CHAPTER 1

SUMMARY

INTRODUCTION

This report satisfies both Federal and State environmental reporting requirements, pursuant to NEPA (National Environmental Policy Act) and the Council on Environmental Quality implementing regulation Section 40 CFR 1506.2(b), and Section 21083.5 of the California Environmental Quality Act. The information contained in the December 1991 ARWI EIS/EIR (American River Watershed Investigation, Environmental Impact Statement/Environmental Impact Report) and its appendixes is incorporated by reference and should be considered when reviewing this report. This chapter briefly explains the purpose of and need for action; the alternatives considered, including the selected plan; the effects of these alternatives on the environment and the measures proposed to mitigate these effects; the areas of controversy associated with the project; and the issues which remain unresolved at this stage in the planning process.

PURPOSE OF AND NEED FOR ACTION

Sponsors of the ARWP (American River Watershed Project) are seeking to develop and implement a plan of flood control improvements that would significantly increase the level of protection provided to the Sacramento area from flooding along the main stem of the American River. The purpose of this document is to consider the environmental effects in the decisionmaking process and provide full disclosure of these effects to the public. The objective of the California Reclamation Board and SAFCA (Sacramento Area Flood Control Agency) is to provide the area with protection from a flood with a 1 in 200 chance of occurring in any year, the minimum protection considered appropriate by these agencies. The Corps' planning policy is to provide increased flood protection consistent with applicable Federal planning principles and guidelines which focus on identifying and providing Federal financial assistance for the plan which maximizes national economic development while protecting the Nation's environment (NED Plan). The NED Plan is the plan which provides the maximum net economic benefits as measured by average annual flood damages avoided less average annual costs. The Detention Dam Plan is identified in this final SEIS/EIR as the NED Plan. Four general criteria were used in formulating and evaluating the candidate plans. They include completeness, effectiveness, efficiency, and acceptability by local sponsors. Within the framework established by these four criteria are comparison factors leading to the recommendation of the Detention Dam Plan.

DESCRIPTION OF THE PROBLEM

In February 1986, major storms in northern California caused record floodflows in the American River basin. Outflows from Folsom Reservoir, together with high flows in the Sacramento River, caused water levels to rise above the "designed freeboard," or safety margin, of levees protecting the Sacramento area. Emergency repair work was required at several locations along the Garden Highway and in the Pocket area of Sacramento. Had these storms lasted much longer, major sections of levee likely would have failed, causing probable loss of life and billions of dollars in damages. The American River flood plain comprises about 116,000 acres and has about 400,000 residents and nearly $37 billion in damageable property. The effects of the February storms raised concerns over the adequacy of the existing flood control system, which led to a series of investigations of the need to provide additional protection for Sacramento.

AMERICAN RIVER WATERSHED PROJECT (ARWP)

In July 1988, the Continuing Appropriations Act (Public Law 100-202) authorized the Corps to commence the feasibility phase of the American River Watershed Investigation on a cost-shared basis with the State of California. The State in turn entered into an arrangement with local agencies interested in the project to act as local sponsors. These agencies subsequently created SAFCA, a joint power authority, to represent local interests in the planning process.

In April 1991, the Corps published a draft feasibility report and EIS/EIR which identified the 400-year alternative, a flood detention dam near Auburn capable of storing up to 894,000 acre-feet of floodwater, as the NED Plan. In June 1991, SAFCA and The Reclamation Board jointly requested that the Corps pursue the 200-year alternative, a scaled-down version of the NED Plan, consisting of a flood detention dam at Auburn capable of storing up to 545,000 acre-feet of floodwater. In December 1991, the Corps Sacramento District published a final feasibility report and EIS/EIR which described this 200-year alternative.

For a variety of procedural and substantive reasons, Congress declined to authorize the locally preferred plan in 1992, leaving the area susceptible to flooding. Instead, in language set forth in Section 9159 of the Department of Defense Appropriations Act for Fiscal Year 1993 (Public Law 102-396), the Natomas features described in the feasibility report were authorized; in subsequent Congressional correspondence, the Corps was directed to reevaluate Sacramento's flood control options and provide (1) additional information on the gating and expandability features of the flood detention dam, (2) a more detailed analysis of the costs and benefits of modifying Folsom Dam, improving the efficiency of flood control operations at Folsom, and increasing the conveyance capacity of the American River levee system; (3) information on transfer of flood control space to an upstream facility; (4) a description of the effects of using existing and increased flood space in upstream reservoirs; and (5) a reassessment of the costs and benefits of enlarging Folsom Reservoir or,

alternatively, establishing offstream storage capacity along Deer Creek in the Cosumnes River watershed.

ACTIONS TAKEN SINCE 1992

The following actions taken after the 1992 legislative session have affected the scope and character of the Corps response to Congress' call for a reevaluation of the American River project: (1) initiation of SAFCA's construction of the Natomas features of the project with local funds (SAFCA Local Project); (2) execution of a 5-year agreement between SAFCA and Reclamation (U.S. Bureau of Reclamation) to modify the operation of Folsom Reservoir (Interim Reoperation); (3) plans for initiation of a bank protection project along critical reaches of the lower American River (Sacramento River Bank Protection Project—Lower American River); (4) initiation of a regional water study, the ARWRI (American River Water Resources Investigation) by Reclamation in conjunction with Sacramento, Placer, El Dorado, and San Joaquin Counties; and (5) initiation of repairs on the main spillway gate that failed at Folsom Dam in July 1995. These actions and their effect on the Corps plan formulation process are discussed in chapter 2.

ALTERNATIVES REPORT

In November 1994, the Corps took the first step in the ARWP reevaluation by issuing an Alternatives Report designed to address the issues raised by Congress in Public Law 102-396. The Alternatives Report confirmed the essential conclusions of the 1991 ARWI; accounted for the governmental actions taken since 1992; and reevaluated the alternatives presented in the report based on a new method of accounting for uncertainties in predicting the pattern of precipitation and runoff in the watershed, the operation of Folsom Dam during flood events, and the performance of the downstream levee system. These results are more fully explained in chapter 2. Following issuance of the Alternatives Report, the State and SAFCA reassessed their recommendations with respect to the project and requested the Corps to focus its review on the Detention Dam and Stepped Release Plans described below.

