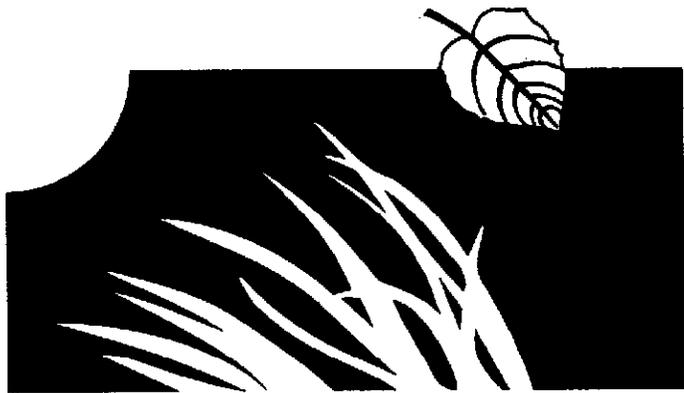




CALFED
BAY-DELTA
PROGRAM

Executive Summary

Draft Programmatic EIS/EIR Technical Appendix
June 1999



Executive Summary



CALFED
BAY-DELTA
PROGRAM

Draft Programmatic Environmental Impact Statement/
Environmental Impact Report

June 1999

Are you interested in more information?

You can contact the CALFED Bay-Delta Program toll-free at (800)-900-3587 or (916)-653-5820, or visit us at our website: <http://calfed.ca.gov>

Comments on the Draft Programmatic EIS/EIR may be submitted in writing on or before September 23, 1999 to:

CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, California 95814
Attention: Rick Breitenbach

Executive Summary

For decades, the Bay-Delta has been the focus of competing economic, ecological, urban, and agricultural interests. The CALFED Bay-Delta Program is a cooperative interagency effort to develop a long-term solution to fish and wildlife, water supply reliability, flood control, and water quality problems in the Bay-Delta.

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Executive Summary

INTRODUCTION

The San Francisco Bay/San Joaquin Delta Estuary (Bay-Delta) is the largest estuary on the West Coast. It consists of a maze of tributaries, sloughs, and islands and is a haven for plants and wildlife—supporting more than 750 plant and animal species. The Bay-Delta includes over 738,000 acres in five counties and is critical to California's economy, supplying drinking water for two-thirds of all Californians and irrigation water for over 7 million acres of the most highly productive agricultural land in the world. Although all agree on its importance for both habitat and as a reliable source of water, few have agreed on how to manage and protect this valuable resource.

For decades, the Bay-Delta has been the focus of competing economic, ecological, urban, and agricultural interests. These conflicting demands have resulted in declining wildlife habitat, native plant and animal species becoming threatened with extinction, the degradation of the Delta as a reliable source of high quality water, and a Delta levee system faced with a high risk of failure.

Even though environmental, urban, and agricultural interests have recognized the Delta as a critical resource, they have been unable to agree on appropriate management of the Delta resources.

Seeking solutions to the resource problems in the Bay-Delta, state and federal agencies signed a Framework Agreement in June of 1994 that provided increased coordination and communication for environmental protection and water supply dependability. The impetus to forge this joint effort came at the state level in December 1992 with formation of the Water Policy Council. In September 1993, the Federal Ecosystem Directorate was created to coordinate federal resource protection and management decisions for the Bay-Delta system. The Framework Agreement laid the foundation for the Bay-Delta Accord and the CALFED Bay-Delta Program (Program). The Bay-Delta Accord detailed interim measures for both environmental protection and regulatory stability in the Bay-Delta.

The Bay-Delta includes over 738,000 acres in five counties and is critical to California's economy, supplying drinking water for two-thirds of all Californians and irrigation water for over 7 million acres of the most highly productive agricultural land in the world.

Even though environmental, urban, and agricultural interests have recognized the Delta as a critical resource, they have been unable to agree on appropriate management of the Delta resources.



The Program oversees the coordination and increased communication between federal agencies, state agencies, and stakeholders in three areas outlined in the Framework Agreement:

- Substantive and procedural aspects of water quality standard setting.
- Improved coordination of water supply operations with endangered species protection and water quality standard compliance.
- Development of a long-term solution to fish and wildlife, water supply reliability, flood control, and water quality problems in the Bay-Delta.

The Program oversees the coordination and increased communication between federal agencies, state agencies, and stakeholders in three areas outlined in the Framework Agreement.

The Program is charged with responsibility for the third issue identified in the Framework Agreement. This Draft Programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR) evaluates this long term program.

THE CALFED PROGRAM

The Program is a cooperative, interagency effort involving 15 state and federal agencies with management and regulatory responsibilities in the Bay-Delta.

Bay-Delta stakeholders also contribute to the Program design and to the problem-solving/decision-making process. Public participation and input have been essential throughout the process, received through the Bay-Delta Advisory Council (BDAC), public participation in workshops, scoping meetings, comment letters, and other public outreach efforts.

BDAC is chartered under the Federal Advisory Committee Act and is comprised of stakeholders in organizations from throughout California. This group of public advisors helps to define problems in the Bay-Delta, helps to assure broad

Role of CALFED Agencies in Preparation of Programmatic EIS/EIR

Lead Agencies—State and federal agencies who have the principal responsibility for carrying out or approving the project:

- Resources Agency of California
- U.S. Fish and Wildlife Service
- U.S. Bureau of Reclamation
- U.S. National Marine Fisheries Service
- U.S. Environmental Protection Agency
- U.S. Natural Resource Conservation Service
- U.S. Army Corps of Engineers

Responsible Agencies—State agencies, other than the lead agencies, with a legal responsibility for carrying out or approving the project:

- California Environmental Protection Agency
- California Department of Fish and Game*
- California Department of Water Resources
- California State Water Resources Control Board

Cooperating Agencies—Federal agencies, other than the lead agencies, with jurisdiction by law or special expertise with respect to any environmental impact:

- U.S. Forest Service
- U.S. Geological Survey
- U.S. Western Area Power Administration
- U.S. Bureau of Land Management

Other agencies, such as the California Department of Food and Agriculture, regularly participate.

* The California Department of Fish and Game is also a trustee agency with jurisdiction over natural resources held in trust for the people of California.



public participation, comments on environmental analysis and reports, and offers advice on proposed solutions.

