ocean. Cool water temperatures in the upper reaches of the system made this extended rearing component of their life history possible. Today, the historical spawning and rearing areas are inaccessible to steelhead trout, and, due to dam construction, spawning and rearing in the American River system is restricted to the lower American River—an area subjected to elevated water temperatures. Consequently, it is believed that few juvenile steelhead trout survive through the summer and fall (DFG, 1991c).

In addition to the river itself, high water temperatures at the Nimbus Fish Hatchery during late summer and fall are problematic for rearing steelhead trout, even during good water years. High water temperatures promote the growth of disease organisms. Treatments for these diseases are expensive and contribute significantly to the cost and ineffectiveness of raising steelhead trout to yearling size (DFG, 1991c). Currently, modernization plans for the hatchery do not address the problems of high water temperatures during summer and fall at the hatchery. There are no formal plans or processes under way to resolve the problem of high water temperatures (DFG, 1991c).

Upper Sacramento River. NMFS has determined that a daily average water temperature of less than or equal to 56 °F is required in the Sacramento River between Keswick Dam and Bend Bridge from April 15 through September 30 to protect winter-run chinook salmon spawning and incubation. NMFS, in its 1993 biological opinion, specified a minimum flow release criteria for October through March of 3,250 cfs at Keswick Dam.

### **Significance Criteria**

For purposes of this evaluation, fisheries impacts were considered significant if construction of the project would substantially interfere with the movement of any resident or migratory fish, substantially diminish habitat for fish, or involve discharges of material which pose a hazard to fish.

### **Impacts**

**Lower American River.** Raising the Howe Avenue and Guy West bridges would not require dredging. Therefore, discharge of material posing a hazard to fish in the area would be minimal. Bridge raising would require modification to 20 existing piers. A construction platform would be placed in the water near the piers. During construction, concrete and aggregate could be spilled into the river. The accidental discharge of these construction materials and sediments into the river could cause temporary short-term impacts to the fishery due to increased turbidity. This impact is considered potentially significant.

The pump stations at the mouth of the Mayhew Drain and Boyd Station would be constructed during the summer, when flows are minimal. Few, if any, fish are resident in these side channels during low summer flows. Therefore, impacts on fish in the side channels would be minimal. Occasionally, fish (sucker, sunfish, and mosquitofish) become stranded in these side channels due to rapid flow fluctuations. A benefit of the pumping plants would be to act as a barrier to prevent fish from entering the side channels.

### **Mitigation**

**Lower American River.** Potentially significant impacts resulting from increased turbidity and possible spawning area siltation would be mitigated to a less than significant level by requiring that construction sites along the parkway be fully contained by barriers and dikes to reduce any chance that sediment or fluid from construction machinery enter the waterway.

## **VEGETATION AND WILDLIFE**

### **No-Action Condition**

The vegetative habitats of the lower American and Sacramento Rivers are influenced by the physical constraints of the levee system. The vegetation within the lower American River corridor consists of grassland, emergent freshwater marsh, seasonal wetlands, riparian scrub-shrub, upland herbaceous, and oak woodland. Vegetation is generally confined within the boundaries of the levee system and in most areas is limited to a narrow band between the levees and the river. Typical wildlife associated with this habitat are raccoon, wild turkeys, mink, deer, yellow warblers, and rufous-sided towhees.

### Significance Criteria

For purposes of this analysis, impacts were considered significant if construction of the project would substantially interfere with the movement of any resident or migratory wildlife species, substantially diminish habitat for wildlife plants, or involve the disposal of material which could pose a hazard to wildlife or plant populations.

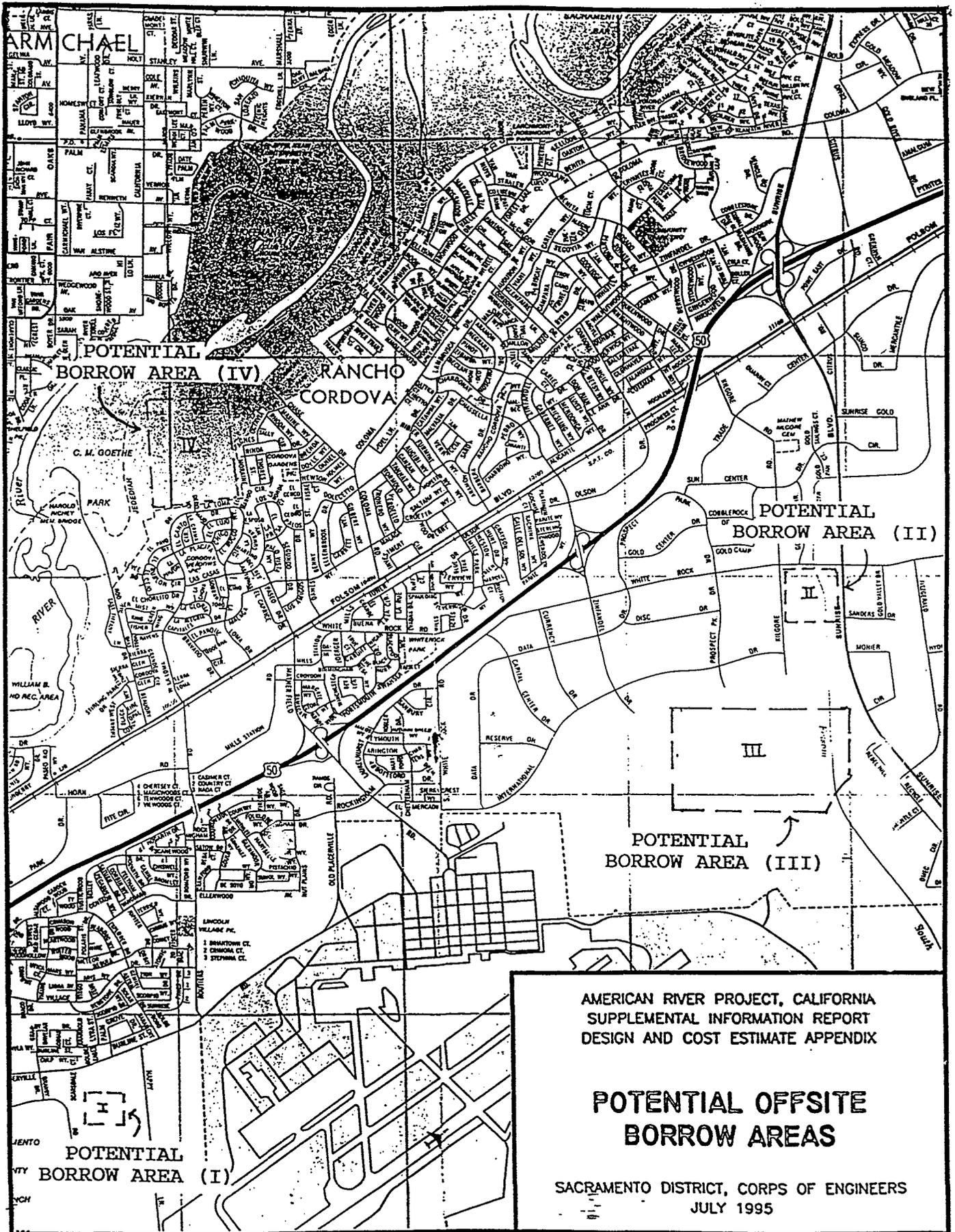
### Impacts

**Folsom Reservoir.** This alternative would require alteration of the Folsom Dam spillway and outlet works to allow for an increase in design releases. About 2,000 cubic yards of concrete would be removed and a new concrete lining installed. The main spillway would be lowered, the river outlets enlarged, and the stilling basin downstream lengthened by 50 feet. Excavated concrete would be hauled to the Sacramento County landfill at Grant Line and Kiefer Roads. Wildlife would not suffer any losses or disturbance because the work would take place on the existing dam structures.

**Lower American River.** The levee modifications required under the Stepped Release Plan, including slurry walls, new levee construction, levee raising, new floodwalls, and levee erosion protection, would result in significant losses of vegetation in the lower American River area. Borrow areas for this work would be a site near Cordova Park, river mile 15, and at three locations south of Highway 50 adjoining existing commercial mining areas. The three sites outside the parkway are already in areas devoid of vegetation, thus eliminating any need for habitat mitigation. The Cordova Park borrow site is slated for use as an area to compensate oak impacts. The site is currently being used for row crops, so there would be no need to separately mitigate natural habitat that may have been destroyed during borrow activity (figure 8-1).

Table 8-2 shows, by construction feature, the habitat loss due to the levee modifications. The loss of these riparian, scrub-shrub, and oak habitats would cause the wildlife species relying on these habitats to be displaced, since their foraging and nesting areas would be destroyed. This is considered to be a significant impact. Impacts to wildlife as a result of the loss of the grasslands would be insignificant because this loss would be temporary and short term. Grasslands would be replaced onsite as part of the reseeding required for construction contracts.

The impacts to vegetation due to construction of the new parks would be minimal (35 acres of mostly agricultural land) because park designs avoid significant vegetative impacts. In addition, the presence of agricultural fields at the Gateway Park site would allow parking areas to be constructed without destroying native cover.



