

CALFED
BAY-DELTA
PROGRAM

Implementation Plan

Final Programmatic EIS/EIR Technical Appendix
July 2000

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1.0 IMPLEMENTATION PLAN OVERVIEW

1.1 Introduction

The CALFED Bay-Delta Program is an unprecedented effort to build a framework for managing California's most precious natural resource: water.

Phase II of the CALFED Program will culminate with the Federal Record of Decision (ROD) and the State Certification of the Final Programmatic Environmental Impact Statement/ Environmental Impact Report (EIS/EIR). At that time, Phase III of the CALFED Bay-Delta Program will begin: Implementation of the Preferred Program Alternative. Phase III is expected to extend 30 years or more. Stage 1, which is expected to comprise the first seven years of Phase III, sets forth the direction and builds the foundation for long-term actions. This Implementation Plan satisfies the requirement for the Final Programmatic EIS/EIR to include a schedule for funding and implementing all elements of the long-term CALFED Program (California Water Code section 78684.2). Funding proposals are most specific for the first four years of Stage 1. Following completion of the appropriate environmental documentation and final decisions to proceed, the cost estimates and associated cost-sharing projections will be subject to review by the state and federal executive branches, Congress, and the State Legislature.

CALFED's strategic approach for implementation includes staged implementation and staged decision making. The selection of a Preferred Program Alternative provides the broad resource framework and strategy for implementing a comprehensive Bay-Delta Program. The programmatic decision sets in motion the implementation of some actions, as well as additional planning and investigation to refine other actions. Throughout the implementation period, monitoring will provide information about conditions in the Bay-Delta and results of our actions.

CALFED has decided to implement the Program through stages. The Preferred Program Alternative is composed of hundreds of individual actions that will be implemented and refined over time. The challenge in implementing the Program in stages is to allow actions that are ready to be taken immediately to go forward, while assuring that everyone has a stake in the successful completion of each stage. Linkages and assurance mechanisms will facilitate successful implementation. When site-specific proposals are developed which involve potentially significant additional environmental impacts, those proposals will be subject to subsequent site-specific environmental review, tiering off the Programmatic EIS/EIS. These site-specific impacts will be evaluated and alternatives considered, as part of the individual project review. Some projects will also require permits from individual agencies, such as a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (Corps) or a water rights decisions from the State Water Resources Control Board (SWRCB). Final decisions on

individual projects will be based on this full suite of analysis and public comments on the projects.

Potential linkage and assurance mechanisms include contracts, legislation (including bond measures, authorizing and appropriations legislation, and other actions), interagency agreements, agency directives, and stakeholder driven decision processes such as the Ecosystem Restoration Program project selection process. The various potential mechanisms will not all be in place at the beginning of Phase III. It is anticipated that they will be negotiated and implemented based on ongoing coordination among CALFED agencies, stakeholders, the State Legislature, and Congress.

Another important part of CALFED's implementation strategy is adaptive management. There is a need to constantly monitor the Bay-Delta system and adapt the actions that are taken to restore ecological health and improve water management. These adaptations will be necessary as conditions change and as more is learned about the system and how it responds. The Program's objectives will remain fixed over time, but the actions may be adjusted to assure that the solution is durable. In essence, adaptive management calls for designing and monitoring actions such that they improve the understanding of the system while at the same time improving the system itself. Adaptive management is an essential part of implementing every CALFED Program element.

Additionally, CALFED is committed to periodic public review of program implementation. CALFED Policy Group participants will be involved in all significant operational decisions with policy implications, and involvement at higher levels will be sought as needed to resolve outstanding concerns. Public review will also be addressed by formation of a Federal Advisory Committee Act chartered public advisory group and associated work groups. Further, public review will also be a necessary step in the project specific environmental documentation.

1.2 Strategies for Addressing Cross-Cutting Implementation Issues: Addressing Technical, Regulatory, and Policy Concerns

The CALFED Program includes several efforts to develop broadly supported strategies for dealing with complex implementation issues which affect many facets of the Program. These include:

- 1. Regulatory Compliance Strategy:** Virtually every action contemplated in the Program to improve some aspect of the Bay-Delta system requires regulatory approval of some sort. Depending on the action, the permit approval process can range from perfunctory to extremely difficult. Therefore, addressing permit compliance as an integral part of the implementation process is essential to assuring its success. It includes interagency coordination, strategic planning, and focused research to assure that regulatory

compliance is an integral part of program implementation, not an afterthought.

- **Multi-Species Conservation Strategy (MSCS):** The CALFED Multi-species Conservation Strategy (MSCS) is a comprehensive regulatory plan for the CALFED Program developed in accordance with the federal Endangered Species Act (ESA), the California ESA (CESA), and the Natural Community Conservation Planning Act (NCCPA). The MSCS establishes the programmatic State and federal regulatory requirements for numerous species and habitat types within the CALFED Program study area, which includes the Delta Region, the Bay Region (including the outer Bay or near-shore area), the Sacramento River Region, the San Joaquin Region, and other State Water Project and Central Valley Project (SWP/CVP) service areas. By implementing and adhering to the MSCS, the CALFED Program can be implemented in compliance with the ESA, CESA, and NCCPA.
 - **Clean Water Act, Section 404 Compliance:** The Corps issues Section 404 permits. Before the Corps can issue a Section 404 permit for a project, it must determine, among other things, whether a proposed project complies with regulations issued by U. S. Environmental Protection Agency (USEPA) pursuant to Section 404(b)(1) of the Clean Water Act (Section 404(b)(1) Guidelines). The Corps cannot determine whether to issue a Section 404 permit for a particular project until a project-specific administrative record is developed to permit a determination as to whether the project complies with the Section 404(b)(1) Guidelines as well as other relevant regulatory requirements. Because project-specific evaluations for the CALFED Program will only be completed after the ROD for this Programmatic EIS/EIR, no site-specific Section 404 permits will be issued for Program projects at the time of the ROD. However, Corps, USEPA and Program staff are developing a Memorandum of Understanding (MOU) to facilitate timely consideration of Section 404 permits for Program projects.
 - **Permit Clearinghouse:** CALFED is developing a comprehensive list of permit requirements for all proposed program components in early Stage 1, and has convened discussions between the appropriate state and federal regulatory agencies to establish a "permit clearinghouse" to coordinate and expedite permitting across all CALFED programs. The CALFED permit clearinghouse will be established to assure state and federal environmental compliance and associated environmental permitting is completed in an efficient and timely manner. The permit clearinghouse will not circumvent permitting processes or give preferential treatment to CALFED agency projects, but will ensure fairness to both CALFED agency projects and projects sponsored by other entities.
2. **Science Program:** The CALFED Science Program will help assure that decisions in all elements of the Program are guided by independent scientific review and advice.

Performance measures and indicators for each program element be used to will track progress. In order to better integrate objective scientific review into the CALFED Program an Independent Science Board will be appointed to provide oversight and review. Additionally, CALFED will hire an interim science leader and subsequently a Chief Scientist to guide the Science Program. While much of the need for science review is often focused on ecosystem restoration efforts, the CALFED Science Program will cover all of the program components. CALFED implementation is based on adaptive management because there is incomplete knowledge of how the ecosystem functions and the effects of individual project actions on populations and processes. Monitoring key system functions (or indicators), completing focused research to obtain better understanding, and staging implementation based on information gained are all central to the adaptive management process.

3. **Water Management Strategy (WMS):** The WMS will serve to coordinate and integrate the activities of several key CALFED program elements in order to help secure sufficient, reliable water supplies to support environmental, urban, and agricultural beneficial uses. The WMS will be periodically updated throughout program implementation to incorporate the knowledge gained via the science program and modifications in program actions.
4. **Complementary Actions:** The Preferred Program Alternative is broad, ambitious, and long-term, but by itself it does not fully describe the resource management activities of the CALFED agencies. Each of the State and Federal CALFED agencies has responsibilities and authorities that are outside of, but complementary to, the CALFED Program. No description of comprehensive resource management activities in California is complete without mention of the complementary actions being planned and carried out by State and Federal agencies. Complementary actions, such as the Corps Sacramento-San Joaquin River Basins Comprehensive Study, are being undertaken by one or more of the CALFED agencies and are being coordinated to address flood plain management issues with other water management and ecosystem restoration actions. Many of these actions will yield statewide benefits. In describing a program as large as CALFED, it is easy to lose sight of the human perspective of how the program will affect individuals, their neighbors, and the region that they live in. This Implementation Plan focuses on a program-by program perspective on the various CALFED program elements. However, the various program actions have been developed to assure that they provide appropriate regional and programmatic balance.
5. **Local Implementation:** The success of the CALFED Bay-Delta Program depends, to a great extent, on the willingness of the public, government, and science to collaborate in achieving the overarching ecosystem quality, water quality, water supply reliability, and levee stability goals of the Program. CALFED also recognizes that actions supported by the program must be not only technically and scientifically appropriate, but also socially and politically in concert with local needs and desires. In order to meet these varied

needs, and to increase the potential to achieve the Program's overarching goals, CALFED will facilitate the development of a set of locally appropriate, community-based implementation strategies. These strategies will be developed by local communities on a watershed basis, with assistance from CALFED staff, State and Federal agencies, scientists, and other stakeholders. These local implementation strategies will help refine and specify the appropriate set of objectives, targets, or benefits to be pursued through community-based action; the locally appropriate set of actions to be carried out to address these objectives, targets, or benefits; and the local people or entities responsible for implementation of these actions.

1.3 Governance

The challenge of retaining Program direction and coherence while implementing actions on many fronts, with multiple agencies and stakeholder groups, will be met in part by appropriately structuring Program governance. As currently envisioned, most Program actions will be implemented by existing entities with overall implementation and funding priorities directed by a new joint federal-state commission. The governance plan is discussed in detail in Section 4.

1.4 Finance

Assuring adequate, long-term financing for the Program will be one of its greatest challenges. A wide range of funding sources and funding mechanisms will be employed to meet the diverse needs of the Program. These include state and federal appropriations, bond measures, user fees, and private investments. A fundamental principle for allocation of Program costs is that beneficiaries should pay the cost of benefits received. The difficulty in applying this principle lies in quantifying benefits of actions which are often difficult or impossible to measure directly. Therefore, policy judgments and negotiations will be integral features of Program financing. The financing plan is discussed in detail in Section 5.

1.5 Implementation Actions

The eight CALFED program elements include Ecosystem Restoration, Watershed Management, Levee System Integrity, Water Quality, Water Transfers, Water Use Efficiency, Storage, and Conveyance. If fully and successfully implemented, they are intended to achieve the broad, balanced objectives of the Program as developed in Phase I. Within the strategic framework summarized in the previous paragraphs, the Program elements would be implemented as a series of discrete, but inter-related actions. The cornerstone of CALFED's implementation strategy is to identify and set priorities for those actions in a fair, open process involving agency and stakeholder participants. Each of the eight Program elements includes broad and intensive

outreach and coordination with interested agencies and stakeholders, through technical advisory groups, public workshops, and other forums. During Program implementation this outreach, coordination, and decision making framework will need to be further refined to assure that actions selected for implementation are broadly supported and are likely to be the most cost effective at each stage of the Program.

The CALFED Program plans, included as separate appendices to the Programmatic EIS/EIR, constitute the broad vision for long-term implementation of the Program. Based on extensive coordination efforts to date, additional details have been proposed for Stage 1 of Program implementation, which is expected to comprise the first seven years. The proposed Stage 1 actions are listed in Section 2. The Stage 1 actions are subject to revision, including modification, deletion, or addition of individual actions, based upon information developed during program implementation; availability of resources, including funding and personnel; and logistical considerations.

Substantial additional effort has gone into describing those actions which are already underway or need to be initiated immediately after the ROD and Certification are completed. This additional effort is needed to support advance planning, including budgeting and agency staffing to allow these actions to proceed without delay after the ROD and Certification. These actions have been developed to assure that they provide appropriate regional and programmatic balance. Based on stakeholder and CALFED agency input, various linkages will be applied as needed to assure that balance is maintained as implementation proceeds. The Stage 1a actions are those which may be funded for implementation in the first two program years following completion of the ROD and Certification, and are summarized in Table 3.1.

1.6 Accountability

California taxpayers, stakeholders, and the federal government will invest billions of dollars in Phase III of the CALFED Program. Expenditure of those funds must be based upon accountability and measurable progress being made on all elements of the program. Program progress will be measured in an annual report issued by the CALFED governing body. The annual report will contain status reports on all actions taken to meet CALFED objectives in Stage 1, including goals, actions, schedules, and financing agreements. The CALFED governing body will conduct such annual reviews in consultation with state and federal CALFED representatives and other interested persons and agencies.

2.0 STAGE 1 ACTIONS

Stage 1 is defined as the seven year period commencing with the final decision on the Programmatic EIS/EIR. Agreement on Stage 1 actions is only one part of the decision for a Preferred Program Alternative, but it is important that these actions achieve balanced benefits and lay a solid foundation for successful implementation of the Program.

The following pages provide more detail on potential actions for Stage 1. To the extent that such actions require additional authorizing legislation, such authorization will be developed and pursued in cooperation with stakeholders. The Stage 1 actions are subject to revision, including modification, deletion, or addition of individual actions, based upon information developed during program implementation; available resources, including funding and personnel; and logistical considerations.

The outcome of and certain sites for Stage 1 decisions will not be known until additional information, including analysis of alternatives and need for mitigation, is available and until the options to carry out these Stage 1 proposals have undergone environmental review. Consequently, the outcome could be altered as a result of that second tier environmental review and mitigation measures imposed as a part of those actions. However, where the impacts from the actions in Stage 1 have been included in the Programmatic EIS/EIR, the subsequent environmental documents can tier off the Programmatic document for cumulative and long-range impacts of the programmatic decision.

Each potential action in the following Stage 1 list includes an estimate (in parentheses) of when the action may occur within Stage 1. For example, "(yr 1)" indicates the action is expected to occur in the first year following the final decision on the Programmatic EIS/EIR.

With extensive input from CALFED agencies and stakeholders, CALFED has begun work on developing a linked set of high priority Stage 1 actions that provide regional and programmatic balance, as described below. Linking the actions would help assure that they all move forward together. These may be linked within the same project EIS/EIR, tied by contractual documents, bond language, appropriation legislation, or other means.

The State and federal fish and wildlife agencies charged with making the programmatic determinations for the CALFED Program pursuant to federal ESA, CESA, and the NCCPA will be describing program performance measures or milestones for the Ecosystem Restoration Program (ERP) and MSCS. The milestones will be derived from the ERP targets and programmatic actions and MSCS conservation measures. These milestones will be an integral component of the federal biological opinions and NCCPA authorization.

2.1 Levees

The focus of the long-term levee protection element of the Program is to reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees. The Levees program includes the Delta and Suisun Marsh. The level of flood protection to be provided by Suisun Marsh levees will be defined during Stage 1. Levee protection is an ongoing effort which builds on the successes of ongoing programs and consists of:

- *Base-level funding to participating local agencies;*
- *Funding of special improvement projects for habitat and levee stabilization to augment the base-level funding based on statewide benefits;*
- *Implementation of subsidence control measures to improve levee integrity;*
- *Implementation of an emergency management and response plan to more effectively plan for and deal with potential levee disasters; and*
- *Development of a risk assessment and implementation of a risk management strategy.*

The first stage continues the decades-long process to improve reliability of Delta levees.

1. Initiate the Levee Program Coordination Group. Develop and implement an outreach, coordination, and partnering program with local landowners including individuals, cities, counties, reclamation districts, resource conservation districts, water authorities, irrigation districts, farm bureaus, other interest groups, and the general public to assure participation in planning, design, implementation, and management of levee projects (yr 1).
2. Obtain short-term federal and State funding authority as a bridge between the existing Delta Flood Protection Authority (AB 360) and long-term levee funding (yr 1-5).
3. Obtain long-term federal and state funding authority (yr 1-7).
4. Conduct project level environmental documentation and obtain appropriate permits for each action/group of actions (yr 1-7).
5. Implement demonstration projects for levee designs, construction techniques, sources of material, reuse of dredged material, and maintenance techniques that maximize ecosystem benefits while still protecting lands behind levees. Give priority to those levee projects which include both short (i.e., construction) and long-term (i.e., maintenance and design) ecosystem benefits, and which will provide increased information (yr 1-7).
6. Adaptively coordinate Delta levee improvements with ecosystem improvements by incorporating successful techniques for restoring, enhancing, or protecting ecosystem values developed by levee habitat demonstration projects or ecosystem restoration projects into levee projects. Continue to develop techniques as major levee projects are implemented (yr 1-7).

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7. Fund levee improvements up to PL84-99 in first stage; e.g., proportionally distribute available funds to entities making application for cost sharing of Delta levee improvements (yr 1-7).
 8. Further improve levees which have significant statewide benefits in Stage 1; e.g., statewide benefits to water quality, highways, etc.(yr 1-7).
 9. Coordinate Delta levee improvements with Stage 1 water conveyance, water quality improvements, and with potential conveyance improvements in subsequent stages (yr 1-7).
 10. Enhance existing emergency response plans; e.g., establish a revolving fund, refine command and control protocol, stockpile flood fighting supplies, establish standardized contracts for flood fighting and recovery operations, outline environmental considerations during emergencies (yr 1-7).
 11. Implement current Best Management Practices (BMPs) to correct subsidence effects on levees. Assist CALFED Science Program activities to quantify the effect and extent of inner-island subsidence and its linkages to all CALFED objectives (yr 1-7).
 12. Develop BMPs for the reuse of dredge materials (yr 1).
 13. Institute a program for using Bay and Delta dredge material to repair Delta levees and restore Delta habitat (yr 1-7).
 14. Complete total risk assessment for Delta levees and develop and begin implementation of risk management options as appropriate to mitigate potential consequences (yr 1-7).
 15. Complete the evaluation of the best method for addressing the Suisun Marsh levee system and begin implementation (yr 1-2).

2.2 Water Quality

The water quality program will consist of a wide variety of actions to provide good water quality for environmental, agricultural, drinking water, industrial, and recreational beneficial uses of water. Water quality actions are a combination of source protection and improvement measures, pilot facilities for treatment and control, operational measures using existing and new storage, research and studies, water exchanges, and conveyance improvements. The majority of the water quality actions rely on comprehensive monitoring, assessment, and research to improve understanding of effective water quality management and on the control of water quality problems at their sources. The Stage 1 water quality efforts focus on reducing constituents contributing toxicity to the ecosystem and affecting water users; reducing total organic carbon (TOC) loading, salinity, nutrients, and pathogens that degrade drinking water quality, and reducing oxygen depleting substances and sediment loads that degrade ecological water and habitat quality. CALFED is pursuing Stage 1 actions to protect public health through continuous improvements in drinking water quality. The Stage 1 actions also include studies and investigations that will contribute to an assessment and decision on the need for additional conveyance actions and/or other means of providing better quality source water.

General Water Quality Actions

1. Prepare project level environmental documentation and permitting as needed (yr 1-7).
2. Coordinate with other CALFED program elements to ensure that in-Delta modifications maximize potential for Delta water quality improvements (yr 1-7).
3. Continue to clarify use of and fine-tune water quality performance targets and goals (yr 1-7).

Environmental Water Quality

4. Conduct the following mercury evaluation and abatement work:
 - Cache Creek*
 - Support risk appraisal and advisory for human health impacts of mercury (yr 1-5).
 - Support development and implementation of total maximum daily loads (TMDL) for mercury (yr 1-7).
 - Determine bioaccumulation effects in creek and Delta (yr 1-4).
 - Source, transport, inventory, mapping, and speciation of mercury (yr 1-7).
 - Information Management/Public Outreach (yr 5-7).
 - Participate in Stage 1 remediation (drainage control) of mercury mines as appropriate (yr 1-5).
 - Investigate sources of high levels of bioavailable mercury (yr 4-7).
 - Sacramento River*
 - Investigate sources of high levels of bioavailable mercury, inventory, map, and refine other models (yr 1-5).
 - Participate in remedial activities (yr 3-5).
 - Delta*
 - Research methylization (part of bioaccumulation) process in Delta (yr 1-2).
 - Determine sediment mercury concentration in areas that would be dredged during levee maintenance or conveyance work (yr 1-7).
 - Determine potential impact of ecosystem restoration work on methyl mercury levels in lower and higher trophic level organisms (yr 1-5).
5. Conduct the following pesticide work:
 - Support development and implementation of a TMDL for diazinon (yr 1-7).
 - Support development of BMPs for dormant spray and household uses (yr 1-3).
 - Study the ecological significance of pesticide discharges (yr 1-3).
 - Support implementation of BMPs (yr 2-7).
 - Monitor to determine effectiveness of BMP implementation (yr 4-7).

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6. Conduct the following trace metals work:
 - Determine spatial and temporal extent of metal pollution (yr 3-7).
 - Determine ecological significance and extent of copper contamination (yr 2-4).
 - Review impacts of other metals such as cadmium, zinc, and chromium (yr 1).
 - Participate in Brake Pad Partnership (as a stakeholder) to reduce introduction of copper (yr 1-7).
 - Partner with municipalities on evaluation and implementation of storm water control facilities (yr 2-5).
 - Participate in remediation of mine sites as part of local watershed restoration and Delta restoration (yr 2-7).
 7. Conduct the following selenium work:
 - Conduct selenium research to fill data gaps in order to refine regulatory goals of source control actions; determine bioavailability of selenium under several scenarios (yr 1-5).
 - Evaluate and, if appropriate, implement real-time management of selenium discharges (yr 1-7).
 - Expand and implement source control, treatment, and reuse programs (yr 1-7).
 - Coordinate with other programs; e. g., recommendations of San Joaquin Valley Drainage Implementation Program, Central Valley Project Improvement Act (CVPIA) for retirement of lands with drainage problems that are not subject to correction in other ways; Central Valley Regional Water Quality Control Board (RWQCB) water quality actions (selenium TMDL); and Grasslands Bypass project (yr 1-7).
 8. Conduct the following sediment reduction work/organochlorine pesticides:
 - Participate in implementation of U. S. Department of Agriculture (USDA) sediment reduction program (Organochlorine pesticides are also reduced as they are tightly bound with sediment.) (yr 1-7).
 - Promote sediment reduction in construction areas and urban stormwater, and other specific sites (yr 1-7).
 - Implement stream restoration and revegetation work (yr 4-7).
 - Quantify and determine ecological impacts of sediments in target watersheds, implement corrective actions (yr 4-7).
 - Coordinate with ERP on sediment needs (yr 1-3).
 9. Conduct the following work addressing dissolved oxygen (DO) and oxygen depleting substances (including nutrients):
 - Define corrective measures for DO sag (yr 1-7).
 - Encourage regulatory activity to reduce nutrients discharged by unpermitted dischargers (yr 1-7).
 - Develop inter-substrate DO testing in conjunction with ERP (yr 2-4).
 - Study nutrient effects on beneficial uses (yr 4-7).

- Develop, implement, and support measures to reduce pollutant (oxygen depleting substances, nutrients, and ammonia) discharges from concentrated animal feeding operations (yr 1-7).
 - Support finalization of investigation of methods to reduce constituent that cause low DO for inclusion in the TMDL recommendation by the Central Valley RWQCB (yr 1-2).
 - Support finalization of Basin Plan Amendment and TMDL for constituents that cause low DO in the San Joaquin River (yr 2).
 - Support implementation of appropriate source and other controls as recommended in the TMDL (yr 3).
10. Conduct the following toxicity of unknown origin work:
- Participate in identifying toxicity of unknown origin and addressing as appropriate (yr 1-7).

Drinking Water Quality Actions

11. Actions specific to drinking water improvements:
- Work cooperatively with Bay Area water suppliers as they develop a Bay Area Blending/Exchange Project (yr 1-7).
 - Address drainage problems in the San Joaquin Valley to improve downstream water quality (yr 1-7+).
 - Implement source controls in the Delta and its tributaries (yr 1-7+).
 - Support the ongoing efforts of the Delta Drinking Water Council (yr 1-7+).
 - Facilitate water quality exchanges and similar programs to make high quality Sierra water in the eastern San Joaquin Valley available to urban Southern California interests (yr 1-7).
 - Invest in Treatment Technology Demonstrations (yr 1-7).
 - Control runoff into the California Aqueduct and other similar conveyances (yr 1-7+).
 - Address water quality problems at the North Bay Aqueduct (yr 1-7+).
 - Conduct comprehensive evaluations, pilot programs, and full scale actions to reduce TOC contribution through control of algae, aquatic weeds, agricultural runoff, and watershed improvements (yr 1-7).
 - Improve DO concentrations in the San Joaquin River near Stockton (yr 1-3).
 - Study recirculation of export water to reduce salinity and improve DO in the San Joaquin River. If feasible, and consistent with ERP goals and objectives, implement a pilot program (yr 1-4).

2.3 Ecosystem Restoration

The CALFED ERP is designed to maintain, 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. The ERP is also designed to achieve recovery of listed species dependent on the Delta and Suisun Bay as identified in the MSCS, and support the recovery of listed species in San Francisco Bay and in the watershed above the estuary. A foundation of this program element is the restoration of ecological processes associated with stream flow, stream channels, watersheds, and flood plains. Implementation of the ERP over the 30 year implementation period will be guided through an ecosystem-based, adaptive management approach. ERP goals and objectives for ecosystem, habitat, and species rehabilitation are designed to produce measurable and progressive improvements to the Bay-Delta ecosystem resulting in a high level of ecosystem health and species recovery that exceeds existing regulatory requirements. The Stage 1 restoration efforts are structured to accomplish significant improvement in Bay-Delta ecological health through a large scale adaptive management approach in which the actions inform management decisions in later stages of implementation. All Stage 1 actions will undergo an appropriate level of environmental review, will be subject to various permit requirements, and will be dependent on budget allocations.

Success of ERP Stage 1 actions is also critically dependent on other program elements, including water quality improvement actions throughout the Bay-Delta watershed, levee system integrity actions, and integration with a watershed management strategy and a water transfers market. To ensure success, CALFED will be facilitating the development of a single blueprint or coordinated plan for environmental restoration throughout the CALFED focus area. The general priorities for restoration activities will be first on existing public lands as appropriate, second to work with landowners in volunteer efforts to achieve habitat goals including the acquisition of easements, third a combination of fee and easement acquisition, and fourth on acquisition of fee title as necessary to achieve program objectives. Acquisition will be on a willing seller basis and with emphasis on local coordination and partnerships and include appropriate mitigation for agricultural resource impacts. The intent is to maximize habitat benefits while minimizing land use impacts.

1. Develop and implement an outreach, coordination, and partnering program with local landowners and individuals, cities, counties, reclamation districts, the Delta Protection Commission, resource conservation districts, water authorities, irrigation districts, farm bureaus, other interest groups, and the general public to assure participation in planning design, implementation, and management of ecosystem restoration projects (yr 1-7).
2. Conduct project level environmental documentation and permitting as needed for each Stage 1 action (yr 1-7).
3. Full coordination and funding partnerships with other ongoing activities which address ecosystem restoration in the Bay-Delta system; e. g., CVPLA, Four Pumps Agreement, Non-native Invasive Species Task Force, etc. (yr 1-7).