DRAFT SIR AND DSEIS/SDEIR

In August 1995, the Corps issued the Draft SIR (Supplemental Information Report) and Draft Supplemental Environmental Impact Statement/Supplemental Draft Environmental Impact Report. The Draft SIR evaluated 17 individual flood protection measures for Sacramento. Of those, six were included in an array of nine flood protection alternatives. Three candidate plans were carried forward for detailed analysis. In August 1995, the draft document was released for public and agency review in accordance with NEPA and CEQA. Comments were solicited and were taken into consideration when the final document was

prepared. Copies of the comments received and responses to those comments are presented in appendix M.

NO-ACTION ALTERNATIVE

As part of the No-Action Alternative, it is expected that SAFCA would indefinitely extend its current agreement with Reclamation to reoperate Folsom Dam and Reservoir to achieve protection from flooding due to levee failure with a 1 in 100 chance of occurring in any one year. This would be achieved by permanently increasing the flood storage capacity from 400,000 acre-feet to a space varying from 400,000 to 670,000 acre-feet in accordance with the flood control diagram set forth in the 5-year agreement (1993 Diagram).

Under this alternative, the Federal Government would take no further action toward implementing a specific plan to increase the level of flood protection to Sacramento. The flood threat would continue, and there would be only about a 16 percent chance of passing the 200-year storm without levee failure and major flooding.

CANDIDATE PLANS

Based on the results of the Alternatives Report and subsequent analysis, three candidate plans, the Folsom Modification Plan, Stepped Release Plan, and Detention Dam Plan, were carried forward for detailed analysis along with the No-Action Alternative. The features of these plans are described below and summarized in table 1-1.

FOLSOM MODIFICATION PLAN

This combination of measures was formulated to minimize, to the extent possible, adverse construction and operation impacts on environmental resources. The plan would provide protection from flooding due to levee failure with a 1 in 180 chance of occurring in any one year and have about a 54 percent chance of safely passing a 200-year storm. Major features of this plan include:

- Adopting a new flood control diagram for Folsom Dam and Reservoir to increase the flood storage in the reservoir to a space varying from 475,000 to 720,000 acre-feet.

- Lowering the main spillway at Folsom Dam by 15 feet and replacing the five service gates and enlarging the eight existing river outlets.

TABLE 1-1

Summary Comparison of Candidate Plans

Item	Alternative			
	No-Action Alternative	Folsom Modification Plan	Folsom Stepped Release Plan	Detention Dam Plan
Level of flood protection (probability of flooding)	1 in 100	1 in 180	1 in 235	<1 in 500
Probability of passing a 200-year storm (%)	16	54	68	95
Features				
Folsom Dam & Reservoir				
Flood control space	400,000/ 670,000	475,000/ 720,000	400,000/ 670,000	400,000
Maximum objective release (cfs)	115,000	115,000	145,000/ 180,000	115,000
Lower main spillway 15 feet	No	Yes	Yes	No
Outlets (no. of gates & capacity, cfs)	8 at 30,000	8 at 70,000	8 at 70,000	8 at 30,000
Modify surcharge storage	No	Yes	Yes	No
Lower American River				
Stabilize/modify levees (mi)	0	24	29	24
Raise/replace bridges (number)	0	0	3	0
Recreation trails & park areas (acres)	0	0	35	0
Environmental restoration areas (acres)	0	0	134	0
Downstream From American River				
Modify Sacramento River levees (mi)	0	12	12	12
Modify Sacramento Weir & Bypass (ft)	0	0	1,000	0
Modify Yolo Bypass levees (mi)	0	0	52	0
Upstream Storage				
Detention space (ac-ft)	0	0	0	894,000
Dam height (ft)	0	0	0	508
Flood operation gates	0	0	0	20
Bridge Relocations	0	0	0	2

- Modifying the use of surcharge storage space in Folsom Reservoir by (1) strengthening embankments and other physical features at Folsom to accommodate the increased water-surface elevations, (2) replacing the three auxiliary spillway gates, and (3) implementing an advanced warning system and flood plain evacuation plan.

- Constructing a slurry wall in 24 miles of levees along the lower American River.

- Strengthening and raising about 12 miles of levees on the east side of the Sacramento River between the Natomas Cross Canal and the mouth of the American River.

With this plan, water supply capacity and hydropower benefits would be reduced, since the plan includes a further permanent increase in the seasonal flood storage space in Folsom Reservoir. Some environmental resources in Folsom and along the lower American

River would be adversely affected. However, the plan includes mitigation features to offset these impacts. These features are presented in table 1-2.

FOLSOM STEPPED RELEASE PLAN

This alternative was formulated to provide a relatively high level of protection to Sacramento with limited impacts along the lower American River and downstream. It includes structural and operational modifications to Folsom Dam and Reservoir and features to increase the objective release from Folsom. It would provide protection from flooding due to levee failure with an estimated 1 in 235 chance of occurring in any year and have about a 68 percent chance of safely passing a 200-year storm. Major features of this alternative include:

- Continuing the variable flood storage space at Folsom Dam and Reservoir of 400,000 to 670,000 acre-feet.

- Lowering the main spillway at Folsom Dam by 15 feet and replacing the five service gates and enlarging eight existing river outlets.

- Modifying the use of surcharge storage space in Folsom Reservoir by (1) strengthening embankments and other physical features at Folsom to accommodate the increased water-surface elevations, (2) replacing the three auxiliary spillway gates, and (3) implementing an advanced warning system and flood plain evacuation plan.

- Constructing a slurry wall in 25.6 miles of existing levees along the lower American River.

- Increasing the objective release from Folsom Dam from 115,000 to 145,000 cfs and eventually 180,000 cfs, depending on the estimated magnitude of inflows to Folsom Reservoir.

- Constructing levee, channel, and other improvements along the lower American River sufficient to convey the increased objective releases.

- Lengthening the Sacramento Weir 1,000 feet, widening the Sacramento Bypass 1,000 feet, and raising or modifying 52 miles of levees at various locations along the Yolo Bypass to accommodate the increased objective release.

- Strengthening and raising about 12 miles of levees on the east side of the Sacramento River between the Natomas Cross Canal and the mouth of the American River.