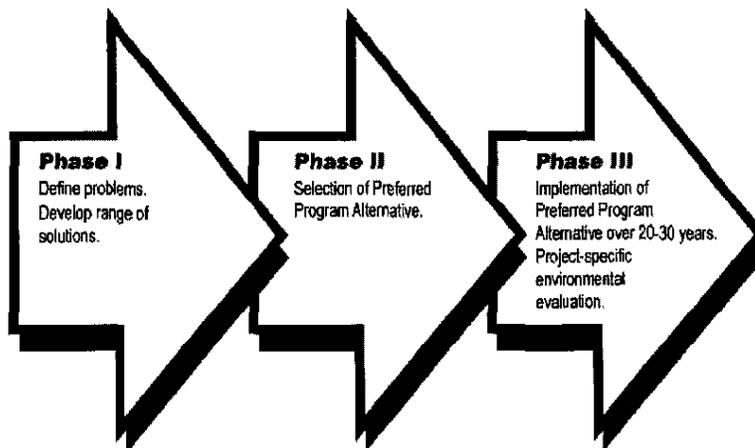
PROGRAM PURPOSE

The purpose of the Program is to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. To practicably achieve this Program purpose, CALFED will concurrently address problems of the Bay-Delta system within four critical resource categories: ecosystem quality, water quality, water supply reliability, and levee system integrity. *Important physical, ecological, and socioeconomic linkages exist between the problems and possible solutions in each of these categories. Accordingly, a solution to problems in one resource category cannot be pursued without addressing problems in the other resource categories. In achieving its purpose, the Program will address goals related to ecosystem quality, water supply reliability, water quality, and levee system integrity.*

The purpose of the Program is to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system.

THE CALFED PROGRAM WAS DIVIDED INTO THREE PHASES

In Phase I, completed in September 1996, the Program identified the problems confronting the Bay-Delta, and developed a Mission Statement and Guiding Principles (next page). Following scoping, public comment, and agency review, the Program identified three preliminary alternatives to be further analyzed in Phase II.



In Phase II, the Program refined the preliminary alternatives, conducted a comprehensive programmatic environmental review, and released a Draft Programmatic EIS/EIR in March 1998. As part of this effort, the Program added greater detail to each of the Program elements and crafted frameworks for two new Program elements: Water Transfers and Watersheds.

Because a Preferred Program Alternative was identified since the March 1998 Draft Programmatic EIS/EIR, the Program decided to rewrite the Draft Programmatic EIS/EIR. The primary difference between the two documents is analysis associated with the Preferred Program Alternative, although CALFED also took the opportunity to update its analysis of consequences for all alternatives and to restructure the document into a more reader-friendly format. Comments received about the previous draft document were catalogued and incorporated into the revised program plans, and are identified or addressed, as appropriate, in the impact analyses. A Multi-Species Conservation Strategy and Implementation Plan have also been completed. Phase II is expected to conclude in 2000 with a Record of Decision and Certification (ROD/CERT).

During Phase III, the Preferred Program Alternative will be implemented in stages over many years. This phase will include any necessary studies and site-specific environmental review and permitting. Because of the size and complexity of the Program alternatives, implementation is likely to take place over a period of 20-30 years.

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During Phase III, the Preferred Program Alternative will be implemented in stages over many years.

CALFED Bay-Delta Program Mission Statement

The mission statement does not stand alone as a single statement of Program purpose. Rather, the mission statement is supported by sets of primary objectives and solution principles. The mission statement is important and reflects the basic intent of the Program. However, the full expression of the Program mission is reflected in the mission statement, objectives, and solution principles, read together.

Mission Statement

The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system.

Primary Objectives of the CALFED Program

- *Ecosystem Quality* - Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.
- *Water Supply* - Reduce the mismatch between Bay-Delta water supplies and the current and projected beneficial uses dependent on the Bay-Delta system.
- *Water Quality* - Provide good water quality for all beneficial uses.
- *Vulnerability of Delta Functions* - Reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees.

(continued)



CALFED Bay-Delta Program Mission Statement

(continued)

Solution Principles

The solution principles were developed as a means to achieve the Program's objectives in the context of a multi-purpose mission and a history of (competing) contentious environmental, political, and institutional influences on the affected resources. The solution principles provide an overall measure of the acceptability of alternatives and guide the design of the institutional part of each alternative. The solution principles are:

- **Reduce conflicts in the system.** Solutions will reduce major conflicts among beneficial uses of water.
 - **Be equitable.** Solutions will focus on solving problems in all problem areas. Improvement for some problems will not be made without corresponding improvements for other problems.
 - **Be affordable.** Solutions will be implementable and maintainable within the foreseeable resources of the Program and stakeholders.
 - **Be durable.** Solutions will have political and economic staying power and will sustain the resources they were designed to protect and enhance.
 - **Be implementable.** Solutions will have broad public acceptance and legal feasibility, and will be timely and relatively simple to implement compared with other alternatives.
 - **Pose no significant redirected impacts.** Solutions will not solve problems in the Bay-Delta system by redirecting significant negative impacts, when viewed in their entirety, within the Bay-Delta or to other regions of California.
-

GEOGRAPHIC SCOPE OF PROGRAM STUDY AREA

The geographic scope of analysis and actions for the Program evolved through both technical and public forum discussions. The geographic scope focuses on the Bay-Delta system for purposes of problem definition, while allowing solution generation from a much broader area.

CALFED PROBLEM AND SOLUTION AREAS

The Program is addressing problems that are identified in or closely linked to the Suisun Bay/Suisun Marsh and Delta area. However, the scope of possible solutions to these problems encompass any action that can be implemented by the CALFED agencies, or can be influenced by them, to address the identified problems—regardless of whether implementation takes place in the Delta, Suisun Bay, or Suisun Marsh area.

Any problem currently associated with (1) the management and control of water, or (2) the beneficial use of water in the Bay-Delta (including both environmental and

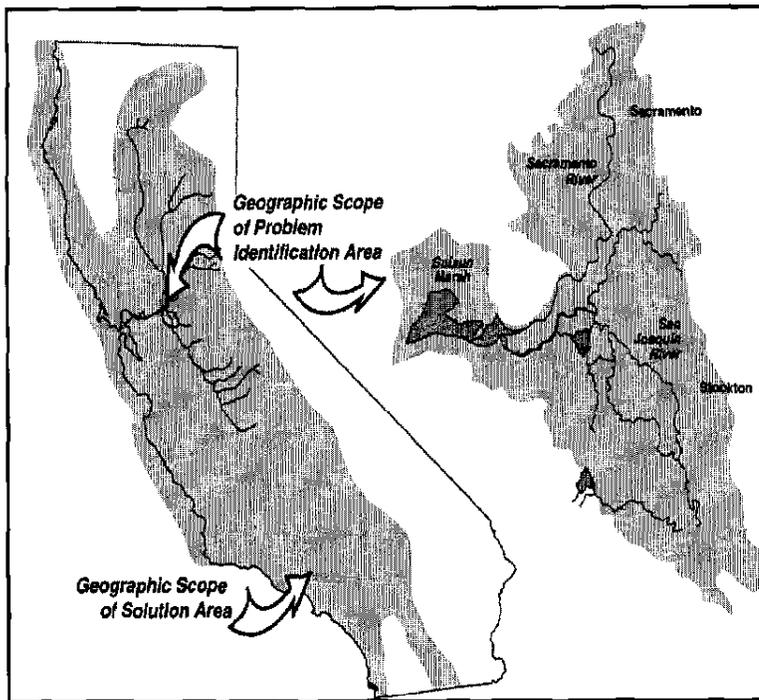
The scope of possible solutions to Bay-Delta problems encompass any action that can be implemented by the CALFED agencies, or can be influenced by them, to address the identified problems—regardless of whether implementation takes place in the Delta, Suisun Bay, or Suisun Marsh area.



economic uses) is within the purview of the Program if at least part of the problem is identified in the Bay-Delta or is directly associated with conditions in the Bay-Delta.