4. Implement habitat restoration in the San Francisco Bay, Sacramento-San Joaquin Delta, Suisun Bay and Marsh, and Yolo Bypass to improve ecological function and facilitate recovery of endangered species consistent with the goals of the ERP Strategic Plan and MSCS (yr 1-7). Habitat restoration efforts in Stage 1 will: restore 2,000 acres of tidal perennial aquatic habitat, restore 200 acres of deep open water nontidal perennial aquatic habitat, restore 300 acres of shallow open water nontidal perennial aquatic habitat, enhance and restore 50 miles of Delta slough habitat, enhance and restore 50 to 200 acres of midchannel islands, restore 8,000 to 12,000 acres of fresh emergent (tidal) wetlands, restore 1,200 to 2,300 acres of saline emergent (tidal) wetlands, restore 4,000 acres of fresh emergent (non-tidal) wetlands, restore 25 miles of riparian and riverine aquatic habitat, restore 1,000 to 2,000 acres of perennial grassland, restore 7,000 to 10,000 acres of seasonal wetlands, and establish 8,000 to 12,000 acres of wildlife friendly agricultural habitat. Focus early restoration on the Yolo Bypass, Mokelumne/Cosumnes, and San Joaquin habitat corridors. This reflects approximately one-fourth of the acreage identified in the ERP to be restored during the 30-year implementation period. These actions are key to making progress towards achieving the goals in the ERP and the MSCS. Consistent with the CALFED solution principle to reduce conflicts in the system and ERP Goal # 1, *At-Risk Species*, highest priority will be placed on actions that restore populations of at-risk species that most strongly affect the operations of the SWP/CVP diversions in the south Delta. The results of these actions will begin to inform the adaptive management process and will help guide larger scale habitat restoration in future stages.
5. Implement large-scale, restoration projects on select rivers (possibly Clear Creek, Deer Creek, and the Tuolumne River) that would include implementation of all long-term restoration measures in coordination with the watershed management common program and monitoring of subsequent ecosystem responses to learn information necessary for making decisions about implementing similar restorations in later stages (yr 1-7).
6. Implement an Environmental Water Account (EWA) that acquires water for critical ecosystem and species recovery needs, substantially through voluntary purchases in the water transfer market in its first few years and developing additional assets over time (yr 1-4).
7. Pursue full implementation of ERP upstream flow targets through voluntary purchases of at least 100,000 acre-feet by the end of Stage 1. Evaluate how the ERP water acquisitions and EWA water acquisitions will be integrated most effectively (yr 1-7).
8. Complete targeted research and scientific evaluations needed to resolve the high priority issues and the twelve uncertainties identified in the ERP Strategic Plan (e. g., instream flow, exotic organisms, and Bay Delta food web dynamics) to provide direction for implementing the adaptive management process and information necessary for making critical decisions in later stages (yr 1-7).
9. Establish partnerships with universities for focused research (yr 1-7).

10. Complete the remaining 60% of the easements and/or acquisition for the Sacramento River meander corridor identified under the SB 1086 Program (yr 1-7). Provide assurances for and participation by Sacramento River users and landowners that provides indemnification of affected parties against flooding impacts on neighboring landowners and impacts on water diverters.
11. Acquire flood plain easements, consistent with ecosystem and flood control needs along the San Joaquin River in coordination with the Corps' Sacramento and San Joaquin River Basins Comprehensive Study (yr 4-7).
12. Continue high priority actions that reduce direct mortality to fishes (yr 1-7):
 - Aggressively screen existing unscreened or poorly screened diversions in the Delta, on the Sacramento River, San Joaquin River, and tributary streams based on a systematic priority approach.
 - Remove select physical barriers to fish passage.
13. Continue gravel management; e.g., isolate gravel pits on San Joaquin River tributaries and relocate gravel operations on Sacramento River tributaries (yr 1-7). Most gravel work would be implemented in subsequent stages with designs and plans for ecosystem reclamation of gravel mining sites.
14. Begin implementing the CALFED comprehensive non-native (exotic) invasive species prevention, control, and eradication plan including the following (yr 1-7):
 - Implement invasive plant management program in Cache Creek.
 - Develop ballast water management program.
 - Develop early-response invasive organism control programs.
 - Evaluate CALFED implementation actions and how those actions may benefit non-native species to the detriment of native species or the Bay-Delta ecosystem.
15. Provide incremental improvements in ecosystem values throughout the Bay-Delta system in addition to habitat corridors described above; e.g., pursue actions that are opportunity-based (willing sellers, funding, permitting, etc.), provide incremental improvements on private land through incentives, develop partnerships with farmers on "environmentally friendly" agricultural practices, etc. (yr 1-7).
16. Incorporate ecosystem improvements with levee associated subsidence reversal plans (yr 1-7).
17. Evaluate the feasibility of harvest management to protect weaker stocks (yr 1-7).
18. Implement projects on selected streams to provide additional upstream fishery habitat by removing or modifying barriers, see also discussion of Fish Migration Barrier Removals in Section 2.7 - Storage (yr 1-7).
19. Working with the CALFED agencies, assist in the preparation of detailed, ecosystem-based restoration and recovery plans for any priority species identified in the ERP Strategic Plan and the MSCS for which up-to-date plans are not available. Begin implementing appropriate additional restoration actions identified in these plans (yr 1-7).
20. In coordination with South Delta Improvements (Conveyance), identify and advance specific regional ERP goals (yr 1-7).

2.4 Water Use Efficiency

The CALFED water use efficiency (WUE) element is designed to accelerate the implementation of cost-effective actions to conserve and recycle water throughout the State in order to increase water supplies available for beneficial uses. The major components of the program are: 1) support ongoing urban and agricultural sector processes for certifying and endorsing local agency implementation of cost-effective efficiency measures; 2) provide technical and planning assistance to local agencies and districts developing and implementing WUE measures; and 3) institute a competitive grant/loan incentive program to encourage WUE investments in the urban and agricultural sectors.

1. Expand Existing State and Federal Agricultural Water Conservation Programs to Support On Farm and District Efforts - Expand State and federal programs (Department of Water Resources [DWR], U. S. Bureau of Reclamation [USBR], U. S. Fish and Wildlife Service [USFWS], Department of Fish and Game [DFG], Department of Health Services [DHS], Natural Resources Conservation Service [NRCS], and SWRCB) to provide technical and planning assistance to local agencies and districts in support of local and regional conservation and recycling programs (yr 1-7).
2. Expand Existing State and Federal Conservation Programs to Support Urban Water Purveyor Efforts - Expand State and federal programs (DWR, USBR, USFWS, DFG, DHS, and SWRCB) to provide technical and planning assistance in support of conservation and recycling programs (yr 1-7).
3. Agricultural Water Management Council (AWMC) Evaluation of Agricultural Water Management Plans - Utilize the AB 3616 AWMC to evaluate and endorse plans to implement cost-effective water management practices by agricultural districts. Identify and secure ongoing funding sources for AWMC and its members seeking to actively participate in the development, review, and implementation of these plans (yr 1-7).
4. Develop Urban Water Management Plan Certification Process - Select an agency to act as certifying entity, obtain legislative authority, carry out public process to prepare regulations, and implement program (yr 1-3).
5. Implement Urban BMP Certification Process - Implement a process for certification of water suppliers' compliance with terms of the Urban MOU with respect to analysis and implementation of BMP's for urban water conservation. Provide funding support for the California Urban Water Conservation Council (CUWCC) to carry out this function (yr 1-7).
6. Prepare a program implementation plan, including a proposed organizational structure consistent with the overall CALFED governance structure, for an competitive grant/loan incentive program for WUE (yr 1). This will include:
 - Incentives in the agricultural sector that will consider several factors, including: (i) potential for reducing irrecoverable water losses; (ii) potential for attaining environmental and/or water quality benefits from WUE measures which result in reduced diversions; (iii) regional variation

in water management options and opportunities; (iv) availability and cost of alternative water supplies; and (v) whether the recipient area experiences recurrent water shortages due to regulatory or hydrological restrictions. Many of these factors are included in the Quantifiable Objectives for Agricultural Water Use Efficiency, and as such, the Quantifiable Objectives will be an important component of the agricultural incentive criteria.

- Incentives in the urban sector will assist in identifying and implementing urban water conservation measures that are supplemental to BMP's in the Urban MOU process and are cost effective from a statewide perspective.
 - Incentives for water recycling in the urban and agricultural areas.
 - The plan will include annual reporting and evaluation mechanisms to gauge effectiveness of the program.
7. Refuge Water Management - Finalize and implement the methodology for refuge water management which was described in the June 1998 "Interagency Coordinated Program for Wetland Water Use Plan, Central Valley, California" (yr 1-3).
 8. Research effort to establish appropriate reference conditions for evaluating program progress, and to identify improved methods for WUE (yr 1-7).
 9. Assess the Need for Additional Water Rights Protections - After consultation with CALFED agencies, the Legislature, and stakeholders, evaluate the need for additional state regulations or legislation providing protection for water rights holders who have implemented WUE measures and subsequently transferred water to other beneficial uses (yr 1-4).
 10. Water Measurement - Develop, after consultation with CALFED agencies, the Legislature, and stakeholders, state legislation that requires appropriate measurement of water use for all water users in California (yr 1-3).
 11. Create Public Advisory Committee - Within the context of the broader CALFED public involvement plans, create a public advisory committee to advise State and Federal agencies on structure and implementation of assistance programs, and to coordinate State, federal, regional and local efforts for maximum effectiveness of program expenditures (yr 1).

2.5 Water Transfer Framework

The water transfer framework is designed to facilitate, encourage, and streamline the water transfer process while protecting water rights and legal users of water and addressing and avoiding or mitigating third-party socioeconomic impacts and local groundwater or environmental impacts. This would occur through a proposed framework of actions, policies and processes. The first stage implements the recommended changes which will continue in subsequent stages.

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1. Develop an Interactive Water Transfer Information Web-site - CALFED agencies will develop, implement, and maintain an interactive, publicly available web-site called On Tap (yr 1-7). This site will serve as an interim and long-term interface to stakeholders and the public with respect to CALFED water transfer actions including: 1) streamlining the approval process, 2) defining transferrable water, 3) providing public disclosure of proposed transfers, and 4) facilitating the sharing of water transfer related data, research, and assessment methodology. The web-site will initially be designed to include:
 - an on-line transfer application process that will provide proponents with information regarding who has approval authority (USBR, SWRCB, DWR), what must be provided to the responsible agency, and what criteria the agency will use during the review period;
 - a searchable database of all approved transfers (going back to the late 1980's and adding new transfers as they are approved); and
 - information regarding other CALFED Water Transfer Program actions.Initial aspects of this web-site will be publicly available in the first year after signing of the Programmatic ROD.

Improve Information Sharing:

2. Establish the California Water Transfers Information Clearinghouse to operate and maintain the On Tap web site, collect and disseminate data and information relating to water transfers and potential transfer impacts, and perform research using historic data to understand water transfer impacts (yr 1-7).
3. Coordinate with CALFED agencies to require water transfer applicants to provide additional impact assessment information as allowed under existing law (yr 1-4).
4. CALFED agencies will identify, arrange, fund, and carry out a specific number of targeted water transfers for in-stream environmental purposes as part of the ERP, with a goal of using these transfers to evaluate the effectiveness of and make any necessary improvements to California Water Code Section 1707 procedures and tracking protocols (yr 1-3).
5. As part of the WMS, a groundwater assistance program (discussed more explicitly under Storage tools) will be established to fund studies to gather groundwater data and to enable local entities to develop and implement local groundwater management/monitoring programs (yr 1-2).

Lower Transaction Costs Through Permit Streamlining:

6. Development by CALFED agencies of a streamlined water transfer approval process including "pre-certification" of certain classes of transfers and expedited environmental review procedures (yr 1-6).
7. CALFED agencies work with stakeholder representatives to clarify and define what water is deemed transferrable under what conditions (yr 1-3).

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8. CALFED agencies continue to work with stakeholder representatives to resolve conflicts over carriage water criteria (yr 1-3).
 9. Establish a refill criteria policy for reservoir storage based water transfers (yr 1).

Increase the Availability of Existing Facilities for Water Transfers:

10. Begin forecast and disclosure process of potential conveyance capacity in existing export facilities (DWR and USBR). This would be an on-going activity, occurring in conjunction with hydrologic forecasts (yr 1-7).
11. CALFED agencies will work with stakeholders to develop an agreed upon set of criteria and procedures governing the determination of transport system availability and costs, including the procedures to determine the fair reimbursement to the water conveyance facility operator (yr 1-3).

2.6 Watershed Program

The Watershed Program will promote collaboration and integration among existing and future local watershed programs and provide technical assistance and funding for watershed activities that support the goals and objectives of the CALFED Bay-Delta Program. The actions during Stage 1 are a mix of watershed coordination, restoration, maintenance, and conservation activities, as well as demonstration projects designed to illustrate the benefits of watershed management to the Bay-Delta system while also benefiting existing watershed resources.

1. Fund and implement community based watershed restoration, maintenance, conservation, and monitoring activities that support the goals and objectives of the CALFED Program (yr 1-7).
2. Assist local watershed groups and government agencies to address common issues, including roles and responsibilities, funding support, technical assistance, information exchange, and to ensure effective communication and implementation among government agencies and stakeholder groups (yr 1-7).
3. Implement a funding process and provide watershed stewardship funds to build the capacity of community based programs to carry out comprehensive long-term watershed management (yr 1-7).
4. Improve the use and usefulness of existing or future watershed information management functions to provide data and other information to people involved in watershed management (yr 3-7).
5. Ensure the completion of project level environmental documentation and permitting; assist with documentation and permitting processes as appropriate (yr 1-7).
6. Evaluate the benefits (including economics) that accrue from watershed plans and projects designed to achieve CALFED goals and objectives (yr 3-7).

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7. Establish, fund, and maintain watershed restoration and maintenance assistance to aid local watershed groups and private landowners in project concept, design, and implementation (yr 1-7).
 8. Collaborate with other CALFED and non-CALFED programs on watershed related activities (yr 1-7).
 9. Provide appropriate information and assistance to stakeholders and the Legislature to develop a state-wide umbrella watershed management act (yr 1).

2.7 Storage

Groundwater and 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 operations with existing flood control reservoirs. New groundwater and surface storage will be developed as appropriate to meet CALFED program goals as part of a comprehensive WMS that includes aggressive implementation of water conservation, recycling, an improved water transfers market, and habitat restoration. Decision to construct groundwater or surface storage will be predicated on maintaining balanced implementation of all Program elements and compliance with all environmental review and permitting requirements.

During Stage 1, CALFED intends to take the necessary steps to pursue expansion of two existing reservoirs and construction of a new off-stream reservoir, with a total capacity of 950 thousand-acre-feet (TAF) and a major expansion of groundwater storage for an additional 500 TAF to 1 million-acre-feet (MAF). In addition, CALFED will study two potential reservoir locations through partnerships with local agencies. These projects are described in the Phase II Report. CALFED will continue to evaluate these surface and groundwater storage opportunities, initiate permitting, NEPA and CEQA documentation, and construction - if all conditions are satisfied. These efforts will be coordinated under CALFED's Integrated Storage Investigation (ISI).

In addition, CALFED will continue work to refine and periodically update the WMS. ISI studies will evaluate the utility of specific storage projects in providing water quality, water supply reliability, and ecosystem benefits. This information, together with information gained from implementation of other CALFED Program elements and updated information on California's changing water management needs, will be considered in an Evaluation Framework. This Framework will include: 1) a comprehensive hierarchy of objectives for the CALFED Program; 2) well-defined measures of performance associated with the achievement of objectives; and 3) provide a basis for comparison of alternative long-term water management strategies. The Evaluation Framework will provide a structure for periodically updating the WMS and determining appropriate levels of the future investment in various water management tools.

Groundwater Banking and Conjunctive Use - *Develop locally managed and controlled groundwater and conjunctive use projects with a total of 500 TAF to 1 MAF of additional storage. This effort includes developing cooperative partnerships with local agencies and landowners in both the north-of-Delta and south-of-Delta areas, and includes construction of several south-of-Delta projects. Additional south-of-Delta and north-of-Delta projects, if feasible, could be constructed in later stages.*

1. Finalize agreements with new local project proponents for joint planning and development (yr 1).
2. Begin feasibility studies (yr 1).
3. Report on the performance of feasibility studies, implementable projects, and potential benefits and beneficiaries (yr 3).
4. Implement early stages of the most promising projects (yr 1-5).
5. Aggressively pursue implementation of additional project (yr 1-7).
6. Support legislation that supports groundwater management by local agencies at the sub-basin level.

Surface Storage - *CALFED agencies identified a list of twelve potential surface storage projects that are in varying stages of the environmental review or feasibility process. Actions taken in Stage 1 will focus on completing the necessary studies to implement or proceed with five surface storage projects:*

1. In-Delta storage project (approximately 250 TAF) - An in-Delta storage facility can provide both fishery benefits and enhances water project flexibility. CALFED will explore the lease or purchase of the Delta Wetlands project. CALFED also will initiate a new project, in the event that Delta Wetlands proves cost prohibitive or infeasible (Planning: yr 1-2, Construction: yr 3-7).
2. Expand CVP storage in Shasta Lake by approximately 300 TAF - Such expansion will increase the pool of cold water available to maintain lower Sacramento River temperatures needed by certain fish and provide other water management benefits (Planning: yr 1-4, Construction yr 6-7).
3. Expand Los Vaqueros Reservoir by up to 400 TAF with local partners as part of a Bay Area water quality and water supply reliability initiative - As part of a Bay Area initiative, an expanded Los Vaqueros Reservoir would provide water quality and water supply reliability benefits to Bay Area users. As an existing reservoir operated by the Contra Costa Water District (CCWD), the Los Vaqueros Reservoir is subject to a number of mandates and agreements, CALFED intends to work with CCWD and interested stakeholders to assure that previous commitments, including local voter approval required for expansion, are respected (Planning: yr 1-5, Construction yr 6-7).
4. Sites Reservoir - Construction of Sites Reservoir, with a project capacity of up to 1.9 MAF, could enhance water management flexibility in the Sacramento Valley. By reducing water diversion on the Sacramento River during critical fish migration periods, this project can greatly increase reliability of supplies for a

significant portion of the Sacramento Valley. It can also provide storage and operational benefits for other CALFED programs including Delta water quality and the EWA. CALFED will join local partners to evaluate this project in Stage 1 (yr 1-5). Extensive technical work, significant environmental review, and development of cost-sharing agreements must be completed before a decision to implement this project as part of the CALFED Program can be made.

5. Additional storage in the upper San Joaquin River watershed - Additional storage capacity of between 250-700 TAF would be designed to contribute to restoration of and improved water quality for the San Joaquin River and facilitate conjunctive water management and water exchanges that improve the quality of water deliveries to urban communities. Additional storage could come from enlargement of Millerton Lake at Friant Dam or a functionally equivalent storage program in the region. CALFED will join local partners to evaluate this project in Stage 1 (yr 1-6). Extensive technical work, significant environmental review, and development of cost-sharing agreements must be completed before a decision to implement this project as part of the CALFED Program can be made.

Power Facilities Reoperation Evaluation - *There is the potential to reoperate some hydroelectric facilities to produce water supply or ecosystem benefits. The following actions will be taken in the context of the ISI.*

1. Identify beneficiaries and negotiate cost sharing agreements (yr 1-7).
2. Work with CALFED agencies, the Public Utilities Commission, the SWRCB, the Federal Energy Regulatory Commission, and interested stakeholders to identify reoperation opportunities (yr 1-2)
3. Develop environmental documentation (yr 3-5).
4. Perform feasibility studies and economic analyses (yr 3-5).
5. Obtain permits, negotiate operating agreements, and seek site specific authorization as required (may require design of facilities modifications to accommodate new operational priorities) (yr 5-7).
6. Begin construction (if needed) and begin new operations if conditions and linkages are satisfied (yr 6-7).

Fish Migration Barrier Removal Evaluations - *As part of the ERP some obstructions to fish passage such as small dams are being considered for modification or removal in order to restore anadromous fish access to critical spawning habitat. The following actions will be taken in the context of the ISI:*

1. Work with CALFED agencies, the SWRCB, local water agencies, and interested stakeholders to identify opportunities for modification or removal of obstructions such as small dams (yr 1-2).
2. Develop environmental documentation (yr 3-5).
3. Perform feasibility studies and economic analyses (yr 3-5).
4. Obtain permits, negotiate agreements, and seek site specific authorization as

required (may require design of facilities modifications or removal actions) (yr 5-7).

5. Identify beneficiaries and negotiate cost sharing agreements (yr 5-7).
6. Begin construction (if needed) and begin new operations if conditions and linkages are satisfied (yr 6-7).

2.8 Conveyance

CALFED's basic strategy is to develop a through-Delta conveyance alternative based on existing Delta configuration with some modifications. Some construction of improvements in the south and north Delta should occur within the first stage to improve conditions for ecosystem and water management reliability. Part of the first stage consists of site-specific environmental review and permitting. This will allow conveyance projects to be ready for construction in later stages should the projects be necessary to meet Program objectives.

South Delta Improvements - *South Delta Improvements consist of methods to control flow, stage and circulation, improve fish passage, fish screen and salvage facilities, and potentially provide SWP/CVP interties upstream and downstream of the export pumps. South Delta conveyance improvements included in Stage 1 would function with the basic through-Delta conveyance strategy or potential modifications. The conveyance improvement actions listed below would be implemented concurrently with other Stage 1 actions in the South Delta which are components of the other CALFED Program elements.*

1. Construct and evaluate a 500 cubic feet per second (cfs) test facility at the Tracy Pumping Plant to develop best available technology for fish screening and salvage for the intakes to the SWP and CVP export facilities (yr 1-7).
2. Construct a new screened intake for Clifton Court Forebay for the full export capacity of the SWP (yr 1-7+).
3. Implement Joint Point of Diversion for the SWP and CVP (yr 1-7).
4. Evaluate and decide on whether to retain a separate CVP intake facility or to consolidate with the SWP facility. Also evaluate and potentially implement an intertie between the project canals downstream of the export pumps (yr 1-7).
5. Increase SWP pumping by 500 cfs from July through September (yr 1-4).
6. Facilitate SWP export flexibility up to 8,500 cfs with appropriate constraints (yr 1-3).
7. Obtain permits to use full SWP capacity of 10,300 cfs for operational flexibility, consistent with all applicable operational constraints, for water supply and environmental benefits (yr 1-7+).
8. Dredge and install operable barriers to ensure water of adequate quantity and quality is available for diversion to beneficial uses within the south Delta (yr 1-7). For the purposes of the project level environmental analysis for the South Delta Improvements, various operable barrier configuration alternatives or their functional equivalents will be evaluated including the installation of a

permanent fish migration barrier at the Head of Old River and construction of three permanent flow control structures at Old River at Tracy, Middle River upstream of Victoria Canal, and Grant Line Canal. The Grant Line Canal would be constructed and operated in accordance with conditions and directions specified by USFWS, National Marine Fisheries Service (NMFS), and DFG. All temporary barriers installations will be phased out as soon as feasible.

9. Form a Barrier Operations Coordination Team, consisting of USFWS, NMFS, DFG, DWR, USBR, and stakeholder representatives to operate the barriers (yr 1-7).
10. Monitor barrier effects on fish, stages, circulation, and water quality (yr 1-7).
11. Dredging of selected channel segments to limit scour velocities and for water supply availability, navigation, and flood control (yr 3-7).

North Delta Improvements - *Provide a coordinated regional solution to ecosystem, watershed, water quality, water supply reliability, and flood control concerns in the North Delta Region. North Delta improvements consist of methods to address flood control, water quality, fisheries, and water supply reliability concerns. Actions include modification of the Delta Cross Channel operational criteria, channel dredging and/or setback levees in the Mokelumne River, and creation of additional flood plain, wildlife, and fisheries habitat. A screened diversion on the Sacramento River will be evaluated and may be implemented if necessary.*

1. Evaluate and implement improved operational procedures for the Delta Cross Channel to address fishery and water quality concerns (yr 1-4).
2. Simultaneously evaluate a screened through-Delta facility with a diversion capacity of up to 4,000 cfs on the Sacramento River. This evaluation would consider the effectiveness of water quality measures and how to operate the Delta Cross Channel in conjunction with this new diversion structure to improve drinking water quality, while maintaining fish recovery (yr 1-4).
3. Complete environmental review of recommended Delta Cross Channel operational procedures and the screened diversion evaluations. If the environmental review demonstrates that this diversion facility is needed to improve water quality in the Delta and at the export facilities, and can be constructed and operated without adverse effects to anadromous and estuarine fish, construction will begin late in Stage 1. This diversion would likely include a fish screen, pumps, and a channel between the Sacramento and Mokelumne Rivers. The historic emphasis has been on a screened diversion at Hood on the Sacramento River. This and other potential sites will be considered as part of this evaluation (yr 4-7).
4. Evaluate opportunities to resolve local flood concerns and create tidal wetlands and riparian habitats by constructing new setback levees, improving existing levees, and dredging channels in the north Delta, especially the channels of the lower Mokelumne River system. Any proposed channel modification would be consistent with CALFED's current direction on Delta conveyance. This evaluation would carefully coordinate ecosystem restoration, regional flood control, levee system

integrity, and conveyance issues and concerns to ensure that a balanced solution to all concerns would be proposed (yr 1-7).

5. Facilitate region-wide coordination of all CALFED related projects in the north Delta region (yr 1-7).

Additional Conveyance Actions - *A process for determining the conditions under which any additional conveyance facilities and/or other water management actions would be taken in the future would include:*

1. An evaluation of how water suppliers can best provide a level of public health protection equivalent to Delta source water quality of 50 parts per billion (ppb) bromide and 3 parts per million (ppm) TOC (yr 1-7). This will include an equivalent level of investigation and studies on all of the actions which could be used to achieve CALFED's targets.
2. An evaluation based on two independent expert panels' reports: one on CALFED's progress toward these measurable water quality goals and the second on CALFED's progress toward ecosystem restoration objectives, with particular emphasis on fisheries recovery (yr 6-7).
3. Additional environmental review. Construction of an isolated facility component of a dual Delta conveyance is not an element of the CALFED Preferred Program Alternative. A decision to construct such a facility would require separate environmental review and alternatives analysis that has not been done as part of the CALFED programmatic analysis.

2.9 Governance Arrangements

After the ROD, CALFED will begin the implementation phase of the Program. The CALFED agencies are proposing the creation of a joint state and federal commission to oversee and direct the CALFED Program in the long-term. A new commission will require State and federal legislation. In the interim, until a new commission is established, the CALFED agencies will use the Policy Group governance structure. A new Interim Governance Agreement will be developed and executed, which describes the interim governance structure and decision-making process.

1. Implement the interim governance structure and decision-making process at the time of the ROD. The interim structure and functions will continue until the long-term structure is in place.
2. Establish CALFED Independent Science Board, establish EWA independent science panel, establish other independent science panels as needed.
3. Form public advisory council to advise the new commission or Policy Group.
4. Initiate actions to implement the long-term governance structure for CALFED. New federal and state legislation will be needed to clarify/modify existing agency

authorities and to establish a new joint federal-state commission for program oversight and implementation.

5. Establish the new commission: implement administrative, fiscal, personnel changes to form the commission.

2.10 Finance

The Financing Plan contains the initial framework for developing a strategy for funding the Preferred Program Alternative (including total costs for implementation/improvements, mitigation, and ongoing annual operating and maintenance costs). Proposed funding sources would include a combination of federal, state, private, and user funds. Financing will be needed over several decades as the various parts of the Preferred Program Alternative are selected, implemented, operated, and maintained. The Financing Plan includes financial principles incorporating a benefits-based approach, a discussion of historical cost-sharing, cost-allocation procedures, proposed cost-sharing scenarios, cost estimates for Stage 1 of Program Implementation, and a preliminary identification of classes of beneficiaries for each of the Program elements. The Plan recognizes the public and user benefits derived from water quality, environmental protection, flood control, recreation, and a reliable water supply.

1. Establish reliable short-term and long-term funding for each program element and for each package of Stage 1 actions (1-7):
 - Finalize cost-share agreements (yr 1-2).
 - Finalize details surrounding repayment or crediting (yr 1-2).
 - Seek legislation and budget authority for financing, including federal and state appropriations, new authority for state bonds, private financing, and new user fees (yr 1-7).
 - Work with local interests to develop state legislation to create a user fee that will generate reliable funding for program elements with broad public benefits, such as the Ecosystem Restoration Program (yr 1-2).
 - Develop and refine cost estimates as program actions are identified (yr 1-7).
 - Prepare a cross-cut budget on an annual basis showing the funding of related state and federal programs and incorporate into finance strategies and funding requests (yr 1-7).