TABLE 1-2

Summary of Significant Impacts and Mitigation
Folsom Modification Plan

Resource	Impact	Mitigation
Water Supply	Average annual reductions in CVP/SWP water deliveries would be about 13,000 acre-feet.	Purchase rights to reduce deliveries when needed.
Local Water Supply	Lower reservoir surface elevations would result in higher pumping costs (about 0.3 GWh/yr).	Water agencies would be reimbursed for anticipated pumping costs.
Hydropower	CVP hydropower generation and capacity would be reduced (about 12 MW and about 6 GWh/yr).	Reimburse Western Area Power Administration.
Fisheries	Eroded materials from construction areas may enter river during storm season.	Install sediment curtains, perimeter berms, and interceptor ditches. Work during dry season.
Endangered species	Possible effect to Swainson's hawk nesting habitat.	Require adherence to DFG guidelines.
Cultural resources	Construction activities would affect culturally sensitive areas in Folsom Reservoir.	Determine eligibility of site for inclusion in National Register and identify additional sensitive areas for study.
Water quality	Eroded materials from construction areas may enter river during storm season.	Install sediment curtains, perimeter berms, and interceptor ditches. Work during dry season.
Recreation	Levee modification work along lower American River would disrupt use of bike trail. Lower water-surface elevations would reduce availability of boat launching facilities at Folsom Reservoir.	Route trail around construction areas using detours to surface streets. Extend low-water boat ramps as required.
Traffic and transportation	Levee raising and modification work along the west levee of Natomas would have temporary impacts during construction.	Reroute Garden Highway traffic to avoid construction areas.
Air quality	Construction equipment and activities would result in emissions and dust. ROG and NO_x emissions would exceed thresholds.	Require equipment to be operated in accordance with contract specifications. Design and implement a dust suppression program. Non-Federal sponsor would secure emission offsets if necessary.
Noise	Construction work at Folsom Dam would cause long-term noise impacts.	Significant, unavoidable, and unmitigable impact.

- Implementing environmental restoration and recreation improvement features along the lower reach of the American River Parkway.

- Mitigating for the loss of 157 acres of vegetation; 229 acres would be purchased and planted with native vegetation.

DETENTION DAM PLAN

This alternative primarily includes a detention dam and related facilities on the North Fork of the American River near Auburn. The plan would provide protection from floods due to levee failure with less than a 1 in 500 chance of occurring. It would have about a 97 percent chance of safely passing the 200-year storm. Major features of this alternative include:

- Constructing a 508-foot-high flood detention facility with a maximum capacity of 894,000 acre-feet on the North Fork American River near Auburn.
- Constructing a slurry wall in 24 miles of levees along the lower American River.
- Strengthening and raising about 12 miles of levees on the east side of the Sacramento River between the Natomas Cross Canal and the mouth of the American River.
- Restoring the flood storage space of 400,000 acre-feet in Folsom Reservoir and maintaining the objective release from Folsom Dam of 115,000 cfs.
- Mitigating for the loss of 1,533 acres of habitat and other canyon area impacts from construction and operation of the detention dam by (1) implementing an adaptive management plan for planting and resource management on 1,481 acres along the North and Middle Forks in the project area and (2) acquiring and managing an additional 2,774 acres on the Yuba River near Englebright Lake.

Of all alternatives considered, this alternative would provide the highest level of flood protection to the Sacramento area. It would have a minor beneficial effect on water supplies and hydropower generation of the CVP (Central Valley Project) by restoring the authorized 400,000 acre-foot flood storage space in Folsom Reservoir. It includes features to offset potential adverse impacts on environmental resources in the detention dam area, primarily due to infrequent inundation.

DESCRIPTION OF PROJECT AREA

The alternatives described above would produce impacts in the following areas:

- Upper American River. The area encompassing the American River basin upstream from Folsom Reservoir, including (1) the Auburn Dam site, (2) the 42,000 acres of land around the damsite which encompass the Auburn State Recreation Area and lie within Reclamation's authorized Auburn Dam project limits, (3) communities in Placer and El Dorado Counties surrounding the Auburn State Recreation Area, and (4) the three largest non-Federal reservoirs in the watershed—Union Valley, Hell Hole, and French Meadows (plate 1 of the SIR).

- Natomas. The area encompassing the east levee of the Sacramento River from the mouth of the Natomas Cross Canal to the mouth of the American River, a portion of the north levee of the American River, the Natomas East Main Drainage Canal and Pleasant Grove Creek Canal, and the Natomas Cross Canal.

- Folsom Reservoir Area. The area encompassing Folsom Dam and Reservoir and including the stilling basin downstream from the dam; the residential development surrounding the dam and reservoir; and the footprint of the reservoir, which would be subject to periodic changes in surface elevation (plate 1).

- Lower American River. The area encompassing (1) the American River Parkway and (2) the flood plain of the lower American River from Folsom Dam downstream to the confluence with the Sacramento River (plate 1).

- Upper Sacramento River. The area encompassing (1) Shasta and Keswick Reservoirs, (2) the upper reach of the Sacramento River from the Fremont Weir to Keswick Reservoir, (3) Clair Engle Reservoir and the Trinity River, and (4) Oroville Dam and Reservoir and the Feather River from Thermolito Afterbay to the confluence with the Sacramento River and South Fork Yuba River (figure 1-1).

- Downstream From American River. The area encompassing (1) the Sacramento River downstream from the mouth of the Natomas Cross Canal, (2) the Yolo Bypass and the lands immediately adjacent to the bypass, (3) the Sacramento Weir and Bypass and adjacent lands, and (4) the Sacramento-San Joaquin Delta, the roughly triangular area bounded by the City of Sacramento on the north, Pittsburg on the west, Tracy to the south, and Stockton to the east (figure 1-2).

- Yuba River Area. The area encompassing the Yuba River upstream from Englebright Dam. A portion of the area would be used to provide mitigation for impacts to habitat affected by construction of the Detention Dam Plan.

ENVIRONMENTAL IMPACTS AND MITIGATION

Tables 1-2 through 1-4 identify the significant adverse impacts and mitigation requirements likely to result from implementing the Folsom Modification Plan, the Stepped Release Plan, and the Detention Dam Plan. Table 1-5 identifies potential impacts of and mitigation for Federalizing permanent reoperation.