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Figure 8-1

TABLE 8-2

## Habitat Loss by Construction Feature - Lower American River

Habitat Types	Construction Impact Acreage						Total
	Levee Raising	Revetment	Flood-wall	Slurry Wall	Staging & Borrow Areas	New Levee	
Riparian Forest	11.33	1.22	1.58	-	-	5.29	19.42
Riparian Shrub	2.94	-	-	-	.04	0.73	3.71
Oak Woodland	3.79	0.65	0.44	-	-	9.23	14.11
Total	18.06	1.87	2.02	-	.04	15.25	37.24

(FWS, 1995)

**Downstream From American River.** Construction of the project improvements required under the Stepped Release Plan in the Sacramento and Yolo Bypass areas would result in significant losses to vegetation. These losses would in turn significantly affect the wildlife species dependent on the affected vegetation. Table 8-3 shows the impacts by construction feature and habitat type. Levee material excavation would cause loss of upland herbaceous habitats at various borrow sites (figure 8-2). The borrow sites in this area include the Cache Creek settling basin and a West Sacramento site; for levee work along the sloughs in the Delta, sites include one north of Rio Vista along the west bank of the Sacramento River and another, Decker Island, south of Rio Vista near the east bank of the Sacramento River.

**Mitigation**

**Folsom Reservoir.** Since there are no construction impacts to vegetation and wildlife in Folsom Reservoir, no mitigation is required for this portion of the project.

**Lower American River.** An agricultural field and a borrow site (currently used for agriculture) are proposed for use as mitigation areas along the lower American River. The first site is an agricultural field at river mile 3.7 on the north (right) bank of the lower American River. This is called the Woodlake area and would be the site for mitigating riparian forest and riparian shrub habitat. The site totals 38 acres (figure 8-3). This portion of the Woodlake area is the most suitable site for mitigation because the site (1) is relatively free from human disturbance, (2) is surrounded on three sides by a seasonal slough and water sources, (3) is free from transmission towers and powerlines, (4) likely has suitable soils for riparian plantings, (5) is situated among riparian forest habitat, and (6) is free from roadways. Other portions of the Woodlake site were discounted due to their location

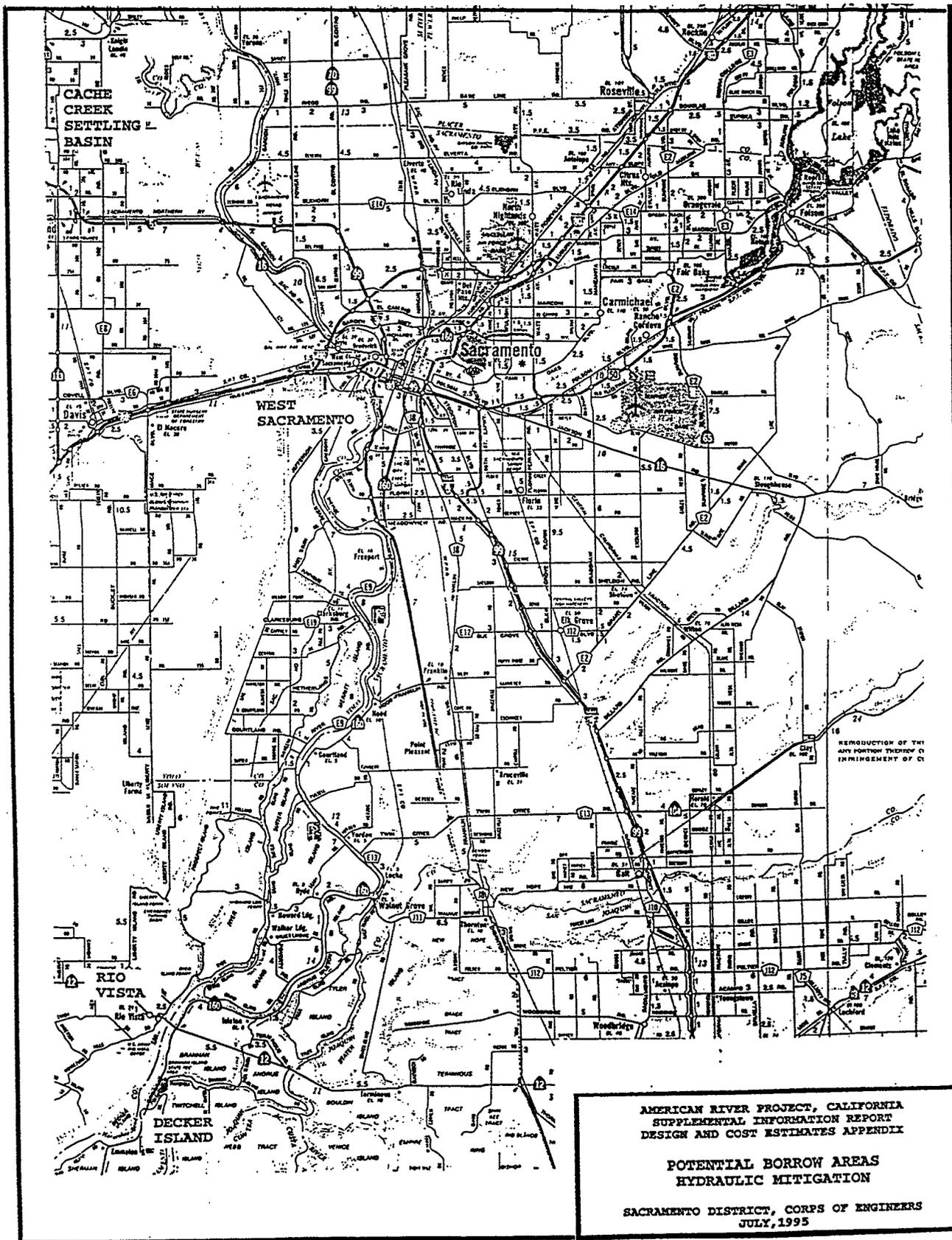
TABLE 8-3

## Habitat Loss By Construction Feature - Area Downstream From American River

Habitat Type	Construction Impact Acreage									
	Levee Raising	Landside Stability Berm	Stability Berm Raising	Waterside Slope Protection	Landside Slope Protection <sup>1</sup>	Ditch Relocation	Levee Reconstruction	Sacramento Bypass Extension	Borrow Sites	TOTAL
Riparian forest	0.96	0.46	-	10.60	1.21	-	-	-	5.42	18.65
Riparian shrub	2.67	6.39	-	4.54	-	-	0.79	-	31.09	45.48
Oak woodland	-	-	-	-	-	-	-	5.15	-	5.15
Emergent marsh	16.10	24.87	-	0.60	1.21	-	0.12	-	-	42.90
Permanent seasonal wetlands	-	2.26	-	-	4.29	1.79	-	-	-	8.34
Total	19.73	33.98	0	15.74	6.71	1.79	0.91	5.15	36.51	120.52

<sup>1</sup>For construction involving both landside stability berm and landside slope protection features, acreage impacts were included under the slope protection column only, as these impacts would be permanent. The overlay in construction impact for the two features includes 0.1 acre of riparian forest, 18.46 acres of upland herbaceous and 1.2 acres of emergent marsh habitat.

<sup>2</sup>This figure includes individual trees removed due to levee raising activities.



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Figure 8-2

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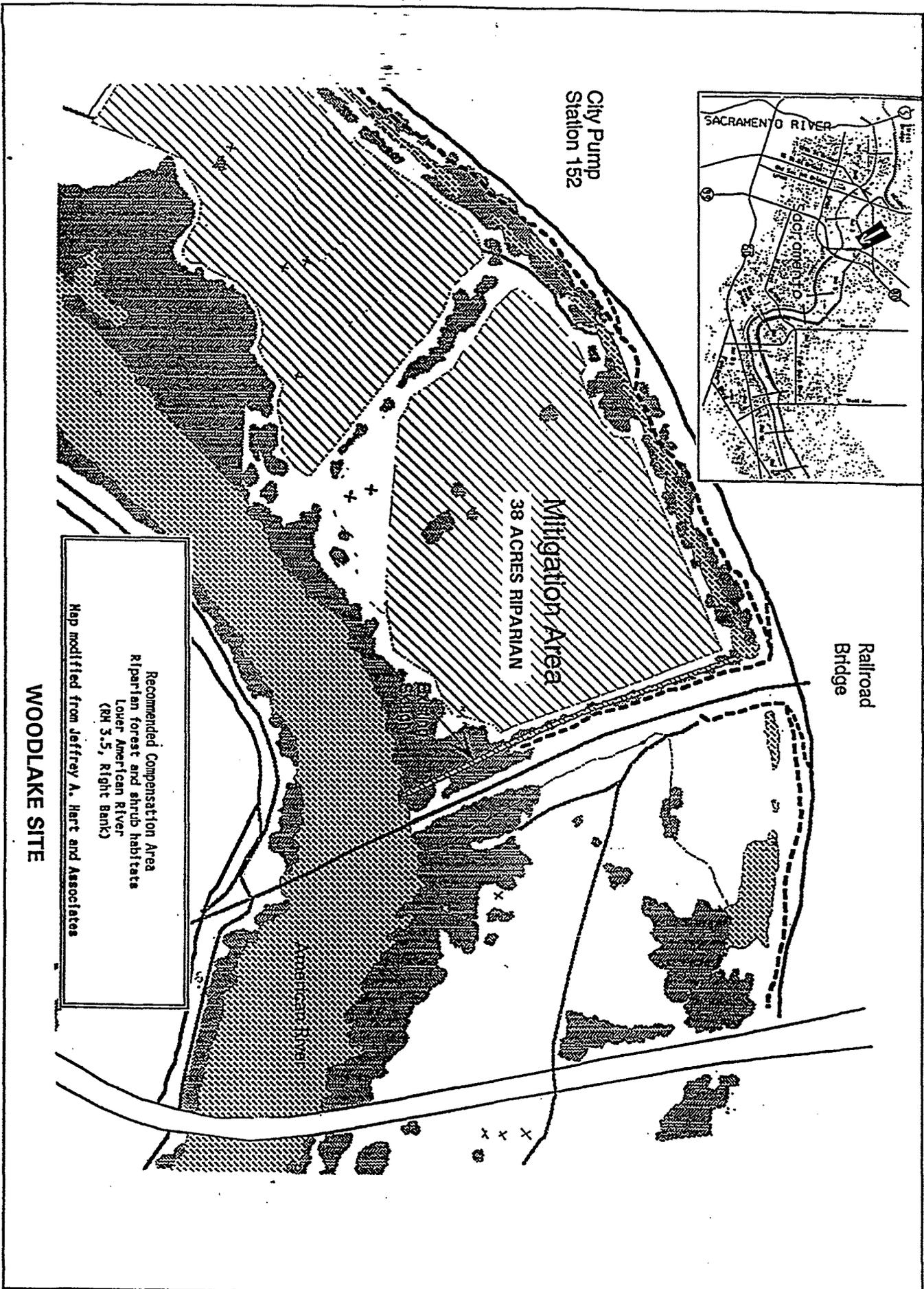