2.11 Science Program

As part of the Science Program, establish monitoring, data assessment, and research activities for all program elements which provide information for evaluating the effectiveness of the program actions in reaching the program objectives. All the monitoring, data assessment, and research activities will be done within an adaptive management framework. Consequently,

most of the activities will be undergoing continual refinement through the duration of the program. The program will be designed to examine 30 year trends within which, components will be tailored to examine the short term time step of the 1-7 year Phase III, Stage 1 Program.

1. Periodic review and refinement of the monitoring, data assessment, and research plan from a long term perspective (yr 1-7+).
2. Periodic review and refinement of the monitoring, data assessment, and research plan from a short-term perspective which would include all elements of the Phase III, Stage 1 Program (yr 1-7+).
3. Help management define triggers and time periods which determine the need for a change in program direction (yr 1-7+).
4. Continue to develop and refine conceptual models to be used in evaluating actions undertaken by the programs. In keeping with the adaptive management format, the models will be continually updated (yr 1-7+).
5. Through a peer review process, evaluate the validity of the data evaluation and the application of the evaluation by the program decision making process (yr 1-7+).
6. Review the progress towards achieving overall CALFED program goals and objectives (yr 1-7+).
7. Complete monitoring identified by diversion-effects-on-fisheries team to provide feedback on actual diversion effects of south Delta pumps (yr 2-7).
8. Design long-term, system wide, baseline monitoring with focused research to increase understanding of ecological processes and ways to reduce uncertainty; definition of needed studies is currently under development, the following are examples:
 - Conduct focused research on Delta hydrodynamics and linkage to food web including relation to location of diversion point.
 - Study population trends of fish using the Delta, including fish salvage at south Delta export facilities, with emphasis on San Joaquin River fall run chinook salmon, delta smelt, and Mokelumne River fall run chinook salmon and steelhead trout.
 - Expand real-time monitoring for enhanced fish protections and flexible operations for water suppliers.
9. Provide available data on need to reduce bromides, total dissolved solids, TOC, pesticides, and trace metals (yr 5).
10. Provide available data on water quality in south Delta and lower San Joaquin River (yr 1-7).
11. Monitor and assess the impacts of WUE measures on water demands and available supplies, and develop better information for water balances in the Bay-Delta system (yr 1-7).
12. Prepare annual reports on status and progress, including such information as: performance of habitat restoration actions compared to expected results, summaries of any new information on the relative importance of various stressors, and any need for adjustments in actions or conceptual models (yr 1-7).

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13. Analyze status and need for adjustments of actions for later stages (yr 5-7).
 14. Monitor and report land use changes, such as agricultural land conversion, resulting from CALFED actions (yr 2-7).
 15. Hire an interim science leader and subsequently hire a chief scientist (yr 1-2).
 16. Appoint an Independent Science Board and an independent science panel for the EWA (yr 1-2).
 17. Coordinate existing monitoring and scientific research programs (yr 1-7).
 18. Refine the set of ecological, operational, and other predictive models which will be used in the evaluative process (yr 1-2).
 19. Establish and refine performance measures and indicators for each of the program areas (yr 1-7).

2.12 Regulatory Compliance

1. For each action in the program, ensure that the appropriate environmental documents are prepared, tiering off the Programmatic EIS/EIR, and that all necessary permits are obtained (yr 1-7).
2. For each action in the program, ensure compliance with applicable or relevant and appropriate requirements (yr 1-7).
3. Tiering from the MSCS, begin to develop the project specific restoration, avoidance, minimization, and compensation measures necessary to recover MSCS covered species and to prevent additional listings in the Delta (yr 1-7).
4. Implement a CALFED environmental documentation, mitigation, and permit coordination process (yr 1-7).

3.0 SUMMARY OF STAGE 1A ACTIONS

Implementation of actions begins in Phase III. This period will include site specific environmental review and permitting as necessary. The first stage of Program implementation is critical to its long-term success because it will serve as an indication of the CALFED agencies and stakeholder community capacity to act on a cost-effective, practical, and equitable set of actions which advance the Program objectives.

The preliminary actions have been selected to provide a balanced suite of actions for the CALFED problem and solution areas. Initial Stage 1a actions also highlight certain critical ongoing programs which will require implementation decisions in the near future. The Stage 1a actions are summarized in Table 3.1 (Early Implementation Actions). The actions listed have been identified by CALFED program element and were selected to address initial goals and objectives of each program element. Included in the table is a brief description of each planned action and the primary effects or objectives of that action. The action numbering used in Table 3.1 was developed to be consistent with other action references and listing, such as the tables in Section 5 - Financing Plan. As such the numbering system is not a simple numerical list. Many of the listed actions will continue beyond Stage 1a. The Stage 1a actions are subject to revision, including modification, deletion, or addition of individual actions, based upon information developed during program implementation; available resources, including funding and personnel; and logistical considerations. Additional actions will be implemented as the program progresses in Stage 1.

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
Ecosystem Restoration			
2	Initiate Ecosystem Science Program	Program to support the adaptive management element of the ERP. This will include science workshops, targeted research, assessment of relevant data and incorporation into the management process.	
4	Full Coordination and Funding Partnerships with other Ongoing Activities which Address Ecosystem Restoration in the Bay-Delta		
5a	Agricultural Diversions Screening Program	Consolidate and screen local ag diversions based on an appropriate priority and initiate a screen maintenance program, per Water Quality Control Plan, May 1995.	Reduce fisheries entrainment impacts
5b	Agricultural Diversions Extension and Screening -South Delta	As part of South Delta improvements extend ag intakes where necessary, with operable barriers in place, to meet local water supply availability needs.	Improve availability of water
5c	Evaluate the Need to Screen Small Diversions in the Delta and Implement Fish Screen Projects on Priority Diversions Upstream of the Delta	Consolidate and screen local ag diversions based on an appropriate priority and initiate a screen maintenance program, per Water Quality Control Plan, May 1995.	Reduce fisheries entrainment impacts
5d	Salmon and Steelhead Trout Genetic Management Program	Develop biological and genetic management plans to address restoration and recolonization of streams in the Central Valley by Chinook Salmon and Steelhead.	
5e	Hatchery Operations Program	Develop an integrated hatchery management strategy that reduces the potential conflict with wild fish, maintains a viable harvest strategy, and optimizes progress toward the goal of self-sustaining populations of wild, native fish.	Improve fish populations

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Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
5f	Hatchery Marking and Tagging Program	Develop and implement a comprehensive Implementation Plan for a statistically designed marking and tagging program for Chinook Salmon produced at Central Valley facilities consistent with existing programs throughout the West.	
5g	Coleman Hatchery Weir at Battle Creek	Repair and modify weir.	Improved fish passage
6a	Ecosystem Restoration Program: South Delta Region	Identify and advance specific regional ERP goals, coordinated with other facilities and operational changes.	Improve fisheries and wildlife habitat
6b	Flood Conveyance Improvements in Lower San Joaquin River System	Channel dredging, limited levee setbacks, and flood plain restoration in conjunction with ERP actions.	Improve levee integrity, channel conveyance, flood plain storage, fisheries and wildlife habitat
6c	Restore Tidal Marsh and Riparian Habitats along Georgiana Slough	The assumption is that improved habitat will decrease the diversion effect on fisheries.	Improve fisheries and wildlife habitat
6d	Suisun Marsh Diversion Screening Program	It is assumed that fish screens in this area will aid in the recovery of threatened or endangered fish species.	Reduce fisheries entrainment impacts
6e	Suisun Marsh Tidal Wetlands Restoration and Improve Levee Integrity	Evaluate and restore tidal wetlands. Based on willing participants.	Ecosystem, WQ, and levee integrity benefits
6f	Alternative Analysis and Implementation of Yolo Bypass Habitat	This is a portion of a general effort for flood bypass areas, including Colusa Basin, Butte Basin, Sutter Bypass, Yolo Bypass, Chowchilla Bypass, Eastside, Fresno Slough, and James Bypass. See # 6g	Improve diverse habitat, fish passage, and WQ
6g	Conduct a Needs and Opportunities Analysis for Achieving Ecosystem Restoration in Flood Bypasses	Areas include but are not limited to: Colusa Basin, Butte Basin, Sutter Bypass, Yolo Bypass, Chowchilla Bypass, Eastside, Fresno Slough, and James Bypass.	Improve diverse habitat, fish passage, and WQ

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Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
6h	Key Acquisition Areas for Conservation of Special Status Plant Species	Conduct reconnaissance level surveys of special status plants.	Identify key ecological attributes
6i	Propagation Techniques and Restoration Protocols for Special Status Plants		
6j	Develop a Long-Term Plan for In-Stream Flows	Formulate a science based method to determine instream flow needs.	Improve fisheries and wildlife habitat
6k	Develop Ecologically-based Hydrologic Models and Water Management Strategies	Develop modeling tools to support a comprehensive ecological water management strategy.	Improve fisheries and wildlife habitat
6l	American River Corridor Management Plan	Develop a corridor management plan.	
7	Sacramento River Meander Corridor	Continue studies and demonstration projects which address potential changes in hydrology and geomorphology, local economic impacts, and other issues associated with ongoing riparian restoration work.	
8	San Joaquin River Floodplain Corridor	Implementation of components of Comprehensive Flood Control Study.	
9a	Frank's Tract and other Flooded Island Habitat Restoration	Further evaluate and restore portions of Frank's Tract to provide for channel islands and tidal wetland habitat using clean dredge materials and natural sediment accretion. Combine the habitat restoration with a program to control or eradicate nuisance aquatic plants.	Create shallow water habitat, riparian
9b	Dredged Materials Reuse	Pilot studies and implementation, as materials and appropriate opportunities become available.	Materials for habitat, levees
9c	In-Channel Islands Restoration	Preserve, restore, and recreate habitat critical to recovery of listed plants.	Tidal wetlands, riparian habitat, special status species

C-024163

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
9d	ERP Levee Relocations, Berms, Veg. Management	Cost included with In-Channel Island Restoration.	Delta Shallow Water, tidal wetlands, and riparian habitat
10	Environmental Water Acquisitions	Upstream flow enhancement.	Protection and recovery of fish
11a	Environmental Water Account	Establishment and administration of EWA, develop accounting process and rules for storing, conveying, and borrowing EWA water. EWA will also obtain water by SWP pumping of (b)(2)/ERP Upstream Releases, use of Joint Point of Diversion, E/I ratio flexibility, and 500 cfs SWP pumping increase.	Protection and recovery of fish while maintaining south Delta diversions
11b	Seek to Provide Water for San Joaquin River Flows to Meet WQ, VAMP, ESA, and Other Flow Objectives Through Water Purchases/Transfers from Willing Sellers.	Component of EWA. See # 11a	Increased instream flows during significant periods
13	Nonnative Invasive Species Management	Demonstration projects. This action is part of an ecosystem-wide effort to control non-native invasive species with early emphasis on the Delta and the Bay.	
14	Environmental Education Programs	Programs designed to develop a broader understanding of natural resource conservation issues at the individual and community level.	Increase public awareness
15	Program Administration	The restoration component of the overall CALFED Program has increased substantially requiring the infusion of additional staff and related costs which is greatly above the existing project administration level.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
16	Sediment Management Plans	Develop a sediment management plan that includes evaluating coarse and fine sediment transport and the need to augment gravel supplies, and is consistent with efforts to restore the Tuolumne River corridor.	Create maintain spawning habitat, help aquatic production
17a	Butte Creek Restoration	Complete barrier removal aspect of the Butte Creek Restoration.	Improve ecosystem health
17b	Deer Creek Restoration	Reintroduction of flood plain processes.	Improve ecosystem health
17c	Clear Creek Restoration		Improve ecosystem health
17d	Tuolumne River Restoration Implementation Actions	The Tuolumne River has been identified as a large scale demonstration stream in the ERP.	
17e	Cosumnes River Restoration		Improve ecosystem health
17f	Habitat Development Along the Mokelumne River Corridor	This action will contribute to establishment of a Mokelumne River Corridor. Acquire and convert land for shallow water, wetland, and riparian habitat.	Flood control and habitat creation w/ breached levees

C-024165

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Water Use Efficiency		
18	Financial Incentive Program- Urban, Ag, and Managed Wetlands	Local assistance (loans & grants) for cost effective water conservation/recycling actions, low interest loans. Develop Urban Water Management Plan Certification process, implement urban BMP Certification process, develop agricultural reference conditions, and work cooperatively with AWMC.	Reduce demand
19	Recycling Financial Incentive Program	Local assistance (loans & grants) for cost effective water conservation/recycling actions, low interest loans.	Reduce demand
20	Technical Assistance- Urban, Ag, and Managed Wetlands	Expansion of existing technical and planning assistance programs; Recoverable loss studies, on farm conservation studies. Finalize and implement methodology for refuge water management.	Reduce demand
21	Recycling Technical Assistance	Technical assistance and resolution of limitations on agricultural and urban water recycling.	Reduce demand
22	Research to Improve Water Use Efficiency Actions	Research ET.	
23	Directed Studies- Pilot Measurement Program	Pilot measurement program.	

C-024166

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
Water Transfers			
24a	Forecast and Disclose Available Capacity in Existing Facilities	Provide transfer proponents and forecasts regarding the potential availability of conveyance capacity.	Improved market efficiency
24b	Develop Predictable/Reliable Access to Excess State and Federal Conveyance Facility Capacity	Work with DWR/USBR to id and assess options to make capacity available for transfers. Then take to stakeholders.	Improved market efficiency
24c	Improve Instream Water Transfers Tracking Protocols	Develop accounting/tracking protocols for 1707 transfers; maintain consistency with other types of transfers.	Facilitate ERP Impl.; ensure water is meeting its purpose
25a	Streamline the Water Transfer Approval Process	Working with SWRCB, DWR, USBR to streamline approval processes including "per-certification" of certain transfers and expedited environmental review procedures. Convene stakeholder panel.	Improved market efficiency
25b	Develop Transferable Water Definitions for Various Types of Transfers	Develop definitions of transferable water for types of transfers that are of issue as identified in guidebook.	Improved market efficiency
25c	Clarify Carriage Water Requirements for Cross-Delta Water Transfers	Evaluate applicability of carriage water concept to transfers and develop consensus on methods to calculate it.	Improved market efficiency
25d	Establish Refill Criteria Policy for Reservoir Storage Based Water Transfers	Establish more consistent application of refill criteria. Facilitate discussion between SWRCB, DWR, and USBR.	Improved market efficiency
26a	Establish the California Water Transfer Information Clearinghouse and the On Tap Web Site	Clearinghouse will maintain web site and facilitate research and CALFED Agency Coordinations (long-term commitment).	Improved market efficiency

C - 0 2 4 1 6 7

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
26b	Require Impact Analysis Disclosure for Water Transfers	Working with SWRCB, DWR, USBR to require transfer applicants to disclose socio-economic, groundwater, and cumulative impact assessments with approval applications. Several year effort. Requires agencies to adopt/modify existing requirements.	Provide more information to third-party interests

C-024168

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
Watershed Management			
27a	Watershed Assessment and Planning	Assist local watershed groups and government agencies to develop watershed plans through grants, directed actions training and technical support.	Manage land use, vegetation, and stream zones to reduce sediment, reduce stream flashiness, improve base flow, Reduce fire danger, reduce pathogens, and TDS
27b	Watershed Project Development and Implementation	Assist local watershed groups and government agencies to develop and implement programs, projects and other community based watershed improvement activities through grants, directed actions training and technical support.	Manage land use, vegetation, and stream zones to reduce sediment, reduce stream flashiness, improve base flow, Reduce fire danger, reduce pathogens, and TDS
27c	Watershed Management Technical Assistance	Ensure adequate levels of technical assistance and scientific support to locally led watershed management programs.	Sound scientifically based watershed plans, and projects
28	Community Capacity Building	Fund the development of local education programs through communities, schools, and universities, non-governmental organizations, local agencies and watershed stewardship groups.	Increased awareness and understanding within communities of the importance of a healthy functional watershed
29a	Watershed Assessment, Monitoring and Information Sharing	Ensure that adaptive management can be applied at multiple scales (including site, project, and program) and across land ownerships by developing a suite of protocols to help track a wide range of watershed responses to change.	The program will have reliable data and information with to adaptively management the program, and program activities

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
29b	Watershed Assessment, Monitoring and Information Sharing	Support the expansion of an active network of watershed data and information to assist watershed programs to conduct effective watershed management, conservation and restoration activities.	Expanded capability of watershed managers to collect, store, retrieve and exchange data and information
29c	Watershed Management Program Oversight and Management	Insure adequate funding to conduct administrative, management, and oversight for the watershed program, within the framework of the overall CALFED oversight entity.	

C-024170

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Water Quality		
	Environmental Water Quality		
34a	Cache Creek/Delta Mercury Source Control Projects	Divert stormwater around mercury waste sites.	Develop ways to reduce mercury transport to waterways
34b	Clear Lake Upper Watershed Mercury Remediation Actions	Divert stormwater and revegetate areas to reduce mercury loading.	Benefits to the ecosystem and public health
34c	Sacramento River Mercury Source ID and Control/Remediation Study	Identify and control sources of mercury in the Sacramento River Watershed.	Benefits to ecosystem
35	Pesticides BMP Development and Implementation	Assess the fate and transport of diazinon and chlorpyrifos; begin implementation to reduce water quality impacts, using BMP's.	Eliminate toxicity in receiving water
36	Trace Metals	Determine extent of copper contamination, review impacts of other metals.	
37a	Salinity Reduction	Conduct salinity reduction work in coordination with the San Joaquin Valley Drainage Program.	Reduce transport of salinity contaminants to San Joaquin River
37b	Reduce Impacts of Soils and Receiving Water During High Flow	Implement regional and on-farm drainage retention facilities and manage discharges.	Improve late season WQ in lower San Joaquin River, potential drinking water quality impact
38	Selenium	Includes research, evaluation of real-time management of selenium discharge, expanded source control, and coordination with other programs.	Reduce transport of selenium contaminants to San Joaquin River
39	Sediment Reduction/Organochlorine Pesticides		
40	Turbidity and Sediment	Includes erosion control BMPs, sedimentation basins, evaluation of use of head control structures on select tributary creeks, and analysis of river sediment loads.	

C-024171

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
29b	Watershed Assessment, Monitoring and Information Sharing	Support the expansion of an active network of watershed data and information to assist watershed programs to conduct effective watershed management, conservation and restoration activities.	Expanded capability of watershed managers to collect, store, retrieve and exchange data and information
29c	Watershed Management Program Oversight and Management	Insure adequate funding to conduct administrative, management, and oversight for the watershed program, within the framework of the overall CALFED oversight entity.	

C-024172

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
41	Stockton Dissolved Oxygen Study and Solution Alternatives	Evaluate and implement appropriate actions to improve San Joaquin River dissolved oxygen conditions.	Improve WQ in San Joaquin River in vicinity of Stockton
42	Toxicity of Unknown Origin	Participate in identifying toxicity of unknown origin and addressing as appropriate.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Drinking Water Quality		
43	Work cooperatively with Bay Area water suppliers as they develop a Bay Area Blending/Exchange Project	Preliminary investigation of the potential for blending of Sierra quality water to improve WQ for Bay Area urban water suppliers.	Improve sources of drinking water
44	Address Drainage Problems in the San Joaquin Valley	Includes funding for support of voluntary land retirement programs with a target of approximately 35,000 acres in Stage 1.	
45a	Source Control Program		Improve sources of drinking water
45b	Reduce TOC Contributions	Conduct evaluations, pilot programs, and full scale action to reduce TOC through control of algae, aquatic weeds, ag runoff, and watershed improvements.	
46	Delta Drinking Water Council	Support ongoing efforts of the Delta Drinking Water Council.	
47	Alternative Sources of Supply for Southern California (Southern California Blending)	Prefeasibility studies of the potential for water quality exchanges between San Joaquin Valley agricultural entities and Southern California water agencies.	
48	Treatment Technology Contributions	For industrial source control, advanced wastewater treatment, bromate control, and UV treatment/ozonation projects.	
49	Control Runoff into Aqueduct		
50	North Bay Aqueduct Intake	Study to examine an alternate point of intake for the NBA. Includes funding for watershed protection at Barker Slough.	
51a	Operational Improvements	Includes modeling, refinement studies, coordination with the water management strategy.	

C-024174

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
51b	Study: Evaluate Recirculation Benefits and Impacts	If feasible, acquire from willing sellers water to recirculate to meet WQ and VAMP objectives.	Potential to improve water quality and meet VAMP flow requirements in lower San Joaquin River

C-024175

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
Levees			
52	Levees Subventions	Provide assistance to local levee maintaining agencies.	Levee System Integrity
53a	Levees Special Projects	Provide funding for levee maintenance for statewide benefits.	Levee System Integrity
53b	Identify Risks to Delta Levees and Develop a Risk Management Strategy	Evaluate potential risks and develop/implement a risk management strategy.	Levee System Integrity
53c	Dredged Materials Reuse	Develop BMPs for reuse. Institute a program for reuse of dredge materials to repair levees.	Materials for habitat, levees
54	Emergency Response Program	Refine existing emergency response capabilities.	Levee System Integrity
55	Suisun Marsh Levees Program	Complete necessary studies to decide how to proceed with Suisun Marsh Levees.	Ecosystem, WQ and flood control benefits

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Storage		
56a	Update Water Management Strategy	Assess new information on water management tools acquired through Program implementation. Update Water Management Strategy to reflect changes in statewide water management needs.	Improve Storage/CU utility
56b	Incentive Program for Groundwater Plans	Incentive program for groundwater management. Coordinate with conjunctive use program/incentives. Incentive dollars would not be through the Water Transfer Program.	Increase use of groundwater as a water management tool
57	Groundwater/CU Feasibility Studies with Local Sponsors	Provide support to local sponsors, id potential impacts, and allocate financial resources.	Improve Storage/CU utility
58	Groundwater/CU Programs: Develop and Impl. GW Monitoring, Modeling and Pilot Programs	Provide support to local sponsors, id potential impacts.	Improve Storage/CU utility
59	In-Delta Storage	Feasibility study of storage options in the Sacramento-San Joaquin Delta.	Water Quality/Operation Flexibility
61	Shasta Enlargement Feasibility Investigation	Begin necessary studies required to pursue expansion of reservoir by 300 TAF.	Water Quality/Operation Flexibility
63	Los Vaqueros Reservoir Enlargement Study	Begin necessary studies required to pursue expansion of reservoir by 400 TAF.	Water Quality/Operation Flexibility
65	North of Delta Off-Stream Investigation (Sites Reservoir)	Develop local partnerships and evaluate potential projects.	
66	Upper San Joaquin River Watershed Storage Study	Develop local partnerships and evaluate potential projects.	Improve Flood Control and Storage/CU utility
67	Power Facilities Reoperations Evaluation		Improve Storage/CU utility
68	Fish Migration Barrier Removal Evaluations	Analysis of options to facilitate fish passage.	Improve fish passage

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
Conveyance			
69	Study Feasibility of Delta Cross Channel Reoperation	Complete DCC operational studies and water quality and fish effects studies for a screened through-Delta facility on the Sacramento River.	Balance water quality and fisheries benefits
70	On Sacramento River Test Diversion (Evaluate)		Balance water quality and fisheries benefits
71	North Delta Regional Flood Control/Ecosystem Restoration	Provide a coordinated regional solution to concerns in North Delta, including 100-year flood protection for the North and South Mokelumne Rivers.	Flood control and habitat creation w/ levee berms
72	Plan, Design & Construct CVP Tracy Test Fish Facility, 500 cfs screen, plus Sorting, Holding, Transport, and Release	New fish screens for Tracy Pumping Plant full export capacity to be completed by end of Stage 1.	Improve fish survival
73a	Plan, Design, & Construct new SWP Clifton Court Forebay Intake, Including Fish Screens and Salvage Facilities, Average Daily Capacity 10,300 cfs: New Screened Intake with Gates and Low Head Pumps		Improve fish survival, water supply flex. and reliability, drinking water quality stages, circulation, and water quality
73b	Implement Joint Point of Diversion	Allow SWP and CVP to shift allowable exports between pumping plants to minimize environmental impacts and improve operational flexibility and water supply reliability.	Operational flexibility, water for SWP and CVP
74	Feasibility and Environmental Study of SWP/CVP Interties Between Export Facilities and Canals	Based on results of this investigation, either construct intertie and add 4600 cfs screened export capacity to CCFB or build new screen and salvage facilities at Tracy Pumping Plant. Also evaluate intertie between Delta Mendota Canal and Cal. Aqueduct between Delta pumping plants and O'Neil Forebay.	Optimize efficiency and reliability

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
76a	Increase SWP Pumping to 8,500 cfs	Facilitate SWP export flexibility up to 8,500 with appropriate constraints.	Operational flexibility
76b	Increase SWP Pumping 500 cfs	At the start of Stage 1 increase SWP pumping by 500 cfs July through September.	Operational flexibility
76c	SWP 10,300 cfs Permits	Obtain permits to use full SWP capacity, consistent with all applicable operational constraints.	Increased operational flexibility for water supply and environmental benefits.
76d	Plan, Design, and Construct one or more Permanent Operable Barriers at Head of Old River, Middle River, Old River at Tracy, and/or Grant Line Canal	Phase out temporary barriers as the permanent barriers, dredging, and extension of local agricultural diversions and/or consolidation of agricultural intakes are completed.	Improve fish passage (HOR), and local water supply availability and quality (MR, ORT and GLC)
76e	Barrier Operations	Establish Barrier Operation Coordination Team, operate for fisheries, water quality, and water supply availability goals.	Improve availability of water of adequate quality and quantity to ag. diverter, contribute to restoring aquatic resources
76f	Channel Dredging of Selected Channel Segments	Dredge to limit scour velocities, for water supply availability, for navigation, and flood control. Costs shown are for design.	
76g	Monitoring	Monitor barrier effects on fish, stages, circulation, and water quality to support real time ops and planning process. Also includes monitoring of new screened intake, new channel dredging, and modifications to ag intakes.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Science Program		
77a	Monitoring, Assessment, and Research	Develop and implement the CALFED Science Program including monitoring, assessment research, and independent scientific review.	
77b	Hire an Interim Science Leader		
77c	Hire a Chief Scientist		
77d	Appoint an Independent Science Board and independent science panel for the EWA		
77e	Coordinate Existing Monitoring and Scientific Research Program		
77f	Refine the Set of Ecological, Operation, and other Predictive Models		
77g	Establish and Refine Performance Measures and Indicators		

C-024180

4.0 GOVERNANCE PLAN

The decision-making process and governance structure for implementation of the CALFED Preferred Alternative is a key feature in assuring successful program implementation. A CALFED long-term governance proposal is described in this section. The state and federal administrations strongly believe that a new joint federal/state commission must be created, through state and federal legislation, to oversee the long-term implementation of the CALFED Preferred Alternative. This approach will require resolution of federal constitutional concerns. In the near-term the CALFED agencies will develop an interim governance structure similar to the current voluntary structure to bridge the gap before appropriate legislation can be completed establishing a permanent structure.

The Implementation Plan and Governance Plan are included in the Final Programmatic EIS/EIR to provide the public with additional information about the CALFED Bay-Delta Program. These sections are not legally required as part of the evaluation of program impacts. The Governance Plan is not an action or project that requires environmental analysis. Additional refinement of the Governance Plan, including the necessary details is expected by the time of the ROD. Refinement will also likely occur through the legislative process as legislation is developed to implement the new commission.

Schedule for Governance Decisions

- Interim Governance
 - New Implementation MOU adopted by the time of the Record of Decision
 - Operates until a long-term governance structure adopted

- Long-Term Governance
 - Proposal in Final EIS/EIR
 - Legislation needed to finalize

The CALFED Program is a complex, multi-objective program which involves many agencies and programs, and covers a large geographic scope. The CALFED Program provides an integrated approach to environmental and water management in the Bay-Delta System. To develop a Preferred Alternative the program has been organized into eight program elements. In addition to the program elements there are programs that will be established to support CALFED implementation, such as the Science Program and Environmental Water Account. In this chapter these programs will be referred to as "program areas."