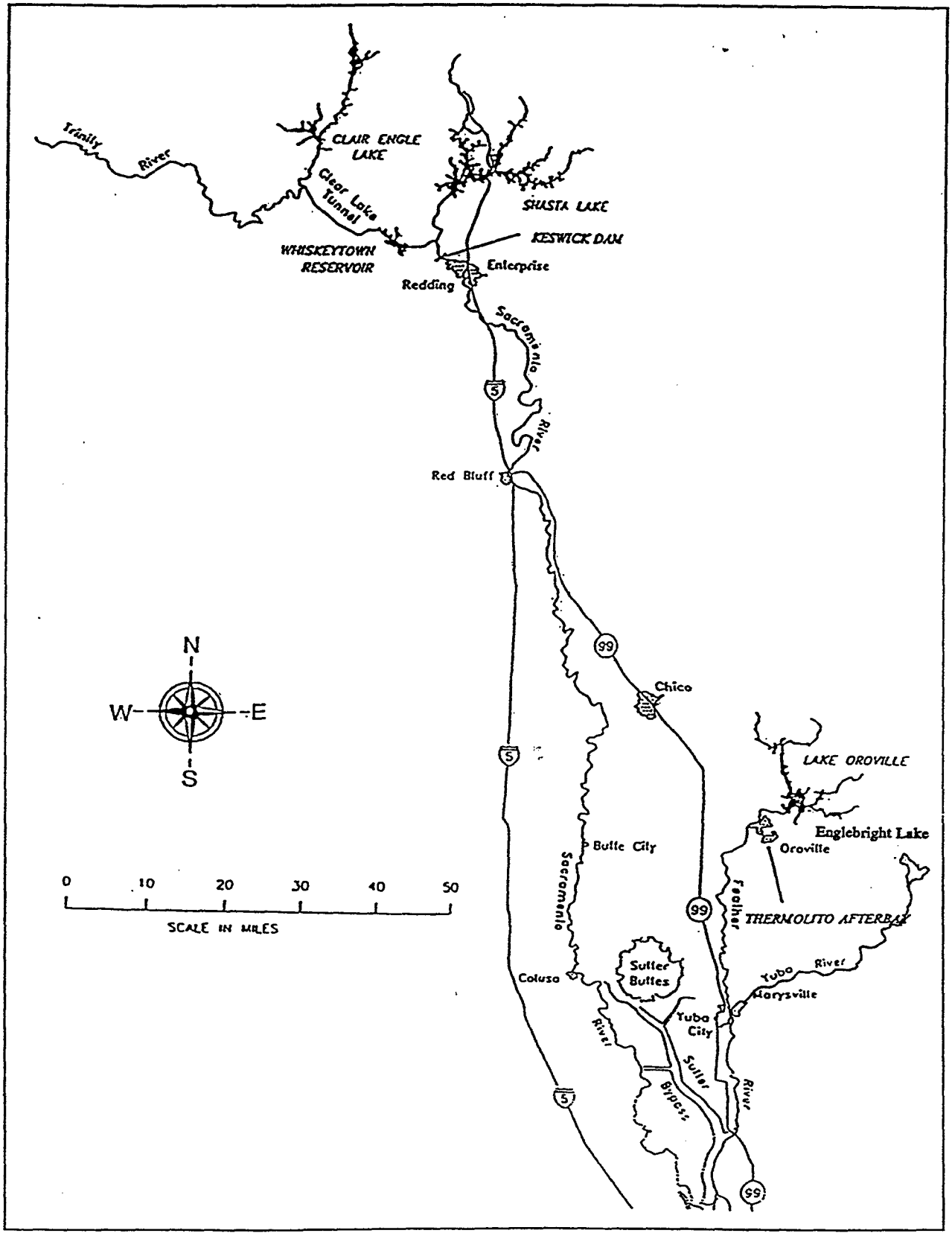

Figure 1-1. Upper Sacramento River Area.

