

Alternative 1

Reduce Export with New Supplies

Alternative 1

Reduce Delta Diversions with New Supplies

Emphasis

Reduce conflict between water supply and ecosystem by reducing Delta diversions, improving diversion methods, and improving habitat.

Distinguishing Features

Physical and Structural Features

A moderate number of physical environmental improvements in and above the Delta, including restoration of various types of habitat, new screens, and facility to prevent salmon from entering Old River. Levee improvement projects and south Delta barriers to support agriculture are key features.

Operational and Management Features

Intensive real time monitoring and management of exports. Shifts in diversions away from periods of high impacts towards lower impact periods and increase spring outflows and reduce spring exports. Modify Clifton Court Forebay operations to reduce entrainment.

Institutional and Policy Features

Major programs to reduce diversion levels, including urban and agricultural conservation, reclamation, conjunctive use programs, land retirement and fallowing, and extensive use of market mechanisms. Subsidence management program on Delta islands. No major institutional elements identified. However, real time management component has institutional applications.

Benefits

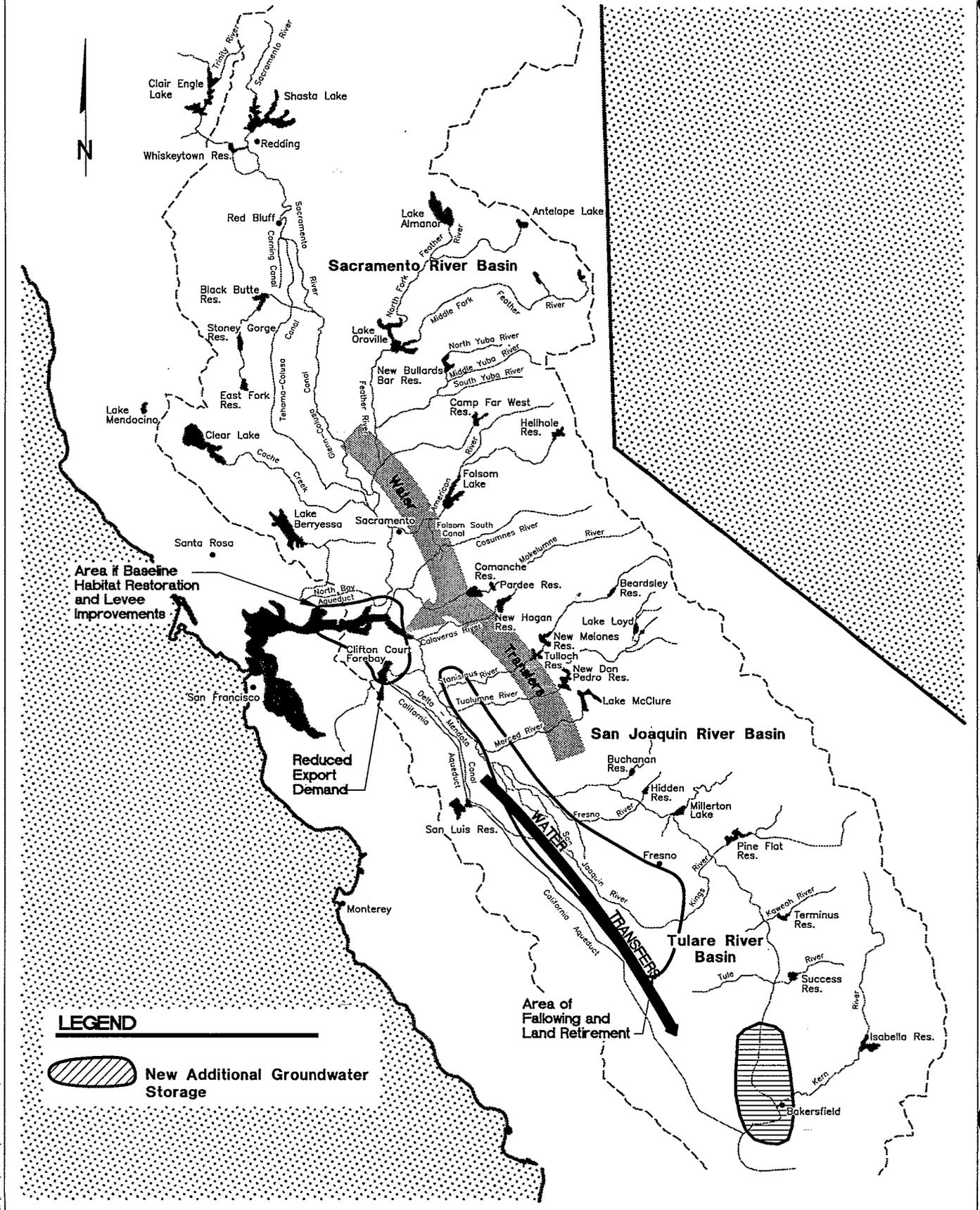
- Improves physical habitat and Delta outflows
- Slightly reduces fish mortality caused by operations
- Reduces mass loading of pollutants
- Improves timing of discharges
- Reduces long-term island subsidence
- Reduces export vulnerability to fish intake
- Slightly improves reliability of export supplies
- Minimally protects all Delta levees and physical configuration/land uses