In contrast to the problem scope, the solution scope is quite broad—potentially including any action that could help solve identified problems in the Bay-Delta. An expanded solution scope is necessary because many problems related to the Bay-Delta are caused by factors outside the Bay-Delta. Moreover, an expanded solution scope is desirable from a planning point of view because more benefits may be generated at lower cost if solutions are not limited to the geographic Bay-Delta.

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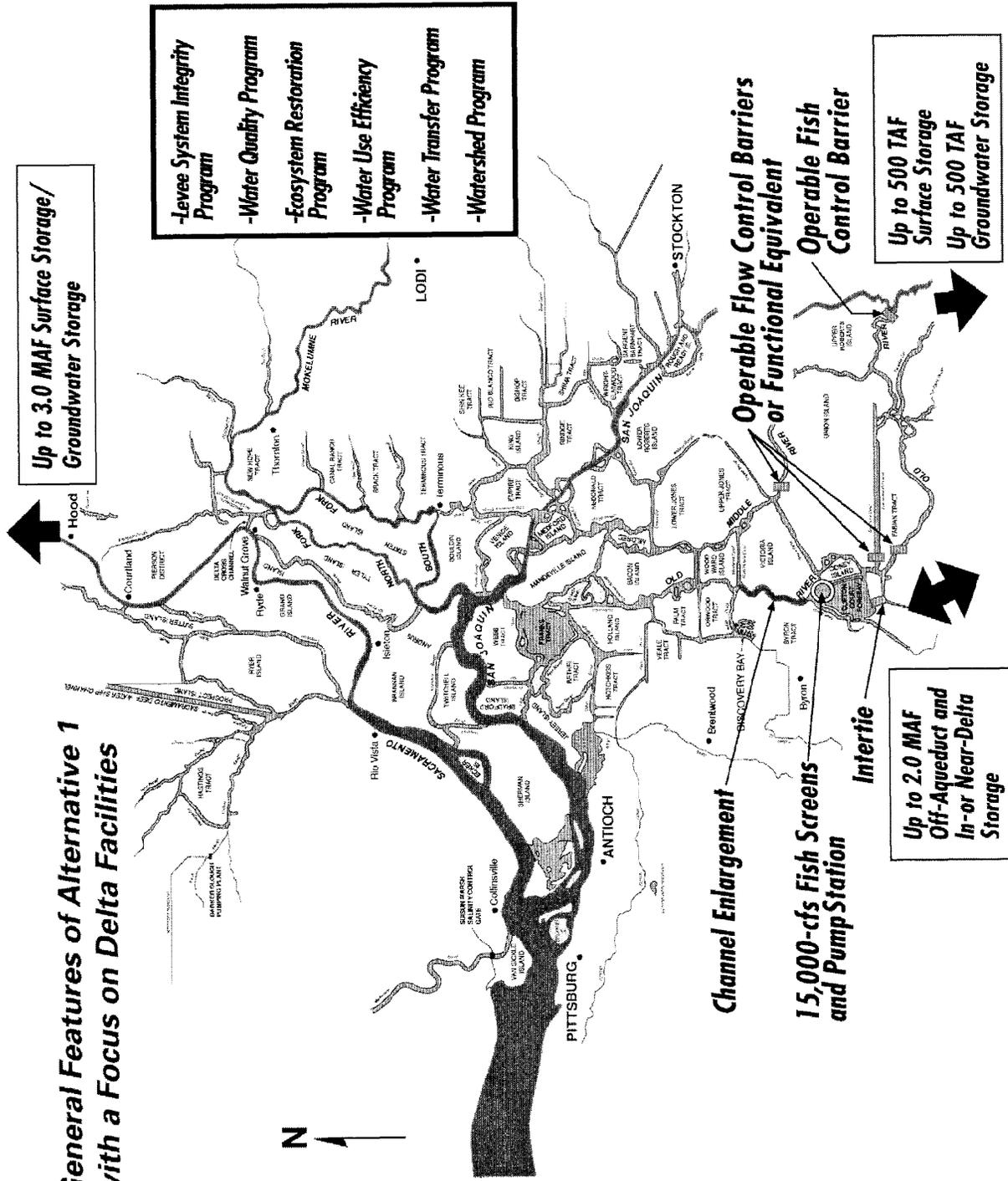
PROGRAM ALTERNATIVES

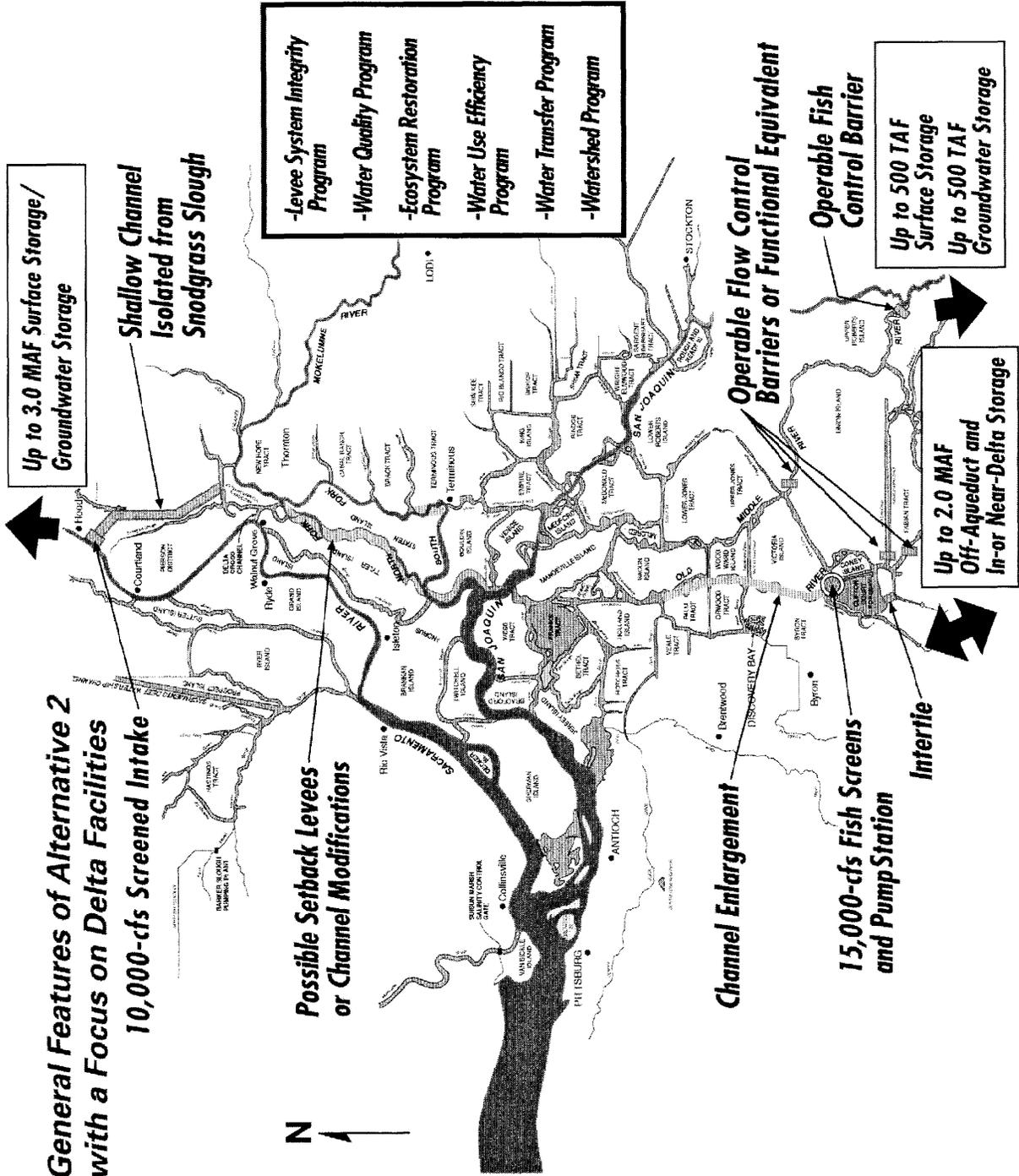
Each of the alternatives include the Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use Efficiency, Water Transfer, Watershed, Storage, and Conveyance elements. Each alternative includes an assessment with storage up to 6 million acre feet [MAF] and without storage. The descriptions of each of the Program elements, except for Conveyance, do not vary among the alternatives. The descriptions of the alternatives are programmatic in nature, defining broad approaches to meet Program purposes. The alternatives are not intended to define the site-specific actions that ultimately will be implemented. The figures on pages 7 through 10 show the general features of the Program alternatives with a focus on Delta facilities.