Figure 8-3

adjacent to areas of human disturbance and close to major roadways, or the sites had transmission towers passing through. This last consideration is important due to the restrictions by the Western Area Power Administration that areas around its transmission towers remain clear of vegetation to allow routine maintenance of the tower and eliminate any chance of vegetation contacting the transmission lines. Work at the potential mitigation site includes recontouring land surfaces to maximize habitat diversity and planting native plant species.

The Cordova Park site has been proposed for all oak-woodland mitigation (figure 8-4). The site would be used first as a borrow site supplying material that would be used for levee work along the upper portion of the lower American River, then for mitigation. The 75-acre site is near river mile 15. Excavation of this borrow site would allow the mitigation plantings to be closer to the water table; however, to ensure topsoil is sufficient for planting success, the topsoil would be removed and stockpiled for later use as a planting medium. If topsoil is insufficient, additional topsoil would need to be brought in.

This site may require recontouring of the land surface, along with replanting native oak species and irrigating to help establish the oaks.

Downstream From American River. Mitigation for work in the Sacramento and Yolo Bypasses would be done at one site. This site would allow for compensation of impacts to riparian and wetland habitats from work along the Delta sloughs and Sacramento Bypass; the site is on a 116-acre portion of Liberty Island. The selection of this site, which is just north of and adjacent to the existing Cache Slough mitigation site, would allow creation of a larger combined habitat site of greater value to the evaluation species than smaller, fragmented mitigation sites. Land use is currently agricultural (figure 8-5).

The predominant cover types affected include grassland, agriculture, emergent marsh, riparian shrub, and oak woodland. The loss of grassland and agriculture habitat would not be significant to wildlife because both habitats provide little value. Should emergent marsh and riparian habitat be lost, the wildlife species that rely on these habitats could be displaced if their foraging and nesting areas are reduced.

## VEGETATION RESTORATION PROPOSAL

The restoration component of the stepped release plan consists of developing sloughs between river miles 2.5 and 3.7 in the Woodlake area of the lower American River Parkway. The interconnecting sloughs and associated ponds would promote riparian habitat growth by circulating water over a wide area.

Water sources include the Natomas East Main Drainage Canal; several stormwater drains and pumps would direct excess winter runoff into an existing ditch system and into the new sloughs. Additional water may be supplied by American River overbank flooding during releases exceeding 20,000 cfs. The slough would be about 10 feet wide, 10 feet





deep, and have gently sloping sides to encourage riparian growth. Constructing the slough would require excavating about 400,000 cubic yards of material. This excavated material may be suitable for filling in portions of the 57-acre Urrutia gravel mining site that has since filled with water. The mining pit is currently devoid of vegetation due to its steep sideslopes.

Some or all of the 400,000 cubic yards of excavated material from the slough creation could be used to partially fill the pit, paying particular attention to lessening the sideslopes to allow vegetation to become established around the perimeter of the pit. In addition, islands would be created to add additional areas for vegetation establishment.

These two restoration plan components would help reestablish riparian and wetland habitat in areas of the parkway that currently are used for agriculture or mining. The restoration component would complement the 38-acre mitigation area at the tip of the Woodlake site that would be used to mitigate the construction impacts of the Stepped Release Plan on riparian habitat. This mitigation site borders the proposed restoration area. The total area affected by the restoration, including areas surrounded by the newly created slough and the restoration of the Urrutia mining pit, would be about 144 acres.

## **ENDANGERED SPECIES**

### **No-Action Condition**

Construction of the features included in the Stepped Release Plan would potentially affect the following Federal or State-listed threatened or endangered valley elderberry longhorn beetle (FT), Swainson's hawk (ST), and giant garter snake (ST, FT). The conditions in the project area which support these species have been previously described (see Endangered Species discussions in chapters 4 and 6 and in appendix K).

### **Significance Criteria**

For purposes of this evaluation, any action taken directly in connection with, or indirectly caused by, the project which may affect the continued existence of a threatened or endangered species would be considered a significant adverse impact.

### **Impacts**

**Folsom, Reservoir.** Modifications to the dam face would not result in adverse impacts to any endangered species at the reservoir. The modifications could be done without lowering the water-surface elevations, so no adverse impacts are expected.

**Lower American River.** Implementation of the Stepped Release Plan could affect 137 elderberry shrubs with 2,105 stems greater than 1 inch by construction activities

along the lower American River and Yolo Bypass. Survey data can be found in the biological data report, appendix K.

**Downstream From American River.** Swainson's hawk potentially nest near construction areas along the Sacramento River east bank levee. If active nests are near construction activity, the hawks could abandon the nests, resulting in losses to the species. Suitable nesting habitat is adjacent to the construction area. Historical nests for State-threatened Swainson's hawk have been documented in the project vicinity. Nesting Swainson's hawk could be affected in this area.

Construction activity along levees in the Natomas area and the Yolo Bypass under the Stepped Release Plan could affect hibernating giant garter snakes.

### **Mitigation**

**Lower American River.** FWS compensation guidelines for the beetle would be implemented to mitigate for the 2,105 elderberry stems potentially lost to construction. Planting of 6,315 elderberry seedlings would take place within the lower American River Parkway near the affected shrubs.

**Downstream From American River.** To avoid impacts on the Swainson's hawk, seasonal restrictions would be implemented on construction activity according to DFG guidelines for mitigating impacts on the Swainson's hawk (DFG, 1994). To avoid affecting the giant garter snake, seasonal restrictions on construction activities (October 1 through May 1) to potential giant garter snake habitat would be implemented according to DFG and FWS guidelines (DFG, 1992). Construction within giant garter snake habitat would be restricted to nonhibernating periods.

## **WATER QUALITY**

### **No-Action Condition**

Water quality along the lower American River is generally good to excellent for all beneficial uses. However, dissolved oxygen and temperature do not meet some beneficial objectives during low-water years when flows in the river are reduced. These low flows periodically result in high water temperatures that may jeopardize juvenile fish. Runoff from the portions of the lower American River area north of the river is collected and discharged into the American River. Runoff from areas south of the river is collected and discharged into the Sacramento River.

### **Significance Criteria**

For purposes of this analysis, any degradation in water quality below standards established by the SWRCB or EPA would constitute a significant impact.

## Impacts

**Lower American River.** This alternative includes 29 miles of levee modifications that include slurry walls, levee raising, construction of new levee lengths, floodwalls, and revetment to prevent surface erosion. These construction activities could cause or allow sediment to enter the river. Assuming proper construction procedures are followed (for example, construction during low-flow periods, use of clean material, construction of sediment barriers, and revegetation of disturbed areas), the effects on water quality would be minimized. There would be no long-term degradation of water-quality parameters in the lower American River area.

**Downstream From American River.** This alternative includes widening Sacramento Bypass by 1,000 feet, modifying the levees through the Yolo Bypass by constructing or modifying landside stability berms, raising or reconstructing existing levees, and placing revetment at various locations along the landside of the levees. Assuming proper construction procedures are followed (for example, construction during low-flow periods, use of clean material, construction of sediment barriers, and revegetation of disturbed areas), the effects on water quality would be minimized. There would be no long-term degradation of water-quality parameters in the lower Sacramento River or bypass areas.

## Mitigation

No mitigation would be necessary because typical construction activities require the use of containment barriers, fences, or dikes to contain construction runoff and erosion. Work would generally take place well away from flowing water, greatly reducing the chance of discharging construction material into the waterways. Therefore, no mitigation is required because there would be no significant degradation of water-quality parameters in the construction areas.