Constraints and Concerns

- Mortality in south Delta export facilities remains significant
- Export water quality remains problematic
- Export supplies remain highly constrained
- Transfer opportunities highly constrained
- Delta water supplies remain vulnerable to interruption
- Delta islands remain vulnerable to flooding
- Large amounts of agricultural land retirement or fallowing possible
- May create significant third-party impacts

Reduce Exports with New Storage

Alternative 1



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Alternative 1

Reduce Exports with New Supplies

The essential theme of this alternative is resolution of both the water supply and ecosystem problems through reductions in Delta exports (while retaining the current intake locations). The theory is that if the overall volume of exports is reduced, then (1) the within-year timing of exports can be shifted away from the February -- June period, (2) spring outflows increased, and (3) the environment should respond positively.

Reductions in Delta export volume and timing can, in general, be accomplished through a combination of four basic approaches: (1) water reclamation (2) reduced demand (e.g., conservation, land retirement, land fallowing); (3) substitution of non-Delta supplies (recycled water, a new Colorado River aqueduct); and (4) south of Delta storage (to allow for greater flexibility in export timing). This particular alternative relies upon choices made from the first two of these categories. Export shifts could also be generated in other ways without substantially changing the character of this alternative.

Physical and Structural Features

Flow Barriers— Install flow barriers in the South Delta to support existing in-Delta diversions. Because a south Delta pumping location is retained in this alternative, south Delta barriers are needed to protect south Delta agriculture.

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 actions to improve flood protection levels. 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 for species such as Delta smelt.

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. The elevation of Decker Island would require extensive removal of dredge materials. Also restore shallow water shoreline habitat along margins of the lower Sacramento and San Joaquin channels, and tributary sloughs including 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.

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.

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.

Flood Protection Level— This action provides a minimum 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.); and 2) islands with both valuable habitat and infrastructure (such as New Hope Tract, Bouldin Island, Sherman Island, Palm Tract, Lower and Upper Jones Tracts, and Lower Roberts Islands).

Channel Improvements and Levee Maintenance— A minimal 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 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 for anadromous species. Evaluate use of acoustic barriers at the Delta Cross Channel and 3-Mile Slough.

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 operations. 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 of hatchery fish by commercial and recreation fisheries to maintain/increase natural (wild) populations.

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

Impact analysis may produce reform

X2 standard will be met - impact analysis - more X2 benefit - analysis - recommend - may change regulatory standards - Internal Working Draft for Discussion Purposes Only

Mine Drainage Remediation— Remediate discharges from abandoned mines in tributaries of the upper Sacramento River downstream of Shasta Dam to the maximum extent reasonably possible.