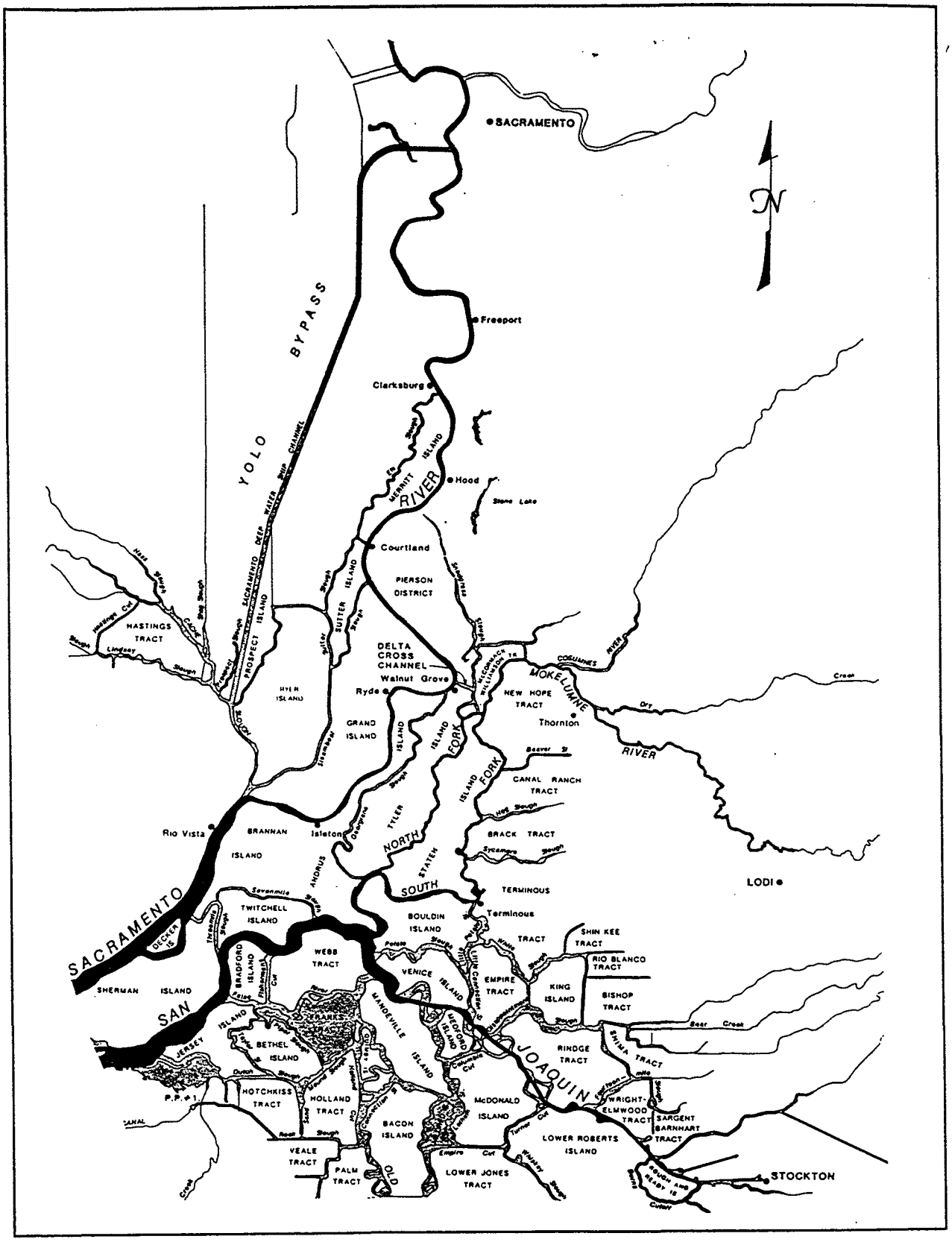

Figure 1-2. Downstream from the American River.

TABLE 1-3

Summary of Significant Impacts and Mitigation
Stepped Release Plan

Resource	Impact	Mitigation
Fisheries	Eroded materials from construction areas may enter river during storm season.	Install sediment curtains, perimeter berms, and interceptor ditches. Work during dry season.
Vegetation and wildlife	Loss of 37 acres of riparian and upland habitats along lower American River. Loss of 120 acres of wetland, riparian, and upland habitats in Sacramento and Yolo Bypasses.	Create 113 acres of replacement habitat at borrow areas along lower American River. Create 116 acres of replacement habitat at Liberty Island.
Endangered species	Loss of 137 elderberry shrubs due to levee modification. Possible effect to Swainson's hawk nesting habitat. Possible effect to giant garter snake resulting from construction.	Plant a total of 6,315 elderberry seedlings to replace lost shrubs. Require adherence to DFG guidelines. Require adherence to DFG and FWS guidelines.
Cultural resources	Construction activities would affect culturally sensitive areas along lower American River.	Determine eligibility of site for inclusion in National Register and identify additional sensitive areas for study.
Water quality	Eroded materials from construction areas may enter river during storm season.	Install sediment curtains, perimeter berms, and interceptor ditches. Work during dry season.
Visual resources	Levee construction work along lower American River would have permanent impacts.	Unmitigable, unavoidable impact.
Recreation	Levee modification work along lower American River would disrupt use of bike trail. Creation of new bike trail and Gateway and 7th Street parks.	Route trail around construction areas using detours to surface streets. Would benefit recreational resources.
Traffic and transportation	Levee raising and modification work along the west levee of Natomas would have temporary impacts during construction.	Reroute Garden Highway traffic to avoid construction areas.
Air quality	Construction equipment and activities would result in emissions and dust. ROG and NO_x emissions would exceed thresholds.	Require equipment to be operated in accordance with contract specifications. Design and implement a dust suppression program. Non-Federal sponsor would secure offset emissions, if necessary.
Hazardous and toxic waste	A dump site is located in the area where the Sacramento Bypass levee would be moved 1,000 feet to the north. There are no other HTRW sites known in the construction area.	Excavate the contents of this site and move to the landfill north of Davis.
Noise	Construction work at Folsom Dam would cause long-term noise impacts.	Significant, unavoidable, and unmitigable impact.

TABLE 1-4

Summary of Significant Impacts and Mitigation Detention Dam Plan

Resource	Impact	Mitigation
Vegetation and wildlife	Construction of dam and relocation of Highway 49 would eliminate 313 acres of riparian and upland habitats. Operation of detention dam would eliminate 1,220 acres of riparian and upland habitats. Habitat losses to wildlife.	Implement adaptive management plan. Plant replacement habitat at inundation area (1,481 acres) and provide offsite mitigation at the Yuba River area (2,774 acres) for a total of 4,255 acres. Plant replacement includes restoring wildlife habitat.
Endangered species	Loss of approximately 103 elderberry shrubs (host plant for the Federally listed valley elderberry longhorn beetle) from periodic inundation of 210 shrubs (73 with exit holes). Possible effect to Swainson's hawk nesting habitat.	Plant total of 7,008 elderberry seedlings at various areas in the inundation zone. Require adherence to DFG guidelines.
Cultural resources	Construction and operation would affect 180 known historic and prehistoric sites in the American River canyon.	Determine eligibility of sites for inclusion in National Register and identify additional sensitive areas for study. Complete inventory and investigation process and determination of eligibility.
Air quality	Construction equipment and activities would result in emissions and dust. ROG and NO_x emissions would exceed thresholds.	Require equipment to be operated in accordance with contract specifications. Design and implement a dust suppression program. Non-Federal sponsor would secure offset emissions.
Recreation	Levee modification work along lower American River would disrupt use of bike trail. Operation of detention dam would flood facilities at Lake Clementine. Recreation trails and access areas in detention area may be damaged during inundation.	Route trail around construction areas using detours to surface streets. Flood proof or remove facilities before storms. Offset damage to the trail system through vegetation management under the adaptive management plan, which includes repair of trails following floods.
Visual resources	Aggregate extraction, transport, and concrete-mixing activities would alter the viewshed. Construction of the dam would create a 508-foot-high structure in the canyon, and relocation of Highway 49 would create new, permanent obstructions to the viewshed.	Remove the extraction and mixing equipment and restore the area using native vegetation. Unmitigable, unavoidable impact.
Noise	Aggregate processing would increase noise levels during dam construction.	Significant, unavoidable, unmitigable impact.

