

**Alternative 13**  
**East-Side Foothill Large**  
**Conveyance Facility**

**E-008961**

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## Alternative 13

### East-Side Foothill Large Conveyance Facility

#### Emphasis

This alternative constructs an isolated conveyance facility on the eastside of the Sacramento and San Joaquin Valleys to an ultimate connection with the California Aqueduct. The facility would capture peak flood and spring flows and from east-side tributaries and divert the water to the California Aqueduct. Such a project would increase the yield and water quality of the export supplies and reduce the need to operate Delta diversions during the winter and spring months.

#### Distinguishing Features

##### Physical and Structural Features

A large conveyance facility would be constructed on the eastside of the Sacramento and San Joaquin Valleys. The facility would include intake diversions on the major east-side tributaries. Levee improvements would be made to achieve Public Law 99 standards. A moderate level of Habitat restoration would occur in the Delta and on the Sacramento and the San Joaquin Rivers.

##### Operational and Management Features

The conveyance facility will be operated primarily during the winter and spring months. An equivalent decrease in Delta exports would occur. Upstream reservoir releases would be managed to release water for diversion into the east-side conveyance facility when possible. Obtain 100 TAF on San Joaquin River and manage for environmental purposes.

##### Institutional and Policy Features

Groundwater banking and conjunctive use would be encouraged to facilitate the success of the eastside storage program. Increase instream flows through variety of programs involving water conservation, reclamation, acquisition, and desalination. Improve pollutant source controls and enforcement for agricultural drainage, establish water quality BMPs, pest control, and remediate on-site mine drainage.

#### Benefits

- Improves quality of export water
- Improves flood control and system reliability
- Reduces entrainment impacts on Sacramento River and in Delta
- Increases reliability of supplies
- Improves control of flows and temperatures in river
- Reduces impacts on anadromous fish from migration obstructions
- Moderate level of Bay, Delta, and river habitat restoration