Management of Water Quality— Implement actions such as source control regulations for agricultural drainage, retiring lands with drainage problems, and other cost-effective management of urban, agricultural, and industrial discharges and runoff to improve Delta water quality.

Ask Mike? change

Institutional and Policy Features

Will not change regulations - may change compliance

Operational Factor— Environmental standards (such as X2 and ESA regulations) will be changed to reduce exports and to increase Delta outflow during the February - June period.

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 is important for sandhill cranes.

Where are my comments

CALFED Regulatory Team— Determine how to implement a regulatory team to facilitate getting 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 out of the Delta above Chipps Island should go into Delta restoration and/or levee maintenance projects.

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

Water Transfers— Increase the efficient utilization of existing water supplies by facilitating water marketing. Water transfers are not independent of agricultural conservation, land retirement, and land fallowing. Rather, market incentives will lead to agricultural conservation, land retirement, land fallowing, and the conversion of lands for habitat restoration.

Conservation— Improve implementation of urban Best Management Practices. Tighten BMPs to require inclining block rate pricing (designed to reduce landscape water use). Implement agricultural Efficient Water Management Practices (EWMPs). EWMPs including: measurement of deliveries; pricing and incentives designed to optimize management (efficiency of use, conjunctive use), grower access to water markets. Higher rates of conservation allow for retention of the benefits of water use while lowering the demand for water from the Delta.

Reclamation— Maximum reclamation and reuse of urban and agricultural supplies. For example, implement the Bay Area--Central Valley recycling/exchange project and a Southern California--Imperial Valley recycling/exchange project (Alternatively, move to largescale potable reuse). Maximize agricultural drainage reclamation. Substituting recycled water for Delta water lowers the demand for water from the Delta.

Land Retirement and Fallowing— Maximize retirement of marginal agricultural lands and lands of willing sellers. Emphasize purchase of land which contributes to regional drainage and discharge problems. The retirement of land south of the Delta reduces the demand for water from the Delta. Maximize potential for temporary land fallowing (such as rotational fallowing). Land retirement north of the Delta may reduce inflows from agricultural return flows. In-Delta land retirement can reduce diversion effects and assist with actions to control subsidence. These lands create opportunities for habitat restoration efforts.

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 25 and 50 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.

Other Programs— Implement recommended habitat restoration actions from other programs, such as 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.

Preliminary Assessment

Benefits

Ecosystem Quality— This alternative would improve ecosystem quality primarily through moderate reductions in the entrainment caused by the export pumps, moderate increases in spring outflow, and moderate improvements in physical habitat.

Water Supply— This alternative improves export water supply reliability by reducing reliance on the Delta as a source of water supply. This is achieved by reducing export vulnerability to fish take limits, and by improving the reliability of export supplies.

Water Quality— Water quality is improved through flow barrier installation, mine drainage remediation, source discharge controls, and land retirement and fallowing.

System Reliability— Improvement of the levees around the Delta islands reduces risks of subsidence to those islands as well as reducing risk of Delta functions such as in-Delta and water supplies from salinity intrusion due to island failure.

Constraints and Concerns

Extent of Fallowing— If export demand reductions are generated through land fallowing or retirement, a large acreage might be required requiring mitigation for third party impacts.

Environmental Benefits— The alternative only reduces the impacts of the export pumps on fish, it does not eliminate it.

Export Urban Water Quality— There may be only minor improvements in the quality of water in this alternative.

Levee Stability Reliability— A significant chance of major levee failures remains, therefore export supplies, Delta habitat, and Delta farming remain at some risk.

Export Supplies— Export supplies remain vulnerable to interruption, highly constrained, with limited opportunities for water transfers.

Reclamation— Salt levels of agricultural supplies could be elevated by recycling drainage water.