Alternative 16

East-Side Delta Isolated Facility

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Emphasis

Through construction of a large east-side Delta Isolated Conveyance facility, this alternative enhances export water quality, supply, and reliability, while reducing diversion effects on fish.

Distinguishing Features

Physical and Structural Features

Constructs a canal around eastern and south-eastern edges of the Delta to serve multiple users (such as SWP, CVP, EBMUD, and San Joaquin County users). Diverts good-quality Sacramento River water through screened intake pumps. Levees protected to maximum level. Implements maximum level of Delta and upstream habitat and channel island restoration. Expands or creates additional downstream storage.

Operational and Management Features

Relocates and alters timing of export diversions and improves fish screens. Mainatains Delta out-flow to effectively protect species of concern. Manages introduced species. Obtain 100 TAF on San Joaquin River and mange for environmental purposes.

Institutional and Policy Features

Improves pollutant-source controls and enforcement for urban and agricultural drainage, establishes water quality BMPs for levee maintenance, pest control, and remediates on-site mine drainage. Implements a watershed management approach to reduce and treat high-priority pollutant sources. Increases agricultural, municipal, and industrial conservation and reclamation, including land fallowing and water pricing measures. Encourages water transfers.

Benefits

- Reduced diversion effects at relocated diversion
- Significantly improves water supply predictability and reliability
- Improves export water quality
- Reduces vulnerability of Delta functions to catastrophic failure
- Provides additional flexibility to manage inflows/exports
- Reduces upstream contaminants
- Improves ecosystem quality through habitat restoration

Constraints and Concerns

- Diversion effects at new diversion
- Site-specific impacts associated with new storage
- Potential water quality degradation in Delta

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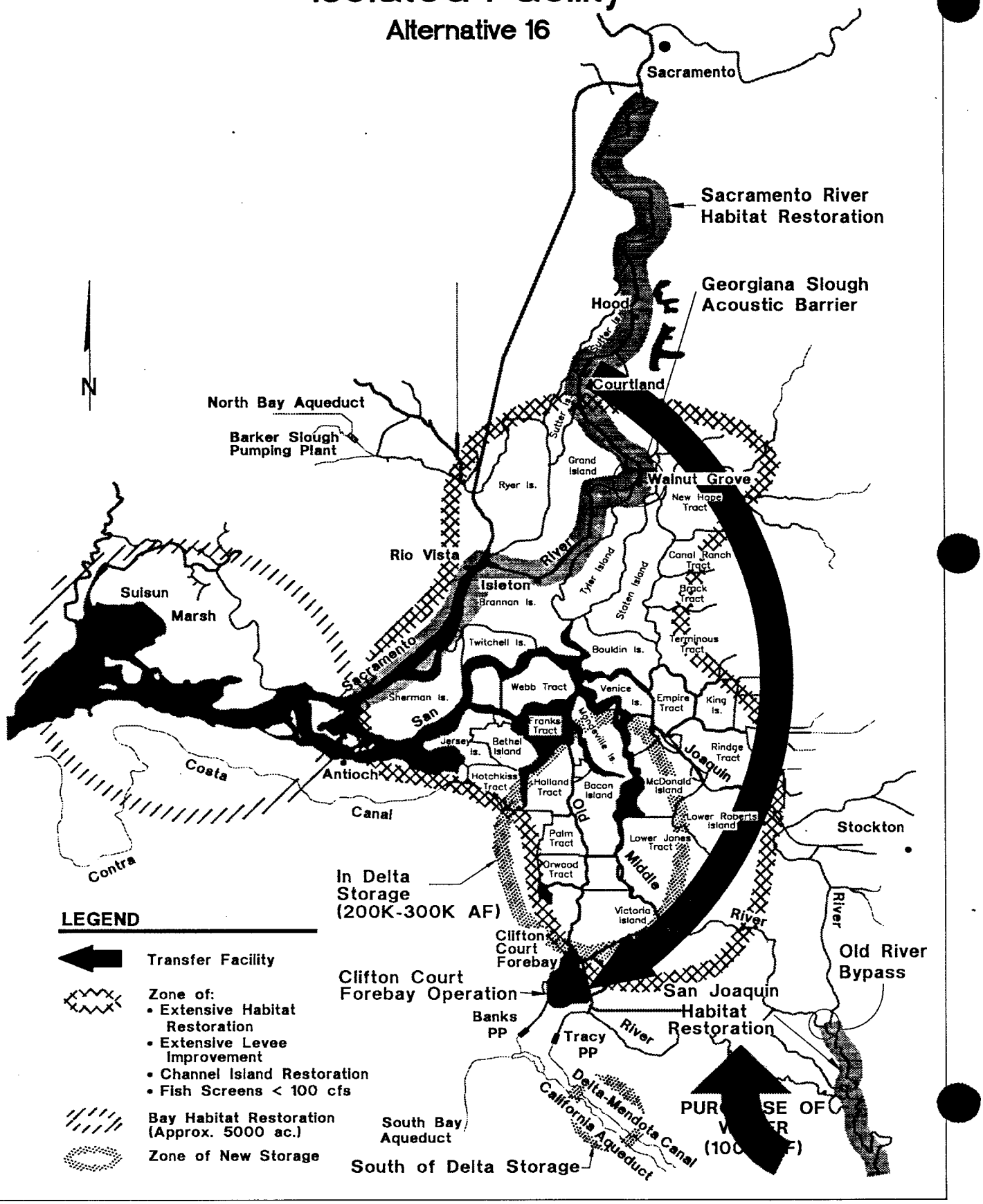
PRELIMINARY DRAFT