## **CULTURAL RESOURCES**

### **No-Action Condition**

Within the lower American River study area, three prehistoric sites are listed on the NRHP (National Register of Historic Places) (CA-SAC-26, -39, -99); one historic site, the Natomas East Main Drainage Canal levee, has recently been determined eligible for the NRHP as a contributing element to the Rural Historic Landscape District of Reclamation District 1000 (Dames & Moore, 1995). Archeological investigations at two additional sites, CA-SAC-155 (Neuenschwander and Peak, 1988) and CA-SAC-319 (Peak & Associates, 1983), have resulted in recommendations of NRHP eligibility, while similar studies at CA-SAC-199 (Dougherty, 1984) show that this property is ineligible to the NRHP. None of the remaining 35 sites in the lower American River area have been evaluated for the NRHP.

Four bridges within the project area were evaluated in the Thematic Request for Determination of Eligibility for Historic Highway Bridges in California 1985-1986 (Caltrans, 1986). The Jibboom Street bridge and Old Fair Oaks bridge were determined eligible for the NRHP in December 1985 under Criterion A as locally important crossings and under Criterion C as distinctive examples of a type and method of construction. Nothing has occurred since that determination that would change the eligibility of these two properties. The American River bridge was determined to have lost integrity and as a result is not eligible for the NRHP. Nothing has occurred that would change the earlier finding of ineligibility. The H Street bridge was determined not eligible for the NRHP; however, Caltrans plans to reevaluate this bridge. It may be eligible under Criterion C as a significant example of engineering.

Three railroad bridges were surveyed. The Northern Electric bridge may be eligible for the NRHP under Criterion A as an important element of a major northern California interurban railroad; it may also be eligible for the NRHP under Criterion C as a distinctive example of a type of construction. The Western Pacific bridge may be eligible for the NRHP under Criterion A as an important element on the main line of a railroad important in the development of California; it may also be eligible for the NRHP under Criterion C as a distinctive example of a type of construction. The Southern Pacific bridge may qualify for the NRHP under Criterion A as an example of E. H. Harriman's extensive upgrading program for the Southern Pacific Railroad; it may also be eligible under Criterion C as an example of engineering. More research is required for all three railroad bridges to make a definite evaluation.

RD 1000 (Reclamation District 1000) Rural Historic Landscape District was determined eligible for the NRHP in September 1994. A portion of the East Levee and the Natomas East Main Drainage Canal are within the project area. Also, a portion of the historic road alignment for the Garden Highway is on the top of the East Levee west of Northgate Boulevard. Levee Road is on the top of the East Levee east of Northgate Boulevard. East Levee, NEMDC, Garden Highway, and Levee Road are contributors to the RD 1000 Rural Historic Landscape District.

The portion of the south bank levee of the American River beginning at the confluence of the Sacramento River and ending on the west side of the Mayhew Drain and the portion of the northbank levee beginning on the eastern side of the NEMDC and continuing to the California State Exposition may be eligible for the NRHP under Criterion A as a part of the Sacramento River Flood Control Project. Both levees were part of the plan approved by the State Legislature in 1925 and authorized for construction by Congress prior to December 1944. The levee system of the American River is already recognized as a local Historic Civil Engineering Landmark.

The tailings district just south of the Nimbus Dam on the south bank in the American River Parkway is part of the Folsom (American River) Mining District, which is currently undergoing NRHP evaluation (M. Maniery, pers. comm., 1995).

**Downstream From American River.** Within the lower Sacramento River study area, the Sacramento Weir is eligible for the NRHP. Two prehistoric sites are known to exist within the Yolo Bypass (Bouey, 1991), but neither has been formally evaluated for the NRHP. In addition, it appears that the levees of the Sacramento Bypass and portions of the levees of the Yolo Bypass are eligible for the NRHP under Criterion A as part of the Sacramento River Flood Control Project. The Sacramento Weir and both bypasses were part of the plan approved by the State Legislature in 1925 and authorized for construction by Congress prior to December 1944.

There are no State Historic Landmarks within the lower American River or lower Sacramento River study areas. One prehistoric site within the lower American River segment, CA-SAC-99, is listed as a California Point of Historical Interest (SAC-003). Three such projects are within the lower American River or lower Sacramento River study: the I Street and Tower bridges in Sacramento; the Sacramento Weir; and the entire system of levees, weirs, and floodways along the Sacramento and American Rivers (American Society of Civil Engineers, 1976; Corps, 1992).

### **Significance Criteria**

For purposes of this analysis, impacts to cultural resources are considered significant if the property is a site, building, structure, or object which is recognized as culturally or historically significant based on the institutional, public, or technical criteria described under Cultural Resources for the No-Action Alternative.

### **Impacts**

**Lower American River.** The cultural resources inventory of the lower American River area of potential effect focused only on direct impact areas relating to levee improvements or levee and floodwall construction along a 23-mile-long corridor of the American River extending from Nimbus Dam to its confluence with the Sacramento River. No systematic inventory was undertaken outside the direct impact areas. Thus, the number and types of archeological sites in the area between the river corridor and the proposed and existing levees remains unknown. The possibility of additional impacts to potentially eligible NRHP properties associated with an increase in the current objective release out of Folsom Dam has yet to be examined. This would require an intensive pedestrian survey along the river bars and terraces between the river corridor and the existing or proposed levee locations to ensure compliance with Section 106 of the NHPA.

Within the direct impact area of potential effect, five archeological sites, CA-SAC-157, -158, -320, and LAR-10 and -15, would be affected as a result of activities related to new levee construction. These impacts would be significant if the affected properties met any of the institutional, public, or technical criteria outlined above.

This plan also involves levee strengthening and raising portions of the historic south bank and north bank levees of the American River. These changes may lessen integrity of the Sacramento River Flood Control Project.

**Downstream From American River.** Proposed levee strengthening and raising along the landside berm of the Garden Highway (River Levee) bordering the Sacramento River between river miles 66.8 and 78.9 have the potential to affect a number of prehistoric and historic sites. Further analysis of project impacts is required before a more accurate assessment can be made.

This plan would involve lengthening the historic Sacramento Weir by 1,000 feet, including the River Road and Northern Railroad. Also, the historic Sacramento Bypass would be widened 1,000 feet and levees of the bypass raised. This change to the historic design, materials, and location of the Sacramento Weir and Bypass would result in a loss of integrity. This would be a significant adverse impact.

The plan would also involve raising 26 miles of levees in the Yolo Bypass, building 2 miles of new levees, and strengthening 38 miles of levees. These changes may result in the loss of integrity to the Yolo Bypass levees as part of the Sacramento River Flood Control Project.

The survey of the historic landscape characteristics of the Yolo Bypass was not a part of the historic structures survey. However, it is possible that portions of the land within the bypass may be eligible as a rural historic landscape district(s). This indirect growth-inducing impact could have an adverse impact on any potentially eligible rural historic properties related to reclamation or agriculture.

### **Mitigation**

A cultural resources Programmatic Agreement (PA) has been developed and adopted between the Corps, the Office of Historic Preservation, and the Advisory Council on Historic Preservation regarding implementation of the ARWP. Other signatories of the PA include the Bureau of Reclamation, Mid-Pacific Region; The Reclamation Board of the State of California; and Sacramento Area Flood Control Agency. This PA will be used to complete Section 106 responsibilities for the wide range of related Federal actions expected to be carried out in connection with the ARWP. The PA includes procedures for treatment of indirect and direct impacts of the levee improvements associated with the projects. The executed PA specifies inventory (Stipulation 2) and NRHP evaluation procedures (Stipulation 3) for historic properties, as well as the process for development of Historic Properties Treatment Plans (Stipulation 4). Additionally, report format and review (Stipulation 5), participation of interested persons (Stipulation 6), curation of recovered data (Stipulation 7), and professional qualifications (Stipulation 8) are also detailed.

As specified in the Corps 1991 ARWI EIS/EIR, mitigation measures may include archeological documentation, architectural and engineering documentation, and historical

documentation, following standards and guidelines promulgated by the Secretary of the Interior (FR 48:190).

## **AGRICULTURAL/PRIME AND UNIQUE FARMLANDS**

### **No-Action Condition**

There are currently prime, unique, and statewide important farmlands in Yolo and Solano Counties that would not be affected under the No-Action Alternative but that could be affected under the Stepped Release Plan.

### **Significance Criteria**

For purposes of this analysis, any substantial long-term disruption of an existing or reasonably foreseeable agricultural land use is considered to be a significant impact.

### **Impacts**

**Lower American River and Folsom Reservoir.** Because there are no agricultural or prime and unique farmlands in the lower American River or Folsom Reservoir areas, there could not be any adverse effect to these areas. Agricultural lands in the upper American River area would not be affected by this alternative.