The alternatives are not intended to define the site-specific actions that ultimately will be implemented.



General Features of Alternative 1 with a Focus on Delta Facilities





**General Features of Alternative 2
with a Focus on Delta Facilities
10,000-cfs Screened Intake**

**Possible Setback Levees
or Channel Modifications**

- Levee System Integrity Program
- Water Quality Program
- Ecosystem Restoration Program
- Water Use Efficiency Program
- Water Transfer Program
- Watershed Program

Channel Enlargement

**15,000-cfs Fish Screens
and Pump Station**

Interfere

**Operable Flow Control
Barriers or Functional Equivalent**

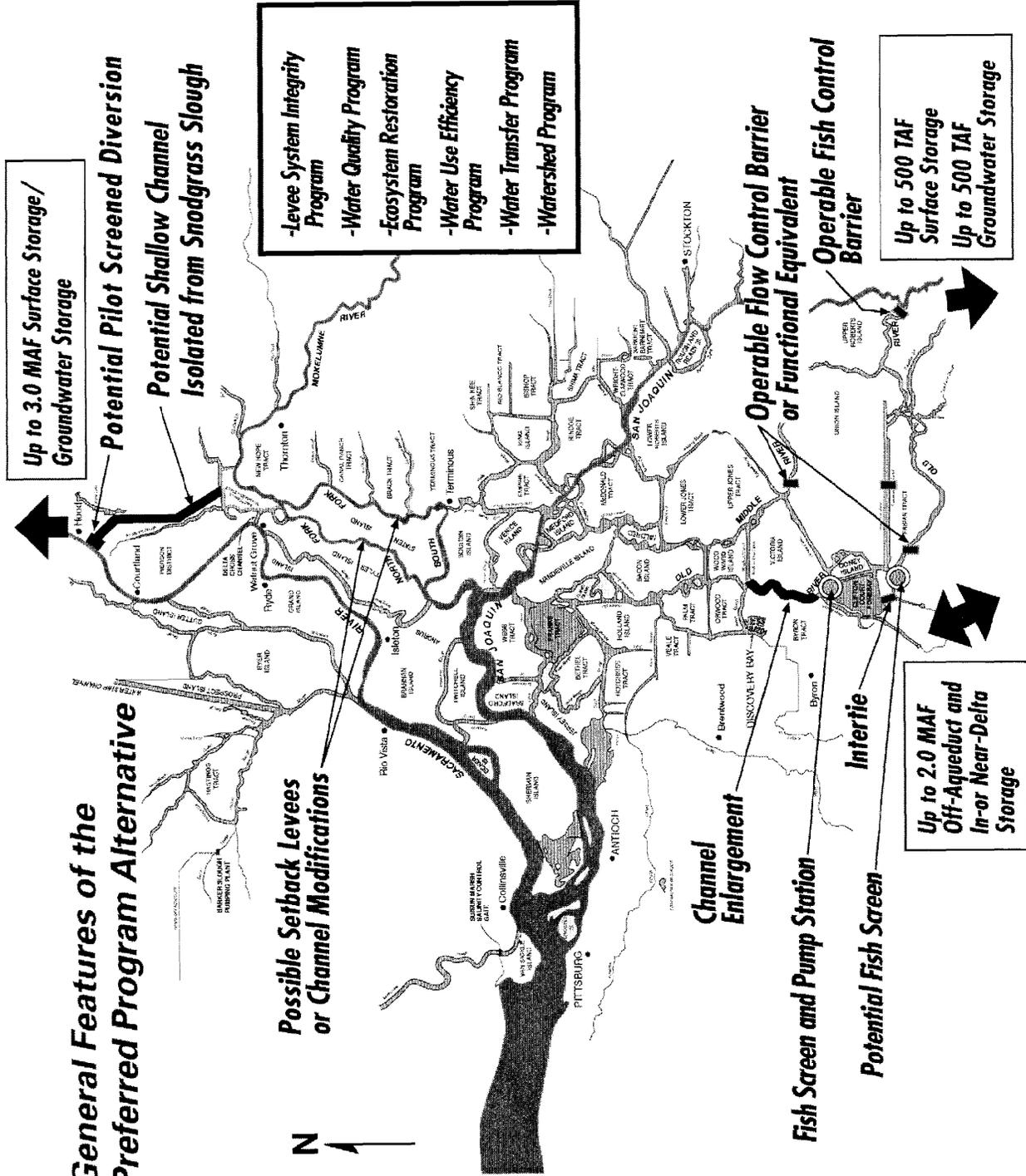
**Operable Fish
Control Barrier**

**Up to 500 TAF
Surface Storage
Up to 500 TAF
Groundwater Storage**

**Up to 2.0 MAF
Off-Aqueduct and
In-or Near-Delta Storage**



General Features of the Preferred Program Alternative



OVERVIEW OF THE EIGHT PROGRAM ELEMENTS

The eight Program elements provide the foundation for overall improvement in the Bay-Delta system. Implementation of these Program elements will result in a significant investment in and improvement of the resource conflicts in the system. For more detailed information on each of these elements, please see the Revised Phase II Report as well as specific program appendices.