Large East Side Delta Isolated Facility

Alternative 16



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Alternative 16

East-Side Delta Isolated Facility

This alternative enhances export area water quality, water supply, and supply reliability primarily by constructing an East Delta Isolated Conveyance Canal and appurtenant physical facilities. The key element of this approach is construction of large capacity conveyance facility on the stable mineral soils around the eastern and south-eastern edges of the Delta to serve the demands of the SWP, CVP, and others. The facility would include inverted siphons beneath points of significant Delta inflows with pump stations located where additional head is needed. Good quality water would be diverted from the Sacramento River through one or more, screened intake structure(s) into the canal.

This alternative would be optimized with increased storage. The diversion allows additional higher quality water to be diverted at times when impacts on fish and other aquatic organisms are least, stored briefly in Clifton Court Forebay or other optional Delta island reservoirs, and then exported to export area reservoirs and service areas.

Physical and Structural Features

Construction and Improvement of Conveyance Facilities— The key elements of this approach involve the construction of a large capacity canal on the stable mineral soils around the eastern and south-eastern edges of the Delta. Good quality water would be diverted from the Sacramento River near Hood through a single, or multiple, screened intake structure(s) into the canal. The canal segments would be connected by a series of inverted siphons beneath creek and river channels (such as the Mokelumne River, Bear Creek, San Joaquin River, Old River, and Middle River). Stations would be located as necessary to generate the additional pump lift needed (cumulatively up to 3 feet) to optimize the canal gradient and deliver water at the optimal surface water elevation.

Increasing Storage Downstream— Existing and/or new downstream reservoir storage capacity is expanded, facilities and operations are modified to increase groundwater storage and conjunctive use, export diversion capacity is increased, and other supporting

measures are undertaken to increase storage by one million acre-feet, thereby maximizing the flexibility of diversion and export timing.

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 in coordination with efforts to improve flood protection. 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, Hastings Tract, Yolo Bypass, and the southeast Delta. Also restore shallow water shoreline habitat along margins of the lower Sacramento and San Joaquin channels, and tributary sloughs including Georgianna 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 (such as Decker Island).

Sacramento River Habitat Restoration— Restore habitat and geomorphic processes along the Sacramento River upstream of the Delta to increase survival and spawning success of anadromous fish, and to provide other benefits. Construct segments of meander belt where feasible (such as Red Bluff to Colusa) and restore segments of riparian habitat in more controlled stretches of the river (Colusa to Knights Landing.)

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.

Fish Screens— Install fish screens on diversions over 100 cfs that are on fish migration routes in the Delta, rivers, and tributaries.

Bay Habitat Restoration— Restore about 5,000 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.

Operational and Management Features

Reduce Effects of Diversions— Reduce effects on Bay-Delta aquatic habitat quantity and quality by relocating and reducing in-Delta and export diversions, altering their timing, and improving or constructing fish screens. The major benefit is achieved by relocating the export diversions to Sacramento River from their current South-Delta sites, which presently induce converging channel flows and flow reversals (periodically of relatively poor quality water containing both ocean- and land-derived salts) directly toward the pumps. Water quality from the Sacramento River is much better due to the larger quantities of diluting inflows and reduced impacts of land uses. Also, diversion timing and duration constraints are much reduced at the Sacramento River location. Modify Delta and export diversions and increase export capacities to reciprocally improve capabilities to reduce diversions at other times when higher instream flows are needed to meet water quality (and biological requirements).