In developing a long-term governance structure, CALFED identified and evaluated principles, functions, and structures/forms needed to successfully implement the CALFED Program. Included in this chapter is a discussion of the:

- Existing governance structure and decision-making processes for CALFED
- Functions needed for CALFED implementation
- Interim governance proposal
- Reasons for a new governance structure
- Long-term governance principles and proposal

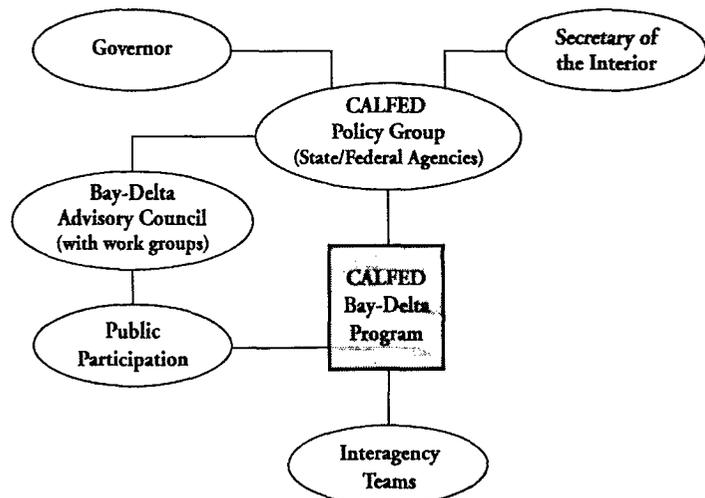
4.1 Background

The CALFED Program is a collaborative effort between state and federal agencies to develop a long-term solution to the Bay-Delta problems. To develop the long-term solution, the Program is organized into three Phases. Phases I and II of the Program focused on development of the Preferred Alternative and preparation of the Final EIS/EIR. After the NEPA/CEQA process is complete, Phase III -- program implementation -- begins. Program implementation will include all aspects of implementation, including continued planning on a program or project specific level, as well as direct implementation of programs and projects.

The current organization of the CALFED Program is shown below. The operating principles were agreed to in the 1994 Framework Agreement, an interagency MOU between the Governor's Water Policy Council and the Federal Ecosystem Directorate. The CALFED Policy Group has served as the primary governing body, providing program direction and coordination of individual agency decision-making on CALFED issues.

Currently there are 18 CALFED agencies on the CALFED Policy Group (see list below). In recent years, several additional agencies have been asked to participate on the Policy Group to increase interagency coordination. Each Policy Group member has management or regulatory responsibilities for the Bay-Delta or its watershed. Legal authority for program decisions currently rests with the Governor (for state matters) and the Secretary of the Interior (for federal matters). Formal public comment and advice to the agencies has been provided by BDAC, a

Existing CALFED Program Structure



federally chartered citizens' advisory committee with over 30 members. In addition, advice and comment has been provided in smaller forums through BDAC work groups, subcommittees, and other technical groups. For the past several years, the CALFED Program has worked with the BDAC Governance Work Group, the Work Group which has provided advice and comment on the governing structure for the CALFED Program.

<u>State CALFED Agencies</u>	<u>Federal CALFED Agencies</u>
CA Resources Agency	(U.S. Department of Interior)*
Department of Fish and Game	Fish and Wildlife Service
Department of Water Resources	Bureau of Reclamation
CA Environmental Protection Agency	Geological Survey
Water Resources Control Board	Bureau of Land Management
Department of Food and Agriculture	U.S. Environmental Protection Agency
Delta Protection Commission	(U.S. Department of Commerce)
The Reclamation Board	National Marine Fisheries Service
	(U.S. Department of Agriculture)
	Natural Resources Conservation Service
	Forest Service
	Western Area Power Administration
	U.S. Army Corps of Engineers

* Agencies shown in parenthesis are not Policy Group members but are shown to indicate the agency organization

4.2 Functions for Implementation --Phase III

As CALFED moves into program implementation (Phase III) from the planning phase, new responsibilities and functions will be required. Before proposing a governance structure suitable for program implementation, CALFED first identified the basic functions that will need to be performed in Phase III. CALFED has organized functions for implementation of the Program into three categories to accommodate the complexity of the Program; program direction, program management, and direct implementation. In all cases, the functions do not predetermine the form or governing structure that will be used, but guide the evaluation and selection of the structures.

- 1. Program Direction and Oversight Functions.** An entity will need to provide broad program direction and oversight for the CALFED Program during implementation, as the Policy Group has done during the planning stage. Because the Program has four equal objectives (ecosystem, water quality, levee stability, and water supply reliability), it will

be important for an entity to ensure balance, integration and coordination between the objectives. Program direction functions include:

- Oversight of CALFED Program Implementation. An entity needs to be responsible for developing policies and making decisions to achieve program goals and objectives, making decisions at program milestones (staged decision-making), and providing direction to ensure balanced implementation, integration, and continuous improvement in all program areas.
- Program Assessment and Modification. An entity needs to be responsible for assessing overall achievement of program goals and objectives, and modification, as needed, of program goals and objectives. Modification would be done in coordination with the appropriate agencies and with public input.
- Review and Approve Priorities and Budgets. An entity needs to be responsible for review and approval of program priorities and budgets in all program areas, whether the funding is appropriated to the entity or to other state and federal agencies. The responsible entity would be subject to individual state and federal agency budget development, review, and approval processes.
- Coordination and Integration of Related Programs. An entity needs to be responsible for coordination, and if appropriate integration, of the CALFED Program with other related programs to maximize available resources and reduce conflicts and inconsistencies with other programs. Programs would need to be identified within the state and federal agencies that are most related to CALFED objectives to determine what level of coordination and integration those programs should have with CALFED.
- Conflict/Dispute Resolution. An entity needs to be responsible for facilitating resolution of conflicts/disputes between CALFED agencies.
- Public Outreach and Communication. Although there will be numerous agencies in each program area that will work with the public, a single entity needs to be responsible for public input and communication for the CALFED Program as a whole.
- Legislative Communication. An entity needs to be responsible for communicating with Congress and the California Legislature to report on program progress, answer legislative inquiries, review and respond to legislative proposals, and to review and submit legislative proposals.

2. **Program Management Functions.** Program management for each program area will be critical for effective implementation. Program management functions include:

- Manage program implementation
- Identify priorities, propose actions, develop budgets
- Assess and report on program area performance
- Coordinate with implementing agencies and stakeholders, and between program areas

3. **Direct Implementation Functions.** These functions have been identified separately because some agencies which may be involved in CALFED Program implementation may not have program management responsibility. For example, one entity will be responsible for program management of the ERP (Bay-Delta Program in the interim), but there will be many agencies and organizations responsible for direct implementation of ERP actions. Direct implementation functions include:

- Responsibility for direct implementation of individual actions
- Report on assessment and monitoring of individual actions
- Prepare environmental documentation and obtain permits
- Stakeholder and local coordination for individual actions

4.3 Interim CALFED Governance

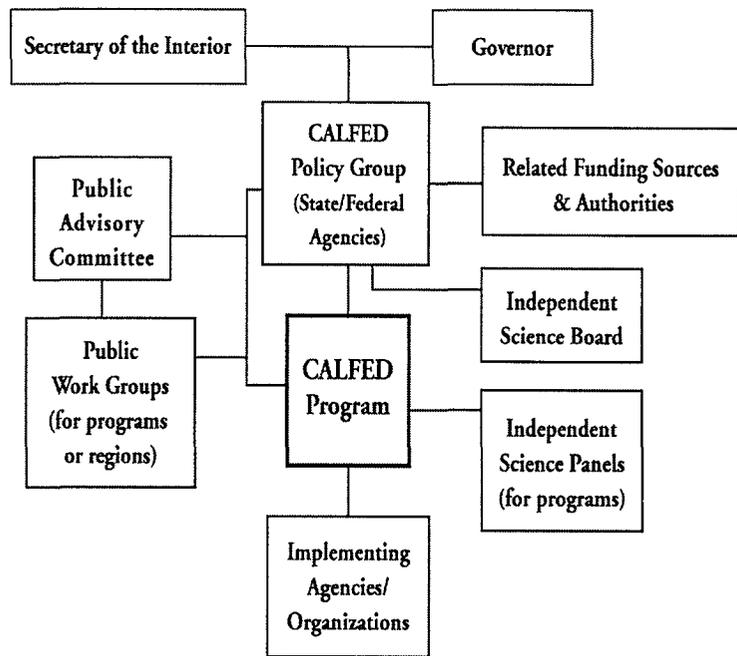
The interim structure will be in place from the time of the Programmatic ROD until a long-term permanent structure is adopted through state and federal legislation. For interim governance, CALFED proposes adoption of the current CALFED structure being used during the planning stage, but adapted for implementation. The interim governance structure, including identification of how decisions will be made, will be set forth in a new Implementation MOU which the agencies will develop and execute by the time of the ROD. The current structure is made up of the Policy Group reporting to the Governor and Secretary of the Interior, public advisory groups, the CALFED Bay-Delta Program Executive Director and staff, and state and federal agencies and teams. This structure, with additions and modifications, will serve to bridge the gap until a permanent commission is established. In Section 4.4, the reasons why CALFED does not support using the current structure on a permanent basis are described.

Interim Implementation Functions and Responsibilities. Described below is the proposed distribution of responsibilities and functions for interim implementation of the Preferred Alternative. In the proposed long-term governance structure, the Policy Group would be replaced by the commission, and the Bay-Delta Program staff would be replaced by the commission staff.

Policy Group and CALFED Bay-Delta Program.

In the interim, the program direction functions will continue to be performed by the CALFED Policy Group with support by the Bay-Delta Program staff. Bay-Delta Program staff will provide program direction and coordination for priorities, workplans, and budgets developed by state and federal agencies participating in CALFED implementation. Program priorities, workplans and budget requests for "Primary" CALFED programs (those programs targeted at CALFED objectives) should be reviewed by the CALFED Policy Group. While final approvals will continue to rest with the agencies with program and funding authority, Policy Group will provide recommended approvals to the funding agency. This review and coordination is critical in the interim to ensure programs and funding are meeting CALFED objectives.

CALFED Interim Governance Structure



Public Involvement. In the interim, public involvement in the implementation of the Program will be through public advisory groups and through public Policy Group meetings. A broad public advisory group will be formed to meet jointly with Policy Group and separately as needed. Public involvement will continue to be provided through groups focused on individual program areas, such as the Delta Drinking Water Council, the Ecosystem Roundtable, and other workgroups. In addition, regional advisory groups may be established. Other options for public involvement in the interim are being evaluated.

Funding. As CALFED implementation begins, it is critical that the program demonstrates progress in meeting its objectives and demonstrates an integrated program. Although state and federal agencies that are members of the CALFED Policy Group are in strong support of a coordinated program, it will be a challenge to oversee and coordinate a fragmented program in which all funding and program authority rests in numerous agencies. In the interim, CALFED Policy Group and the Bay-Delta Program staff will provide funding coordination and integration among the many agencies. This will be especially necessary with regard to "primary" CALFED Programs--those programs and funding targeted at CALFED objectives. Program priorities, workplans and budget requests for primary CALFED programs should be coordinated with Bay-Delta Program staff and reviewed by the CALFED Policy Group. While final approvals

will continue to rest with the agencies with program and funding authority, Policy Group will provide recommended approvals to the funding agency. CALFED agencies will define the primary CALFED programs and funding in the Implementation MOU by the time of the ROD.

Crosscut Budget. To ensure coordination between CALFED "primary" programs and CALFED "related" programs, the Policy Group should review and comment on an annual CALFED crosscut budget prepared by the Bay-Delta Program staff. The Policy Group should provide recommendations to the appropriate agencies on program modifications needed to increase coordination with CALFED primary programs. Coordination with state and federal agencies will be needed in the early planning stages of budget preparation as well as after program budgets are approved by Congress or the State Legislature. Additional review is needed to identify those programs that should be included in an annual CALFED crosscut budget. Once identified, those programs should be listed in an interagency MOU specifying the agreement to coordinate and share program and funding information.

Interim Program Management. With program management responsibilities distributed among many agencies, it is important that agencies closely coordinate to achieve the CALFED objectives. Therefore, in the interim the Bay-Delta Program will provide program direction and oversight for each program area.

The Bay-Delta Program will not supplant any action or decision required by law to be performed by a CALFED agency. In the interim, CALFED agencies will utilize the CALFED process to reduce fragmentation among existing agencies. The degree to which the process is used will vary, depending on the program. In most cases, program management functions for each program area will be performed by staff at the state and federal agencies which currently have program and funding authorities. For several programs such as the ecosystem restoration, watershed and drinking water quality programs, the Bay-Delta Program will take a larger role in program management. In all cases, however, CALFED agencies will retain and exercise their statutory authorities. The term program management does not suggest any delegation of an agency's authority to the Bay-Delta Program. Interim program management of each CALFED program area is described below.

In the interim, primary CALFED programs, those targeted at CALFED objectives, should be reviewed by the CALFED Policy Group.

While final approvals will continue to rest with existing agencies, Policy Group will provide recommended approvals.

1. Levee System Integrity Program

In the interim, program management responsibilities will remain with DWR, DFG, and other existing agencies. However, the Bay-Delta Program will provide program direction and oversight, and serve as program manager for several tasks (such as risk assessment studies and North Delta planning). Final decision-making authority would continue to rest with existing

agencies, however, program priorities and funding should be coordinated and reviewed by the CALFED Policy Group. The Program should coordinate closely with DWR on the levee programs and funding (subventions and special projects) to ensure consistency and integration with CALFED objectives. The Bay-Delta Program will form and manage an agency and stakeholder coordination group to provide technical coordination and to allow for public advice in the implementation of the Program.

2. Ecosystem Restoration Program

In the interim, the Bay-Delta Program will continue to be assigned program management functions for the ERP, in coordination with the appropriate agencies. Although funding authority rests with existing agencies (such as the Resources Agency for Proposition 204, and participating federal agencies for the Federal Bay Delta Act), the funding agencies have assigned program management to the Bay-Delta Program to avoid fragmentation. Final decision-making authority would continue to rest with existing agencies, however, program priorities, workplans, and funding should be coordinated and reviewed by the CALFED Policy Group.

Implementation of the ERP will follow a "single blueprint for ecosystem restoration and species recovery", as proposed by the ERP Focus Group. The single blueprint supports a cooperative and unified approach to restoration of the Bay-Delta System -- both within the CALFED program, and between all resource management, conservation, and regulatory actions affecting the Bay-Delta System. To ensure communication and integration occurs, a management framework including agreements between parties will be adopted early in Phase III. (See the Phase II Report for additional description of the single blueprint.)

In the interim, the Ecosystem Roundtable or a similar advisory body will continue to provide public input in the program. An Interim ERP Science Board has been established and will continue in Phase III to advise the ERP on science issues. The ERP science activities will be coordinated with the CALFED Science Program and the CALFED Independent Science Board, once established.

3. Environmental Water Account (EWA)

In the interim and for the first four years of Stage 1, the state and federal fishery agencies (DFG, USFWS, NMFS) will manage the EWA assets, in coordination with the ERP and with water project operations. Coordination with the project operators and stakeholders will be through the CALFED Operations Group. Initial acquisition of assets for the EWA will be made by federal and state agencies (USBR and DWR). Subsequently, it is anticipated that acquisitions will be made pursuant to a public process that may take advantage of other agencies or third parties to acquire assets. The EWA assets and decisions over how the assets are used will be reviewed by an independent EWA science panel. The Bay-Delta Program will serve the role of facilitator and coordinator for EWA.

4. Watershed Management Program

In the interim, the Bay-Delta Program staff will be assigned for program management of the CALFED Watershed Program. As funds are appropriated for the CALFED Watershed Program, the Bay-Delta Program will be assigned program management responsibilities for those primary CALFED funds to avoid fragmentation of program management. Final program and funding decisions during the interim will continue to rest with the funding agency but should be coordinated and reviewed by CALFED Policy Group. For funds appropriated to state and federal agencies for the related watershed activities (such as programs within the SWRCB, EPA, USFS, and NRCS), the Bay-Delta Program should coordinate closely with the agencies.

The Bay-Delta Program staff will facilitate and coordinate communication between the Program areas and among the various watershed groups/agencies to increase coordination and consistency with CALFED watershed and community-based implementation objectives as much as possible. The Interagency Watershed Advisory Team (IWAT) will continue to provide advice to CALFED on program priorities, funding, and implementation. The Watershed Work Group will continue to be the main forum for formal public input and advice on the program.

5. Drinking Water Quality

In the interim, the Bay-Delta Program staff will be assigned the program management functions for the Drinking Water Quality Program. As funds are appropriated to the Bay-Delta Program for the CALFED Drinking Water Program, the Bay-Delta Program will be assigned program management responsibilities for those funds to avoid fragmentation of program management. However, it is expected that because significant funding targeted for the CALFED drinking water program will also be appropriated to various agencies (such as USBR, EPA, DHS, DWR, SWRCB), program management responsibilities will be dispersed among these agencies, unless those agencies assign program management responsibility to the Bay-Delta Program. For those primary CALFED funds appropriated to CALFED agencies, the Bay-Delta Program will need to provide interagency coordination and program direction/oversight to ensure CALFED objectives are being met. The Delta Drinking Water Council will continue in the interim, and will likely be part of the long-term governance structure. The Council was established to provide agency and stakeholder advice and input into the decision-making process for drinking water issues.

6. Water Management Program

Water Management Strategy. The WMS provides a broad framework to coordinate and integrate the many water management tools in the program, evaluate the success of implementation efforts, and to select additional tools needed to achieve CALFED's water supply reliability objective. The Bay-Delta Program staff will manage the WMS in the interim, and coordinate with appropriate agencies. The Bay-Delta Program should coordinate closely with

other programs within DWR and with USBR to develop budget proposals and workplans to support the WMS.

Water Transfers. In the interim, the Bay-Delta Program staff will provide program direction, oversight, and coordination among Program areas and among agencies with jurisdiction over water transfers and use of project facilities. Agencies with jurisdiction over water transfers would retain authority to implement any changes in their own policies or procedures. As CALFED member agencies, these agencies will coordinate with the Bay-Delta Program to implement program recommendations. USBR and DWR will continue to have jurisdiction over the use of and access to their respective project facilities. These agencies will work in close coordination with the SWRCB to provide a consistent set of rules and guidelines for water transfers and a streamlined transfer review and approval process.

Water Use Efficiency. In the interim, DWR and USBR will be responsible for program management of the technical assistance and loan assistance elements of the CALFED Water Use Efficiency Program. The Bay-Delta Program staff will provide the program direction and oversight for the WUE Program, and will be assigned the responsible for program management of the grant assistance element. The Bay-Delta Program staff will coordinate with the CUWCC, AWMC, and other public groups during the refinement and implementation of the WUE Program. Bay-Delta Program staff will convene technical work groups to conduct and review directed studies, to address technical issues, and to respond to problems associated with public acceptance of WUE actions. Funding for the WUE program will be appropriated to DWR and USBR, but the Policy Group should recommend approval of priorities, workplans and expenditures for CALFED WUE proposals.

Water Recycling. In the interim, the existing agencies will provide program management for the recycling program and the Bay-Delta Program will provide the program direction and oversight. To the extent funding agencies request assistance from the Bay-Delta Program, the Program may be assigned program management functions as well. It is expected that funding authority for recycling actions will remain with existing agencies in the interim, and that new funds would not be appropriated to the Bay-Delta Program. Therefore, coordination with state and federal agencies (SWRCB, DWR, and USBR) which have funding for recycling programs will be critical in the interim to ensure state and federal funding is available to support CALFED objectives as much as possible. Specifically, the Bay-Delta Program should work closely on recycling programs funded by existing and new bond funds. Final program and funding decisions during the interim will continue to rest with the agencies with funding authority, but should be coordinated and reviewed by the CALFED Policy Group.

Storage. In the interim, DWR and USBR will share responsibility for program management for the ISI, and the Bay-Delta Program will provide program direction and oversight. DWR and USBR will be responsible for their portions of the ISI. The Bay-Delta Program will work closely with DWR, USBR, and other agencies to ensure programs are coordinated and consistent with

CALFED objectives. Final program and funding decisions during the interim will continue to rest with the agencies with funding authority, but should be coordinated and reviewed by the CALFED Policy Group. The Bay-Delta Program will work with DWR or USBR to convene technical advisory committees to work with Bay-Delta Program and ISI staff on specific project studies (such as the existing Technical Advisory Committees on Sites Reservoir).

Conveyance. In the interim, the Bay-Delta Program will be assigned responsibility for program management of the conveyance program element. The Bay-Delta Program will continue to serve the program management functions for the North Delta and South Delta Programs which include conveyance, levee, water quality and ecosystem actions. In the interim funding will remain with existing agencies. Existing agencies, primarily DWR and USBR, will be responsible for individual project management. The Bay-Delta Program should work closely with DWR and other appropriate agencies to ensure programs are coordinated and consistent with CALFED objectives. Final program and funding decisions during the interim will continue to rest with the agencies with funding authority, but should be coordinated and reviewed by the CALFED Policy Group.

7. Water Operations

In the interim, state and federal agencies and stakeholders will continue to coordinate and resolve operations issues through a multi-step process. The CALFED agencies involved in operations are USBR, USFWS, NMFS, DWR, and DFG. Most operational conflicts will be resolved at the operator or director level, but senior levels of government need to remain informed as conflicts develop. As conflicts develop they would be referred first to the CALFED Operations Group (Ops Group). Ops Group would draw on the advice and discussions within the stakeholder forum (No-Name Group), and the agency biologist team (Data Assessment Team). Ops Group will communicate decisions and remaining conflicts to the Water Operations Management Team (WOMT) -- a high level agency group responsible for resolving conflicts among competing resources demands. As conflicts arise, an "early warning" will be provided to senior state and federal policy makers to expedite the resolution of conflicts. The Bay-Delta Program will serve the role of facilitator and coordinator of WOMT.

8. Science Program

In the interim, the Bay-Delta Program staff will be responsible for program management of the CALFED Science Program. The Bay-Delta Program will hire an Interim Science Leader (ISL) to coordinate, oversee, and direct the many aspects of the science program. Each program area will work with the ISL in the management of the science program. How management responsibilities will be distributed between the ISL and the program areas is still being determined. In order to better integrate objective scientific review into the CALFED Program, the Governor and the Secretary of the Interior will appoint an Independent Science Board to provide science oversight for the overall program. A science panel will be convened for review

of the EWA. Other science panels, such as the current Interim Science Board for the ERP, will be convened as needed. In general, direct implementation of monitoring, assessment, and research will be performed by existing agencies and nongovernmental organizations. Final program and funding decisions during the interim will continue to rest with the agencies with funding authority, but should be coordinated and reviewed by the CALFED Policy Group.

9. Regulatory Compliance and Coordination

In the interim, the Bay-Delta Program will oversee and coordinate the regulatory compliance activities (environmental documents, permit assistance, compliance monitoring, data management, and dispute resolution) for CALFED actions. Agencies responsible for preparing the environmental document and obtaining permits are those agencies tasked with project management, or otherwise required by law to do so. CALFED is developing a comprehensive list of permit requirements for all proposed components in early Stage 1 and has convened discussions between the state and federal regulatory agencies to establish a "permit clearinghouse" to coordinate and expedite permitting across all CALFED programs. CALFED agencies will develop an MOU detailing this clearinghouse process by December 2000.

4.4 Reasons for a New Governance Structure

The current CALFED governance structure was established to develop a long-term plan to address the Bay-Delta problems. State and federal agencies agreed upon operating principles for the CALFED Program in the 1994 Framework Agreement, an interagency MOU between the Governor's Water Policy Council and the Federal Ecosystem Directorate. The planning phase of the program is ending and the implementation phase is soon to begin with the signing of the ROD. In the process of evaluating options for a CALFED long-term governance structure to implement the CALFED Program, CALFED agencies reviewed the following governance functions/responsibilities necessary for implementation to determine whether the existing structure could successfully serve those functions, or whether a change would be needed.

Program Direction Functions. Provide broad program direction for the CALFED Program during implementation to ensure program balance, integration and coordination among the four equal program objectives. Program direction functions include:

- Oversight of program implementation
- Program assessment
- Review and approve priorities and budgets
- Coordinate related programs
- Conflict resolution
- Public outreach and communication
- Legislative communication

The CALFED agencies have determined that the existing structure is not adequate to serve as the long-term governing structure for CALFED the following reasons.

Dispersed authority. The MOU which established the Policy Group provides a forum for communication that has served well for the planning phase of the program. However, the current voluntary informal structure does not provide the authority necessary to ensure continued balance and integration over a long-term period. Authority for funding and program implementation currently resides in many state and federal agencies. Without a more formal structure, the Program would not have the authority to receive funding or direct programs and activities to serve the CALFED objectives. Instead the CALFED Program would need to rely on the cooperation of numerous agencies over a 30 year implementation period.

Lack of accountability. CALFED is a voluntary association among between 18 state and federal agencies. Each agency retains its own authority but has agreed to coordinate with the other agencies. This association lacks the structure and accountability necessary to assure success of a multi-faceted 30-year program. With significant funding being sought to implement the CALFED Program, a single point of accountability is needed for the public, Congress and the California Legislature to address concerns regarding the success or problems with program implementation.

Lacks durability. A formal mandate by the California Legislature and Congress is needed to ensure a lasting partnership of the state and federal governments. An MOU is a voluntary agreement to cooperate which does not provide the durability and foundation for a state and federal partnership over a 30-year or longer period of implementation.

4.5 Long-term Governance Proposal

CALFED strongly believes that a new public agency needs to be created to oversee the long-term implementation of the CALFED Preferred Alternative. The state and federal administrations support legislation to create a joint federal/state commission. This approach will require resolution of federal constitutional concerns. The legislative charge to the new commission should be to provide program direction and oversight of the program. A joint commission made up of high-level appointees would maintain visibility inside and outside the government, assure agency coordination, help secure funding, and provide policy leadership. This proposal for a new commission embodies an integrated approach to water and environmental management in the Bay-Delta system that requires a shift in authorities and management of these critical resources. CALFED has adopted the following principles that summarize the essential elements of the governance proposal.

4.5.1 Principles

- Principle 1:** Federal/State Partnership. *The CALFED Program, as defined in the final Programmatic EIS/EIR and accompanying documents, should be carried out through a state and federal government partnership.*
- Principle 2:** Accountability. *There should be a clear point of, and process, of accountability of the Program to the Legislature, the Congress, and the public.*
- Principle 3:** Commission. *A new commission should be created to provide direction and oversight of the Program to achieve CALFED Program goals and objectives.*
- Principle 4:** Membership. *The membership of the commission should be made up of state, federal, tribal, and public members. Public members should represent a broad array of interested constituencies. State and federal members should be representatives at the highest level of the agency organization.*
- Principle 5:** Leadership. *The governing structure and authorities of the commission should be designed to attract effective leadership.*
- Principle 6:** Changes in Authorities. *The commission will not exercise or supplant any regulatory authorities. However, changes in specified program and funding authorities should be made in legislation to consolidate or coordinate management of each program area.*
- Principle 7:** Agency/Tribal Participation. *The commission should establish a process to support participation and coordination with agencies (federal, state, and local) and tribes involved in and affected by the CALFED Program who are not members of the commission. The commission should facilitate government-to-government consultation with the tribes.*
- Principle 8:** Public Involvement. *The commission's meetings should be open and public, and the commission should seek ways to maximize public knowledge of, and involvement in, its work. The commission should support involvement in the Program at a community-based level.*
- Principle 9:** Program Management. *Program management for each of the program areas should be specified in legislation establishing the commission. Each program area should be evaluated to determine the appropriate entity for assuming program management functions. Responsibility for program management will vary between program areas depending on the nature of the program and actions, the expertise of agencies, and the ability of the agency to manage the programs*

without significant conflicting mandates.