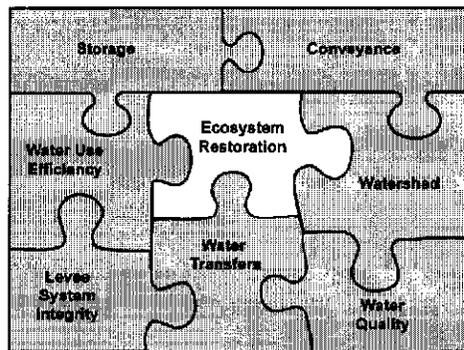
Ecosystem Restoration Program

The goal of the Ecosystem Restoration Program is to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta system to support sustainable populations of diverse and valuable plant and animal species. In addition, the Ecosystem Restoration Program, along with the water management strategy, is designed to achieve or contribute to the recovery of listed species found in the Bay-Delta and, thus, achieve goals in the Multi-Species Conservation Strategy.

Improvements in ecosystem health will reduce the conflict between environmental water use and other beneficial uses, and allow more flexibility in water management decisions.

The Ecosystem Restoration Program identifies programmatic actions designed to restore, rehabilitate, or maintain important ecological processes, habitats, and species within 14 ecological management zones. Implementation of these programmatic actions will be guided by six goals presented in the Strategic Plan for Ecosystem Restoration. Nearly 100 restoration objectives have been developed which are directly linked to one of the six goals. Each objective further defines the restoration approach for each ecological process, habitat, species, or ecosystem stressor. One to several restoration targets have been developed for each objective to set more specific or quantified restoration levels.

Long-term implementation of the Ecosystem Restoration Program will be guided by the adaptive management approach described in the Strategic Plan for Ecosystem Restoration. This approach to restoration will require review by an Ecosystem Restoration Science Review Panel and will rely on information developed in the Comprehensive Monitoring, Assessment, and Research Program.



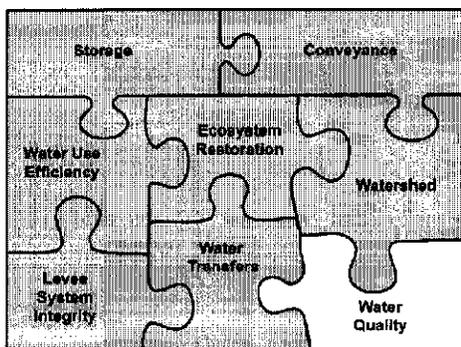
The goal of the Ecosystem Restoration Program is to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta system to support sustainable populations of diverse and valuable plant and animal species.

Long-term implementation of the Ecosystem Restoration Program will be guided by the adaptive management approach described in the Strategic Plan for Ecosystem Restoration.



Water Quality Program

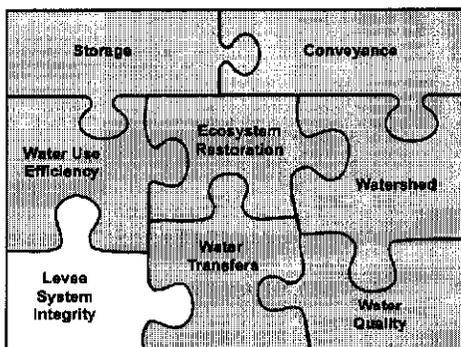
The Program is committed to achieving continuous improvement in the quality of the waters of the Bay-Delta system—with the goals of minimizing ecological, drinking water, and other water quality problems and of maintaining this quality once achieved. Improvements in water quality will result in improved ecosystem health, with indirect improvements in water supply reliability. Improvements in water quality also increase the utility of water, making it suitable for more uses.



The Program is committed to achieving continuous improvement in the quality of the waters of the Bay-Delta system.

Levee System Integrity Program

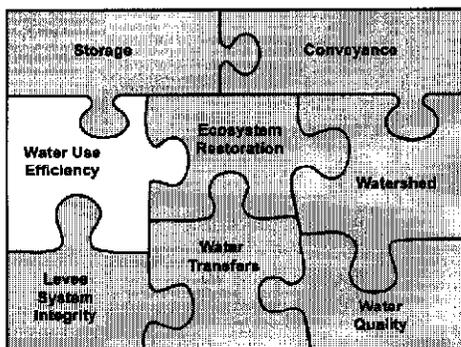
The Levee System Integrity Program focuses on improving levee stability to benefit all users of Delta water and land. Actions described in this program element protect water supply reliability by maintaining levee and channel integrity. Levee actions will be designed to provide simultaneous improvement in habitat quality, which would indirectly improve water supply reliability. Levee actions also would protect water quality, particularly during low-flow conditions when a catastrophic levee breach would draw salty water into the Delta.



The Levee System Integrity Program focuses on improving levee stability to benefit all users of Delta water and land.

Water Use Efficiency Program

The Water Use Efficiency Program includes actions to assure efficient use of existing and any new water supplies developed by the Program. Efficiency actions can alter the pattern of water diversions and reduce the magnitude of diversions, providing ecosystem benefits. Efficiency actions also can result in reduced discharge of effluent or drainage, improving water quality.



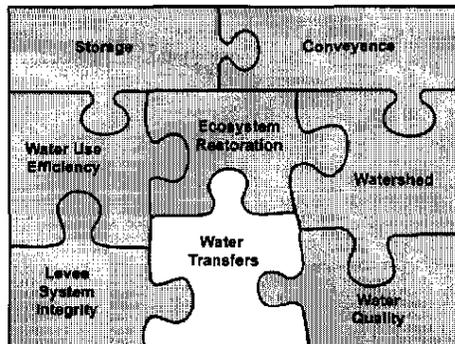
The Water Use Efficiency Program includes actions to assure efficient use of existing and any new water supplies developed by the Program.



The Water Use Efficiency Program will build on the work of the existing Agricultural Water Management Council and California Urban Water Conservation Council Process, supporting and supplementing those processes through planning and technical assistance and through targets financial incentives (both loans and grants). The Water Use Efficiency Program has identified potential recovery of currently irrecoverable water losses of over 1.4 million acre-feet of water annually by 2020 as a result of CALFED actions. Before execution of the ROD, CALFED will identify measurable goals and objectives for its urban and agricultural water conservation program, water reclamation programs, and managed wetlands programs.

Water Transfer Program

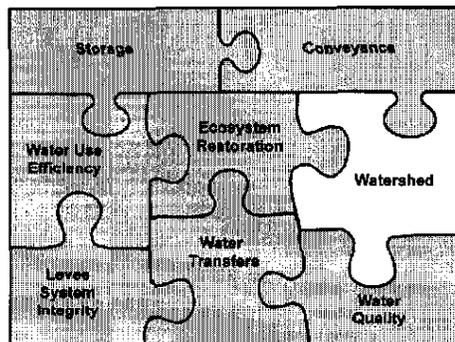
The Water Transfer Program proposes a framework of actions, policies, and processes that, collectively, will facilitate water transfers and the further development of a state-wide water transfer market. The framework also includes mechanisms to provide protection from third-party impacts. A transfers market can improve water availability for all users, including the environment. Transfers also can help to match water demand with water sources of the appropriate quality, thus increasing the utility of water supplies.



The Water Transfer Program proposes a framework of actions, policies, and processes that, collectively, will facilitate water transfers and the further development of a state-wide water transfer market.