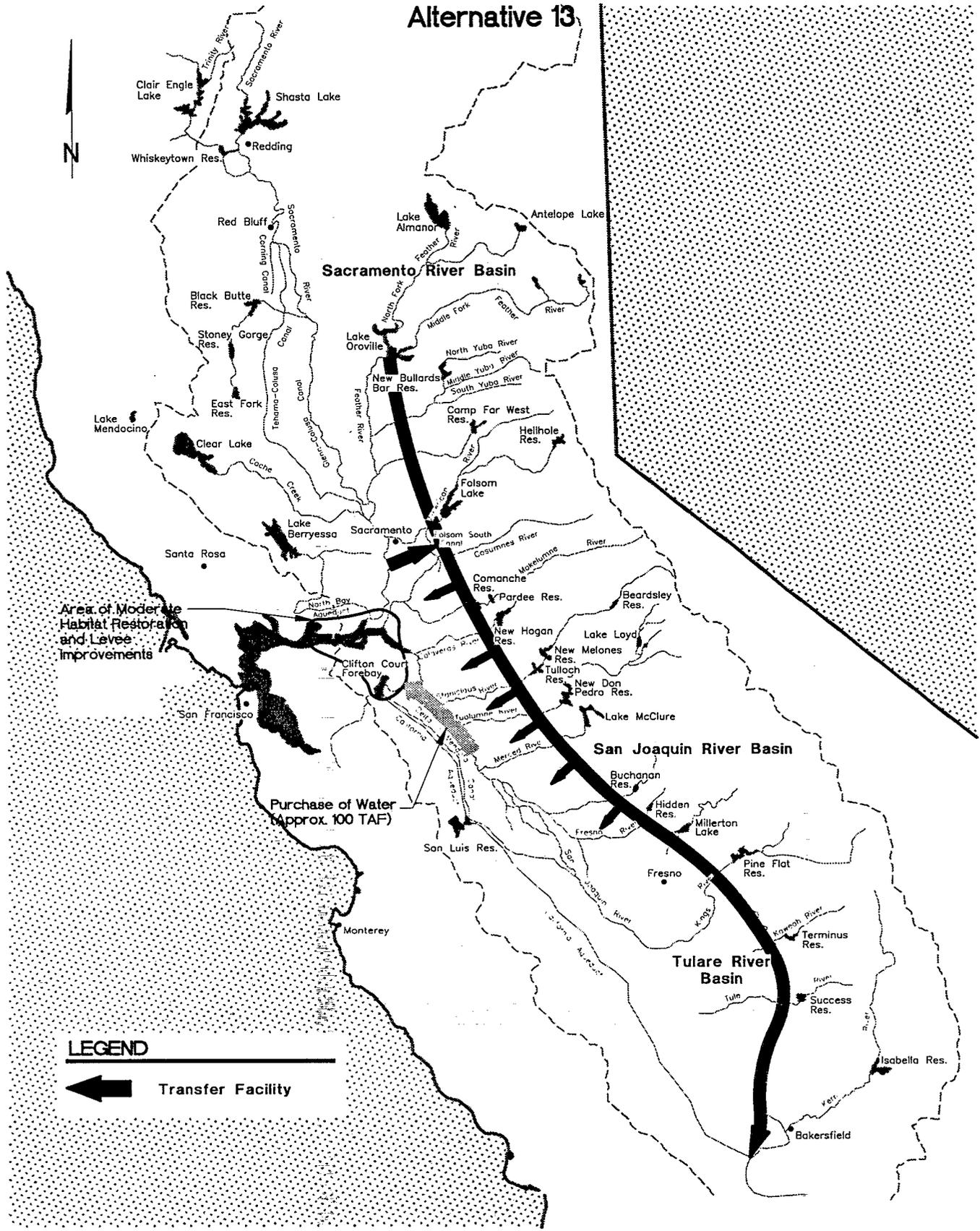
#### Constraints and Concerns

- Extremely high cost
- Fish mortality remains high at south Delta diversions
- Environmental impacts associated with new storage reservoirs and conveyance facilities

• *Historical problems*

# East Side Foothills Conveyance Facility

## Alternative 13



**LEGEND**

← Transfer Facility

## **Alternative 13**

### **East Valley Conveyance Facility**

This alternative includes a new conveyance facility, located along the east side of the Sacramento and San Joaquin Valleys, connecting intakes on the Sacramento, and Feather Rivers to the California aqueduct in Kern County. The purpose of this alternative is to increase populations of anadromous and Bay-Delta native fish by relocating diversions upstream of the Delta and by improving instream habitat. This alternative would also greatly improve the reliability and quality of exports, and would make them less vulnerable to catastrophic failure.

This alternative would divert water from the Sacramento and Feather Rivers and transport it in a canal to southern California. The facility would be sized (around 5000 cfs at its terminus) for export deliveries. The diversion impacts associated with the export of water from the south Delta would be reduced. Interties with eastside rivers such as the Mokelumne, the Tuolumne and the Stanislaus would be included, therefore, benefits would also accrue to Bay Area water users. The existing Folsom South, Madera, Friant-Kern, and Cross Valley canals would be modified or paralleled to convey high quality supplies to the California Aqueduct and groundwater banking facilities in the San Joaquin Valley. Instream flow requirements would be maintained in eastside rivers by substituting canal water for agricultural diversions from these rivers. The eastside interties could also be used to facilitate transfers of water from eastside streams. Water from the canal would be used to recharge groundwater basins in the San Joaquin Valley for conjunctive use. The vulnerability of Delta land use, Delta water supply, agricultural export water supply and Delta ecosystem function to catastrophic failure is reduced by improving levees.

### **Physical and Structural Features**

***Construct East Valley Conveyance Facility***— Relocate export diversions to the Sacramento River upstream of the Feather confluence, and to the Feather at Thermalito. Construct a new conveyance facility from these points south, along the east side of the Sacramento and San Joaquin Valleys, connecting to the California Aqueduct in Kern County. Enlarge and modify the existing Folsom South, Madera, Friant-Kern, and Cross Valley Canals as feasible to serve as parts of the new conveyance. Size the facility to meet export needs, including supplemental dry year supplies for EBMUD and Hetch Hetchy; environmental needs in the San Joaquin River tributaries; groundwater recharge and banking in the eastern San Joaquin County to improve supply reliability and to make

dry period water available for environmental uses in the Delta and its tributaries. This would reduce diversions for export purposes in the Delta, reducing diversion impacts.