**Downstream From American River.** Levee modifications associated with the Stepped Release Plan would permanently disrupt use of farmland adjacent to the north levee of the Sacramento Bypass. This levee would be moved 1,000 feet north of its current alignment, isolating about 230 acres of land currently in agricultural production. Levees along the Yolo and Willow Slough Bypasses and along Cache and Haas Sloughs would be raised. Stretches of the levees along these channels and the levees along Lindsey Slough would be strengthened. This levee work would permanently affect about 628 acres of farmland or vacant land. Of this total, USDA classifies about 400 acres as prime and unique farmlands; about 50 acres are considered to be of statewide importance. Construction may temporarily disrupt agricultural use of the adjacent lands. These temporary impacts are adverse; however, they are not considered to be significant under the criteria of the Farmland Protection Policy Act of 1981 as amended in 1994.

The borrow sites for the Yolo Bypass levee work are the Cache Creek settling basin and a West Sacramento site. The borrow sites for levee work along the sloughs in the Delta include one north of Rio Vista along the west bank of the Sacramento River and another, Decker Island, south of Rio Vista near the east bank of the Sacramento River. Excavation of material for levee work at these existing borrow sites would not affect agricultural lands.

### Mitigation

No mitigation would be required for converted farmlands.

## **HAZARDOUS, TOXIC, AND RADIOLOGICAL WASTE**

### No-Action Condition

Over 1,000 hazardous waste sites have been located within the flood plain portion of the project area. Of these sites, 334 could result in significant contamination if they were inundated. These sites are host to leaking tanks, pits containing hazardous substances, and similar storage or disposal facilities. Of these potentially dangerous sites, 175 present an especially serious threat. This category includes sites slated for cleanup or further monitoring under one or more of the governmental efforts to address hazardous and toxic waste issues in the Sacramento area. Aside from these listed sites, the flood plain contains other hazardous materials which could cause significant problems in the event of a flood. These include aboveground tanks and drums, which may contain heating or fuel oil, liquid propane, kerosene, and agricultural chemicals.

### Significance Criteria

The significance criteria for HTRW is based on both institutional and public recognition of potential public health risks if contaminants are introduced into the environment. For the purposes of this analysis, any action which substantially increases the risk of an uncontrolled release of hazardous or toxic materials into the environment is considered significant.

### Impacts

Lower American River and Folsom Reservoir. No construction impacts are expected with this plan.

Downstream From American River. The East Yolo County landfill occupies a parcel about 400 feet wide by 2,200 feet long and averages about 5 feet deep. The landfill is adjacent to the existing north levee of the Sacramento Bypass. Records show that the landfill began operation in 1940 as a private business known as the "Albericci Dump." It was used to dispose of residential and commercial solid wastes by sequentially burning, crushing, and burying them. This "burn dump" methodology also usually incorporated salvaging of metals and chemicals whenever possible. Relocation of the north levee of the Sacramento Bypass would result in soil disturbance at the "Albericci Dump" site or cause inundation of the dump.

## Mitigation

**Downstream From American River.** The State's investigation recommended that if a future levee relocation results in excavation of the landfill area, the most desirable remedial action would be to relocate the landfill material to a different authorized site. According to the Yolo County Department of Public Works, the current Yolo County landfill north of Davis is the most likely site for relocation of the dump. The old dump contains a relatively small volume of nonhazardous landfill material which should not be a major logistical problem to relocate.

## TRANSPORTATION

### No-Action Condition

**Folsom Reservoir.** Folsom Dam Road, a two-lane roadway, crosses the top of the dam and runs beneath the mobile crane. Reclamation allows public use of the roadway between 6 a.m. and midnight. The roadway lanes are substandard in width and have no shoulders; however, the road is one of the few crossings of the American River in the area and represents an important arterial connecting the City of Folsom and western El Dorado County to communities in northeastern Sacramento County and southern Placer County.

**Lower American River.** The transportation network serving the lower American River area is radial with its major streets starting at, and then radiating outward from, the city's central business district. In the downtown area, the surface streets are laid out in a grid. The most traveled corridors are served by one-way facilities. The areas away from downtown exhibit typical suburban roadway design with major arterials serving commercial-office-industrial corridors and providing access to the regional freeway network. A system of collector streets provides access from local residential areas to the arterial system.

**Downstream From American River.** Roadways in this portion of the project area include controlled-access levee roads, county roads, and the Garden Highway. These roads are used for levee maintenance, by local residents, and for limited recreation access.

### Significance Criteria

Three criteria were used to determine if project-generated traffic and transportation impacts would be significant. First, where project-added traffic volumes would contribute to or degrade any existing peak-hour intersection level of service (LOS) to LOS "D" or below, the project was considered to have a significant impact. Second, in instances where project traffic would create a substantial safety risk, this impact was considered significant. Third, where project vehicle weight would exceed roadbed design standards, potential impacts to road surfaces were considered significant.

## Impacts

**Folsom Reservoir.** The roadway on top of the dam could be used by the public for the entire construction period, except for short periods during transport of materials and equipment. An access bridge would be constructed across the face of the main and auxiliary spillway and into the left abutment for use in moving materials, equipment, and personnel and to ease adverse effects on the dam road. Extensive scaffolding would be attached to the downstream face of the dam to provide working surfaces for modifying the spillways. Bulkheads would be prepared ahead of time for closure of spillway bays and outlets. These measures would limit disruption to traffic. Transportation delays such as those experienced in 1995 due to gate repair would not occur.

**Lower American River.** Based on the above significance criteria, the likely impacts of construction-related traffic associated with the Stepped Release Plan were evaluated. Particular attention was given to vehicle trips between identified borrow sites and their associated construction destinations. Approximately 40 trucks per day would be needed for levee modification including construction of new levees, raising levees, and adding revetment. Contractors would comply with existing limitations on all access roads. No significant adverse effects are expected.

**Guy West.** Foot and bicycle traffic currently using the Guy West bridge would be routed over the H Street bridge, about 1/2 mile from the site, by installing pedestrian detours along the levees and through the walkway on the upstream side of the H Street bridge. The construction period is estimated to be 1 year.

**Howe Avenue.** Work at this bridge would require that one of two structures be raised at a time. Traffic would be routed across the structure which was not being raised, reducing traffic to one lane in each direction.

**Downstream From American River.** The stabilization and raising of levees along the Sacramento River would result in periodic closure of the affected roads and could cause increased truck traffic on roads near the construction staging areas (approximately 100 trucks per day during the construction season). Contractors would comply with existing limitations on all access roads. No significant adverse effects are expected.

## Mitigation

To reduce the direct construction impacts associated with the various project alternatives in all project areas, the following typical construction measures would be implemented:

- The contractors shall prepare a transportation plan with information on haul routes and the number of trucks per day, as well as a traffic engineering analysis indicating that potential affected intersections have adequate turning radii for oversized vehicles.

## Environmental Consequences, Stepped Release Plan

- Contractors shall avoid hauling on public roads during weekday peak traffic periods, such as 6:30-9:30 a.m. and 3:30-6:30 p.m., especially in developed areas. If this is not feasible, contractors shall prepare traffic engineering studies to include peak-hour capacity calculations at affected intersections along haul routes, demonstrating that acceptable levels of service would be maintained. These studies shall be prepared for the Corps and shall conform to appropriate local standards. Contractors shall also allow pertinent agencies and concerned neighborhoods to comment on the transportation plan and traffic engineering studies. Where construction access is by local roads, residents shall receive prior notification.
- Traffic would be rerouted to avoid construction areas.

## AIR QUALITY

### No-Action Condition

Most of the lower American River is in the Sacramento Valley Air Basin. The principal air pollutants in this area are ozone, nitrous oxides, and carbon monoxide. While ozone tends to be a regional problem dispersed over wide areas, CO problems are usually localized and result from a combination of high traffic volumes and traffic congestion. The two primary sources of air pollution in the American River area are motor vehicles and stationary industrial facilities and operations.

The Folsom Reservoir area is heavily influenced by air contaminants originating in the Sacramento region and from agricultural burning in the Sacramento Valley. Interstate 80, Highway 50, and local industries are also sources of air pollution. Air contaminants are concentrated most often when the atmosphere is stable and winds are light for long periods of time.

The Sacramento Air Quality Management Area is not expected to reach attainment for ozone or CO before the year 2000. Traffic-related hydrocarbons, nitrogen oxides, and carbon monoxide would increase, worsening the basin's non-attainment status. The primary causes would be increased auto traffic associated with increased development and land use changes in the area. Most hydrocarbon and nitrogen oxide emissions would come from vehicle trips that originate outside the City of Sacramento, primarily from people commuting and shopping and also from through traffic.

### Significance Criteria

According to appendix G of the State CEQA Guidelines, a project will normally have a significant effect on the environment if it violates any ambient air-quality standard, contribute substantially to an existing or projected air-quality violation, or expose sensitive receptors to substantial pollutant concentrations.

Significance criteria developed by the SMAQMD and by the EPA were used in determining the significance of project-related air-quality impacts. Project-related emissions were considered significant if emissions exceeded the SMAQMD's thresholds of:

- 85 pounds per day (ppd) of ROG,
- 85 ppd of NO<sub>x</sub>, or
- 275 ppd of PM10 (Sacramento Metropolitan Air Quality Management District, 1994).

Also, project-related annual emissions were considered significant if emissions exceeded EPA's general conformity thresholds. Those conformity thresholds are based on the de minimis thresholds included in EPA's general conformity guidance regulation for the Sacramento area (40 CFR Part 51 Subpart W and 40 CFR Part 93 Subpart B). The threshold levels equal:

- 25 tons per year for ROG
- 25 tons per year of NO<sub>x</sub>,
- 100 tons per year for CO, or
- 100 tons per year for PM10.