TABLE 1-5

Summary of Potentially Significant Impacts and Mitigation of Federal Participation in Permanently Reoperating Folsom Dam and Reservoir with a Flexible Operation of 400,000/670,000 acre-feet

Resource	Potential Impacts	Potential Mitigation
Water supply	Average annual reductions in CVP/SWP water deliveries would be about 13,000 acre-feet.	Purchase rights to reduce deliveries when needed.
Local Water Supply	Lower reservoir surface elevations would result in higher pumping costs.	Water agencies would be reimbursed for anticipated pumping costs.
Hydropower	Reduced hydropower generation.	Reimburse the Western Area Power Administration.
Recreation	Reduced recreational use when Folsom Lake is lowered.	Incorporate SAFCA's proposed mitigation (extend boat ramps).
Fisheries	Eroded materials from construction areas may enter river during storm season.	Install sediment curtains, perimeter berms, and interceptor ditches. Work during dry season.
Vegetation and wildlife	Losses of vegetation or wildlife populations.	Impacts not significant.
Water quality	Adverse changes to water quality.	Impacts not significant.
Cultural resources	Lower Folsom Lake levels occasionally expose historically significant resources to looting.	Identify and record sites as required by the National Historic Preservation Act. Establish vehicle barriers and ranger patrols to protect site.
Visual resources	Temporary reductions in scenic quality of various lakes.	Impacts not significant.
Land use and population	Increased flood protection may increase flood plain development.	Provide mitigation by local land use planning process as necessary.

DETENTION DAM PLAN

The resource categories described below are the same as those summarized in table 1-4, but with additional detail to distinguish between operational and construction impacts and to denote if the mitigation proposed would reduce the impact to insignificance. Chapter 9 contains a further discussion of these resource categories.

Vegetation and Wildlife

Construction. The construction of the dam and the relocation of Highway 49 would result in the loss of 313 acres of riparian and upland vegetation that would be mitigated to insignificance by implementing the mitigation plan described below.

Operation. The infrequent temporary inundation of the canyon by this plan would adversely affect vegetation. During major flood events, temporarily detaining floodwaters behind the normally dry dam from several days up to 28 days during a 400-year storm event would cause the unavoidable losses of 1,220 acres of oak, chaparral, conifer, and riparian cover types during the 100-year period of analysis. Although there would be a loss of approximately 97 acres of riparian vegetation, this loss is not considered to be a significant effect, since this vegetative cover type is adaptable to inundation.

Planting 2,774 acres of the same species offsite at a location along the Yuba River would reduce this vegetation loss from construction and operation to insignificance. Also, under the adaptive management plan, an additional 1,481 acres of vegetation similar to that lost would be planted in the inundation zone. The vegetative planting also mitigates for wildlife habitat losses.

Endangered Species

Construction. There are no anticipated construction impacts to any Federal or State listed species. Potential construction impacts to the giant garter snake and the Swainson's hawk have been avoided by adhering to DFG (California Department of Fish and Game) and FWS (U.S. Fish and Wildlife Service) guidelines for avoiding impacts to these species.

Operation. The only identified listed species affected by the operation of this plan is the Federally listed valley elderberry longhorn beetle. Since the life cycle of this beetle is dependent upon the elderberry shrubs, temporary inundation greater than 3 days would kill the shrubs and therefore affect the beetle. Approximately 103 shrubs with 2,336 stems greater than 1 inch in diameter would be lost under this scenario. This loss would be reduced to insignificance by following FWS elderberry shrub replacement guidelines and planting 7,008 elderberry seedlings along the Middle Fork American River.

Cultural Resources

Construction. There would be no construction-related impacts to cultural resources.

Operation. The effects of inundation could significantly affect 180 known cultural sites in the inundation zone. This adverse effect could be reduced but not entirely eliminated by data recovery, documentation, and structural protection prior to inundation. Two unavoidable, significant impacts that cannot be mitigated include any continuing effects of erosion that could cause damage to cultural sites and the visual impacts of the dam after construction that would distract from the quality of the canyon's historical setting.

Air Quality

Construction. There would be construction impacts from aggregate mining, processing, and transporting and from exhaust emissions produced by construction equipment. All but the exhaust emissions could be reduced to insignificance by

implementing a dust suppression program at the worksite. The purchase of air-quality offsets would compensate for the adverse effects of heavy equipment emissions of ROG and NO_x.

Operation. There would be no operational impacts to air quality.

Recreation

Construction. During construction, no significant adverse effect to recreational resources between the confluence and the damsite would be expected. No impact to rafting would be experienced because rafting is prohibited between these two points. Along the lower American River, the bike trail would be routed around the construction sites.

Operation. There would be temporary adverse impacts from a reduction in access to canyon recreation opportunities, a decline in visual quality of the canyons, a disruption of boating facilities at Lake Clementine and along the lower American River, and a disruption of bike trail use during slurry wall work. Some of these impacts to recreation in the canyon occur under the No-Action Alternative during natural flooding that temporarily eliminates most canyon use.

Project-induced impacts from the inundation would be reduced, but not eliminated, by flood proofing or moving recreational facilities at Lake Clementine during a large flood, then reinstalling the facilities after the floodwater recedes, and repairing the major trails in the canyon after each major inundation and reducing the visual impact by implementing the adaptive management plan.

Visual Resources

Construction. Visual impacts caused by aggregate extraction, transport, and concrete-mixing activities during dam construction and the relocation of Highway 49 would cause significant impacts. These temporary construction activity impacts would be mitigated to insignificant by removing the construction equipment and reseeding the area with native grasses. The visual impact of the resulting dam and relocated Highway 49 could not be mitigated. Visual impacts from the slurry wall construction along the lower American River would be mitigated by reseeding the construction area with native grasses.

Operation. Impacts would be caused by inundation during large flood events and by the dam that would partially block canyon viewing. Implementing the adaptive management plan would reduce this impact on vegetation to insignificant by replacing vegetation lost during inundation. However, the visual impact associated with construction of the dam cannot be mitigated.

AREAS OF CONTROVERSY

The following significant areas of controversy were identified during this study:

Folsom Modification Plan

- Increasing the seasonal flood space in Folsom Reservoir and concern about impacts on water and power supply, local water availability, water quality, and recreation.
- Relatively low level of flood protection achieved and likely preclusion of other options capable of providing higher levels of protection and other water resource goals.
- Residual flood risk.

Stepped Release Plan

- Hydraulic impacts to area downstream from American River due to higher objective releases.
- Continued reoperation of Folsom Dam and Reservoir and related impacts primarily on water supply, water quality, and recreation.
- Concern about higher objective releases along lower American River and the relationship of the releases to the potential for the levees to be modified to adequately accommodate the flows.