***Delta Levee Habitat Restoration***— Restore approximately 100 levee miles of shallow water, riverine and riparian habitat in the Delta to provide forage and cover habitat for resident and anadromous fish, and to provide other benefits associated with riparian habitat. Actions might include setback levees, creation of berms, creation of shallow water habitat, and increased vegetation on levees. Considerations for site selection will include distance from hazards such as pumping plants, protection from waves generated by wind and boat wakes, importance of island integrity to the maintenance of Delta water quality, and need to improve channel capacity and structural stability of levees. Good candidate areas are Twitchell Island along Three-mile Slough and Seven-mile Slough, Georgiana Slough, and the north and south forks of the Mokelumne River.

***Delta Habitat Restoration***— Restore shallow water and tidal wetland habitat in the Delta to provide spawning areas, forage areas, and escape cover for juvenile salmon, Delta smelt, splittail, and other species. Candidate areas include Prospect Island, Liberty Island, Little Holland Tract, Decker Island, Hastings Tract, Yolo Bypass, and the southeast Delta. Other candidate areas include shoreline habitat along margins of the lower Sacramento and San Joaquin channels, and tributary sloughs including Georgiana Slough, Barker Slough, Lindsey Slough, and Parker Island. Riparian, wetland, and terrestrial habitat would also be restored on Delta islands and upland areas adjacent to river channels.

***San Joaquin River Habitat Restoration***— Restore channel features to improve fish survival. Actions may include restoration of deeper, narrower channel areas to keep water cooler, and isolation of quarry areas to protect young fish from predation and straying.

***Bay Habitat Restoration***— Restore about 1,000 acres of tidal wetlands between Collinsville and Carquinez Strait. Actions may include conversion of diked wetlands to tidal wetlands or use of dredge spoils to create wetland areas. The resulting habitat types will provide wet year spawning habitat for Delta smelt, rearing areas for salmon, as well as habitat for diverse wildlife including canvasback and redhead ducks.

***Channel Islands***— Restore and protect channel islands. Evaluate contribution of upstream meander belts to sediment deposition at channel islands. Establish zones for different types of boating use so some areas are protected from large boat wakes.

***Install Bypass at Mouth of Old River***— Construct a bypass at the mouth of Old River that will encourage outmigrants to stay in San Joaquin River while allowing a managed flow down Old River.

***Fish Screens***— Install fish screens on diversions over 250 cfs that are on fish migration routes in the Delta, rivers, and tributaries.

***Other Programs***— Implement recommended habitat restoration actions from other programs, including CVPIA and the Anadromous Fish Restoration Plan. Examples of specific actions include small dam removal on Clear Creek, dam removal on Battle Creek, establishment of a population of winter run chinook salmon on Battle Creek.

***Sacramento River Habitat Restoration***— Restore riparian, shaded riverine, and shallow water habitat along the Sacramento River from Sacramento to Collinsville. First step will be to provide matching funds for Corps of Engineers feasibility study. Subsequent restoration would be funded 75% by COE.

***Retain and Manage Stormwater Runoff***— Create wetlands, buffer strips, treatment processes, or holding reservoirs to reduce contaminant concentrations and to store or retard contaminated flows and stormwater drainage for release during periods of higher instream flows.

***Construct Wetlands***— Utilize wetlands for natural treatment and detention to reduce contaminant concentrations and make releases during periods of higher instream flows.