Watershed Program

The Watershed Program provides financial and technical assistance to local watershed programs that benefit the Bay-Delta system. Watershed actions can improve reliability by shifting the timing of flows, increasing base flows, and reducing peak flows. These actions also help to maintain levee integrity during high-flow periods. Other watershed actions will improve water quality by reducing the discharge of parameters of concern.



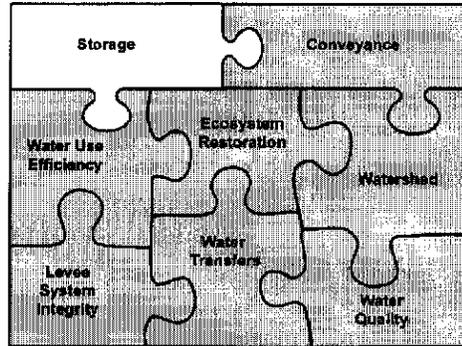
The Watershed Program provides financial and technical assistance to local watershed programs that benefit the Bay-Delta system.



Storage

Groundwater and/or surface water storage can be used to improve water supply reliability, provide water for the environment at times when it is needed most, provide flows timed to maintain water quality, and protect levees through coordinated operation with existing flood control reservoirs.

Decisions to construct groundwater or surface water storage will be predicated on complying with all Program linkages.



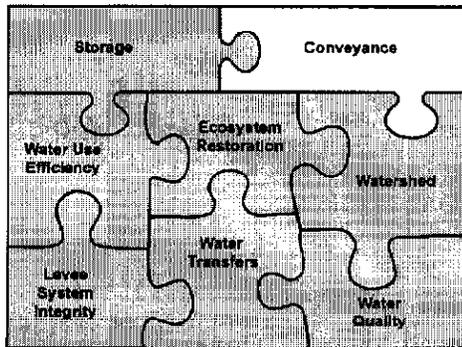
Groundwater and/or surface water storage can be used to improve water supply reliability, provide water for the environment at times when it is needed most, provide flows timed to maintain water quality, and protect levees through coordinated operation with existing flood control reservoirs.

Conveyance

Modifications in conveyance would result in improved water supply reliability, protection of and improvement in Delta water quality, improvements in ecosystem health, and reduced risk of supply disruption due to catastrophic breaching of Delta levees.

The four alternate conveyance approaches are:

- Alternative 1 - existing system conveyance
- Alternative 2 - modified through-Delta conveyance
- Alternative 3 - dual-Delta conveyance
- Preferred Program Alternative - through-Delta conveyance



Modifications in conveyance would result in improved water supply reliability, protection of and improvement in Delta water quality, improvements in ecosystem health, and reduced risk of supply disruption due to catastrophic breaching of Delta levees.

PREFERRED PROGRAM ALTERNATIVE

The Preferred Program Alternative consists of a set of broadly described programmatic actions that set the long-term, overall direction of the Program. Implementation of these actions would fulfill the Program mission to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. Implementation of the Preferred Program Alternative also would achieve the Program's objectives for ecosystem quality, water quality, levee and channel system integrity, and water supply reliability.

Implementation of the Preferred Program Alternative also would achieve the Program's objectives for ecosystem quality, water quality, levee and channel system integrity, and water supply reliability.



OVERVIEW OF THE PREFERRED PROGRAM ALTERNATIVE

The problems and potential solutions facing the Bay-Delta involve a complex set of interrelated biological, chemical, and physical systems. This complexity, coupled with the broad scope and number of actions needed to implement the Program, the 20- to 30-year implementation period, the need to test hypotheses, and resource limitations make it necessary to implement the Program in stages. Consequently, the Preferred Program Alternative provides for implementation of the Program in a staged manner and establishes mechanisms to obtain the necessary additional information to guide the next stage of decision making.

The Preferred Program Alternative consists of a through-Delta conveyance approach, coupled with ecosystem restoration, water quality improvements, levee system improvements, increased water use efficiency, improved water transfer opportunities, watershed restoration, and a Water Management Strategy that includes an integrated storage program. The Preferred Program Alternative meets the Program's multiple purposes, reduces adverse environmental effects, and provides a system of research and monitoring to determine whether modifications or additional actions are needed. It provides multiple benefits, including:

- Modifying the timing and magnitude of flow to restore ecological processes and to improve conditions for fish, wildlife, and plants in the Bay-Delta system.
- Improving and increasing aquatic and terrestrial habitats.
- Modifying and eliminating fish passage barriers.
- Constructing fish screens that use the best available technology.
- Reducing the loads and impacts of bromide, total organic carbon, pathogens, nutrients, salinity, and turbidity.
- Reducing the impacts of pesticides.
- Reducing the impacts of trace metals, mercury, and selenium.
- Improving and maintaining the stability of the Delta and Suisun Marsh levee system.
- Enhancing flood protection for key Delta islands.
- Expanding and implementing agricultural and urban conservation incentive programs.

The Preferred Program Alternative meets the Program's multiple purposes, reduces adverse environmental effects, and provides a system of research and monitoring to determine whether modifications or additional actions are needed.



- Implementing better water management for managed wetlands.
- Facilitating water transfers while protecting from third parties from potentially significant adverse impacts.
- Supporting local watershed restoration, maintenance, and conservation activities.
- Developing appropriate groundwater and surface storage in conjunction with specified water conservation, recycling, and water transfer programs to provide water for the environment at times when it is needed most, and to improve water supply reliability.
- Modifying existing Delta conveyance systems for improved water supply reliability and water quality, improved ecosystem health, and reduced risk of supply disruption due to catastrophic breaching of Delta levees.

There is concern whether a through-Delta conveyance approach can meet future water quality objectives and not adversely affect the recovery of threatened and endangered fish species. Although some scientific and engineering evidence suggests that a dual-Delta conveyance configuration may improve export water quality and achieve fish recovery more effectively, other evidence indicates that such a conveyance configuration can cause in-Delta water quality problems. In addition, during scoping and public meetings, some stakeholders and agencies voiced concern that moving water around the Delta instead of through it may:

- Cause difficulty in ensuring the appropriate operation of such a facility.
- Create impacts from construction.
- Increase the amount of land needed for the facility.
- Provide an engineered solution when non-structural modifications and reoperation of existing facilities may provide similar benefits.

Although the CALFED agencies did not rule out the possibility of constructing an isolated conveyance facility in the future, they were mindful that, even if approved immediately following the ROD/CERT, such a facility could not be studied, approved, funded, and constructed within the first stage (7 years) of implementation.

In light of the technical and feasibility issues discussed above, the CALFED agencies propose to begin with through-Delta modifications. As part of the Preferred Program Alternative, the Program also would:

- Investigate storage opportunities in the context of the broader Water Management Strategy.

There is concern whether a through-Delta conveyance approach can meet future water quality objectives and not adversely affect the recovery of threatened and endangered fish species.



- Implement the first stage of the Ecosystem Restoration, Water Quality, and Levee System Integrity Program Plans.
- Monitor the results of these actions to determine whether an isolated conveyance facility as part of a dual-Delta conveyance configuration is necessary to meet the Program objectives.