Detention Dam Plan

- Relationship between the Detention Dam Plan and the authorized multipurpose Auburn Dam.
- The extent of environmental and recreational impacts which would result from temporary inundation during large storms and the appropriate scope of mitigation for these impacts.
- Potential impacts from sloughing in the North and Middle Forks of the American River during periods when the detention dam would detain water.
- Potential impacts from reservoir-induced seismicity during periods when the detention dam is detaining water.

General

- The difference between the application of the Federal Principles and Guidelines for water resource projects adopted by Congress in 1986 and Section 404(b)(1) of the Clean Water Act, including the application of 404(b)(1) guidelines to the analysis of the Detention Dam Plan and the requirements and effects of compliance with Section 404(r) remains an area of controversy.

- The Corps has found that the Detention Dam Plan is in compliance with the Section 404(b)(1) guidelines of the Clean Water Act, and an exemption under Section 404(r) of Public Law 92-500, as amended, is requested. The EPA (Environmental Protection Agency) has determined that the Detention Dam Plan as proposed is not consistent or otherwise in compliance with the Section 404(b)(1) guidelines of the Clean Water Act.

- The EPA rated the three action alternatives individually and based its rating on continuing EPA concerns regarding baseline, potential impacts, and mitigation. The EPA ratings for the three action alternatives are based on the "Environmental Impact of the Action" and the "Adequacy of the Impact Statement." EPA rated the Folsom Modification and Stepped Release Plans as "EC—Environmental Concerns" and "EC-2—Insufficient Information." The Detention Dam Plan was rated "EU—Environmentally Unsatisfactory."

- The FWS has stated that the impacts from constructing and operating the detention dam would cause significant and unmitigable impacts to fish and wildlife resources.

- Based on continuing coordination with FWS, it is understood that the recommendations contained in the July 1995 draft CAR (Coordination Act Report) will remain in effect for the detention dam. When the final CAR is received from FWS it will include the results of the Section 7 consultation, and any new recommendations from FWS will focus on the requirements to avoid jeopardizing endangered species affected by the project.

- The overall reaction of the public and reviewing agencies to the flood protection alternatives centered on the major issues below and are based on comments received on the DSEIS/SDEIR. Responses to the following issues are discussed in appendix M:

  Seismicity at damsite
  Development in flood plains
  Reoperation impacts under worst-case conditions
  Inundation of vegetation by the dry dam
  Project costs and benefits
  Project funding
  Analysis of expanding detention dam to multipurpose facility

Hodge decision as minimum flow standard
Flooding in Sacramento area from tributaries below Folsom Reservoir
Traffic impacts at Folsom Dam
Proposed adaptive management plan

MAJOR FINDINGS AND CONCLUSIONS

Major conclusions of the SIR are presented in chapter X of the Main Report. Environmental review and analysis of the three action plans compared to the No-Action Alternative finds that the fully mitigated Detention Dam Plan is the NED plan and complies with the 404(b)(1) guidelines and other applicable environmental laws and regulations. The 20 sluice gates incorporated into the design of the dam allow controlled release of floodwaters during major flood events. By controlling the release of floodwaters, Folsom Reservoir's flood storage space, in combination with the detention dam, would have a 97 percent chance of passing a 200-year storm, so flood releases could be safely conveyed down the lower American River without levee modifications to contain higher objective flows. The detention dam would allow Folsom Reservoir to return to its former 400,000 acre-foot seasonal flood storage and keep its 115,000 cfs maximum downstream objective release. Additionally, the temporary inundation of the American River canyon caused by the detention dam would be fully mitigated to insignificance with the AMP (adaptive management plan) that mitigates for vegetation and wildlife losses. It is the Corps position that the AMP avoids jeopardizing endangered species in the inundation zone. In addition, vegetation lost during construction of the dam would be fully mitigated offsite.

The two other action plans, the Stepped Release Plan and the Folsom Modification Plan, contain levee modifications and reoperation of Folsom Reservoir to allow for increased seasonal flood storage. Although the construction elements of these two plans could be mitigated to insignificance, the reoperation component of each plan would cause more damage to downstream fisheries and riparian/wetland habitats than the fixed flood storage space of 400,000 acre-feet anticipated with the Detention Dam Plan. Each of the candidate plans were evaluated against the No-Action Alternative. The No-Action Alternative includes permanently extending the flood control operation of Folsom Reservoir from 400,000 acre-feet of fixed storage to a variable operating curve of between 400,000 and 670,000 acre-feet of space, depending on the amount of incidental storage space available in the upstream private reservoirs. The Folsom Modification Plan and the Stepped Release Plan both recognize that this reoperation of Folsom Reservoir would either continue unchanged under the Stepped Release Plan, or be increased under the Folsom Modification Plan.

As explained in chapter 10, should the Federal Government authorize a project which includes a permanent reoperation component, mitigation would likely be provided for the impacts of changing from the Baseline condition of 400,000 acre-feet of fixed flood control storage space in Folsom Reservoir to the Stepped Release Plan (400,000 to 670,000 acre-feet) or the Folsom Modification Plan (475,000 to 720,000 acre-feet), as these would be the

impacts for which mitigation would be provided should either plan become the authorized Federal project. The plan formulation process identified the Detention Dam Plan as the NED plan and is in compliance with the 404(b)(1) guidelines and other applicable environmental laws and regulations.

UNRESOLVED ISSUES

The following issue remains unresolved:

- The difference of opinion between the Corps and FWS on appropriate strategies to mitigate project impacts in the upper American River canyon resulting from periodic inundations.

SELECTED PLAN

PLAN SELECTION

Chapter VI of the Main Report presents an evaluation for each plan. The Detention Dam Plan rated highest overall based on criteria discussed in the Main Report. Both The Reclamation Board and SAFCA identified this plan as the locally preferred plan. On the basis of these recommendations, this alternative was identified as the selected plan for submittal to Congress.

DETENTION DAM PLAN

Environmental commitments for the selected plan are:

- A proposed revegetation mitigation program would provide replacement of the habitat values provided by the vegetative cover types and related canyon area resources projected to be lost as a result of construction and operation of the flood detention dam. As mitigation for the losses, the easement right to plant and manage 1,481 acres of land along the North and Middle Forks in the detention dam area would be acquired for the adaptive management plan, and 2,774 acres along the Yuba River would be purchased and restored to a density comparable to that on the areas in the canyon. If the survival rate of the plantings, including elderberry shrubs, is less than anticipated, additional plantings, in excess of the Corps original compensation projections, would be provided by the Corps and the non-Federal sponsor.