Principle 10: *Comparable Authority over Program Areas. Each of the program areas should have the same degree of autonomy from, as well as the same degree of accountability to, the commission. For each program area, the commission should exercise a comparable degree of authority over specified funding and programs.*

Principle 11: *Funding. Funding for implementation of the CALFED Program should be appropriated directly to the commission for those activities assigned to the commission. For CALFED programs managed by another state or federal agency, funding for the program should be appropriated directly to that agency, with control language requiring commission review, coordination, and approval of program plans, priorities, and implementation.*

Principle 12: *Crosscut Budget. For those funds and programs not under commission approval but which are related to CALFED (to be specified in an interagency MOU), the appropriate agencies should participate in preparing an annual Crosscut Budget to ensure coordination with the CALFED Program.*

Principle 13: *Legislative Reporting. The commission should serve as the focal point for contact on the CALFED Program with Congress and the Legislature, and should provide annual status reports on the Program.*

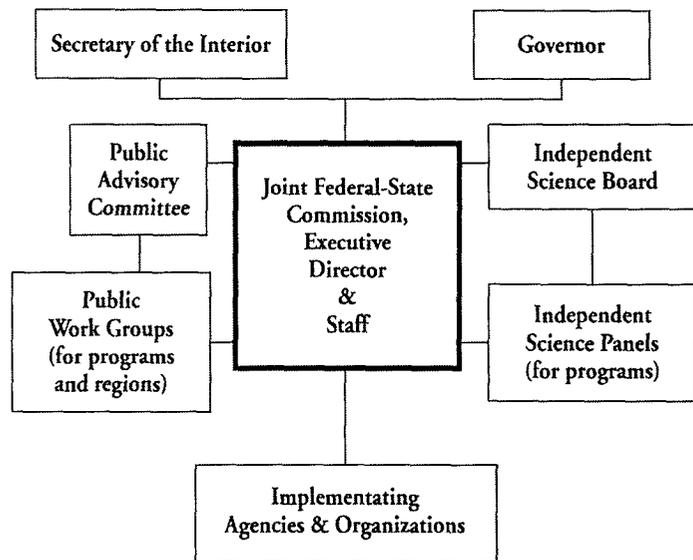
4.5.2 Proposed Joint Federal-State Commission

A new joint federal/state commission (commission) should be created to provide program direction and oversight for the implementation of the CALFED Program as specified in the Final Programmatic EIS/EIR and implementing documents. State and federal legislation will be needed to establish the commission. The legislation should establish a permanent partnership between the state and federal governments which is critical to the success of the CALFED Program. The governing structure of the commission should be joint federal-state entity. This approach will require resolution of federal constitutional concerns. If the constitutional concerns are not resolved, a state commission should be created that has federal participation. At a minimum to maintain a strong partnership, both the state and federal governments will require; equal participation on the commission, long-term funding commitments for the Program, and cooperation and coordination with the commission.

Membership

There are numerous configurations for creating the membership of a new commission. However, in all options CALFED believes it is critical to include the highest level of authority for state and federal agencies, tribes, and stakeholders represented. The success of the CALFED Program will also in part depend on ongoing communication and coordination among state and federal agencies with responsibilities in the program. Because regulatory authorities are being retained in existing agencies, and coordination between the regulatory agencies and the CALFED Program is critical, those agencies need to be represented on the commission.

CALFED Long-Term Governance Structure



Currently the CALFED Policy Group has 18 members and that does not include public members. Listed below are some of the agencies and interest groups that have requested or were considered for membership on a new commission.

- State agencies: Resources Agency, Cal-EPA, DFG, DWR, SWRCB, Department of Food and Agriculture, DHS, Delta Protection Commission, and Department of Finance.
- Federal agencies: Department of the Interior, USFWS, USBR, NMFS, USEPA, Corps, NRCS, and Western Area Power Administration.
- Tribal: Tribal interests have requested membership on the commission. Due the large number of tribes in California, selection of tribal representative(s) could be coordinated with or delegated to the California Tribal Policy Committee or a similar tribal organization representing a broad cross section of tribal leaders in California.
- Other Interests: Local government, watershed organizations, water users, business, environmental, fishing, farming, labor, recreational, boating, and Delta interests.

The participation of these many agencies and interests in the CALFED Program is necessary to ensure successful implementation. However, there are more agencies and constituent groups that are interested in being members on the commission than can reasonably be accommodated. Therefore, the commission will be assisted by an advisory committee whose members would

include qualified representatives of Indian tribes and stakeholder groups. Additional agency teams and agreements will also be needed to ensure broad and continued state and federal agency involvement.

The CALFED agencies propose a 12-member commission made up of equal numbers of high level officials of the federal and state agencies responsible for implementing CALFED programs and a similar number of high level stakeholder and tribal representatives. Under this proposal the commission membership would be 4 federal members, 4 state members, and 4 public/tribal members representing agricultural water users, urban water users, environmentalists, and Indian tribes

Commission Organization, Duties, and Authorities

The commission should be the primary agency responsible for achieving the CALFED Program objectives and targets identified in the CALFED Final EIS/EIR and implementing documents. The overarching mandate of the commission should be to assure effective, balanced and coordinated implementation in all program areas. Regulatory responsibilities will remain with the existing agencies. In general, the commission will provide program oversight and direction, and the CALFED agencies will be responsible for management of individual programs, and direct implementation of actions. In some cases the commission will need to take a more active role in managing certain program areas (such as ecosystem restoration, watershed management, and drinking water quality) in order to minimize fragmentation of CALFED efforts.

The commission should have a strong and effective executive director, who would serve at the pleasure of the Governor and the Secretary of the Interior. The executive director should hire and direct additional staff as needed to assist the commission in carrying out its responsibilities. The executive director would be responsible for providing information, reports and recommendations to the commission, and carrying out and monitoring compliance of the program under the direction of the commission.

The commission should assume the following responsibilities and authorities to ensure program integration and balance:

1. **Oversight of CALFED Implementation.** The commission should be responsible for developing policies and making decisions in order to achieve program goals and objectives, for making staged decisions at specific program milestones, and for providing direction to ensure balanced implementation integration and continuous improvement in all areas.
2. **Program Assessment and Modification.** The commission should review and approve an annual performance assessment prepared by commission staff. Prior to submittal to the commission, the CALFED Independent Science Board should review the Assessment and comment on how the CALFED Program is achieving its objectives. The commission should

be responsible for modification, as needed, of program goals and objectives which would be done in coordination with the appropriate agencies and with public input.

3. Review and Approve Priorities and Budgets. The commission should review and approve the annual priorities and budget, through the state and federal budget processes, for those specified "primary" programs/funding under commission authority. The commission should ensure the proposed budget reflects the CALFED priorities and provides program balance and integration. It is critical that sufficient funding is under commission direction for all Program areas to provide assurances of meeting CALFED Program objectives. Additional review is needed to identify the appropriate programs and funding that should either come under commission authority, or should require coordination with the commission but not change authorities.
4. Approve the CALFED Long-term Program Plan and Priorities. The commission should be responsible for adopting CALFED Program priorities as part of a Long-term Program Plan. The CALFED priorities should guide the priorities for each program element to provide integration and balance of the CALFED Program. The commission should review the Long-term Program Plan and priorities annually and modify as needed.
5. Approve Annual Program Element Workplans. The commission should be responsible for review and approval of the annual workplans for each Program Element. Annual workplans should be submitted to the commission after first being reviewed by the Executive Director and commission staff. The commission should review the annual workplans to ensure:
 - A balanced and integrated CALFED Program.
 - Program element priorities are consistent with CALFED Program priorities and consistent with program element objectives and priorities.
 - Independent scientific and technical review of the annual workplans has been conducted and incorporated into the workplans.
 - Public input has been adequately considered in the development of the annual workplans.
6. Coordination of Related Programs. The commission should be responsible for coordination of the CALFED Program with other related programs to maximize available resources and reduce conflicts. Programs will need to be identified that are most related to CALFED objectives to determine what level of coordination and review those programs should have with CALFED. Mechanisms and agreements will need to be adopted to establish the framework for coordination and integration, and identify the responsibilities of all parties to coordinate programs and actions (for example the Crosscut Budget and the Single Blueprint for the ERP will require agreements/MOUs).

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7. Conflict Resolution. The commission should seek to resolve conflicts among agencies implementing the CALFED Program. Issues that could not be resolved by the agencies themselves, or by the commission, should go to the Governor and Secretary of the Interior for decision.
 8. Public Outreach and Communication. The commission should be responsible for maintaining contact with and communications with the public and media regarding program development, implementation, and performance.
 9. Legislative Communication. The commission should be responsible for maintaining contact with and communications with Congress and the State Legislature regarding the status of program development, implementation, and performance.

4.5.3 CALFED Public Involvement

The purpose of CALFED public involvement is to maximize opportunities for the public to work with the commission, state and federal implementing agencies, and scientific and technical advisors to design, implement, and evaluate the CALFED Program. "Public," in this context, means interest groups, their representatives, and the public at-large. Public involvement in the program will be provided through advisory committees and groups, public workshops, newsletters, and other publications that provide updated information, and meetings outside the Sacramento area. The current citizen advisory group, the Bay-Delta Advisory Council (BDAC), was established to provide advice to the program in the planning phase during the development of a Preferred Program Alternative. As this phase is completed and the implementation phase begins, the structure and membership of advisory groups will be reevaluated.

CALFED has evaluated various structures for providing public involvement through advisory groups, including:

- Broad public advisory committee
- Program area work groups
- Local/regional workgroups

Broad public advisory committee. CALFED agencies support the creation of a broad public advisory committee. One of the primary responsibilities of the advisory committee would be to assist the commission in its responsibilities of program integration, coordination, balance, and assessment. The advisory committee would meet as needed. Membership would be made up of qualified representatives of Indian tribes and stakeholder groups, including environmental justice representatives. The advisory committee members would be selected based on their experience and expertise in relevant fields, such as ecosystem restoration, agriculture, hydrology, urban water management, fishery biology, water quality, flood management, water conservation and

recycling, and economics. Appointments would be made to assure that the advisory committee as a whole is both balanced and diverse. Representatives of the commission and CALFED agencies would be charged with attending advisory committee meetings and providing the information and reports as the committee may request. Responsibilities could focus on:

- Long-term plans and program area performance and priorities
- Program integration
- Liaison between its work groups, subcommittees, and the commission
- Creation of subcommittees and work groups, as needed
- Considering recommendations from subcommittees and local work groups

Program area work groups. CALFED will continue to rely on program area work groups in the refinement and implementation of the Program. The role of program area work groups would be to focus on specific program areas and provide specialized technical/policy expertise to the program. Membership would include individuals with technical/policy expertise pertinent to the program area, such as ecosystem restoration and drinking water quality experts from non-governmental organizations, tribes, water agencies, state and federal agencies, and the public at-large. The Delta Drinking Water Council and the Levee Coordination Team are examples of program area work groups that will be needed during implementation.

Local/regional work groups. CALFED supports the creation of local work groups to provide the public and local forums to support community-based outreach as described in the Watershed Program Plan. Local work groups could represent specific geographic areas in the CALFED solution area, such as northern California, San Joaquin Valley, Delta/Bay Area, and southern California. Alternatively, they could represent local conservancies in watersheds or ecological zones. Membership could include local government representatives, local non-governmental organizations, local tribal representatives, and the public at-large. Responsibilities would include:

- Effective coordination/interaction with local citizens
- Liaison between the local areas and CALFED
- Providing local advice on program element performance and priorities

4.5.4 CALFED Science Program

The purpose of the CALFED Science Program (see CMARP Appendix and Phase II Report for additional description) is to provide a comprehensive framework to provide new information and scientific interpretations necessary to implement, monitor, and evaluate the success of the CALFED Program. An overriding principle of the Science Program is adaptive management. New information and scientific interpretations will be used to confirm or modify all aspects of

the Science Program, including problem definitions, conceptual models, research, and implementation actions.

The scope of the CALFED Science Program will provide scientific information for the CALFED Program as defined by the Programmatic EIS/EIR. While all the CALFED Programs will have a science component to address areas of less certainty, some programs such as the ecosystem program strongly rely on an adaptive management science program. In addition, the information from the CALFED Science Program should be used by other related state, federal, local, and nongovernmental actions/programs in the CALFED solution area. This includes other ecosystem restoration, water quality, levee, and water management activities both regulatory and nonregulatory, including water project operations.

The governance structure and responsibilities of the CALFED Science Program are still being evaluated by CALFED, with state and federal agency and stakeholder input. Generally, there is agreement that the Science Program should be coordinated by a Chief Scientist reporting to the commission executive director. In order to better integrate objective scientific review into the CALFED Program, the Governor and the Secretary of the Interior will appoint an Independent Science Board to provide science oversight for the overall program. A science panel will be convened for review of the EWA. Other science panels will be convened as needed. The mechanisms for integration of the Science Program with the regulatory agencies and the distribution of responsibilities between program managers and the Chief Scientist are issues that will be resolved by the time of the ROD.

4.5.5 CALFED Program Areas

The commission's staff, under the direction of the executive director, would be responsible for program direction, coordination, and in certain cases to minimize fragmentation, program management. In evaluating how each of the program areas should be managed, CALFED is considering the following factors:

- Is there an existing agency available to assume the CALFED Program objectives without conflict with existing agency objectives?
- Is there an existing agency that has the expertise to manage the program area?
- Is the program area currently fragmented among many agencies?
- Is the program area complex and large in scope, making it difficult for an existing agency to assume the new program?

Legislation establishing the commission should specify the roles and responsibilities of the commission and the agencies in overseeing, directing, and managing the CALFED Program.

4.5.6 Annual Status Report

The commission will prepare an annual report to the Governor, the Secretary of Interior, Congress, the California Legislature, and other interested parties that describes the status of implementation of all elements of the Program. Consistent with Proposition 204, prior to November 15 of each year, the commission in consultation with other interested persons and agencies, will review the CALFED Program's progress in meeting the implementation schedule established in the Final Programmatic EIS/EIR and ROD. The annual report will be submitted by December 15th of each calendar year. The report will include a status report on all actions taken to meet CALFED objectives in Stage 1, including goals, actions, schedules, and financing agreements in the following areas:

- Completion of key projects and milestones identified in the ERP;
- Development and implementation of local programs for watershed conservation and restoration;
- Achievement of commitments under state and federal ESA
- Implementation of a comprehensive science program;
- Progress on storage projects, conveyance improvements, water quality infrastructure projects, and water use efficiency targets;
- Progress toward acquisition of the state and federal permits, including Clean Water Act Section 404, for implementation of projects in all identified program areas; and
- Progress in achieving benefits in all geographic regions covered by the Program
- Legislative action on the Program, including water transfer, groundwater management, water use efficiency, and governance issues

If at the conclusion of each annual review, or if timely annual review has not been issued, the Governor or the Secretary of the Interior determines that the schedule or objectives established in the final ROD has not been substantially adhered to, the Governor and the Secretary, after notice to, and consultation with state and federal CALFED representatives, will prepare a revised schedule that ensures that balanced solutions in all program areas are achieved consistent with the intent of the final ROD. State funds, if determination was made by the Governor, and federal funds if the determination was made by the Secretary, will only be available for expenditure in the subsequent budget year if a revised schedule has been developed within six months from the date on which the determination was made that the prior schedule has not been substantially adhered to. Upon the submission of any revised schedule, funds will be expended in accordance with the revised schedule.

5.0 FINANCING PLAN

Executive Summary

With the signing of the Programmatic ROD, CALFED will need to have a financing plan in place to guide implementation. To be prepared for program implementation, a financing plan is needed to guide state and federal administration and legislative discussions regarding new bonds, new fees, and proposed budget appropriations.

Since this is a Programmatic EIS/EIR, the specifics for designing and financing the components of each program have not been finalized, however principles and strategies are being developed to help guide the CALFED Program in making sound funding decisions during implementation of the Program. This preliminary document lays the framework for developing a CALFED Finance Plan. It is designed to highlight key issues and principles that will guide financing decisions over the 30 year life of the Program. It is not intended to be a complete, highly detailed financing plan. The Plan provides background, definitions, description of Program benefits, description of possible funding sources, financing options, and issues to resolve to finalize a Finance Plan.

The Financing Plan for implementing the CALFED Bay-Delta Program is a critical component of the Program because of the assurance needed by member agencies and stakeholders that a serious and concerted effort will be made to secure funding for all components over the life of the Program. In developing financial strategies and cost-sharing for the many aspects of the CALFED Program, CALFED is following several basic steps:

- Identifying the priority actions for implementation;
- Developing cost estimates for priority actions;
- Identifying the funding and cost-sharing formulas in existing laws and agreements;
- Identifying program/project benefits and beneficiaries;
- Identifying finance issues that affect the successful implementation of the Program; and
- CALFED will work with federal and state agencies and stakeholders to recommend cost allocation procedures and cost-sharing strategies for each program element and in some cases for individual projects. These recommendations will likely come during implementation.

A fundamental philosophy of the CALFED Program is that costs should, to the extent possible, be paid by the beneficiaries of the Program actions. The CALFED agencies consider this policy to be equitable, but there are reasons, other than equity and fairness, that the beneficiaries pay principle be applied to CALFED and other water resources programs. Having beneficiaries pay for programs encourages them to more carefully review their water and power needs and the costs of proposed programs (including mitigation costs) in relation to the benefits they receive. Such a policy also encourages examination of a fuller range of alternatives, including locally funded measures, in order to assure that public funds are spent in the most cost-effective way to meet Program goals.

Definitions. There are several terms that require definition to provide clarity in this section: (a) initial funding shares (which may or may not correspond to final funding shares); (b) cost allocation - the distribution of costs to project purposes and beneficiaries; (c) cost shares (formulas typically used for sharing the costs allocated to each project purpose); (d) proposed cost shares - the shares that would be recommended for use by the CALFED Program; and (e) effective cost shares (the percentage that each beneficiary group ultimately pays). The effective cost shares would differ from the proposed cost shares if repayment terms are at below-market rates.

Historical Financing. CALFED's finance strategy must be considered within the current and historical context of state and federal water resources financing. Historically, federal water projects have been financed with appropriations and, in some cases, repayment was provided by beneficiaries at below market rates of interest (or no interest). This resulted in historically low levels of effective cost-sharing. Since the 1980's, federal water resources agencies have been requiring higher levels of non-federal cost-sharing, through higher levels of up-front cost-sharing and other means. In the CVP, the CVPIA of 1992 enacted tiered water rates, Mitigation and Restoration payments, and other fees to be deposited into a Restoration Fund to be used for environmental purposes. Financing for the SWP relies principally on general obligation bonds and revenue bonds repaid by water and power users, which provides high levels of effective cost-sharing. In general, there has been a shift in federal and state water financing toward higher levels of repayment and higher effective cost shares by local entities.

Program Benefits/Beneficiaries. At this time, because many of the actions have not yet been specified, (e.g., water use efficiency actions), the specific benefits cannot be identified or measured, and Program costs cannot be allocated. In other cases, such as ecosystem restoration, benefits can be identified but not easily measured. However, to initiate the finance discussions, and lay the framework for a CALFED finance strategy, this section identifies expected benefits and beneficiaries at the program level. For actions where benefits can be measured, the program or project costs will be allocated among the benefit categories. For those program elements where benefits cannot be easily measured (ecosystem, water quality, watershed programs) CALFED will need to identify a procedure for estimating and allocating costs. After the benefits analysis and cost allocation, CALFED may propose cost shares that differ from existing state and

federal cost-sharing formulas or may use the cost-sharing formulas in existing programs. Final decisions on cost-sharing will be made by the state and federal legislatures.

The benefits from each program element (both near-term and expected future benefits), as well as cost-sharing issues and potential cost-sharing options are described in this section. In general, these options differ financially (the extent to which they require higher levels of repayment from beneficiaries), or institutionally (in terms of what mechanism they rely on to secure repayment, ranging from existing programs, up-front cost-sharing, recovery through water rates, or recovery through other user charges). Some of these options address user fees targeted at the beneficiaries of a particular program (e.g., directly linked to a group of benefitting water districts, such as Delta diverters).

It should be noted that the options for financing included in this section do not represent proposals by CALFED. Rather, they represent a range of possible options for financing each of the program elements. These options have been discussed by the CALFED agencies and stakeholders, and an effort has been made to identify broad beneficiaries and describe possible financing options. This section represents thinking that has gone on to date. It provides a starting place for further discussions. Different options for financing may be developed in the future.

Financing Mechanisms. This section compares several different financing mechanisms, all of which have been used to date and are expected to be used in the future, including state and federal appropriations, state general obligation bonds, state water and power revenue bonds (tied to SWP water and power rates), private financing, and a broad-based user fee (similar to the Mitigation and Restoration payments imposed by the CVPIA). The advantages and disadvantages of these various funding sources and financing mechanisms are described.

Broad-based User Fee. CALFED and CALFED stakeholders have discussed the use of a broad-based Bay-Delta system user fee, particularly to finance some of the programs or actions with broad-based public benefits, such as the ERP (such a fee is discussed, for example, in the 1996 report "*Maintaining Momentum on California Water Issues: Business Leaders' Findings - Financing Options for Water-Related Infrastructure in California*" produced by the California Business Roundtable, the California Chamber of Commerce, the California Farm Bureau Federation, and the California Manufacturers Association). The basic concept is a fee that would apply to all diverters, or all major diverters of water from tributaries that flow into the Delta, as well as exporters of Delta water. Section 5.6 does not make a proposal for how such a fee should be structured. Rather, it explores how such a broad-based user fee could be structured and what revenues could be expected from fees similar to those established in the CVPIA.

Program Cost Estimates. Section 5.7 provides an estimate of Program costs for Stage 1. CALFED's adaptive management approach makes long-term cost estimating inherently difficult. However, the Stage 1 cost estimates do represent the right order of magnitude of investment which will be necessary to carry the program forward successfully.

Cross-cut Budget. CALFED worked with federal and state agencies that have programs or projects contributing to CALFED Program goals and objectives to develop a cross-cut budget for Federal Fiscal Year 2000/State Fiscal Year 1999-2000. More information is included in Section 5.8.

5.1 Definitions

Cost-sharing and cost allocation are sometimes used interchangeably but to mean quite different things. For clarity, this report will distinguish different uses of these terms.

Initial Funding Shares. Typically, funds for constructing state and federal water resources storage projects are provided by the respective governments. For some programs local up-front cost-sharing may be provided concurrently. But these initial funding shares may or may not represent the ultimate cost shares. For example, repayment of the water delivery costs by water contractors in the USBR and state programs means that these users ultimately share in the costs of the project (see the definitions of “cost-sharing” and “effective local cost shares” below.) If no additional payments are required and if no other adjustments are made, the initial funding shares become the same as the “effective cost shares.”

Cost Allocation. Cost allocation is used to mean the allocation of costs among program purposes or benefit categories. Traditionally, benefits of water resource programs have been categorized by project purposes. For example, the federal “*Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*” (U.S. Water Resources Council, 1983), which govern benefit-cost procedures for federal projects, recognize the following benefit categories: Municipal and Industrial (M&I) water supply, agriculture (including avoidance of flood damage), urban flood damage, hydropower, navigation, recreation, and commercial fishing. Many, but not all, of the benefits of the CALFED Program elements can be placed in the same categories.

Historical Cost-Sharing. Historically, both the federal and state governments have applied cost-sharing formulas or percentages to allocated costs, either as a matter of law or policy. In some cases, the non-federal cost shares may be met by a combination of cash contributions and local “in-kind” contributions (for example, land, easements, rights-of-way, relocations, and dredged material disposal [LERRDs]). While these cost-sharing formulas may reflect the historical federal or state willingness to fund the type of project or program (and while these cost share formulas may rely on costs allocated based on an assessment of the benefits of individual projects or programs), they may not fully reflect the beneficiaries pay principle because they have not required full repayment of allocated costs. For example, for construction costs allocated to flood control, the Water Resources Development Act of 1996 (WRDA) establishes 65% as the maximum cost share paid by the federal government, with at least 35% coming from non-federal sources (operation and maintenance (O&M) costs for flood control usually require 100% non-federal payment).

As part of the CALFED discussion of cost-sharing, this section reviews some of the major existing state and federal programs, laws, and policies which specify cost-sharing. The cost-sharing in these existing programs will be evaluated and may or may not be proposed for CALFED proposed cost-sharing. The initial funding shares that have occurred to date in CALFED will be one consideration in developing proposed cost-sharing, but may not be the final proposed cost shares.

Proposed Cost Shares. The term “proposed cost shares” is used to reflect the proposed CALFED distribution of costs to the beneficiaries. The CALFED Program could either use the cost shares contained in existing law, programs, or policies or the CALFED Program could propose different cost shares and seek authorizing legislation for them.

Effective Cost Shares. If repayment over time of some project costs is required and if below-market rates of interest are used to compute repayment, then the effective cost share of that beneficiary would be less than the proposed cost share expressed in nominal terms. For example, several of the loan programs authorized under Proposition 204 require repayment over 20 years at 50% of current interest rates on general obligation bonds. If the current interest rate were 5%, then repayment at 2.5% would result in an effective local cost share of about 82%, with the remainder of the costs being paid by the state. By comparison, if no repayment over time is required, then the effective cost shares would be the same as the initial funding shares (for example, the 35% up-front cost share for flood control required by WRDA 1996).

Public Benefits are generally those that are shared by a wide cross-section of the community and from which individuals cannot realistically be excluded. Inability to exclude individuals means that imposing charges for access to the benefit is difficult. If “free riders” can access the benefits without paying, there is no economic incentive for them to spend their money for these benefits. This means that if these benefits are to be created, public funding (obtained from the benefitting community) must usually be used.

Private Benefits are generally those that accrue to an identifiable subset of the community and from which individuals can be excluded. The ability to restrict benefits to those that pay enables these benefits to be funded with user money. In addition there are good reasons why beneficiaries should pay for private benefits: bearing the cost provides incentives for wise use of the resources and it is fair that only those enjoying the benefit should pay. In some cases, such as metered water use, individuals or districts can be charged on the volume of use. In other cases, such as access to recreational facilities, charges are based on simple access to the benefit. Note that as used here, private beneficiaries would include “public” water districts, which supply agricultural or M&I water to an identifiable group of water users.

5.2 Historical Context for State and Federal Cost-sharing

CALFED has developed the Financing Plan for the Bay-Delta Program relying primarily on a benefits-based approach. This approach is consistent with historical procedures, as well as with recent changes and trends in water financing at the state and federal level. Following is a historical description of state and federal water project financing to provide additional context for the CALFED approach (See Tables 5.1 and 5.2).

Federal Cost-Sharing. When federal water resource programs were initiated, they had quite different goals from what they have today. The evolution of these programs and changing program goals, as well as altered federal financial priorities, have been the principal motivations for altering cost-sharing and effective cost shares on federal projects.

For example, when the Reclamation program was established in 1902, its principal goal was to assist in settling the West by providing irrigation water to family farms. Repayment was made into a revolving fund, with interest-free repayment occurring over 10 years, which resulted in an effective cost share by water users of about 85%. But irrigators had difficulty meeting these repayment terms, and some projects did not result in as much irrigation as originally envisioned. As a result, a series of measures were passed between 1914 and 1939, which lengthened the interest-free repayment period to 20, 40, and then 50 years, thereby reducing the effective cost-sharing to levels of 50%. As interest rates rose starting in the 1960s, the effective level of non-federal repayment fell to around 15% for irrigation. Over this same period, the cost-sharing for O&M costs for irrigation remained 100% local.