### Impacts

Upper American River. The Stepped Release Plan would generate no emissions in the upper American River.

Folsom Reservoir. The Stepped Release Plan would generate emissions in the Folsom Dam area from modifications to the spillway and outlet works.

Lower American River. The Stepped Release Plan would cause emissions to be generated in the lower American River area as a result of levee raising and strengthening.

Downstream From American River. The Stepped Release Plan would cause emissions to be generated along the Sacramento River and in Yolo Bypass construction areas as a result of levee raising and strengthening.

Table 8-4 shows that emissions of ROG, NO<sub>x</sub>, and CO would exceed the daily or annual emission thresholds established for the Sacramento area. This is considered a significant impact.

As shown in table 8-4, emissions associated with the Stepped Release Plan exceed the tons-per-year conformity thresholds established by the EPA. Consequently, a conformity analysis would be conducted to show that this alternative would not violate the Sacramento area's State Implementation Plan if the Stepped Release Plan is authorized for construction.

TABLE 8-4

## Construction Equipment Emissions - Stepped Release Plan

Year	Carbon Monoxide (CO)		Reactive Organic Compounds (ROG)		Nitrogen Oxides (NO <sub>x</sub> )		Sulfur Oxides (SO <sub>x</sub> )		Inhalable Particulate Matter (PM <sub>10</sub> )	
	Tons per Year	Pounds per Average Work Day	Tons per Year	Pounds per Average Work Day	Tons per Year	Pounds per Average Work Day	Tons per Year	Pounds per Average Work Day	Tons per Year	Pounds per Average Work Day
2000	152	1,254	19	151	364	2998	40	324	65	718
2001	161	1,468	20	185	387	3548	42	384	66	759
2002	205	1,623	25	201	486	3,878	53	417	73	774
2003	331	2,513	39	297	771	5,890	83	634	90	898
2004	289	2,131	35	270	673	4,954	73	535	84	840
2005	288	2,238	34	267	669	5,246	72	564	83	857
2006	211	1,533	24	175	480	3,515	52	376	30	217
2007	379	2,682	46	327	896	6,379	97	687	166	1799
2008	290	1,966	36	246	700	4,748	76	512	155	1697
2009	103	723	14	105	263	1,868	29	209	128	1524
2010	0	0	0	0	0	0	0	0	0	0
Maximum	379	2,682	46	327	896	6,379	97	687	166	1799

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**Mitigation**

The Corps would prepare a dust suppression plan and submit it to the SMAQMD and the Yolo-Solano Air Pollution Control District for review before initiating construction activities. The plan would include as many of the following mitigation measures as are applicable to each project site:

- Cover, enclose, or water active storage piles at least twice daily.
- Cover inactive storage piles.
- Pave all haul roads.
- Cover securely or maintain at least 2 feet of freeboard on all haul trucks when transporting material.
- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Maintain the natural topography to the extent possible to eliminate the need for extensive land clearing, blasting, ground excavation, grading, and cut-and-fill operations.
- Prohibit all grading activities during periods of high wind (that is, greater than 30 miles per hour).
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least 4 consecutive days).
- Apply nontoxic binders (for instance, latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.
- Plant tree windbreaks on the windward perimeter of construction projects if they are adjacent to open land.
- Plant ground cover in disturbed areas as soon as possible.
- Install wheel washers for all exiting trucks.
- Sweep streets if visible soil material is carried onto adjacent public roads.
- Post a publicly visible sign at the project site to specify the telephone number and person to contact regarding complaints. This person shall be responsible for responding to complaints and taking corrective action within 48 hours.

Environmental Consequences, Stepped Release Plan

- Incorporate NO<sub>x</sub> Mitigation Measures into construction plans.
- Require injection timing retard of 2 degrees on all diesel vehicles, where applicable
- Install high-pressure injectors on all vehicles, where feasible.
- Encourage the use of reformulated diesel fuel.
- Use pre-chamber diesel engines (or equivalent) together with proper maintenance and operation.
- Electrify equipment, where feasible.
- Maintain equipment in tune with manufacturer's specifications, except as stated above.
- Install catalytic convertors on gasoline-powered equipment.
- Substitute gasoline-powered for diesel-powered equipment, where feasible.
- Use compressed natural gas or onsite propane mobile equipment instead of diesel-powered equipment, where feasible.

**Conformity.** The Stepped Release Plan is potentially subject to the general conformity rule, but would not be subject to transportation conformity requirements.

As shown in Table 8-4, emissions associated with the Stepped Release Plan exceed the tons per year conformity thresholds established by EPA. Consequently, a conformity analysis would be conducted to show that this alternative would not violate the Sacramento area's SIP. If this plan is selected, a conformity analysis would be completed after authorization and prior to construction.

The conformity analysis should not be conducted until the Corps has decided which alternative it wants to implement since all three action alternatives are currently subject to conformity. The conformity analysis requires air-quality modeling and/or the purchase of emission reduction credits to offset the increase in emissions associated with project construction. Consequently, the detailed general conformity analysis should be conducted only after a plan has been selected for implementation.

**NOISE****No-Action Condition**

Adjacent uses in the construction area include recreation on the waterside and commercial, industrial, and residential on the landside. The ambient background levels range from 51.1 to 61.6 dBA. Structures are located within 20 to 100 feet from the slurry wall construction sites.

**Significance Criteria**

The significance criteria used to evaluate anticipated noise conditions are based upon project-related incremental noise increases at the construction sites. Noise from construction activities would be compared to the city's criteria for nontransportation-related noise sources. An increase in noise of 3 dB or less is typically not perceptible, while a 5 dB increase is usually perceived as being distinctly perceptible. Consideration is given to the magnitude of the change in assessing significance.

Noise impacts were assessed at each of the sites by comparing project-generated construction and operational noise levels, existing noise levels, and the criteria and standards contained in applicable planning documents. The criteria applicable in this case are primarily for noise-sensitive residential uses and are intended to provide a suitable environment for indoor communication and sleep. The noise standard that would apply to each project improvement site is contained in the General Plan Noise Element for that respective jurisdiction. All respective noise elements cite 60 dBA  $L_{dn}$  as the established daytime residential noise standard. Short-term construction-generated noise is normally exempt from noise standards; this would not be a significant impact.

**Impacts**

**Lower American River.** Insertion of a slurry wall into the levees along both sides of the American River would generate construction noise near residential areas. These impacts would be considered short-term adverse in most areas since construction would be temporary and would take place during the day. Nevertheless, heavy-duty construction equipment would be expected to produce noise levels which exceed adopted standards in some areas where noise-sensitive receptors are adjacent to the construction site. In these cases, impacts would be considered short term but significant.

**Folsom Reservoir.** This alternative would require alteration of the Folsom Dam spillway and outlet works to allow for an increase in design release events. Completing construction of a gate during one construction season would require working 20 hours each day and would require materials handling and stationary source construction equipment similar to that listed in figure 7-1. These pieces of equipment can produce noise in the 70 to 88 dBA range as measured 50 feet from the noise source. In addition to these pieces of equipment, jackhammers would probably be used to break up concrete below the spillway.

Jackhammers can produce noise levels of up to 90 dBA at 50 feet. Delivery truck traffic and other mobile sources would also add to construction noise at the improvement site. This impact would be considered significant and unavoidable. The above information is based on the results of the Montgomery-Watson study for the Corps entitled "American River Flood Control Project Task 2: Lowering Folsom Spillway" (March, 1994).

Downstream From American River. Noise impacts would be associated with raising and strengthening the levees along the Sacramento River and Yolo Bypass. Heavy-equipment noise would be the major concern during levee-related and dam construction activities. Primary sources of noise in these cases would be engine exhaust, fans, transmissions, and other mechanical equipment. These impacts would be considered short-term. Because short-term construction-generated noise is normally exempt from noise standards, this would not be considered a significant impact.

### Mitigation

The following discussion is for the construction activities along the lower American River and downstream from the American River. Mitigation for work at Folsom Dam is the same as that presented for the Folsom Modification Plan.

Heavy-equipment noise would be the major concern during levee-related and dam construction activities. Primary sources of noise in these cases are engine exhaust, fans, transmissions, and other mechanical equipment. Heavy equipment is typically fitted with mufflers and engine enclosures to allow operation in noise-sensitive areas. Thus, the source of noise may be controlled within technological limits by requiring adequate mufflers and enclosures to be maintained on heavy equipment and other noise-producing tools.

When reasonably controlled, construction noise is often accepted by the public during daytime (7 a.m. to 5 p.m.). People are less tolerant of noise and may complain if nonemergency construction activities continue at night. Preventing nighttime construction near noise-sensitive receptors can effectively reduce public concerns. The following measures, therefore, are recommended to reduce the project's short-term construction-related noise impacts on adjacent noise-sensitive land uses.

- Provide mufflers for all project-related heavy construction equipment and stationary noise sources (such as diesel generators). Stationary noise sources shall be located at least 300 feet from occupied residences, or contractors shall be required to provide appropriate noise-reducing engine-housing enclosures.
- Place equipment warmup areas, water tanks, and equipment storage areas in a central area as far away from existing residences as is feasible.