***Flood Protection Level***— This action provides a moderate level of protection to Delta system levees. First, all levees not yet providing a level of protection equivalent to the hazard mitigation plan (HMP) will receive the necessary upgrades to their levees to meet HMP standards. A level of flood protection equivalent to the US Army Corps of Engineers' Public Law (PL)- 99 standard would be provided to: 1) critical western Delta islands (such as Sherman and Jersey islands), with important regional infrastructure (e.g. the Mokelumne Aqueduct, transmission lines, Highway 160, etc.); 2) other islands having infrastructure of local importance (such as New Hope Tract, Bouldin Island, Sherman Island, Palm Tract, Lower and Upper Jones Tracts, and Lower Roberts Island); and 3) islands having valuable habitat, but not necessarily infrastructure, (including, but not necessarily limited to Canal Ranch, Brack Tract, Staten Island, Venice Island, Rindge Tract, Webb Tract, Big Mandeville Island, Twitchell Island, and Bradford Island).

***Channel Improvements and Levee Maintenance***— A moderate level of channel improvements (e.g. widening for improved conveyance), levee maintenance and stabilization (e.g. stabilizing berms), the modification of agricultural practices to reduce subsidence potential, setback levees, providing funding for maintenance and stabilization, and maintaining and/or reconstructing levees are indicative of the range of actions that would be implemented with the intent of reducing the risk of the Delta levee system with respect to its value in providing water supply, water quality, ecosystem quality, and land use/infrastructure benefits.

### **Operational and Management Features**

***Real Time Monitoring***— Establish an adequate real-time monitoring program to determine location of species of special concern so that project operations can be effectively managed to reduce losses of fish and minimize effects on habitat.

***Acoustic Barrier at Mouth of Georgiana Slough***— Operate an acoustic barrier at the mouth of Georgiana Slough. Work to improve the effectiveness of behavioral barriers. Evaluate use of acoustic barriers at the Delta Cross Channel and 3-Mile Slough.

***Storage of Agricultural Tile Drain Water***— Develop a program with irrigation districts to store tile drain water to be released at times when pulse flows can provide dilution.

***Modify Clifton Court Forebay Operation***— Modify operations of Clifton Court Forebay so that it does not entrain as many fish into the forebay during typical operation. Install regulating gates into Italian Slough so that water can be drawn in over time at a lower velocity. This will reduce the number of fish lost to predation in the forebay.

***Mark Hatchery Fish***— Mark salmon produced in hatcheries to facilitate selective catch by commercial and recreation fisheries.

***Pen Rearing of Striped Bass***— Rear striped bass in pens to maintain recreational fishery and avoid operational constraints on water projects due to spawning bass.

***Response Program for Introduced Species Control***— Establish and fund a rapid response program among environmental agencies to provide a fast and effective means of managing non-native species introduced to the Bay-Delta. Expand continuing management programs for nuisance species such as water hyacinth.

***Obtain Environmental Water***— Obtain about 100,000 acre feet from San Joaquin water users to reduce conflicts between fisheries and diversions. Water could be used to provide pulse flows to move Delta smelt downstream, away from diversion points. Another use might be dilution of poor quality San Joaquin River flows, providing benefits for fisheries, water supply, and water quality. New south-of-Delta storage would allow this water to be used as exchange water so that Delta diversions could be reduced at critical times to protect fisheries without affecting export supplies.

### **Institutional and Policy Features**

***Water Quality Standards***— Maintain current standards for Delta water quality and position of X2.

***Preserve Agricultural Land Uses***— Establish programs to preserve agricultural land uses that help to protect the ecosystem. Examples include limiting levee restoration to levels that are inadequate to permit residential construction on Delta islands, and incentive programs to preserve habitats such as pasture, which are important for sandhill cranes.

***CALFED Regulatory Team***— Determine how to implement a regulatory team to facilitate permits for environmental restoration projects. Each member agency would have a key person on team.

***Dredge Materials***— Establish a policy that all future clean dredge material from the Delta above Chipps Island should go into Delta restoration projects.

***Safe Harbor for Maintenance***— Encourage farmers and levee maintenance districts to leave habitat areas undisturbed when feasible by providing protection from ESA provisions.