During the first half of the 20th century, additional project purposes were added to federal projects, including M&I water supply, hydropower, and eventually recreation and fish and wildlife. Unlike irrigation water, M&I water and hydropower user payments were computed with interest, although sometimes the rates were below current government borrowing rates. The effective cost shares for these uses generally ranged from 60% to 70%, with higher levels on some projects (U.S. Water Resources Council, 1975). Also, since hydropower was profitable, Congress adopted provisions under which hydropower revenues could be used on some projects to pay that portion of the construction costs allocated to irrigation - namely that portion which was estimated, through economic analysis, to be above the irrigators payment capacity. This cross-subsidy between these two user groups has become known as taking into account the irrigators' "ability-to-pay."

Starting in about the 1960s, there was increasing recognition that federal subsidization of irrigation water supply in the western states had several negative consequences and was not serving contemporary needs. For one, the small effective cost shares from local water districts encouraged both large capital expenditures on new projects and inefficient water use on existing projects. Too, environmental concerns about the impact of large scale projects were on the rise.

TABLE 5.1
Summary of Water Project Cost Sharing
For Federal and State Construction

Costs allocated to:	Initial financing share	Nominal local cost share	Effective local cost share	Notes
Construction - federal				
M&I and Hydropower - USBR	100% federal	100%	60% - 70%	below market rates of interest
Irrigation water - USBR	100% federal	100%	15%	zero interest, more than 15% if required up-front
M&I and Hydropower - Corps	100% non-federal	100%	100%	WRDA 1986
Irrigation - Corps	35% non-federal	35% +	35% +	WRDA 1986
Flood control - Corps	35% non-federal, up-front	35%	35%	WRDA 1996, up from 25% in WRDA 1986
Navigation recreational - Corps	50% non-federal	50%	50%	WRDA 1986
Environmental Restoration (generally Corps, not CALFED)	25% to 35% non-federal, up-front, depending upon program	25% - 35%	25% - 35%	WRDA 1996
Construction - State Water Project				
Hydropower, M&I water, and irrigation water	100% state (bonds)	100%	close to 100%	bonds used to finance require repayment
Notes: M&I = Municipal & Industrial USBR = U.S. Bureau of Reclamation Corps = U.S. Army Corps of Engineers WRDA = Water Resources Development Act SWP = State Water Project Conveyance costs are treated the same as storage, environmental mitigation costs are included in construction costs. the costs of feasibility studies and design are included in construction costs.				

TABLE 5.2
Summary of Water Project Cost Sharing
For Federal and State Planning, Operations and Maintenance

Costs allocated to:	Initial financing share	Nominal local cost share	Effective local cost share	Notes
Planning				
Federal appraisal or reconnaissance studies	100% federal	0%	0%	
Federal Feasibility studies	50% federal	50+ %	50+ %	Planning costs become part of construction costs if project is built
SWP planning	100% SWP water users	100%	100%	Planning costs paid by SWP funds
State comprehensive storage investigations	100% state	Varies	Varies	If a project proceeds to construction then all planning costs will be reimbursed by project sponsors
Operations and Maintenance				
Federal and State	NA--an ongoing expense	100%	100%	100% except for some cases of deferment
Note: SWP = State Water Project N/A = Not Applicable Conveyance costs are treated the same as storage.				

Federal policy began to shift toward analyzing and mitigating environmental impacts on projects and to questioning whether the funding of additional large water storage projects was in the national interest now that the western states were settled, especially in the face of low water prices and growing competition for water resources.

Federal policy changed in several ways: funding for large-scale projects received much greater scrutiny; benefit-cost procedures were revised to be more rigorous; more emphasis was placed on the efficient use of water from existing projects, including water transfers; greater levels of non-federal cost-sharing were sought; and methods to increase water fees were examined and, in some cases, mandated by Congress. These policies received additional emphasis in the 1980s as concerns rose over balancing the federal budget and limiting federal spending.

In 1984, federal water resources agencies worked together on several of these items. One result was the adoption of federal policies requiring greater levels of “up-front” cost-sharing on new construction, i.e., non-federal contributions made during project construction. For projects constructed by the Corps, these policies eventually became embodied in the WRDA of 1986, which comprehensively addressed cost-sharing for Corps projects (See Table 5.1). This act raised the required local cost share for flood control projects to 25%, of which a maximum of 20% could be provided by LERRDs. For general navigation, the act required that non-federal sponsors pay from 10% to 50% of the costs during construction, depending on depth. For inland waterways subject to fuel taxes, 50% of the construction cost must be contributed from such user taxes. The WRDA of 1996 increased the non-federal cost-sharing requirement for future flood control projects to 35%. The WRDA of 1986 requires that 100% of the costs allocated to M&I water supply and 35% of the costs allocated to irrigation water be provided by non-federal sponsors. Although not embodied in legislation, the same 1984 set of initiatives indicated that greater levels of up-front cost-sharing for irrigation on new federal USBR projects (targeted at a 35% non-federal contribution during construction) were to be examined on a case-by-case basis.

On a separate track, the Office of Management and Budget raised the criteria for qualifying for water resources loan programs by requiring a higher level of effective cost-sharing. Where interest rates were set at below market rates, this was achieved by requiring a shorter repayment period or requiring a mix of loans that contained a greater percentage of loans with higher interest rates.

In 1982, Congress passed the Reclamation Reform Act (RRA), which required users of irrigation water to pay “full cost,” which included interest charges, for water delivered to acreage in a farming operation that was over the 960-acre limit set in the act for receiving water at the historical rates computed on the basis of interest-free repayment. In 1992, the CVPIA required contractors for USBR-supplied project irrigation water to pay \$6 per acre foot in addition to normal contract or “cost-of-service” rates. Contractors for M&I water are required to pay \$12 per acre foot above the usual rates. The act also established a set of tiered water rates, with higher rates to be charged for water delivered above 90% of historical levels. The CVPIA also contains a formula used to establish additional payments from hydropower users. All of these

various collections are paid into a Restoration Fund which is used for authorized environmental purposes.

As regards environmental purposes generally, environmental mitigation has been required for federal projects, with the costs distributed to the project purposes. The WRDA of 1986, 1990, and 1996, which covers Corps projects, explicitly recognized environmental restoration and authorized funds for this project purpose, as well as setting out requirements for non-federal cost-sharing.

In general, this history shows a federal policy shift toward higher levels of repayment and higher effective cost shares by non-federal entities, implemented through a combination of increased local up-front financing, financial terms with higher effective levels of repayment, higher user fees, and the adoption of special programs and fees dedicated to environmental restoration.

Cost-Sharing on the State Water Project. The SWP began operations much later than the federal Reclamation program and had different goals and a different financing basis. In 1960, California voters approved the Burns-Porter Act which authorized the sale of \$1.75 billion in general obligation bonds to build the project. Funds from the sale of general obligation bonds and revenue bonds have provided the major sources of financing (approximately 75 percent) for the construction of the SWP. All of these sources of funding are repaid with interest by SWP contractors. Another 10 percent of the cost of project construction has been funded by interest-free loans from the tideland oil and gas revenues and repaid by SWP contractors (revenues have been deposited in the California Water Fund). The remaining 15 percent of the construction costs have been funded by a variety of revenue sources (federal flood control payments, legislative appropriations for recreation). Although there have not been enough independent studies to specify an agreed upon number, the effective level of cost-sharing by project beneficiaries (irrigation districts, municipal districts, and hydropower) is much closer to 100% for new construction.

5.3 Cost Allocation

Over the years, federal and state agencies have developed very specific, agreed-upon procedures for defining project benefits, estimating such benefits, and for allocating project costs to those benefit categories. The interagency Principles and Guidelines govern benefit cost analysis on federal projects. DWR generally follows the same procedures. Benefit and cost definitions and measures are important on multi-purpose projects not only for planning, but also because they are the basis for one of the most frequently used methods for allocating costs, the Separable-Cost Remaining Benefits (SCRB) method.

Although the SCRB procedure is the one preferred in federal cost allocation procedures, other methods are recognized for applications where SCRB cannot be applied. For example, the use of facilities method, which allocates joint costs on the basis of a physical measure, such as storage

capacity, may be appropriate in some circumstances where use of facilities can be determined on a comparable basis and where benefit measures and separable costs are not available or too expensive to obtain. Other cost allocation methods and their strengths and weaknesses are discussed in the March 1998 CALFED “*Implementation Strategy*”, part of the “*Technical Appendix of the Programmatic EIS/EIR*”, and that discussion is not repeated here.

CALFED Approach to Cost Allocation

Many of the benefits of the CALFED program elements can be categorized in the same way as for multi-purpose projects. The CALFED program elements are organized along functional lines, such as water quality, ecosystem restoration, water use efficiency, storage, and conveyance. Any one of these program elements may have benefits that fall into one or several of the traditional categories (M&I water supply, agriculture, flood damage, hydropower, navigation, recreation, and commercial fishing). For example, this is true of water storage and conveyance facilities. In this section the benefits and beneficiaries of the CALFED program elements are identified and placed in similar categories. For example, water quality improvements to diverters benefit both agriculture and urban water supply. One additional category is used to reflect non-market benefits to the general public, such as broad ecosystem benefits. For example, water quality can also have broad ecosystem benefits, as well as directly benefitting water diverters.

The federal benefit-cost and cost allocation procedures have evolved around the planning and design of well defined, multi-purpose projects to be constructed over a relatively short period of time. These are not characteristics of the CALFED Program taken as a whole. Therefore, the SCRB procedure and other established cost allocation methods are ill-suited to allocate the overall costs of the CALFED Program. For one, the various CALFED program elements will continue for over 30 years. Since many of the specific actions and projects have yet to be determined, neither costs nor benefits can be determined at this time. Also, under the principle of adaptive management, program elements and projects are subject to revision as the CALFED Program proceeds. As a result, if the SCRB method or other established procedures were used, they would, in principle, have to be used not once, but applied many times to recalculate benefits as the Program evolved. These considerations make the costs of the CALFED Program, taken as a whole, ill-suited to allocation through established cost-allocation methods. Established cost allocation methods such as SCRB or proportionate use of facilities would be suitable, however, for analyzing some program elements or actions in the CALFED Program.

Applying Cost Allocation. The program elements to which established procedures would be the most applicable would be storage, conveyance, and water quality improvement projects. Under these procedures, environmental mitigation costs of new facilities are allocated to the project purposes. In many cases, it will not be possible to determine beneficiaries or to estimate benefits until a CALFED Program action reaches the planning and design phase. For example, a storage facility may or may not involve water deliveries for environmental purposes. Similarly, a water use efficiency measure could be designed with the explicit goal of augmenting an instream flow

or it could be designed to increase the long-term stability of water supplies to beneficiaries within an agricultural or urban district/region. Therefore, it will be necessary to examine each program element and, in some cases, each action, in order to assign costs based on the beneficiaries of that program element or action. In other cases, it may be possible to group together several actions with the same program benefits in estimating and allocating costs. It is at this step in the analysis that CALFED would apply an appropriate cost allocation method.

Assessment of Non-Market Benefits. The difficulties in applying established procedures Program-wide would also be compounded in the case of CALFED for other reasons. The CALFED Program has a large proportion of program elements with non-market benefits, such as ecosystem restoration and watershed management. Although federal benefit-cost procedures recognize and include methods, such as contingent valuation, for evaluating the non-market benefits of programs (such as recreation), these methods are expensive to implement well. (In the case of environmental quality, including enhancement, on Corps projects, it is simply assumed that the benefits are equal to the costs -- a requirement stemming from the WRDA of 1986, Section 907 [33 U.S.C. 2284], although a cost-effective analysis is performed). Therefore, at this time, CALFED does not intend to measure benefits for those portions of the Program with a large percentage of public, non-market benefits, such as ecosystem restoration. For example, strict application of a SCRB cost-allocation procedure in these cases, which depends on the measurement of benefits, would be time-consuming and expensive to use.

However, DWR is nearing completion of its three year study "*Multi-Objective Approaches to Floodplain Management on a Watershed Basis*", which includes development of a framework to "enhance traditional benefit/cost analysis by incorporating techniques for valuing non-market environmental and societal benefits attributable to natural floodplain functions." CALFED will review the techniques developed by this study to determine their applicability to allocating costs of the CALFED Program. In addition, if the framework is adopted by the federal *Principles and Guidelines* such that both DWR and the Corps change the way they value benefits, CALFED will comply with those changes.

The first step in the process of distributing costs is to examine what benefits and groups of beneficiaries (private user groups or the public) are linked to each of the CALFED program elements. For some of the program elements, there is a relatively small list of beneficiary categories. For others, the number is larger. As noted above, for some programs or actions, the beneficiaries cannot be determined until the site-specific and functional details of a program are known.

5.4 Program Benefits/Beneficiaries and Finance Options

This section discusses the benefits and beneficiaries for each of the eight CALFED program elements and for the Science Program. As a point of reference, these sections also contain brief discussions of the existing cost-sharing provisions under current federal and state law or policy. Finally, each section discusses possible finance options and issues related to cost-sharing under CALFED. These options and issues will be used to help further financing and develop finance strategies during implementation.

It should be noted that the options for financing included in this section do not represent proposals by CALFED. Rather, they represent a range of possible options for financing each of the program elements. These options have been discussed by the CALFED agencies and stakeholders, and an effort has been made to identify broad beneficiaries and describe possible financing options. This section represents thinking that has gone on to date. It provides a starting place for further discussions. Different options for financing may be developed in the future.

Definition of Benefits. Before examining benefits and beneficiaries on a program-by-program basis, it is useful to review how benefits are defined. Economic benefits are a measure of the willingness of beneficiaries to pay for the flow of services from a program or project - either to obtain additional benefits (additional or more reliable water supplies) or to avoid damages (flood damages, higher treatment costs, or less reliable water supplies). Benefits are not measured simply by looking at the ongoing stream of benefits from existing activities - for example, the economic activity associated with Delta agriculture and recreation. Rather, benefits are measured as the difference between the benefits that would occur with the program compared to the benefits that would occur without the program.

Many of the CALFED program elements involve modifications to existing water flows, water uses, or water quality. The benefits of increased water deliveries would be the willingness to pay for such deliveries, which, in the case of agricultural water, could be measured by increased farm income (less expenses). Water supply benefits would need to be considered in relation to the costs of alternative sources, including water transfers. Sometimes benefits can be measured by the damages avoided. For example, the benefits of improved water quality could be measured as the treatment costs avoided or the avoided health impacts. Flood damages avoided (e.g., by enhanced storage or by levee reconstruction) would be a Program benefit.

The differences in Program benefits with and without a program would need to be considered over time. For example, if a negative impact, such as recreational, agricultural, or environmental losses due to flooding were relatively brief and recovery were possible over the period of a few years, then the benefit of avoidance would be smaller than if the damages were to last for several decades.

5.4.1 Storage

Program Description

CALFED's WMS includes groundwater and/or surface water storage which 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.

Program Benefits/Beneficiaries

Identification of benefits and cost-sharing for new storage projects needs to be on a project specific basis. Selection and construction of additional water storage facilities will follow other steps and may not occur for several years. This section, therefore, identifies the benefits generally associated with water storage facilities. Potential benefits include:

- **Water Supply Reliability** -- storage facilities can capture excess runoff to be released at times when demands are higher or to accommodate the growth in demand over time.
- **Water Quality** -- appropriately designed storage facilities can provide flows for improved Delta water quality and provide flexibility to export water from the Delta during times of impaired water quality.
- **Ecosystem** -- appropriately designed storage facilities can also provide benefits for environmental purposes, such as releases timed to match fish migrations, additional system flexibility to allow exports at times of reduced sensitivity to fisheries, refuge water supplies, or ecosystem water quality, etc.
- **Flood control** -- some projects provide for increased protection from large flood events.
- **Hydropower** -- some projects provide for the generation of electric power.
- **Recreation opportunities** -- some projects or project facilities can provide enhanced recreational opportunities.

The beneficiaries of new storage facilities would also depend upon the design and operation of each facility and the allocation of the water supply, but could include the following:

- **Agricultural water users.**
- **M&I water users.**

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- **The public** -- to the extent that water is allocated to environmental restoration or enhancement and increased flood protection is provided for the Delta ecosystem.
 - **Floodplain residents/land owners.**
 - **Recreational users** of the storage facility directly or those benefitting from ecosystem restoration (e.g., fisheries).
 - **Hydropower operators**

Estimating benefits and cost allocation. As described in the introduction to this section, government agencies have adopted procedures for estimating the benefits of several of the purposes of multi-purpose storage facilities (agricultural water use, M&I use, reduction in flood damages, and recreational uses), as well as standardized approaches to cost allocation among such benefits/purposes. The CALFED agencies propose to apply these or other procedures to individual storage projects as they are planned and designed. These standardized procedures do not address environmental restoration per se, but costs could be allocated based on the water used directly for such purposes and not benefitting private users. In addition, CALFED may adopt techniques developed by the DWR study "*Multi-Objective Approaches to Floodplain Management*" (see Section 5.3 on cost allocation). The allocation to public uses will be addressed by CALFED for each storage facility.

Existing Programs and Funding

Cost-Sharing for Construction. Both federal and state water programs, the CVP and the SWP, were, from their inception, devoted to constructing major storage and delivery systems within California's Central Valley. As described in the introduction to this section, there has been an evolution in the goals and financing of federal water projects. The concern over low effective cost shares (in the range of 10% to 15%) for irrigation has placed more emphasis on increasing the repayment from water users or general policies requiring higher levels of up-front cost-sharing (see Table 5.1--cost-sharing table). As Table 5.1 indicates, in some cases this emphasis on increased cost-sharing has resulted in new legislation. Federal law and policy requires that the cost of environmental mitigation of new facilities is allocated to the project purposes which caused the need for the mitigation. Accordingly, the cost-sharing rules or effective cost shares for those project purposes would apply to mitigation costs.

Cost-sharing for Planning and Feasibility Studies. Federal policy for water resources programs does not generally require local cost-sharing for "reconnaissance" level or "appraisal" level review. However, more detailed feasibility or planning studies usually require an up-front non-federal cost share that is generally administered on a "pay-as-you-go" basis in smaller portions. Although federal cost-sharing policies for planning and feasibility studies can vary by authorizing legislation, USBR projects typically require a 50% local cost share for planning (see Table 5.2). Recent cost-sharing policy for Corps projects, which provide storage mainly for flood control purposes, requires a 50% local up-front cost share for feasibility studies, with an

option for the local sponsor to contribute an additional cost share to add a storage function to a project. For project purposes which require repayment, such as irrigation water and M&I water supply and power, the other 50% of planning costs become part of the construction cost of the project.

In the SWP, planning studies have typically been undertaken using SWP funds generated from bonds repaid over time from water and power charges. In the case where planning is for a new facility that benefits only certain SWP contractors, the costs are borne by the benefitting contractors (i.e., costs are included only in the rates to those contractors). In summary, SWP planning costs have an effective local cost share of 100% (or near 100%). Recently, state public funding has been provided for planning and evaluation costs associated with storage investigations (Proposition 204 and state budget General Fund appropriations) (see Table 5.2).

Cost-sharing for Maintenance. Maintenance on both state and federal projects is generally funded 100% by the beneficiaries or local interests (see Table 5.2). All SWP O&M costs are repaid by the SWP contractors, for example. USBR projects require 100% non-federal funding for O&M. The Corps does not fund any O&M on its flood control projects, with a few rare exceptions for pre-1986 facilities.

Finance Options

Given the magnitude of potential storage expenditures in the CALFED Program, the selection of financing options for new storage will be an important component of the Program. The beneficiaries pay principle indicates that the payment for such storage facilities should be closely linked to the beneficiaries, particularly where such groups can be easily identified, as in the case of water supply.

Options for Cost-Sharing for Construction

Option 1 -- Construct additional storage as part of the federal system and require up-front cost-sharing from water and hydropower users following existing federal cost-sharing laws and policies.

Option 2 -- Construct additional storage projects as components of the SWP, which has high levels of local effective-cost-sharing. This option would assure application of the beneficiaries pay principle, while avoiding the need to seek changes in those provisions of federal law that provide low effective cost shares for irrigation water supply. Cost-sharing for the flood control and recreation segments could be handled under existing legislation.

Option 3 -- Construct additional storage projects under a mix of state and federal authorities, relying on the effective levels of local cost-sharing in existing law.

Option 4 -- Construct additional storage projects under a mix of state and federal authorities, but seek new legislation to specify levels of cost-sharing for specific facilities.

Option 5 -- Variation of above -- For certain groundwater storage projects, public funding may be appropriate based on the demonstration value of such projects, and to ensure implementation and local support.

Cost-Sharing for Planning

In the Revised Phase II Report, December 1998, CALFED stated a policy of seeking public financing for the planning and evaluation of storage projects to ensure a comprehensive and fair comparison of storage options. However, should a storage project proceed to construction, then the public funds used for planning and evaluation will be reimbursed by the project beneficiaries. This financing policy does not foreclose the option of also receiving up-front cost-sharing by potential project beneficiaries.

Cost-Sharing for O&M

Consistent with existing federal and state policy and law and the principle of beneficiaries pay, CALFED recommends that for irrigation, M&I, and hydropower, users pay 100% of O&M costs.

5.4.2 Conveyance

Program Description

CALFED's strategy for Delta conveyance improvements is to use the existing Delta system with some modifications, evaluate its effectiveness, and add additional conveyance and/or other water management actions if necessary to achieve CALFED goals and objectives. These actions will be continually monitored, analyzed, and improved as necessary to meet CALFED goals.

Program Benefits/Beneficiaries

Identification of benefits and cost-sharing for conveyance improvements will need to be on a project specific basis. This section, however, identifies the benefits generally associated with water conveyance facilities. Potential benefits include:

- **Water supply reliability** due to conveyance improvements such as channel enlargements, new facilities, and operational changes.
- **Ecosystem** benefits from fish screens and operational changes (i.e., EWA).

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- **Water quality** benefits from structural and operational changes.
 - **Flood control** benefits from channel enlargements and other conveyance improvements.

Beneficiaries of the water conveyance actions/improvements potentially include:

- **Agricultural and M&I water users** would benefit from conveyance improvements.
- **The public** would benefit from conveyance improvements that enhance environmental conditions in the Delta and provide increased flood protection for Delta ecosystem.
- **Regional land owners** would benefit from flood control for lands and infrastructure susceptible to flooding.

Estimating Benefits and Cost Allocation. Traditionally, the costs of conveyance improvements associated with the delivery of water for agricultural or municipal use are allocated to those project functions. Similarly, if particular conveyance facilities are designed primarily for delivering water to wildlife refuges, the costs would be allocated to ecosystem restoration. Delta conveyance improvements may also benefit water exporters through benefits in water quality, as well as those susceptible to flooding and the ecosystem. The extent of such benefits will continue to be analyzed in the Program, both through biological studies and through modeling efforts. Consistent with the benefits definition in the introduction to this section, some of the key questions that need to be addressed would be the following:

- What would be the difference in the willingness to pay for the level of agricultural water supply with and without the proposed Delta improvements?
- The same question would apply to the levels of municipal water with and without the conveyance improvements. Note that the answers to the above questions would also be linked to the quality of the water supplies (see discussion under Water Quality Program).
- What is the magnitude of the flood control damages avoided solely by the conveyance improvements? This question is perhaps best answered in conjunction with analyzing the benefits of levee protection.

Ultimately, a recommendation will have to be made by CALFED as to how the costs of conveyance facilities should be allocated and approval sought from legislative bodies as to who will share the costs of conveyance facilities.

Existing Programs and Funding

Since conveyance costs are traditionally allocated to the recipients of water supply, the cost-sharing of conveyance facilities has tracked that of water storage (see section on storage, above). Therefore, the associated federal and state programs and the effective levels of local cost-sharing have been the same as for storage. For example, planning and construction of the SWP California Aqueduct has had high levels of effective cost-sharing as its planning and construction costs are nearly all being repaid by the SWP contractors through the SWP Delta Water Charge. Planning and construction of SWP conveyance facilities that benefit only certain contractors, such as the Coastal Branch, are borne by the benefitting SWP contractors.

Funding for fish screens (fish screens are a component of the through-Delta conveyance proposal) comes from a variety of funding sources under differing cost-sharing arrangements. The CVPIA, Section 3406(b)(21) provides for up to 50 percent federal cost-sharing for construction of screens on unscreened diversions or actions to improve existing screens. Sections 3406(b)(4) and (5) of the CVPIA provide cost-sharing for screening the Tracy Pumping Plant and Contra Costa Canal Pumping Plant at 37.5% federal expenditure to be reimbursed by project water and power users, 37.5% non-reimbursable federal expenditure, and 25% to be paid by the state.

Although some channel enlargement has been paid for and carried out by The Corps under its responsibilities regarding navigable waterways, these improvements have generally not been the same improvements that would be required for improving conveyance through the Delta. Therefore, commercial shipping is not considered to be a beneficiary of conveyance improvements.

Finance Options

The options for cost-sharing for conveyance improvements are similar to those for storage, given that the costs of conveyance are traditionally allocated in the same manner as storage facilities (the allocation is based on end use of the water). Where an allocation is made to public purposes, then the costs would be paid for by the state or federal government, contingent upon appropriation by the state and federal Legislatures.

5.4.3 CALFED Levee Program

Program Description

The Levee Program objective is to reduce the risk to land use, infrastructure, and associated economic activities; water supply; and the Delta ecosystem from catastrophic breaching of Delta levees. To achieve the Levee Program objective and the other CALFED objectives, in addition to meeting CALFED's Solution Principles, the Delta levee system must remain generally in its current configuration. In addition to improving the integrity of the Delta levee system, the Program aims to integrate ecosystem restoration and Delta conveyance actions with levee improvement activities. Improvements in the reliability of water quality would be a natural by-product of the Levee Program.

The specific elements of the Levee Program, as outlined in the Long-Term Levee Protection Plan (LTLPP), include the Delta Levee Base Level Protection Plan, Delta Levee Special Improvement Projects, Delta Levee Subsidence Control Plan, Delta Levee Emergency Management and Response Plan, and the Delta Levee Risk Assessment. The Base Level Protection element would incorporate the levees currently covered under the existing Delta Levee Subventions Program and aims to improve all levees to a uniform base level standard. The Special Improvements Project element would adopt the goals of the existing Special Projects Program and provide additional flood protection separate from the Base Level Protection element for Delta islands that protect public benefits such as the ecosystem, as well as water quality, life and personal property, agricultural production, cultural resources, recreation, and local and statewide infrastructure. The Subsidence Control Plan element would reduce or eliminate the risk to levee integrity from subsidence. The Emergency Management and Response Plan element would enhance existing emergency management response capabilities in order to protect critical Delta resources in the event of a disaster. The Risk Assessment element would identify the risks to Delta resources from Delta levee failure, quantify the consequences and develop recommendations to manage the risk.

Program Benefits/Beneficiaries

Benefits of the Levee Program vary somewhat between each of the 5 elements of the program described above. The benefits of the program as a whole are:

- **Land use protection** of Delta agricultural resources, municipalities, infrastructure, and ecosystem habitat in the interior of the Delta islands.
- **Water quality improvements** due to reducing the likelihood of levee failure which can cause saltwater intrusion impacts that could potentially degrade both agricultural and municipal water supplies from Delta exports for several months.

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- **Rapid Response to Levee Distress and Failure.** The Emergency response component of the Levee Program would provide for suitable funding, equipment and material availability, and coordination to augment the ability for rapid response to levee distress and failure.

The beneficiaries of the Levee Program include:

- **Delta land owners including farmers, business owners, and residents** who benefit from increased flood protection.
- **Delta water users and exporters** who benefit from increased protection of water quality and thus greater water supply reliability for both agricultural and M&I water supply.
- **The public** -- due to improved ecosystem water quality from reduced salinity intrusion in the Delta.
- **Railroads, state highways, utilities, and water distribution facilities** which benefit from increased flood protection.
- **Recreational boaters and tour operators** who benefit from navigation benefits.