As described above, the Preferred Program Alternative adopts a set of programmatic actions designed to achieve the objectives for each of the resource areas while evaluating the effectiveness of those actions, and assessing whether modifications may be needed to meet Program goals and objectives. The Preferred Program Alternative accordingly constitutes the “Environmentally Preferable Alternative” as that term is used in NEPA, and the “Environmentally Superior Alternative” as that term is used in CEQA.

SUMMARY OF CONSEQUENCES OF PREFERRED PROGRAM ALTERNATIVE

The Program alternatives were analyzed to determine the potential for adverse and beneficial consequences. The most significant potential consequences of the Preferred Program Alternative are related to the resource areas listed below. For detailed information about impacts on all environmental resource areas, please refer to Chapters 5, 6, and 7 in the impact analysis document. Chapter 3 in the impact analysis document provides a summary comparison of the consequences for all resources and Program alternatives.

The most significant potential consequences of the Preferred Program Alternative are related to the resource areas listed below.

RESOURCE	BENEFICIAL CONSEQUENCES	POTENTIALLY ADVERSE CONSEQUENCES
WATER SUPPLY AND WATER MANAGEMENT	Through coordinated implementation of Program elements, facilities reoperation and integration; and, if appropriate, additional groundwater and/or surface water storage.	Temporary local water supply interruptions due to turbidity of water during construction of facilities and habitat restoration activities.
WATER QUALITY	Improved water quality for environmental and urban or agricultural uses from reduced concentrations of many contaminants, including heavy metals, pesticide residues, salts, selenium, pathogens, suspended sediments, total organic carbon, and bromides.	Increases in concentrations of bromide, salinity, total dissolved solids, and total organic carbon in the Delta; increased diversions of water from the Delta, reducing outflow to the Bay and changing Bay salinity; releases of inorganic or organic suspended solids, or toxic substances into the water column in the Delta; increased water temperatures and decreased dissolved oxygen concentrations in the Delta; potential decreased in-stream water quality from reduced in-stream flows associated with new storage facilities.



RESOURCE	BENEFICIAL CONSEQUENCES	POTENTIALLY ADVERSE CONSEQUENCES
GROUNDWATER	In areas undertaking managed ground-water use programs, long-term increased groundwater levels, reduced pumping-induced subsidence, improved groundwater recharge, locally reduced potential for salt-water intrusion or pumping-induced migration of existing contaminants, and reduced groundwater extraction and reduced long-term lift costs.	Increased groundwater extractions, resulting in land subsidence, lower groundwater levels, and higher pumping costs; degradation of groundwater quality; or losses of existing wells.
FISHERIES AND AQUATIC ECOSYSTEMS	Reactivating and maintaining ecological processes and structures that sustain healthy fish, wildlife, and plant populations; increased abundance and distribution of desired aquatic species; improved streamflow, sediment supply, floodplain connectivity, stream temperature, and biological productivity; and reduced entrainment losses.	Increased non-native species abundance and distribution; blocked access to habitat and potentially altered water quality and flow conditions from placement of barriers in the south Delta; altered natural ecosystem structure, removal of benthic communities, and creation of conditions that may damage habitat for desired species from dredging activities; short-term disturbance of existing biological communities and species habitat, mobilized sediments, and input contaminants from construction activities; reduced streamflow and Delta outflow, changed seasonal flow, water temperature variability, and changes in salinity potentially resulting in reduced habitat abundance, impaired species movement, and increased loss of fish to diversions; increased entrainment loss of chinook salmon and other species from diversions to new off-stream storage; reduced frequency and magnitude of net natural flow conditions in the south and central Delta from Delta Cross Channel operations and south Delta barriers; with a Hood area diversion facility, impacts on individual organisms of special status-species from reduced net flow conditions in the Sacramento River down-stream of Hood, increased mortality through abrasion, increased predation, and other factors from a new fish screen facility for the through-Delta element on the Sacramento River, and delayed migration and reduced spawning success for adult fish.
VEGETATION AND WILDLIFE	Net increases in target habitat types, increased protection for natural habitats, reduced toxic organic and inorganic constituents in the food web; increased quality and quantity of wetland and riparian habitats; increased habitat diversity; improved vigor of target populations (including special-status species); and long-term flood protection for existing and restored wetland, riparian, upland, and agricultural habitats.	Fragmentation of existing habitat corridors on small or ephemeral tributaries as a result of inundation by storage reservoirs, potentially blocking the movement and interchange of populations of some wildlife species from upper to lower watershed locations; loss of habitat and direct impacts on special-status species; loss of incidental wetlands and riparian habitats that depend on agricultural water use inefficiencies; temporary or permanent loss or disturbance of wetland or riparian communities, wintering waterfowl habitat, portions of rare natural communities and significant natural areas, and quantity or quality of forage for species of concern.



RESOURCE	BENEFICIAL CONSEQUENCES	POTENTIALLY ADVERSE CONSEQUENCES
AGRICULTURAL LAND AND WATER USE	Increased certainty in availability of irrigation water, potential for higher value crops and higher grazing productivity because of better water quality, increased property protection and reduction of salt-water intrusion, updated aging and inefficient irrigation systems, and opportunities for water transfers that could make irrigation water available where it may not have been otherwise.	Conversion of prime, state-wide important, and unique farmland; conflicts with adjacent land uses; and conflicts with local government plans and policies.
AGRICULTURAL ECONOMICS	Protection, long-term savings, increased revenues, and certainty to the agricultural economy.	Reduction in agricultural incomes in local areas.
AGRICULTURAL SOCIAL ISSUES	Some localized increases in agricultural-related employment, protection of agricultural jobs and income from catastrophic loss due to levee failure, and reduced future social dislocations due to water reliability.	Localized social effects related to reduced agricultural incomes.
URBAN LAND USE	Greater flood protection for urban centers.	Displacement of existing urban residences, physical disruption or division of established communities, and potential conflicts with local general plans.
URBAN WATER SUPPLY ECONOMICS	Lower treatment and regulatory costs, improved water quality, relocated water supply intakes, reduced risk of export interruptions caused by levee failure, and increased water supply availability.	Additional costs through payment for Program elements. Many economic effects cannot be determined until more specific information is available.
UTILITIES AND PUBLIC SERVICES	Reduced risk to electrical or natural gas transmission lines, utility facilities, communication infrastructure, and emergency service centers due to levee failure.	Relocation or modification of major infrastructure components; increased risk of gas line rupture during construction.
RECREATION RESOURCES	Increased open space; enhanced or restored wetland or wildlife habitat; improved water quality; increased fishing, hunting, and wildlife viewing opportunities; more recreation-related jobs; increased quality of recreational experience; increased flood protection for camping facilities and boat launches; and increased or improved access to public recreation areas.	Temporary or permanent closure of some recreation areas or facilities; reduced access to recreation facilities; decreased recreation opportunities from changes in reservoir levels; loss of terrestrial and on-stream recreation by inundation from reservoirs; temporary and permanent changes to motorized boating in the Delta from speed limits, channel closures, and installation of flow and fish control barriers; decrease in flooded lands suitable for wildlife viewing, hunting, and fishing; reduced water-contact recreation quality from releases of reservoir cold water.