- Elderberry seedlings would be planted onsite (a 3:1 replacement ratio) in suitable areas along the Middle Fork American River. Because survey results show that most

shrubs are found mostly on the Middle Fork, replanting would be done there to ensure the greatest chance of survival and to allow the beetle to become more securely established in the region.

- Periodic, temporary inundation of the canyon area could cause substantial site disturbance to the 180 cultural resource sites. Impacts from temporary inundation, wave action, and a new zone of wet-dry cycling could be reduced by data recovery, documentation, and structural protection, but not to a less-than-significant level.

- Relocating Highway 49 and constructing a flood detention dam near Auburn would cause the replaced Highway 49 to be flooded periodically along its present alignment where it crosses the North Fork of the American River. The existing Highway 49 corridor would remain under the jurisdiction of Placer and El Dorado Counties and be maintained as a recreation access corridor to the confluence of the North and Middle Forks by the non-Federal sponsor.

- A dust suppression plan would be prepared and implemented for the construction areas. Both a determination of conformity and transportation conformity would be finalized. Coordination with the appropriate agencies in Placer, El Dorado, and Sacramento Counties would be completed. Air-quality emission offsets would be secured by the non-Federal sponsor.

- The construction equipment would be equipped with appropriate mufflers, and stationary sources would be shielded to avoid or reduce the increase in ambient noise levels. The increase in noise levels from construction and quarrying 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.

- Visual resources around the dam would be restored using native vegetation to repair construction access roadways and work areas which are not needed for operation. Mitigation for effects to visual resources resulting from construction of the dam and bridge is not feasible.

IMPACT SUMMARY

The Main Report examines three action alternative flood control plans and a No-Action Alternative that represents the most likely "default" course of action in the event that no additional Federal action is taken to improve flood control in the Sacramento area. Other projects with the potential for creating cumulative impacts in conjunction with the American River Watershed Project are discussed in relation to each major action alternative in chapter 10. For this summary, only the cumulative impacts of the No-Action Alternative and the three action plans are summarized and shown below:

- No-Action Alternative. With no action, impacts would be cumulative if it is assumed that Folsom Reservoir becomes permanently reoperated according to the 1993 flood control diagram. These impacts include minor regional changes due to decreases of stored water and production of hydropower at Folsom that are linked to larger projects such as the CVP/SWP (Central Valley Project and State Water Project). In addition, there would be relatively greater cumulative impacts to local resources such as water supply and water-oriented recreation at Folsom Lake. In the lower American River, the fisheries, riparian vegetation, and wildlife; water quality; and cultural and visual resources would be affected somewhat by permanent reoperation. However, average annual impacts are projected to be minor; over the long term, they would be within a few percent of existing production levels. As discussed in chapter 10, when compared to the systemwide demands for CVP/SWP water, the impacts of permanent reoperation are considered to be very small.

- Folsom Modification Plan. Potential cumulative adverse impacts of this plan are greater than for the No-Action Alternative because the plan includes constructing improvements to Folsom Dam, the lower American River levees, and the east levee of the Sacramento River. In addition, there would be an increase in the amount of flood space reservation in Folsom Reservoir. As with the No-Action Alternative, local resources produced at Folsom Reservoir that would probably be adversely affected by reoperation include water supply, hydropower, cultural resources, and recreation. Cumulative impacts to these resources may be considerable in some years, but probably would not be of sufficient magnitude to be called significant overall because recreation mitigation measures (such as lowering boat ramps) and alternative recreation areas and water and power supplies are available at other lakes that are either privately owned or part of the CVP and SWP systems. Therefore, the Folsom Modification Plan would not significantly increase the cumulative effects on the CVP and SWP operations.

- Stepped Release Plan. Potential cumulative adverse impacts of constructing facilities necessary for this plan are locally and regionally even more significant than for the Folsom Modification Plan due to more construction and a higher floodway design. However, detailed projections of impacts to fish and wildlife habitat and recreation show that mitigation measures would offset potential losses. (See chapter 8.) Therefore, there should be no cumulative adverse impacts to these resources associated with long-term operation of the Stepped Release Plan. Proposed Folsom Reservoir reoperation would be the same as discussed for the No-Action Alternative. Construction of levee modifications to handle greater floodflows should result in no increased loss of wildlife or fisheries, recreation facilities, or utilities compared to the No-Action Alternative. Construction of new recreation facilities along the lower American River would result in beneficial cumulative impacts. On average, as with the No-Action Alternative, cumulative losses of recreation, water, and power production at Folsom Lake can be compensated by integrating reoperations with existing regional production.

- Detention Dam Plan. The potential cumulative adverse impacts of this plan include vegetation loss from periodic inundation within the upper American River. Vegetation mortality from sloughing and physical damage to roads, trails, and other recreational facilities cumulatively over time would contribute to the loss of vegetation and wildlife habitat values; recreational capabilities; and visual quality for existing uses such as whitewater rafting, hiking, and nature appreciation. However, the temporary effects of inundation are projected to greatly lessen impacts to these resources because any inundation (up to about 28 days for a 400-year event) would occur during the winter dormancy when plants are least likely to be affected. Regionally, because the detention dam would be operated for temporary flood detention rather than permanent water impoundment, cumulative impacts, though significant, would be offset by mitigation that compensates for lost vegetation. Cumulative impacts to recreation are determined to be minimal because the area would be inundated only temporarily during the off-season and therefore would remain available for most recreation.

INTENDED USES OF THE SEIS/EIR

This SEIS/EIR is intended to serve as a stand-alone document. It will be used to inform the following administrative and legislative bodies whose approval is needed to select and fund a plan of flood protection improvements along the American River: the United States Congress; the Corps of Engineers; The Reclamation Board, the Resources Agency, and the State of California Legislature; and the Board of Directors of SAFCA. The SAFCA Board will specifically rely on this document to create a local financing district to raise the local share of the cost of the approved project.

The Corps has determined that the Detention Dam Plan meets the Section 404(b)(1) guidelines of the Clean Water Act, and an exemption under Section 404(r) of Public Law 92-500, as amended, is being requested form Congress.