Implementation of the above onsite construction noise mitigation measures would reduce the project's short-term noise impacts to the greatest extent feasible. However, due to

the proximity of existing noise-sensitive receivers (residences), the project's construction noise impacts would remain significant and unavoidable at Folsom Dam.

Construction-related traffic noise could be reduced at noise-sensitive receiver locations by ensuring that all traffic complies with applicable noise emission standards. Often traffic can be routed to minimize exposing these areas to heavy truck traffic. To reduce the project's mobile source construction noise impacts, the following measures are recommended.

- Equip all onroad mobile construction vehicles (dump trucks) with mufflers.
- Allow all dump truck haul trips to follow only the haul routes analyzed in this report unless a waiver is received from the appropriate agency.
- Prohibit dump truck haul trips in residential areas prior to 8 a.m. or after 6 p.m.

## VISUAL RESOURCES

### No-Action Condition

Under the No-Action Condition, visual resources at Folsom Reservoir and the State Recreation Area would remain subject to the same natural and operational regimes to which they are now subject; the reservoir is considered to have been impaired for some time. Visual resource values along the lower American River are considered to be high. The area downstream from the American River (Yolo and Sacramento Bypasses) is almost entirely developed with agriculture, and there is little visual diversity. Construction of the features included in the Stepped Release Plan would potentially affect the quality of visual resources along the lower American River and in the Folsom Reservoir area.

### Significance Criteria

For a project component to have a significant impact, the project or features of a project must substantially alter the visual quality of sensitive viewing components within the observable scene. Such an alteration may include a project feature significantly blocking a desirable viewing component, or replacing valuable environmental resources previously regarded as a visual amenity.

### Impacts

**Lower American River.** Increasing the releases from Folsom Dam would necessitate building new levees and floodwalls and raising or otherwise modifying 25 miles of levees along the lower American River. These improvements would affect 425 acres of wildlife habitat, including 24 acres of riparian and scrub-shrub vegetation, 14 acres of oak woodland, and 387 acres of upland herbaceous habitat. The affected levees are almost

entirely in residential neighborhoods. Because mitigation for lost vegetation would be accomplished offsite, residents would be left with an altered viewscape, particularly in neighborhoods adjacent to the new levee and floodwall sections. This is considered a potentially significant impact. Hydroseeding for erosion protection would be done on the waterside of the levee, somewhat reducing the visual alteration. Levee work along the lower American River is considered to be a significant and unavoidable impact which cannot be mitigated onsite due to necessary operation and maintenance of the levees.

Raising the Howe Avenue and Guy West bridges to accommodate higher flows in the river would not result in adverse visual effects because the current alignments of these bridges would be unaffected and the raises relatively minor.

Modification of existing pumping facilities would not adversely affect the existing look of these facilities; however, construction of large new pumping facilities at the mouth of the Mayhew Drain and at the Boyd Station channel would alter existing viewscales. This is considered a potentially significant impact.

**Folsom Reservoir.** Enlargement of Folsom Dam's river outlets and modifications of the dam spillway as called for under the Stepped Release Plan would not significantly alter existing viewscales of the dam and reservoir.

**Downstream From American River.** Required improvements to levees in the Yolo Bypass would affect 403 acres of habitat, including 283 acres of upland herbaceous, 43 acres of emergent marsh, 64 acres of riparian habitats, 8.3 acres of seasonal wetland habitat, and 5 acres of oak woodland. The loss of this habitat would be mitigated on Liberty Island except for the oak, which would be mitigated at a site along the lower American River. The proposed improvements would affect viewscales only for the few residences in the areas. These impacts would not be considered significant. Lengthening the Sacramento Weir and setting back the north levee of the Sacramento Bypass 1,000 feet would not result in any significant adverse effect on visual resources.

### **Mitigation**

#### **Lower American River and Downstream From American River.**

Adverse effects to visual resources associated with new levee construction and with applying rock revetment to existing waterside levee surfaces could be mitigated, but not to a "less than significant" level, by ensuring that the outer layer of the affected levee surfaces are covered with soil and hydroseeded. Adverse effects associated with the new pumping facilities at Mayhew Drain and Buffalo Creek could be mitigated with landscape plantings, but not to a "less than significant" level.

### CUMULATIVE IMPACTS

Cumulative impacts for the Stepped Release Plan are summarized in chapter 10.

### GROWTH-INDUCING IMPACTS

Construction of the Stepped Release Plan would not cause growth beyond growth that would occur under the No-Action Alternative. The current 100-year level of flood protection (No-Action Alternative) provides flood protection for regionally planned growth. While not inducing growth, the Stepped Release Plan would reduce the risk of damages from more severe storms.

### SUMMARY OF IMPACT CONCLUSIONS AND ENVIRONMENTAL COMMITMENTS

#### **SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS**

The CEQA Guidelines state that any significant environmental effects which cannot be avoided if the proposal is implemented must be described. This description extends to those significant effects which can be mitigated but not reduced to a level of insignificance. All potentially significant adverse effects except onsite visual impacts resulting from construction of the project, as indicated by the preceding evaluation, can be avoided or mitigated to a level of insignificance. Construction activities at Folsom Dam would result in a significant unavoidable increase in noise during the construction season.

#### **SIGNIFICANT IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

No significant irreversible environmental changes would result from the Stepped Release Plan, since this alternative would not commit nonrenewable resources to uses that future generations would be unable to reverse. Folsom Reservoir operations could always be returned to the Base Condition should that become the prudent course of action.

#### **SHORT-TERM USES OF THE ENVIRONMENT VS. LONG-TERM PRODUCTIVITY**

Provision of increased flood protection to substantial portions of the Sacramento Metropolitan Area would contribute to the long-term economic productivity of the region.

This benefit would be achieved without any significant sacrifice of environmental resources, since the adverse impacts of this alternative are temporary and would not result in long-term degradation of the physical environment.

## **EFFECTS FOUND TO BE SIGNIFICANT**

The summary table at the beginning of this final SEIS/EIR documents the most salient impact determinations and whether they were deemed significant or less than significant.

## **ENVIRONMENTAL COMMITMENTS**

Significant operational adverse effects and required mitigation would be the same as identified for the No-Action Alternative.

- Potentially significant effects resulting from increased turbidity and possible siltation at spawning areas would be mitigated to a less than significant level by requiring that construction sites along the American River Parkway be fully contained by barriers and dikes to reduce any chance that sediment or fluid from construction machinery enter the waterway.
- Adverse effects to vegetation from construction activities would be compensated by a replanting program along the lower American River and on Liberty Island. Along the lower American River, riparian cover would be compensated on a 38-acre site at river mile 3.7. For oak-woodland, 75 acres would be provided at one site near river mile 15. For areas downstream from the American River, 60 acres of riparian and 56 acres of wetland losses would be compensated on 116 acres at Liberty Island. Oak-woodland impacts would be compensated at the same mitigation site near river mile 15 as recommended for compensating oak losses along the lower American River.
- FWS compensation guidelines would be followed for the valley elderberry longhorn beetle.
- Seasonal restrictions on construction activity would be in accordance with DFG guidelines to avoid effects to Swainson's hawk.
- Seasonal restrictions on construction activities would be in accordance with DFG and FWS guidelines to avoid affecting the giant garter snake.
- Contractors would prepare a transportation plan and traffic engineering studies, if necessary. Where possible, traffic would be rerouted.

- A dust suppression plan for the construction areas would be prepared and implemented. An Air Quality Conformity Plan would be prepared and coordinated with the appropriate agencies. A detailed general conformity analysis would be conducted should this plan be selected for implementation.
- To avoid or reduce the increase in ambient noise levels, the construction equipment would be equipped with appropriate mufflers, and stationary sources would be shielded. The increase in noise levels from construction would result in significant and unavoidable effects that may not be mitigated to a less than significant level. This impact would last for the duration of the construction.

### CORPS RESPONSES TO FWS RECOMMENDATIONS

#### GENERAL COMMENT

The U. S. Fish and Wildlife Service (FWS) submitted a revised draft Supplemental Fish and Wildlife CAR (Coordination Act Report) for the (ARWP) American River Watershed Project in July 1995. The report supplements the FWS 1991 CAR. The entire section of FWS recommendations is presented below, with Corps responses below each recommendation.

The recommendations contained within this section constitute what FWS believes, from a fish and wildlife resource perspective and consistent with our Mitigation Policy, to be the best present recommendations for the project. The outcomes of any new or renewed consultations, as required under Section 7 of the Endangered Species Act or the Fish and Wildlife Coordination Act, could also affect the recommendations herein.

The Council on Environmental Quality and FWS's Mitigation Policy define mitigation as including the following elements: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts. FWS considers these elements to represent the most desirable sequence of steps in the mitigation planning process. In determining when to move from any one element to the next in the sequence, success or failure of particular techniques or approaches in the past under similar circumstances (as reflected in the results of previous [e.g., DeWeese, 1994] mitigation evaluation studies) are taken into account. The FWS preferred alternative for mitigation of project impacts is to avoid them altogether. Following are our recommendations for 1) actions relative to the American River Watershed Investigation as a whole, 2) actions specific to the Stepped Release Plan, and 3) actions specific to the Detention Dam Plan.