RESOURCE	BENEFICIAL CONSEQUENCES	POTENTIALLY ADVERSE CONSEQUENCES
FLOOD CONTROL	Easier inspection, maintenance, and repair of the flood control system; improved flood flow conveyance capacities; and reduced incidences of instability and overtopping failures; levees improved to the Public Law 84-99 standards and restored floodplains would provide additional system-wide flood control benefits.	Reduced levee stability and reductions in a channel's flow conveyance from barriers in the channel; increases in seepage, wind fetch, and wave erosion on landside levee slopes; level of flooding downstream of diversions after removal of Sacramento River tributary diversion structures and other flow obstructions; flood stages along streams; localized subsidence, resulting in levee slumping or cracking near levees; and adverse effects on water quality from use of dredged materials.
POWER PRODUCTION AND ENERGY	Some increase in hydropower generation if new storage is constructed.	Decrease in amount of energy available for non-project uses; possible air quality and land use impacts from new power plants to replace lost power.
REGIONAL ECONOMICS	Increases in recreation-related or construction-based economies; increased land values due to flood protection; reduced cost to some water supplies due to increased storage; and some increases in regional revenues and jobs associated with the Storage element.	Adverse effects to agricultural sector in the Delta. Amount and allocation of costs are currently uncertain.

NEXT STEPS

Between the Draft Programmatic EIS/EIR and the Final Programmatic EIS/EIR—in late 1999, work will continue on refining and evaluating the Preferred Program Alternative. This effort will include additional technical evaluations. The Program will work with elected officials, local agencies, interest groups, and the public over the coming months to respond to comments on this draft to finalize the Preferred Program Alternative. A series of public hearings to receive comments will be held around the state in August and September 1999. In addition, written comments on the Draft Programmatic EIS/EIR are invited.

The Final Programmatic EIS/EIR is expected to be adopted sometime in summer 2000.

Work will continue on refining and evaluating the Preferred Program Alternative.



CALFED BAY-DELTA PROGRAM

Public Hearing Schedule

CALFED will hold 15 public hearings to gain input on the Draft Programmatic Environmental Impact Statement/Environmental Impact Report. At present, only the date and city locations are known. When the actual site location and times are known, a notice will be published in local newspapers making individuals aware of the public hearings. Below is a list of the planned dates and cities:

- August 18, 1999, in Stockton
- August 19, 1999, in San Bernardino
- August 24, 1999, in Los Angeles/Pasadena
- August 25, 1999, in Salinas
- August 26, 1999, in Oakland
- August 31, 1999, in Los Angeles/Pasadena
- September 1, 1999, in Redding
- September 2, 1999, in Antioch
- September 7, 1999, in San Jose
- September 8, 1999, in Costa Mesa
- September 9, 1999, in Santa Rosa
- September 14, 1999, in Visalia
- September 15, 1999, in Chico
- September 21, 1999, in San Diego
- September 22, 1999, in Sacramento

For more information regarding the public hearings you can:

Call (916)-657-2666

FAX (916)-654-9780

Website: <http://calfed.ca.gov>

In addition, written comments of the Draft Programmatic EIS/EIR can be sent to the CALFED Bay-Delta Program, c/o Rick Breitenbach at the following address:

CALFED Bay-Delta Program
1416 Ninth Street, Suite 115
Sacramento, California 95814

The **Draft Programmatic Environmental Impact Statement/Environmental Impact Report (Programmatic EIS/EIR)** for the CALFED Bay-Delta Program is available for review and comment. The Draft Programmatic EIS/EIR is a **new, stand-alone** document. If you have previously provided comments on the Draft EIS/EIR released in March 1998, please review the current document and **provide new comments**.

This report and supporting appendices are available in the following three formats:

1. **CALFED Bay-Delta Program Website:** <http://calfed.ca.gov> - The Draft Programmatic EIS/EIR is posted on the CALFED website. The website also offers a wide range of other documents released by CALFED since August 1996. Sections or pages of all these documents can be copied and pasted into any word processing application or e-mail, which makes reviewing and sharing the documents easier and faster.
2. **CD-ROM** - The CD-ROM is easy to use and indexed for easy navigation. The software required to view the documents is free and included with instructions on the CD. The search capability is one of the CD's most desirable features. If you enter a word such as "watershed", the "search" function will take you to every place "watershed" appears in the document. Portions or the complete document can be copied or printed from the CD.
3. **Printed Documents** - The Programmatic EIS/EIR and appendices are printed in 14 individual volumes totaling approximately 4,650 pages.

If you wish to receive a copy of one or more of these documents in printed version or a CD version containing all of the documents, please fill out the self-addressed order form below and return to the CALFED Bay-Delta Program.

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| (301) | <input type="checkbox"/> EIS/EIR Main Document (Impact Analysis) -1,200 pp. |
| (302) | <input type="checkbox"/> Executive Summary - 30 pp. |
| (303) | <input type="checkbox"/> Implementation Plan - 150 pp. |
| (304) | <input type="checkbox"/> Ecosystem Restoration Program Plan - 1,230 pp. |
| (305) | <input type="checkbox"/> Levee System Integrity Program Plan - 500 pp. |
| (306) | <input type="checkbox"/> Water Quality Program Plan - 300 pp. |
| (307) | <input type="checkbox"/> Water Use Efficiency Program Plan - 190 pp. |
| (308) | <input type="checkbox"/> Water Transfer Program Plan - 100 pp. |
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| (310) | <input type="checkbox"/> Multi-Species Conservation Strategy - 500 pp. |
| (311) | <input type="checkbox"/> Comprehensive Monitoring Assessment and Review Program Report - 150 pp. |
| (312) | <input type="checkbox"/> Revised Phase II Report, June 1999 - 200 pp. |
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Alternatives Matrix

Programs	Storage			Conveyance							North Delta	Isolated Facilities			
	South Delta	North Delta	Isolated Facilities	South Delta	North Delta	Isolated Facilities	South Delta	North Delta	Isolated Facilities						
Preferred Alternative	X	X	X	0-3	0-1	0-2	X	X	X	X	X	X	potentially up to 4M	X	
Alt 1	X	X	X	0-3	0-1	0-2	X	X	X	X	X	X			
Alt 2	X	X	X	0-3	0-1	0-2	X	X	X	X	X	X	10,000	X	
Alt 3	X	X	X	0-3	0-1	0-2	X	X	X	X	X	X	5,000-15,000	X	5,000-15,000

surface storage in near Delta & off-reef (in MAF)
 surface & groundwater in San Joaquin Valley (in MAF)
 surface & groundwater storage in Sac Valley (in MAF)
 Watershed Coordination
 Water Transfers
 Levee System Integrity
 Ecosystem Restoration
 Water Use Efficiency
 Water Quality
 new CCF screened intake structure
 operate Old R. barrier (or equivalent)
 flow & stage control measures in-station (or equivalent)
 channel enlargement along Old R.
 screened intake (in cfs) at Hood
 North Delta Channel Modifications
 open channel from Hood to CCF (in cfs)