Estimating Benefits. Benefits would be measured in the Levee Program based on the difference in benefits with and without the levee improvements. For each benefit category or group of beneficiaries, the key questions would be the magnitude, duration, and frequency of damages that would be incurred both for short-term flooding events (and the cost of emergency response) and for catastrophic failure with the program compared to without the program. For Delta agriculture, what would be the reduction in loss of net agricultural income? What would be the reduction in loss of Delta infrastructure due to flood damages? For Delta exporters, how would the severity of the impacts be reduced on Delta water quality connected with a catastrophic failure? Both with and without the program, how long would supplies be disrupted, what alternatives would exist for obtaining or using substitute supplies, and what would be the cost of the disruptions? Would there be impacts on recreational boating in the Delta? Over what area and for how long?

Existing Programs and Funding

The Delta Levee Subventions Program was established in 1973 (SB 541) to provide state financial assistance to local districts for improving non-project Delta levees. (A "project" levee is defined as a flood control levee that is a project facility under the State Water Resources Law of 1945.) It was revised with enactment of the Delta Flood Protection Act of 1988 (SB 34) and further amended in 1991 (SB 1065) and 1996 (AB 360). The Delta Levee Subventions Program

requires that levee work be funded up front by the local agencies and reimbursed up to 75% by the state through DWR. California Water Code Section 12300 authorizes \$6 million a year to be appropriated to the Delta Flood Protection Fund from the California Water Fund for the Subventions Program until July 1, 2006. Historically, annual appropriations have been less than what has been authorized. There is very little federal participation in non-project levee work in the Delta. Federal participation in non-project levee maintenance is authorized through Public Law 84-99 (PL84-99). Islands must meet the PL84-99 levee standard to be qualified for post-flood levee rehabilitation funding. Currently, only two islands are qualified and funding is subject to federal appropriation.

The Special Flood Control Projects program, created by the Delta Flood Protection Act of 1988 (SB 34) and amended in 1991(SB 1065) and 1996 (AB 360), provides additional flood protection separate from the Delta Levee Subventions Program for Delta islands based on (1) the importance or degree of public benefit needing protection, and (2) the need for flood protection work (California Water Code section 12313). Cost-sharing percentages under the existing Special Projects Program vary from 75% to 100% state funds, depending on the ability of the state to find a local cost-sharing partner. Although no federal cost-sharing agreements exist for the Special Projects Program, the California Water Code encourages DWR to seek cost-sharing with, or financial assistance from, federal agencies with programs applicable to or an having an interest in flood protection projects. Although the state is required to seek a local cost-sharing partner under the Special Flood Control Projects Program, historically the state has provided higher cost-sharing (up to 100%) for these projects than for the Subventions program primarily because of the program's focus on broad public benefits.

No existing program currently provides funding specifically for subsidence work; however, subsidence research currently is funded under the existing Special Projects Program. Local levee districts provide funding for initial emergency response through benefit assessments. The state provides assistance and funding when local resources are exhausted. If the governor declares an emergency and requests emergency assistance where life or substantial property is at risk, federally funded emergency assistance is provided.

DWR currently funds a Seismic Stability Evaluation for Delta levees through SWP contractor fees.

Finance Options

The cost estimate for the Long Term Levee Protection Plan over a 20-30 year period is estimated at \$1.5 billion. There are several options for financing the Levee Program:

Option 1 -- Continue current cost-sharing. Levee maintenance and repair work would continue to be funded up front by the local agencies and reimbursed up to 75% by the state through DWR. State cost-sharing percentages for the existing Special Projects Program would vary from 75% to 100%, depending on ability-to-pay analysis completed

for each participating local agency. Local agencies would provide the remaining funds. Federal funding for non-project levee work in the Delta would continue to be limited. Funding for initial response to flood emergencies is currently provided by local resources. Once local resources have been exhausted, the state provides assistance and funding. If the governor declares an emergency and requests emergency assistance, federally funded emergency assistance may be provided.

Option 2 -- Modify current cost-sharing to allow for Federal Cost Share. The levee program would obtain long-term federal and state funding authority and develop cost-sharing scenarios between state, federal, and other interests building upon the existing programs. The primary difference would be a shift in cost-sharing to the federal government and reduction by the local and state agencies. In addition, the Levee Program would seek to resolve problems in current funding strategies and identify mechanisms that best secure long-term funding.

- Cost-sharing for the levee maintenance program (Base Level Component) would be 65% federal, 25% state, and 10% local for construction to PL 84-99 standards. Local agencies can contribute LERRDs, which would be credited toward their 10% share. Planning costs would be cost shared at 50% federal, 25% state, and 25% local. Funding for maintenance would be provided 100% by the local agencies up to \$1,000 per mile of levee improvement. Costs above \$1,000 per mile of levee improvement would be cost shared 65% federal, 25% state, and 10% local, and would be considered re-construction.
- Funding for the Special Improvement Projects element of the Levee Program would be cost shared at 65% federal and 35% state. The state would seek a local cost-sharing partner. As in the Base Level Protection element, local agencies would contribute LERRDS. Planning costs would be cost shared at 50% federal and 50% state. Funding for maintenance would be provided 100% by the local agencies up to \$1,000 per mile of improved levee.
- Funding for the Subsidence Control element of the Levee Program would be cost shared at 65% federal, 25% state, and 10% local.
- Funds for the Emergency Management and Response element would be provided 100% by local interests for initial response. After local resources have been exhausted, secondary response funds would be cost shared at 50% federal and 50% state. After the established state funds are exhausted, funding would be 100% federal. First-year start-up costs to establish a \$10 million Emergency Response Fund would be cost shared at 50% federal and 50% state. After the Emergency Response Fund is exhausted, the federal government would provide funds through The Corps. Local agencies would contribute any necessary LERRDS.

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- Funds for the Risk Assessment element would be covered under Special Improvement Projects funding.

Option 3 -- Benefits based approach. This option could include a possible increase in the local agency cost share, and a cost share from water users that are not currently contributing under the existing model. For example, water users and exporters who benefit from the increased water supply reliability provided by the levees could pay a user fee toward levee maintenance. In this case, levees could be viewed as part of the "conveyance structure" and payment for their maintenance provided similarly to the application of the minimum operations, maintenance, power, and replacement costs (OMP&R) component of the transportation charge to the State Water Contractors for maintenance of California Aqueduct reaches.

The percentage public contribution toward the Special Improvement Projects element should remain proportionally higher than that for the Base Level Protection element because of the Special Improvement Projects' focus on public benefits. However, the Special Improvement Projects element could be modified to include a water user cost share for the same reasons described above.

5.4.4 CALFED Water Use Efficiency Program

Program Description

The ultimate goal of the CALFED WUE Program is to develop a set of programs and assurances that contributes to CALFED goals and objectives, has broad stakeholder acceptance, fosters efficient water use, and helps support a sustainable economy and ecosystem. To achieve these fundamental goals, the WUE Program has the following objectives:

- Reduce existing irrecoverable losses,
- Achieve multiple benefits,
- Preserve local flexibility,
- Use incentive-based actions over regulatory actions,
- Build on existing water use efficiency programs, and
- Provide assurance of high water use efficiency.

Program Benefits/Beneficiaries

Some potential WUE benefits may not be cost-effective locally, but may be so regionally or from a statewide perspective. For one thing, water may be more valuable to an entity outside the immediate local area and that entity may be willing to fund the efficiency improvement in exchange for transferring the conserved water. Second, water efficiency improvements that also

increase water quality could have benefits to a larger group of water users in the region. Finally, where the water saved through WUE measures results in increased water being dedicated to in-stream or Delta uses on a permanent basis, there may be a public benefit. In these latter situations, CALFED planning and cost share support may be particularly effective.

Benefits of the WUE Program would include:

- **Increased Water Supply Reliability** -- Reducing irrecoverable losses by reducing losses currently unavailable for reuse (because they flow to a salt sink or an inaccessible or degraded aquifer, or are lost to the atmosphere).
- **Improved Water Quality** -- Increases in irrigation efficiency can reduce the amount of tailwater that drains from a farm field. Efficiency actions also may change tailwater quality. This may improve in-stream water quality by reducing the return flow of salts, sediments, organic carbon, selenium, or other substances.
- **Contribution to Ecosystem Restoration** -- Increased emphasis on efficiency measures would improve water quality from reduced discharge of unwanted constituents, timing, and in-stream flows, provided the improved in-stream flows are administratively and legally protected, e.g., by Section 1707 of the California Water Code, supplemented by other protections.

The beneficiaries of the WUE Program would include:

- **Agricultural water users** would benefit from more efficient use of water through conservation practices. These may be reflected by reduced costs of production, increased crop yields, or both, leading to increased net farm income.
- **M&I water users** would benefit from increased water supply reliability (through reduced irrecoverable losses) and improved water quality (from reduced discharge of unwanted constituents in agricultural and municipal return flows).
- **Users of Delta exports** would benefit from increased water supply reliability (through reduced irrecoverable losses) and improved water quality (from reduced discharge of unwanted constituents in agricultural and municipal return flows).
- **The public** would benefit from ecosystem restoration in those cases where the increase in WUE results in reduced discharge of unwanted constituents or increased flows to improve water quality in the Delta. The public also benefits from increased in-stream flows, where the dedication of such increased flows is administratively and legally protected.

Estimating Benefits and Cost Allocation. CALFED's incentive-driven, objective-oriented approach to water use efficiency relies heavily on locally defined projects that have the potential to meet CALFED objectives. Many of these projects will create both local and statewide benefits. Where local benefits will be created, CALFED will require local cost share equivalent to the estimated local benefits. This approach is consistent with CALFED's beneficiaries pay policy.

CALFED will estimate the local benefits for each funded project. To the greatest possible extent, CALFED will use the work of the AWMC and CUWCC in identifying locally cost-effective practices to assist in their determination of local benefits.

Existing Water Use Efficiency Programs

Current state and federal programs and laws have provided funding, primarily in the form of loans and grants, to assist local agencies with implementation of water conservation or water recycling projects.

State Programs and Funding

The Office of Water Recycling in the SWRCB provides grants and loans for water recycling projects. The SWRCB, through the State Revolving Fund (SRF), also provides loans of up to \$50 million per agency per year with a 20-year payback period and an interest rate of one-half of the interest rate currently used for state general obligation bonds, which result in an effective local agency cost share of about 80%. These loans are for construction of wastewater treatment, wastewater recycling, and non-point source pollution prevention projects. The SWRCB also provides Wastewater Recycling Loans and Small Community Grants.

The DWR's Water Conservation, Groundwater Recharge, New Local Water Supply, and Local Projects Program provides financial assistance to local agencies constructing water management infrastructure projects. DWR administers four bond laws under which some funding is available for water conservation and recycling: the Clean Water Bond Law of 1984 (Proposition 25); the Water Conservation and Water Quality Bond Law of 1986 (Proposition 44); the Water Conservation Bond Law of 1988 (Proposition 82); and the Safe, Clean, Reliable Water Supply Act (Proposition 204). Collectively, these acts provide funding for loan and grant programs to assist local agencies with construction of voluntary, cost-effective, capital outlay water conservation and groundwater recharge facilities projects, and in the development of new local water supply projects. The bond laws provide for:

- Capital Outlay Loans of up to \$5 million per eligible project to public agencies for cost-effective, capital outlay projects. The maximum repayment period for loans is 20 years (Propositions 44, 82, and 204) and 25 years (Proposition 25).

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- Feasibility study loans up to \$100,000 per project for water conservation and groundwater recharge and up to \$500,000 for new local water supply are also available.
 - Local project feasibility study grants of up to \$500,000 each to public agencies in selected counties, as well as land acquisition loans of up to \$1,000,000.

Federal Programs and Funding

USBR is authorized under the Reclamation Wastewater and Groundwater Studies and Facilities Act (Title XVI of PL 102-575) to provide grants for specified water recycling projects. In 1992, Title XVI authorized USBR to participate in the design and construction of water reuse projects in five specific geographic areas, four of which are in California (San Diego, San Gabriel, Los Angeles, and San Jose) and one in Arizona. As of December 1996, all four of the California projects had received federal grant funding, and no construction money had been provided for the Arizona project. Federal contributions can be up to 25% of the total costs. In 1995, USBR adopted a self-imposed \$35 million annual cap for funding the projects authorized under Title XVI. In 1996, Title XVI was amended by the Reclamation Recycling and Water Conservation Act of 1996 (PL 104-266), which authorized another 16 recycling projects and 2 desalinization projects. PL 104-266 also established a maximum \$20 million cap per project for federal contributions, maintained the 25% maximum federal cost share, and requires a cost share agreement before federal funds can be appropriated for a project.

Other Programs/Actions. Although not a program of federal funding directly to water districts, federal and state actions to facilitate and administer voluntary market transfers of water have been another source of improvements in WUE. For example, starting in 1988, the Metropolitan Water District of Southern California agreed to fund a number of water efficiency improvements in the Imperial Irrigation District in exchange for the conserved water.

Private Programs and Funding. The California WaterReuse Finance Authority, a JPA, provides low interest loans to its members through its California WaterReuse Variable Rate Borrowing Program, for water and wastewater capital projects ranging from \$1 million to \$100 million. Applications for loans are reviewed by the Program Administrator, who together with the Program bond counsel prepare loan documentation. Once the loan is approved by the bond insurer and the JPA, the applicant adopts an ordinance prepared by the bond counsel and joins the JPA. Following the enactment of the ordinance, funds can be made available for the project. Approximately \$200 million was made available for loans in 1998. Interest rates on variable rate bonds are reset every seven days and have averaged 3.582% since 1990.

Finance Options

Applying a benefits based approach to WUE financing, the costs would be allocated to those who benefit from the water use efficiency actions. Benefits of individual water use efficiency

measures would need to be determined for each loan or grant provided under the program. Where the benefits accrue to agricultural and municipal water suppliers, the options below provide either financial incentives in the form of loans or grants. The effective local cost share would depend upon the financial terms of the loans or grants (see options, below).

All of the options described below incorporate the concept that if a WUE measure provides public ecosystem or water quality benefits and is not locally cost effective, it would qualify for public funds. If a portion of the conserved water or other benefits are dedicated to in-stream or Delta uses over the long term and is administratively and legally protected for those uses, then the costs of that portion can be allocated to the public because of the public benefits. For the WUE measures that provide ecosystem benefits, CALFED proposes to provide grants to finance that portion of WUE measures that are not cost effective at the local or regional level, if certain criteria are met.

Cost Share Options

In all cases, CALFED proposes to fund the technical assistance program with public funds because of the limited cost of the program and the demonstration value and broad societal benefits of such a program. Providing technical assistance creates an incentive to develop innovative techniques for WUE that may be too costly at the local level, but can be made cost-effective with the help of public funding. The primary difference between the following options for financial assistance programs is the level of local cost-sharing required.

Option 1 -- Market Rate Loans & Grants. State and federal funding -- provide loans at market rates for locally cost effective projects and provide grants for projects (or portions of projects) that meet the criteria for public benefits.

Option 2 -- Low Interest Loans & Grants. Continue programs with levels of effective local cost-sharing similar to current state and federal programs. With state and federal funding, provide low interest loans for water conservation projects. Provide grants for projects (or portions of projects) that meet the criteria for public benefits.

Option 3 -- Same as Option 2, but emphasizes the ranking of proposals based on their percentage of effective local cost shares and the percentage of water and other benefits dedicated to public purposes.

Option 4 -- Public Funding. Fund the CALFED actions mostly with public funds, offering primarily grants and obtaining cost-sharing when feasible. There may be reasons (new technology, demonstration benefits) that support the use of public funding through grants or low interest loans for some locally cost effective WUE measures.

5.4.5 CALFED Water Transfer Program

Program Description

The CALFED Water Transfer Program proposes a framework of actions, policies, and processes that, collectively, would facilitate water transfers and the further development of a properly regulated state-wide water transfer market. Because water transfers can affect third parties (those not directly involved in the transaction) and local groundwater, environmental, or other resource conditions, the framework also includes mechanisms to provide protection from such impacts.

Program Benefits/Beneficiaries

Water transfers are institutional mechanisms to move water from one use to another. Therefore, they can benefit various water uses - agricultural, M&I, and environmental. While transfers may or may not include efficiency improvements, they can provide incentives for more efficient use of water and potentially could produce revenue to be used for investing in such improvements.

Benefits of water transfers include:

- **Increased Water Supply Reliability** -- By helping to relieve the mismatch between water supply and demand by moving water available in one area to satisfy a need in another area. Water supply reliability is also increased by providing a short-term method to move existing supplies from one location to another while other facilities are being constructed (new conveyance, surface storage, or conjunctive use), during temporary reductions in water supply due to outages of conveyance facilities, or until other technologies (such as desalination) or land use policies offer other alternatives.
- **Improved Water Quality** -- Water quality benefits can result from actions taken to make water available for transfer (reducing agricultural return flows and reducing urban wastewater flows--although, in some cases, degradation of water quality can also occur).
- **Improvements to the Ecosystem** -- By providing water for in-stream flow augmentation and by providing a mechanism to move water assets into and out of the EWA.

Beneficiaries of water transfers:

The primary purpose of the Water Transfer Program is to facilitate the development of a water transfer market which benefits buyers and sellers and protects environmental values and the public interest. More specifically, beneficiaries of the Water Transfer Program can be described as follows:

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- **Agricultural, M&I, or environmental users who purchase water** would benefit from increased water supplies and increased water supply reliability;
 - **Water users who willingly sell water** and who invest the proceeds in local water conservation or water management would benefit from lower costs and/or increased productivity (most water will be purchased from existing agricultural users, but some may also be from M&I users);
 - **All agricultural and M&I water suppliers and users** would benefit from environmental water transfers because, as environmental conditions improve, the implications of regulatory conditions on water diversions should be reduced;
 - **The public** would benefit from water transfers between consumptive uses that, to some extent, offset or defer the need for new facilities or other potentially environmentally degrading water supply sources, or sources that would be built at public expense. Benefit would also be derived from legally protected environmental transfers (i.e., under California Water Code Section 1707) intended to augment instream flows above regulatory baseline conditions resulting in improved environmental conditions.

Estimating Benefits and Cost Allocation. The Water Transfer Program is primarily focused on improving institutional mechanisms, which is not amenable to traditional benefits analysis. It is clear, however, that both the public and existing water districts (as buyers and sellers), would benefit when appropriate transfers can be approved more easily. Costs of the Water Transfer Program could be allocated between public and private uses based on the expected quantities of water devoted to public transfers, as opposed to private transfers. Since this may not be known in advance, one option might be to simply include a portion of the administrative cost of this program in an application fee for water transfers. Another option would be to use public funding because of the limited cost of the program (see options, below).

Existing Water Transfer Programs

The Water Transfer Program proposes a framework to facilitate the further development of the water transfer water market in California, while protecting water rights and area of origin priorities and providing safeguards against source area environmental and economic impacts. Generally, the water transfer element relies on the existing legal and regulatory framework of water rights and jurisdictional authorities and does not recommend any major changes to California water law or the water rights system. Currently, agencies which have jurisdictional authorities to administer transfers (USBR, DWR, SWRCB) use a combination of application fees and public funds included in their budgets to administer and facilitate transfers.

Program Funding Options

Water transfers are water management tools that help provide numerous water resource benefits to many beneficiaries -- from agricultural users and urban communities to the environment in the form of in-stream flows. Streamlining processes for approving water transfers, as well as overcoming other institutional issues, would benefit these same groups.

Since most of the actions in the Water Transfer Program involve policy and procedural changes, the costs would likely be absorbed into existing agencies' budgets (USBR, DWR, and SWRCB) within the first few years. The newly established Water Transfers Clearinghouse, however, may be an exception. Several funding options for long-term funding, such as the clearinghouse, are possible. However, the costs of the program are relatively small with respect to other CALFED program elements. Therefore, CALFED proposes that the costs of the program be funded similarly to current practices.

Note that the principal costs of specific water transfers (water, application process, legal, and engineering costs) would be paid for by buyers and sellers in the transaction. The Water Transfer Program goal is to encourage the water transfer market, but financing specific transfers falls outside the scope of the program.

5.4.6 CALFED Water Quality Program

Program Description

The purpose of the CALFED Water Quality Program is to improve the quality of the waters of the Sacramento-San Joaquin Delta estuary for all beneficial uses (including M&I water use, agricultural water use, recreation, and aquatic habitat). Because species dependent on the Delta and its tributaries are affected by upstream water quality conditions in some areas, the scope of the Water Quality Program also includes watershed actions to reduce water quality impacts on these species, as well as impacts on municipal, industrial, and agricultural uses.

Section 303(d) of the federal Clean Water Act (CWA) requires states to identify water bodies with impaired quality with respect to supporting beneficial uses. This process has resulted in a number of water bodies in the Bay-Delta estuary and its tributaries being listed as impaired. Therefore, an important component of correcting the overall problems of the Delta estuary is undertaking actions to effectively reduce the toxicity of aquatic habitats and reduce constituents, such as salinity, that affect the usability of Delta water supplies.

The Water Quality Program will include both environmental water quality and drinking water quality actions, and will address concerns related to pesticides such as diazinon and chlorpyrifos, mercury source control, drinking water improvements (such as TOC and bromide), investigations and control of low DO, mercury, salinity, selenium, trace metals, and turbidity and sedimentation.

Program Benefits/Beneficiaries

The benefits of the Water Quality Program include:

- **Increased Water Supply Reliability** -- Reduction of salinity and other contaminants increases reuse opportunities which lessens the demand on fresh water.
- **Improvements to the Ecosystem** -- Reduced toxicity to phytoplankton, zooplankton, benthic invertebrate organisms, and fish communities that inhabit the Delta.
- **Public Health** -- Increased safety of drinking water supplies, such as reduced pathogens in drinking water exported from the Delta, reductions in disinfection byproduct concentrations related to bromide and TOC, and reduced levels of mercury contamination of fish.
- **Enhanced Recreational Use** -- Reduction of disease-causing organisms and increased aesthetic values by reduction in nuisance algae blooms.

The beneficiaries of the Water Quality Program include:

- **The Public** -- The public would benefit from ecosystem improvements and increased aesthetic values, such as a reduction in nuisance algae blooms.
- **M&I Water Users** -- M&I users would benefit from increased water supply reliability through increased reuse opportunities, reduced cost of pretreatment and accretion of mineral deposits in piping, cooling, heating, and other industrial equipment, and the public health benefits of better water quality.
- **Agricultural Water Users** -- Agricultural users would benefit from reduced salinity which would lessen toxicity in plants, as well as the possibility for promoting more efficient water use by enabling multiple stages of tailwater recycling.

Estimating Benefits and Cost Allocation. At this time, CALFED has not quantified or measured potential benefits received by the beneficiaries. However this information can be estimated to some degree of detail and used to further develop a more detailed benefits based finance option. For example:

1. For M&I use, the benefits would be the cost savings in treatment costs, as well as health costs, and greater potential for reuse. The first step in assessing the relative magnitude of these benefits would be to use existing studies that are indicative of these cost savings.
2. For agricultural use, the benefits would be increased productivity and greater potential for re-use. The first step in assessing the relative magnitude of these benefits would be to review existing studies indicative of these benefits.
3. The relative magnitude of the public benefits of water quality (over and above meeting required standards) would be much more difficult to measure. Some of the benefits could be increased recreational benefits.

Existing Water Quality Programs and Funding

The SWRCB offers low interest loans and grants to solve water quality problems associated with discharges from point and non-point source dischargers and for estuary enhancement. California's Clean Water Act (CWA) SRF loans, the Non-point Source Implementation Grants (CWA 319(h) grants), the Water Quality Planning Grants (CWA 205(j) grants), and the Wetlands Program Development Grants (CWA 104(b)(3)) are all loan and grant programs offered through the SWRCB that help fund water quality actions.

CWA Section 319(h) grants are available to states, Territories, and Indian Tribes. These grants support a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific non-point source implementation projects. A 40% project cost share (in the form of dollars or in-kind services not supported by federal programs) is required to qualify for a 319(h) grant, and no more than 10% of funding may be used for administrative expenses. The federal grant per project typically ranges from \$25,000 to \$350,000. Since the local funds (or in-kind services) are required concurrently with federal funds, the effective local cost share is 40%.

CWA Section 205(j) grants fund water quality planning projects that reduce, eliminate, or prevent water pollution and enhance water quality. In order to qualify, projects should address one or more significant water quality problem, and priority is given to projects which target specific watersheds identified by the RWQCBs. The federal grant may fund up to 75% of project costs, and the remaining 25% must come from a non-federal match (dollars or in-kind services not supported by federal programs). The federal grant per project ranges from \$25,000 to \$125,000.

CWA Section 104 (b)(3) wetlands grants provide financial assistance to states, federally recognized Indian Tribes, and local governments to support wetlands development or augmentation and enhancement of existing programs. The federal grant per project generally ranges from \$25,000 to \$500,000. A minimum 25% non-federal match of the total cost of the project is required.

The CWA SRF offers low interest loans to address water quality problems associated with discharges from point and non-point source (NPS) dischargers and for estuary enhancement. The interest rate on a CWA SRF loan is 50% of the interest rate on the most recently sold general obligation bond. The maximum amortization period is 20 years. Loans may cover up to 100% of the cost of planning, design, and construction of pollution control structures and 100% of pollution control programs. Proposition 204 made available \$80 million of State funds to the CWA SRF. Proposition 204 also contained \$30 million for a Small Communities Grant Program, administered through the SWRCB. Section 78613 of Proposition 204 states that the SWRCB may make grants to small communities for construction of eligible treatment works so that any combined federal and state grant does not exceed 97½ percent of the eligible cost of necessary studies, planning, design, and construction of the eligible project. The total amount of grants for any single project may not exceed \$3.5 million.

The Municipal Water Quality Investigations Program (MWQI) is managed in DWR's Water Quality Assessment Branch of the Division of Local Assistance. The MWQI budget is approximately \$1.8 million, which comes mainly from SWP funds. The MWQI Program studies current and potential contaminants in Delta water supplies, assists water supply agencies in planning, protecting, and improving drinking water sources and water supply facilities, and documents water quality under a variety of hydrologic conditions for studying water transfer alternatives, water quality standards, and predictive modeling capabilities.

DHS administers the Safe Drinking Water Act SRF, which provides loans to drinking water providers to assist them in complying with drinking water requirements.

Finance Options

The CALFED water quality actions provide drinking water, agricultural, and ecosystem benefits. The types of actions proposed by the program generally can be categorized in two areas -- (a) research, studies, and monitoring, and (b) site specific implementation of water quality actions aimed at direct improvements to water quality. Possible financing options for these two categories of actions are described below.

Options for Research, Studies and Monitoring

Option 1 -- Costs shared between public and a broad-based water user fee. All actions receive the same cost-sharing between the two funds--benefits and costs are not evaluated for each action, but it is assumed that overall the distribution between the funding reflects the overall benefits from the actions.

Option 2 -- Funding is still from public and broad-based water user fees, but individual actions are evaluated for their benefits and funding is assigned based on the benefits assessment.

Options for Water Quality Improvement Actions

Some water quality programs that would measurably improve the quality of water diversions could benefit a small group of beneficiaries. Others could benefit a large group of Delta exporters. Other programs may be targeted to solve particular environmental problems related to species restoration. Therefore, it is important to broadly categorize water quality programs by groups of beneficiaries. Then, the relative magnitude of ecosystem versus water diverter benefits would be assessed as the basis for recommending an allocation of costs.

Polluter Pay Issue. For some actions there might be one primary polluter or primary cause of the problem. In order to make appropriate resource use decisions in the future leading to a sustainable Delta system, polluters must consider the external costs of their actions, including their ongoing effect on the ecosystem. A beneficiaries pay principle should not preclude polluters from paying for actions that they would be required to perform by law in the absence of CALFED. Furthermore, a water quality action may reduce a pollutant that is harmful to the environment to a level below the regulatory standard. Although the benefit of this action is the ecosystem and the beneficiary is mostly the public, this does not mean that the public should foot the bill. This would leave no incentive *not* to pollute, and be detrimental to the goals and objectives of the Water Quality Program. In summary, a polluter should pay at least for the portion of costs that would help them meet regulatory standards and possibly more. Polluters also benefit from actively participating in the process of solving Delta problems. Furthermore, participation in cost-sharing provides an incentive for them to support solutions that are less costly to them.