## GENERAL RECOMMENDATIONS

**FWS Comment:** We recommend that adverse impacts be minimized by selecting a flood control alternative which avoids unmitigable impacts to fish and wildlife resources. At present, this plan would be either increased Folsom Modification or the Stepped Release Plan.

**Corps' Response:** The non-Federal sponsors of the project, the Sacramento Area Flood Control Agency and the State of California Reclamation Board, in conjunction with the Corps, have thoroughly considered all the alternative plans, including the Folsom Modification Plan and the Stepped release Plan. Based on final recommendations of governing boards and headquarters review, the project proponents have selected the Detention Dam Plan as both the NED plan and the locally preferred plan. Regardless of the plan selection, full compensation, to the extent practicable, would be provided.

**FWS Comment:** The following recommendations are provided pursuant to Section 7 of the Endangered Species Act.

- a. Determine potential effects of the project on listed or proposed species or critical habitat by conducting surveys for the species or potential habitat, as appropriate.
- b. Should the species or critical habitat be present, complete a Biological Assessment for the project and determine whether the species would be affected.
- c. Should the proposed action be likely to affect the species or its critical habitat, initiate formal consultation with FWS.

**Corps' Response:** The Corps has initiated formal Section 7 consultation by forwarding a Biological Assessment to FWS. Recommendations that would reduce the likelihood of listed species being adversely affected by the project are also included in the Corps' Biological Data Report (appendix K).

## STEPPED RELEASE PLAN

FWS recommends that the following actions be fully considered singly or in combination by the Corps as refinements to the proposed Folsom storage/stepped release plan for impact avoidance:

**FWS Comment:** Reevaluate the levee modification design along the lower American River to ensure that modification features are necessary to meet intended flood control objectives. As discussed earlier in this report (with-project conditions), these areas include 1) the floodwall downstream from the Nimbus Fish Hatchery, 2) new levee construction on the south bank of the river opposite William B. Pond, and 3) new levee construction along the

Gold River area. Deleting project features in these areas could reduce mitigation needs for woody vegetation by about 30 acres.

**Corps' Response:** At the request of FWS, the alignment of the floodwall and new levees was moved from the original location to avoid sensitive areas. Deleting project features in these areas would likely reduce mitigation needs; however, the Corps' evaluation of the levee modification design concludes that the proposed floodwall and new levee construction features are necessary to carry the increased objective releases. The Corps proposes to mitigate for the affected areas.

**FWS Comment:** For the hydraulic mitigation area, eliminate proposed borrow sites which now contain woody vegetation, and select lower value habitat areas for extracting borrow material.

**Corps' Response:** The present acreages of native habitats in the hydraulic mitigation area (downstream from the American River) are relatively small in relation to the agricultural acreages. The Corps has reevaluated its borrow site selections in the hydraulic mitigation area and has eliminated planned use of borrow sites that contain woody vegetation (oak) and has opted to use the Cache Creek Settling Basin borrow site, which has much lower value habitat.

**FWS Comment:** Modify Corps levee maintenance regulations to allow tree growth on existing (and proposed) levees, thereby reducing impacts to riparian forest, riparian shrub, and oak-woodland habitats.

**Corps' Response:** Grassland and herbaceous acres that are disturbed for levee improvements would be reseeded with native vegetation. Impacts to riparian forest, riparian scrub, and oak woodland habitats would be mitigated through a compensation plan which includes revegetation. The Corps' regulations on levee maintenance do not allow woody vegetation to be planted on levee slopes due to the need for rapid inspection of the slopes during storms for possible erosion, sloughing, and piping and also because roots from large plants can create a seepage path through the levee, which can lead to failure.

**FWS Comment:** Modify the alignment of the floodwall across from Goethe Park to avoid impacts to mature oak-woodland habitat.

**Corps' Response:** As noted above, the floodwall alignment has been refined and shortened; however, a floodwall across from Goethe Park remains a necessary component of the Stepped Release Plan. A further attempt would be made to avoid affecting oak-woodland habitat by modifying the alignment of the floodwall during final design, should this alternative be authorized.

**FWS Comment:** Address any impacts (to listed and non-listed species) resulting from project-induced agricultural or urban development within the appropriate environmental

documentation for this project. Initiate the appropriate consultation with FWS, as required under the Endangered Species Act, for such potential effects on listed species.

**Corps' Response:** In compliance with the California Environmental Quality Act (CEQA), the Corps has addressed all potential direct, indirect, project-induced growth, and cumulative impacts in the final SEIS/EIR. The Corps has also properly initiated the process required by Section 7 of the Endangered Species Act by submission of the Corps' Biological Assessment to FWS.

**FWS Comment:** To compensate the elimination of 25 acres of riparian forest and shrub that would result from project construction along the lower American River, plant 45 acres of native woody riparian vegetation at optimum densities at the Woodlake site in the American River Parkway.

**Corps' Response:** Based on the results of the revised draft CAR to compensate for 25 acres of riparian forest and shrub, 38 acres of woody riparian habitat would be planted at the Woodlake site.

**FWS Comment:** For impacts to 64 acres of riparian forest and shrub in the hydraulic mitigation areas, plant 67 acres of these habitats in the hydraulic mitigation area at Liberty Island.

**Corps' Response:** The Corps has identified a site at Liberty Island as a potential mitigation area. A 116-acre portion of Liberty Island has been proposed as a site for riparian forest/shrub and emergent marsh habitat mitigation. The incremental analysis determined that the most cost-efficient mitigation method is to plant 60 acres of riparian forest and shrub habitats at this site.

**FWS Comment:** To fully compensate impacts to 9.7 acres of SRA cover along 6 miles of sloughs in the hydraulic mitigation area, 25.6 acres of shaded-riverine habitat would need to be planted along at least 16 miles of project sloughs at an approximate 13-foot width to regain lost habitat values. This plan would also mitigate for a portion of the losses of riparian habitat.

**Corps' Response:** Due to the very high habitat value associated with SRA, waterside revetment work on levees along sloughs in the Yolo Bypass has been eliminated from the construction plans. New designs would allow the levees to be strengthened by adding material on the landward side in the same manner as other levee strengthening in the bypass. This design change eliminates any impacts to SRA habitat and thus eliminates any SRA mitigation needs.

**FWS Comment:** For the lower American River, mitigate the loss of 14 acres of oak woodland habitat by planting 56 acres of oak tree species in the American River Parkway. Two sites at about river mile 15, one being one of the Corps' proposed borrow sites, would be suitable.

**Corps' Response:** The Corps concurs with this recommendation. However, mitigation requirements have been revised because oak impacts from project construction in the Yolo Bypass are less, so the few acres of remaining oak compensation would be combined with the oak plantings proposed for the borrow site near Cordova Park close to river mile 15; thus, the need for a second oak mitigation site in this area was eliminated.

**FWS Comment:** For impacts to 15 acres of oak woodland in the hydraulic mitigation area, 52 acres of this habitat would need to be planted.

**Corps' Response:** Because oaks at the originally proposed borrow sites in the upper Yolo Bypass would not be destroyed, an oak mitigation site in the Cache Creek Settling Basin is no longer needed. As such, no mitigation is now planned for the Cache Creek Settling Basin. The remaining oak impacts due to widening the Sacramento Bypass would be mitigated at the lower American River oak mitigation site near Cordova Park.

**FWS Comment:** In the hydraulic mitigation area, mitigate the loss of 43 acres of permanent freshwater emergent marsh habitat by replanting 47 acres of emergent marsh species on low habitat value cropland as described in the HEP report.

**Corps' Response:** The Corps has identified Liberty Island as a mitigation area. A portion of Liberty Island has been proposed as a site for riparian forest/shrub and emergent marsh habitat mitigation. As recommended, 56 acres of emergent marsh species would be planted at the Liberty Island site.

**FWS Comment:** Also in the hydraulic mitigation area, mitigate the loss of 8 acres of seasonal freshwater emergent marsh habitat by replanting native species on 9 acres of low habitat value cropland as described in the HEP report.

**Corps' Response:** The Corps has identified Liberty Island as a possible mitigation area. A portion of Liberty Island has been proposed as a site for riparian forest/shrub and emergent marsh habitat mitigation. As recommended, 9 acres of native emergent marsh species would be planted at this site and is included in the 56 acres of marsh described above.

**FWS Comment:** Mitigate losses to annual grassland by reseeding construction areas, including staging and borrow sites, with grasses (native species when possible).

**Corps' Response:** The Corps concurs with this recommendation.

**FWS Comment:** Develop detailed mitigation, monitoring, and remedial action plans for each mitigation action and site. Coordinate all phases of mitigation plan development and implementation with FWS and DFG.

**Corps' Response:** A mitigation and monitoring program, as required by CEQA, has been outlined by the Corps, SAFCA, and the State and is contained in Volume 4,

Environmental Consequences, Stepped Release Plan

Appendix H. A final mitigation monitoring plan will be developed in conjunction with the local sponsors upon project authorization.

**FWS Comment:** Have staff with biological expertise monitor construction activities and provide technical assistance to ensure avoidance of additional construction impacts.

**Corps' Response:** The Corps concurs with this recommendation.