Increase In-Stream Flows Through Transfer and Conjunctive Use— Water transfers and conjunctive use programs would be specifically designed to improve local Delta tributary flows. The exchanged water would result in increased instream flows which would then improve overall Delta water quality for environmental benefits during critical summer months. For other Delta tributary users such as EBMUD, as an exchange for their flows, water could be provided through a connection to the east-side conveyance facility.

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.

Timing of Agricultural Drainage Releases— Utilize existing upstream evaporation ponds for the temporary storage of agricultural drainage and make discharges to the rivers only during floods or other periods of adequately-high instream diluting flows. Apply similar timing measures as applicable to reducing water quality impacts resulting from other types of discharges.

Flood Protection Level— This action provides a maximum level of protection to Delta system levees 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. 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 maximum credible earthquake (MCE) standard would be provided to critical western Delta islands (such as Sherman and Jersey islands), and with important regional infrastructure (e.g. the Mokelumne Aqueduct, transmission lines, Highway 160, etc.). A level of flood protection equivalent to the US Army Corps of Engineers' Public Law (PL)- 99 standard would be provided to: 1) islands having infrastructure of local importance (such as New Hope Tract, Bouldin Island, Palm Tract, Lower and Upper Jones Tracts, and Lower Roberts Island); and 2) islands having valuable habitat, but not necessarily infrastructure, (including, but not necessarily limited to Canal Ranch, Brack Tract, Staten Island, Venice Island, Rindge Tract, Big Mandeville Island, and Bradford Island).

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 100 and 200 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.

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. Carry out continuing management programs for nuisance species such as water hyacinth.

Institutional and Policy Features

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. 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.

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 lands 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.

Reduce Water Demand on Delta to Increase In-Stream Flows— Use a variety of actions involving increased agricultural, municipal, and industrial conservation and reclamation; acquisition of supplemental water; and expanded use of desalination with the intent of reallocating the conserved supplies for use as in-stream dilution flows and to reduce salinity levels. Conservation strategies would include encouraging land fallowing and water pricing measures. The conserved supplies would then be available to provide water quality protection through dilution and habitat improvements such as improved

temperature and pulse flows during critical migration periods.

Sacramento River Habitat Restoration Feasibility Study— Provide for USCE matching funds to conduct a feasibility study for habitat restoration on the Sacramento River from Sacramento to Collinsville. Make restoration non-homogenous and allow for recreation sites.

Preliminary Assessment

Benefits

Ecosystem Quality— The major benefit is achieved by relocating the export diversion from the current south Delta location to the Sacramento River, reducing diversion effects on fish. Habitat restoration at high levels also improves ecosystem quality.

Water Supply— Supply reliability is greatly improved with this alternative because the threat of interruption due to salinity intrusion as a result of Delta levee failures is diminished. Water supply predictability would be increased due to reduced threatened and endangered species constraints on exports. Increased storage and reclamation will augment water supplies and improved integrated resources management (especially backup local storage and conjunctive use) will make alternate supplies available when needed.

Water Quality— Quantities of contaminants entering the aquatic system are reduced. Export water quality is improved by access to, higher quality Sacramento River water. Transfers between delta water users provides increased in-stream flows to improve Delta water quality.

System Reliability— The probability of a prolonged shutdown of the water projects and local diversions will be greatly reduced. Implementation of subsidence reduction measure will allow remaining agricultural, recreational, and associated land uses to continue. Levee maintenance actions will provide additional protection against flood- and seismically-induced levee failures.

Constraints and Concerns

Fisheries and Wildlife— Possible entrainment effects at the new diversion. Decreased flows within natural channels below the new diversion.

Site Specific Impacts— Environmental/socio-economic impacts associated with construction of new facilities.

Feasibility— Environmental, social, equity impacts of raising or building additional reservoirs, and other facilities. Enforcement of pollutant source control regulations may be difficult to implement without adequate funding.

Water Quality— Potential water quality degradation in the south Delta.