***Improve Pollutant Source Controls***— Existing source control regulations for pollutants may not be sufficiently comprehensive nor enforced to levels required to protect beneficial uses in the Bay-Delta system and tributary rivers. These actions would provide for an array of increased source reduction activities such as additional regulation of agricultural and urban drainage and better enforcement, establishing BMP's for a range of activities affecting Delta water quality such as levee maintenance and pest control

practices, and supporting and enhancing existing land retirement and fallowing programs. Using a watershed management approach, identify and control high priority pollutant sources through a combination of source reduction and treatment actions. Provide regulatory incentives and develop institutional agreements to enable focusing resources on priority sources. Intense application of core level actions such as implementing source control regulations for pollutants, retirement of lands with serious drainage disposal problems, retirement or fallowing agricultural land with salt or other contaminant drainage problems to reduce land-derived salt contamination, management of irrigation tailwater, retention and management of stormwater runoff, and management of discharges from abandoned mining sites would improve water quality management.

Implement on-site mine drainage remediation measures based on requirements in current regulations. Through changes in water pollution requirements give urban areas flexibility to fund high-priority mine cleanup in lieu of increasing expenditures on treatment plant improvements.

***Control Volume of Agricultural Discharges***— Selected agricultural water quality management measures, such as those directed at drainage volume control, can reduce agricultural water demands and increase in-Delta flows. Exporting agricultural drainage from the San Joaquin Valley to the least sensitive locations in the ocean or salt sinks will greatly reduce water quality problems in the San Joaquin River and southern Delta while minimizing impairment of agricultural lands and resultant losses in production.

***Manage Irrigation Tailwater to Reduce Pesticides***— Utilize wetlands, treatment processes, or holding reservoirs to store or retard surface agricultural drainage, reduce pesticide concentrations, and/or make releases during higher instream flow periods.

***Conjunctive Use of Groundwater***— Implement a conjunctive use program in the San Joaquin Valley that uses water from the eastside to recharge groundwater basins. During the irrigation season, this groundwater would be used instead of water diverted from eastside streams. Alternatively, groundwater could be pumped into the canal during dry periods to allow water to reduce demands on the Sacramento, Feather and American River reservoirs.

***Subsidence Reduction***— Efforts to reduce the subsidence on Delta islands with deep peat soils (such as parts of Grand, Twitchell, Sherman, Andrus, and Bouldin islands) will include the establishment of a landside buffer zone between 50 and 100 yards in width, located adjacent to the levee.

***Emergency Levee Management Plan***— An emergency levee management plan would provide necessary funding and direction to reclaim Delta islands in the event of inundation to continue protection of Delta functions as an integrated resource system. Funding would be provided to ensure that a suitable amount of equipment and materials would be readily available to rapidly respond to flood fights.

## **Preliminary Assessment**

### ***Benefits***

***Ecosystem Quality***— Habitat restoration actions would be implemented at moderate levels in this alternative because agricultural exports would continue to be diverted from the south Delta, but some exports would be moved from the Delta. Additional improvements to ecosystem quality would be achieved through reducing diversion and reverse flow impacts currently associated with Delta exports. Consequently, productivity improvements would be expected in the western Delta and lower San Joaquin River. Losses of anadromous and resident fish to exports at the south Delta pumping plants would be reduced. This alternative would provide moderate habitat restoration in the Delta.

***Water Supply***— Water users would have improved supply reliability (and quality). Water users in the San Joaquin Valley could benefit from the conjunctive use program. Under this alternative, 1995 Water Quality Control Plan objectives would remain in place to protect in-Delta use.

***Water Quality***— Water quality will be enhanced to varying levels for areas receiving Delta export water. Users would receive higher quality water from the Sacramento, Feather Rivers. In-Delta water users would benefit from the reduction in pollutant loads in the San Joaquin River and increased San Joaquin River system inflow.

***System Reliability***— The system reliability would be increased within the Delta due to the more stable levees in the Delta system. The canal would also provide a more reliable source of water to some users. Delta habitat restoration and levee maintenance would also improve system reliability.

### ***Constraints and Concerns***

***Fish Mortality***— Losses of Delta resident, and San Joaquin delta anadromous fish would still occur at the export pumps, though at a reduced rate.

***Facility Construction Impacts***— The construction of an East Valley conveyance facility would result in several significant environmental impacts.