For example, CALFED is proposing a partnership with the business community in the development of BMPs for diazinon and chlorpyrifos. The Urban Pesticide Committee (UPC) is already developing BMPs, and there is an opportunity here for funding from a private foundation, where the manufacturers of the chemicals might be interested in contributing funds to a solution that would educate users of their product and help solve the problem, while still allowing their products to stay on the market.

The following basic options could be employed for Water Quality Improvement Actions:

Option 1 -- Costs shared between public and direct beneficiary or polluter. The benefits/beneficiaries for each action would be identified and, as appropriate, cost share requested. An example action includes the urban pesticide education program with cost-sharing from pesticide manufacturers. Cost-sharing could be in the form of a loan or with direct up-front financial contributions.

Option 2 -- Same as 1, but costs shared between the public and appropriate groups of benefitting water users by using increments to SWP or CVP water rates.

Options for Cost-sharing for Planning

Option 1 -- Utilize existing federal or state cost-sharing policies for planning.

Option 2 -- Fund with a combination of public funds and broad-based water user fees.

Option 3 -- Provide planning at public expense, up to the point of design.

5.4.7 CALFED Watershed Program

Program Description

The two main components of the Watershed Program are to provide assistance - both financial and technical - to local watershed programs and to promote collaboration and integration among local watershed programs and the CALFED Program. The Watershed Program supports and encourages locally-led watershed activities that benefit the Bay-Delta system, recognizing that local watershed approaches may vary and that community involvement and support are essential. The Watershed Program strives to strengthen the partnerships and relationships between the public, local watershed organizations, and governments at all levels. Like the rest of the CALFED Bay-Delta Program, watershed activities included in the Watershed Program should ensure that adaptive management processes can be applied at multiple scales and across ownerships.

In summary, the draft Watershed Program includes the following elements:

- Support Local Watershed Activities -- Implement watershed restoration, maintenance, and conservation activities that support the goals and objectives of CALFED.
- Coordination and Assistance -- Facilitate and improve coordination and assistance between government agencies, other organizations, and local watershed groups.

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- **Watershed Monitoring and Assessment** -- Facilitate monitoring efforts that are consistent with the Science Program's protocols and support watershed activities to ensure that adaptive management processes can be applied.
 - **Education and Outreach** -- Support resource conservation education at the local watershed level and provide baseline support to watershed programs.
 - **Watershed Processes and Relationships** -- Identify the watershed functions and processes that are relevant to the CALFED goals and objectives, and provide examples of watershed activities that could improve these functions and processes.
 - **Integration with other program elements**, especially the efforts of the Watershed Program with the actions implemented under the Ecosystem Restoration and Water Quality Programs.

Program Benefits/Beneficiaries

Benefits of the Watershed Program include:

- **Ecosystem Quality** -- Watershed activities that improve terrestrial and riparian habitat, increase or improve fisheries habitat and passage, restore wetlands, or restore the natural stream morphology affecting downstream flows or species may benefit ecosystem quality. Some examples include stream flow enhancements, sediment balance, geomorphic stabilization, fire management, and improved spawning habitat through water quality improvements.
- **Water Quality** -- Watershed activities may benefit water quality in the Bay-Delta system by helping to identify and manage non-point sources of pollution and identify and implement methods to control or treat contaminants. Actions within the watershed which reduce the pollutant loads in streams, lakes, or reservoirs could measurably improve downstream water quality.
- **Water Supply Reliability** -- As land use activities within a watershed intensify, the ability of that watershed to slow runoff and allow water to infiltrate into the ground and percolate into aquifers tends to decrease. A result of this modified condition can be increased surface runoff and higher peak flows during storms and lower base flows during the dry season. This condition can make flood management more difficult, reduce opportunities to capture runoff in downstream reservoirs, and decrease groundwater recharge. Activities designed to restore or enhance the ability of watersheds to naturally absorb, store, and release water can reduce peak flows during storms, extend stream base flows through the dry season, and increase the potential for groundwater recharge.

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- **Levee and Channel Integrity** -- In some cases attenuation of flood flows coming from the upper watershed may provide benefits far downstream in the system. Delta levees are most vulnerable during high winter flows; watershed activities which reduce these flows can help maintain the integrity of the levees.

Beneficiaries of the Watershed Program include:

- **The Public** would benefit from ecosystem restoration (habitat, water quality, natural hydrograph), and from proposed monitoring within the watersheds of the greater Bay-Delta system.
- **Delta Farmers** may benefit from reduced flood risk and increased water supply reliability.
- **Users of Delta exports** (water diverters) may benefit from increased water supply reliability and improved water quality.
- **Local Communities** -- The Watershed Program is based at the local level. Local communities include land owners, governments, M&I water users, businesses, and others interested in the health and productivity of their watershed.

-- **Local land owners and local governments** may benefit from reduced fire risk, drinking water improvements, increased water supply reliability, and expanded recreational opportunities.

-- **Local M&I water users** (local water districts) may benefit from improved water quality and increased water supply reliability.

-- **Local business** -- One way businesses may benefit from the Watershed Program is through fire and fuel load management actions. As fuel loads through various vegetation management practices are reduced, businesses may profit from increased timber production opportunities made possible by fuel load management programs.

Estimating Benefits and Cost Allocation. The Watershed Program contains many features designed to strengthen communication, cooperation, and collaboration between all who have a stake in watershed management. Such activities, by themselves, are not amenable to economic benefit analysis and formal cost allocation. Where activities generate specific benefits to local business or benefit water quality, the costs can be allocated to the benefitting parties. Alternatively, where the benefits of the Watershed Program parallel those of other CALFED program elements (such as WUE and water quality), the benefits could be estimated and the costs allocated in the same way as for those program elements (see discussion of options below).

Existing Watershed Programs and Funding

There are many existing programs at the national, state, and local level which use a watershed approach. There are several federal programs with watershed protection goals, several of which are spending money within the CALFED area. Most of the federal programs provide federal funds on a cost-sharing basis. Many of these programs provide a cost share in the range of 75%. Some of these federal programs have dollar limits either on individual projects or the amounts provided to a project sponsor, grantee or land owner.

Federal Programs and Funding

The Federal Agriculture Improvement & Reform Act of 1996 (the Farm Bill) created and expanded federal watershed programs to address high priority environmental protection goals. The Farm Bill authorized more than \$2.2 billion in additional funding for conservation programs, extended the Wetland Reserve Program, and created new initiatives to improve natural resources on America's private lands, such as creation of the Environmental Quality Incentives Program (EQIP).

The EQIP was established through the Farm Bill, and offers financial, educational, and technical help for farmers and ranchers who face serious threats to soil, water, and related natural resources. The NRCS is the lead agency for EQIP, and works with the Farm Service Agency (FSA) to set the program's policies, priorities, and guidelines. EQIP was funded nationally at \$130 million in federal fiscal year 1996 and \$200 million annually thereafter. Livestock-related conservation practices receive half of program funding, with the remainder going to other significant conservation priorities. In fiscal year 1998, approximately \$2.75 million was funded within the geographic scope of the CALFED Bay-Delta Program. Higher priority is given to areas where state or local governments offer financial or technical assistance, or where agricultural improvements help meet water quality objectives. Cost-sharing provisions pay up to 75% of the costs of conservation practices for technical assistance, and limits total cost-share and incentive payments to any person to \$10,000 annually and to \$50,000 for the life of the contract.

NRCS administers the Wetland Reserve Program (WRP). The WRP helps land owners work toward a goal of no net loss of wetlands. Acres of wetlands on private lands are enrolled in the program through easements. The WRP has an enrollment cap of 975,000 acres. The WRP requires that one-third of total program acres be enrolled in permanent easements, one-third in 30-year easements, and one-third in restoration only cost-share agreements. Individuals may choose the category for their eligible land. The WRP provides land owners with 75% to 100% cost-sharing for permanent easements, 50% to 75% for 30 year easements, and 50% to 75% for restoration cost-share agreements. Cost-sharing helps pay for restoration. Approximately \$12.5 million from this program was spent within the geographic scope of the CALFED Program in fiscal year 1998.

Other federal programs include: CWA Section 205(j) and CWA 319(h) [discussed in more detail in the Water Quality section], CWA Section 320 - National Estuary Program (EPA), Clean Water Action Plan (EPA/NRCS/USFS/BLM), CVPIA and Partners for Wildlife (USFWS), State and Private Forestry Program (USFS), USFS and BLM Watershed Management Programs, and the Resource Conservation and Development Program (NRCS).

State Programs

California Department of Parks and Recreation (DPR) offers grants to cities, counties, and districts through the Habitat Conservation Fund Program (HCF). Grants are awarded for acquisition, restoration, and enhancement of wildlife habitat and significant natural areas, such as wetlands. Annually \$2 million is available, with no more than \$500,000 awarded per project. Grants require a 50% non-state share of costs. Grants for development may be matched by monetary or in-kind services.

California Department of Forestry and Fire Protection (CDF) administers the California Forest Improvement Plan (CFIP). The CFIP offers technical and financial assistance to local governments and private owners for practices that will improve the long-term quality of forested lands in terms of timber productivity, retention of soil cover, and value for wildlife. The program was established by the California Forest Improvement Act of 1978 and is available statewide. Under CFIP, a land owner works with a registered professional forester to develop a forest land management plan. The CDF typically reimburses the land owner up to 75% for the cost of preparing the management plan and for management practices, though it may go as high as 90% under certain circumstances. The land owner's contribution to the project cost can be in the form of labor, materials, or direct outlay. The annual maximum reimbursement amount is \$30,000.

Some of the other state and local programs available for watershed activities include: Prop 204 funds, Fire Safe Program, Vegetation Management Program, and Timber Harvest Effects Monitoring Program (CDF), DWR's Urban Stream Restoration Program and Local Assistance Program, CWA SRF (EPA/SWRCB), and the Safe Drinking Water SRF (EPA/DHS) (SRF loans are described in the Water Quality Program section).

Finance Options

The actions and primary benefits proposed by the Watershed Program support the following CALFED resource areas--water quality, ecosystem restoration, water supply reliability, and possibly levee improvements. Financing for these actions should therefore be consistent with the financing ultimately proposed for the other program elements addressing those resources areas.

The finance strategy for the Watershed Program should be compatible with the strategies for the other CALFED program elements. For example, if the finance strategy for ERP is a combination of funding from the public and from a broad-based user charge, then that may also provide

support for those watershed activities that have ecosystem benefits. Similarly if in the Water Quality Program, actions where specific beneficiaries or polluters can be identified would require cost-sharing from them, this also could be the approach used by the Watershed Program.

One financing issue in the Watershed Program is how to help support local community participation and organization. Watershed protection involves many stakeholders and therefore requires much coordination. Many local watershed groups find it difficult to carry out many of the initial development activities needed to inform, organize, and assist local communities in addressing watershed management issues. One way to help support these specific community development activities would be to use public and/or outside beneficiary funds for a limited period of time, with the expectation that over time, individual community programs will find other ways to cover these administrative and management costs. This arrangement would allow CALFED Watershed Program Funds to become more focused on the implementation of watershed projects and restoration activities.

As discussed above, financing for CALFED's Watershed Program should be consistent with the financing ultimately proposed for the CALFED program elements addressing the same resource areas. Some general options can be discussed based on the program's proposed actions and existing sources of funds.

Option 1 -- Use a combination of public funds and local cost-sharing based on current established cost shares in existing program elements. This option could be used if most of the funding for CALFED's Watershed Program is administered through existing federal and state watershed program elements.

Option 2 -- Fund the Watershed Program consistent with other CALFED Program financing proposals for cases in which funding is administered by CALFED. Use Option 1 when the Watershed Program is dependent on existing agencies/program elements to implement actions.

Option 3 -- Fund the Watershed Program consistent with other CALFED related program elements (i.e., Water Quality, ERP, Water Supply, etc.). If necessary, seek legislation to change cost-sharing, where applicable, to be consistent with other related CALFED program elements.

5.4.8 CALFED Ecosystem Restoration Program

Program Description

The ERP is the principal mechanism that CALFED will use to restore the health of the Bay-Delta system. The ERP emphasizes the restoration of ecological processes in order to create and maintain the diverse and vital habitats of the multiple plant and animal species in the Bay-Delta system. To do so, the ERP identifies over 600 programmatic restoration actions, including restoring, protecting and managing diverse habitat types representative of the system; restoring critical flows; improving Delta outflow during key springtime periods; developing prevention and control program elements for invasive species; and modifying or eliminating fish passage barriers.

Program Benefits/Beneficiaries

Benefits of the ERP include:

- **Improved Ecosystem Health.** The objective of the ERP is to improve the ecosystem health of the Bay-Delta system. The ERP focuses on improving terrestrial and aquatic habitats and ecological functions to support sustainable populations of plant and animal species in the Bay-Delta System. Actions under the ERP will also reduce the negative biological and economical impacts of established non-native species.
- **Improved Water Supply Reliability.** A primary conflict in the Bay-Delta system has been between fisheries and water diversions. As the ecosystem health improves and fish populations recover or are stabilized, the conflicts will diminish and water supplies will be more reliable.
- **Improved Water and Sediment Quality.** Actions under the ERP to improve water and sediment quality will prevent toxic impacts to organisms in the system.
- **Flood Control Benefits.** Some ecosystem restoration actions (e.g., setback levees) will provide non-structural flood control benefits.

Beneficiaries of the ERP include:

- **The Public.** There are broad public benefits for maintaining and restoring ecosystem health, habitats, and plant and animal populations.
- **Water Diverters.** As fish populations recover and stabilize, in-delta diverters and upstream diverters could benefit by diversion restrictions being lessened. Diverters also could benefit from improved fish screens and ladders which reduce

fish mortality and allow for more reliable diversions, and from the lessening of non-native species impacts which can also affect diversions.

- **Commercial Fishermen.** As the fish population increases, the restrictions on harvest limits could be reduced allowing for increased fishing and increased profits.
- **Recreationists.** Recreationists (such as hunters, sport fishing, bird watching) will benefit from improved ecosystem conditions.
- **Regional land owners.** Land owners would benefit from non-structural flood control for lands, infrastructure, and ecosystem habitat susceptible to flooding.

Estimating Benefits and Cost Allocation. Much of the ERP would result in broad public benefits. Benefits to water users could be measured by the reduced frequency of disruptions or reductions in supply owing to the ERP actions. The benefits to commercial fishing and recreation would need to be estimated based on water quality and other modeling.

Existing Program Elements and Funding

For the most part, ecosystem restoration program elements and actions have been publically funded by state and federal funds. Numerous state bond acts and annual state and federal budget appropriations have provided funding for habitat acquisition and restoration, for ecosystem monitoring and research, and for managing ecosystem projects and program elements. Under the CVPIA, water users fees also contribute significant funding annually to ecosystem restoration in the Central Valley. Private and nonprofit foundations and organizations have also provided environmental funding, but to a lesser degree than public and water user funding. The following section provides a summary of the more recent ecosystem funding related to the CALFED Program.

The Restoration Fund under the CVPIA provides approximately \$45 million a year, at least \$30 million of which is going toward actions that are consistent with achieving CALFED goals and objectives. For example, many actions under the CVPIA's Anadromous Fish Restoration Program (AFRP) are consistent with ERP actions. Several ecosystem recovery measures authorized under the CVPIA (Section 3406(b)) have specific cost-sharing provisions--such as the Shasta Temperature Control Device and mitigation of the fishery impacts of the Tracy Pumping Plant, have cost shares of 37.5% federal, 37.5% CVP water users, and 25% state. Other measures split the costs evenly between the state and federal governments or between water users and the federal government.

The 1994 Bay-Delta Accord, "*Principles for Agreement on Bay-Delta Standards*" contained a funding commitment (Category III) for non-flow related ecosystem restoration measures. Water users provided approximately \$32 million in contributions between 1996 and 1998 in support of

activities consistent with CALFED objectives and priorities. Additional state and federal funding is being provided through Proposition 204 (state funds) and the California Bay-Delta Environmental Enhancement and Water Security Act (federal funds) described below.

In 1996, with the passage of Proposition 204 (The Safe, Clean, Reliable Water Supply Act), \$60 million became available immediately in support of Category III ecosystem actions related to CALFED objectives. An additional \$390 million will become available at the time of a final decision on a Preferred Program Alternative. These funds may only be expended once the Programmatic EIR/EIS is certified by the state lead agency, filed by the federal lead agency, and the state and federal governments have entered into a cost-sharing agreement for eligible projects.

In November 1996, the President signed the California Bay-Delta Environmental Enhancement and Water Security Act (Bay-Delta Act), which authorized \$430 million in federal funding for Bay-Delta ecosystem restoration activities. A total of \$220 million has been appropriated in the last three federal fiscal years (1998, 1999, and 2000) in Bay-Delta Act funds to address high priority actions that can be undertaken, consistent with CEQA regulations, prior to completion of the Programmatic EIS/EIR. High priority actions include fish screening and passage, habitat acquisition and restoration, exotic species management, and monitoring of ecosystem health.

Other federal sources of funds include the recent WRDA and the Omnibus Parks and Public Land Management Act. The National Wildlife Refuge System Improvement Act has provided funds to Agencies such as USFWS to enhance and protect the nation's wildlife refuges. The 1996 Farm Bill, described more fully in the section on Watershed financing, provides several program elements for private land enhancement. Starting with the WRDA of 1986 (Section 1135), project modifications for "improvement to the environment" were recognized. The WRDA of 1990 (section 304) made this program ongoing, set an annual appropriations limit of \$15 million (with no more \$5 million to be spent on any one project). Projects do not have to be linked to an existing Corps project to qualify. Non-federal interests are required to provide between 25% and 35% of the construction costs (including lands, easements, rights of way, and relocations) and 100% of O&M costs, but at least 5% financing is required.

Finance Options

As described in the previous section, there are public funds currently available or expected to become available at the time of the ROD. Following the ROD, \$390 million of Prop. 204 funds becomes available. Also, an additional \$210 million under the Bay-Delta Act may still be appropriated and a portion of CVPIA Restoration Funds may support CALFED actions while also meeting the CVPIA objectives. These funds could cover some of the ecosystem costs expected in Stage 1, but to be successfully implemented, more funding will be needed. CALFED proposes that the ERP must have at least \$150 million from dedicated funding sources annually through Stage 1, including up to \$50 million annually for the EWA for each of the first four years.

Option 1 -- Combine a broad-based user fee and public funding. CALFED proposes a combination of state funding (including Proposition 204 funds), federal funding (including funds from the Conservation and Reinvestment Act (CARA), if enacted, or other federal sources), and user fees to provide a dedicated stream of funding for the ERP. During the first 2-3 years, state and federal funds would provide the bulk of funding, supplemented by CVPIA Restoration Funds and SWP contributions under the Four Pumps Agreement.

Option 2 --Variation of Option 1. Impose additional cost-sharing requirements on those diverters receiving funding for fish screens and ladders to reflect the water user benefits received from increased water supply reliability.

5.4.9 CALFED Science Program

Program Description

The purpose of the Science Program is to provide those new facts and scientific interpretations necessary to implement and evaluate the success of the CALFED Program. Monitoring involves measuring and sampling physical, chemical, and biological attributes of the resources and can include social and economic attributes of associated human activities. Assessment involves developing correlations among monitored data. Research involves analysis or experiments to establish mechanisms that explain observed correlations, such as documenting fish distributions and mortalities for different flows. The information generated from monitoring, assessment, and research provides managers with the understanding needed to design actions and to detect responses to their actions. The principal monitoring objectives include documenting conditions; recognizing trends; assessing causes of observed changes; partnering with agency/ecosystem management for adaptive management; and reducing scientific uncertainties.

Program Benefits/Beneficiaries

The CALFED Science Program would serve all aspects of the CALFED Program and therefore would provide benefits for ecosystem, water quality, levee protection, water use efficiency, and water supply reliability. The Science Program would describe the baseline conditions against which the Program can measure its progress, would provide monitoring data and information needed to evaluate the implementation of the Program, and would assess the success of meeting the Program objectives -- all of which is critical to the decisions that will need to be made by the CALFED managers through the adaptive management process.

For certain monitoring, research and assessment actions, benefits can be narrowed and therefore beneficiaries could be more specifically identified; for example, monitoring related to mortality impacts related to diversion in Delta and drinking water quality monitoring in the Delta.

Generally, the beneficiaries of the Science Program would fall into one or more of the following categories.

- **The Public** -- There are broad public benefits from a Bay-Delta system-wide monitoring, assessment, and research program. For those CALFED program elements in which the beneficiaries are the general public (such as Ecosystem Restoration, and portions of the Watershed, WUE and Water Quality programs), monitoring assessment and research for those program elements would have the same beneficiaries.
- **Agricultural Water Users** -- Agricultural water users that benefit from WUE, water supply reliability, and ecosystem improvement would also be beneficiaries of the Science Program.
- **M&I Water Users** -- M&I water users that benefit from increased water supply reliability and improved drinking water quality would be beneficiaries of the Science Program.

Estimating Benefits and Cost Allocation. Monitoring, assessment, and research are essential to the CALFED mission and also serve to integrate the Program. However, it is often very difficult to assess the benefits of information, taken by itself. At least some of the costs of Science Program can be regarded as essential to running a successful water delivery system and allocated to water users, as is done currently. Other costs related to ecosystem monitoring could be regarded either as a component of the cost of water deliveries or as a public cost.

Existing Programs and Funding

Central Valley Project Improvement Act. The AFRP of the CVPIA includes a Comprehensive Assessment and Monitoring Program (CAMP). Although CAMP is much smaller in scope and more focused in its goals, it is of a similar nature to the CALFED Program in terms of monitoring and assessment needs. Unlike CALFED, there is no research component to the CAMP. The cost-sharing provisions for CAMP are 37.5% CVP users (through the CVPIA Restoration Fund), 37.5% federal and 25% state. Approximately \$2.5 million is provided each year.

Interagency Ecological Program. The Interagency Ecological Program (IEP) is a cooperative effort among ten member agencies (3 state agencies, 6 federal agencies, and the San Francisco Estuary Institute [SFEI]). The members work together to develop a better understanding of the estuary's ecology and the effects of the SWP and CVP operations on the physical, chemical, and biological conditions of the estuary. The IEP is funded through each of the ten member agencies' budgets. In 1998-99 the total funding committed to IEP purposes was approximately \$14 million. Approximately 40 percent of the annual funding over the last ten years has been provided by DWR and USBR.

The San Francisco Estuary Institute. The mission of the SFEI is to foster development of the scientific understanding needed to protect and enhance the San Francisco estuary through research, monitoring and communication. SFEI is governed by a Board of Directors whose members are selected so as to assure a balance of environmental, business and user groups, regulatory and management, and scientific interests. Entities currently represented on the Board are the Santa Clara Valley Water District; Western States Petroleum Association; University of California, Berkeley; BayKeeper; Port of Oakland; USGS; CALFED; and Marin County Audubon Society. There is also a panel of Scientific Advisors that serves the Board of Directors. A large portion of SFEI funding (for the Regional Monitoring Program) is provided by dischargers to the San Francisco Bay, as required by the San Francisco Bay RWQCB. Funds are also available from grants.

Other Monitoring Program elements. Individual agencies provide monitoring and assessment related to specific objectives and program elements. For example, the MWQI managed by DWR, provides monitoring to evaluate the quality of Delta water related to drinking water. The MWQI is funded by municipal SWP contractors.

Finance Options

Monitoring, research, and assessment will be costly for a very large and complex system like the Bay-Delta and Central Valley in which there is a lot of uncertainty. Possible funding options include:

Option 1 -- Continue and extend current approach -- Use a combination of funding from water users, public funding, and discharger fees. To the extent feasible, beneficiaries of the monitoring and assessment actions would be identified and funding from those beneficiaries used for those actions--such as urban water users and dischargers for drinking water quality, public funding and water user funds for ecological program elements, water user funding for hydrological and water management actions.

Option 2 -- Variation of Option 1-- Use a preset percent cost share between water user funding and public funding for Science Program. The program has benefits for all aspects of the CALFED Program and allocating costs to separate beneficiaries could limit the funding for the program as a whole.

Option 3 -- Public Funding-- Use primarily public funding based on the benefits to the public of having quality science to support adaptive management. Adaptive management will allow CALFED to identify if proposed solutions are working, and choose future projects based on scientific information and monitoring.

5.5 Funding Sources and Finance Mechanisms

One of the concerns for the Program is obtaining sufficient revenues for the CALFED program elements, while remaining committed to the principles of ongoing monitoring and oversight and adaptive management. Stakeholder involvement and commitment to the program depends upon assurances that each CALFED program element would be funded at the appropriate time and level and that water quality and ecosystem standards can be met in such a way as to achieve the long-term stability of water deliveries.

Water resources program elements in California have utilized a variety of different financing mechanisms, many of which CALFED has relied on to date and expects to utilize in the future. These include federal and state appropriations, state general obligation bonds, state water and power revenue bonds (tied to water repayments in the SWP), private financing, and broad-based Bay-Delta system user fees (such as the Mitigation and Restoration payments imposed by the CVPIA). This section compares various funding sources and their advantages and disadvantages. These are summarized in Table 5.3.

It should be noted that this section shows a variety of different financing mechanisms, but other mechanisms may be developed in the future. CALFED could utilize the funding sources described in this section, or consider mechanisms in addition to the ones presented here.

General Obligation Bonds. Although federal water resources program elements do not operate with bonding authority, bonds have been heavily relied upon by the State of California. State bonding authority requires approval by the California Legislature and the voters and is typically used only for funding capital infrastructure. As of 1993, state general obligation bonds have been used to finance some 28% of the capital costs of the SWP (O'Connor, 1994). O&M of the project is funded principally by water contractor payments. Proposition 204 will provide substantial funding to CALFED through general obligation bonds following completion of the Programmatic ROD. In some cases, the bonding authority provided by Proposition 204 for CALFED is directed to grant program elements, which do not require any specified effective local cost share from program beneficiaries. In other cases, the Proposition 204 monies are directed to low-interest loans, which impose less of a financial burden on the state (some level of effective local cost share is required). Over its 30-year Program, CALFED expects to seek additional financing from similar bond issues on a periodic, as-needed basis, and general obligation bonds would continue to be an important component in the overall mix of funding.

Bonding authority, such as that contained in Proposition 204, has several advantages. It can provide considerable funding amounts, especially in the initial years after the bonds are issued. Structuring a bonding package has positive side effects: it forces stakeholders to reach agreement on the next phase of the Program, and voter approval maintains visibility for the Program and public commitment to it. On the other hand, passage by voters is not guaranteed,

**TABLE 5.3
Potential CALFED Funding Sources
Advantages and Disadvantages**

Option	Advantages	Disadvantages
General obligation bonds	<ul style="list-style-type: none"> --Can achieve substantial up-front funding, but distribute the financial burden over time. --Focuses stakeholders and the public on next Program phase. 	<ul style="list-style-type: none"> --Can be limited to physical infrastructure and facilities --Requires legislative and voter approval. --Would require repeated approval over 30-year period. --Cannot be used for ongoing costs such as land management costs, monitoring and assessment.
Water and power revenue bonds	<ul style="list-style-type: none"> --Can provide immediate sources of funding if linked to revenue-generating facilities. --Less burden on state budgets than general obligation bonds. Does not require voter or legislative approval. --Linking beneficiaries to program elements in SWP rates is consistent with beneficiary pay. 	<ul style="list-style-type: none"> --Can be limited to physical infrastructure and facilities. --Works well for private benefits (water deliveries and power), but hasn't been used to cover program elements with broad public benefits.
State appropriations	<ul style="list-style-type: none"> --Provides immediate sources of funding. --Focuses stakeholders and the public on next Program phase. --Allows annual legislative review. 	<ul style="list-style-type: none"> --A more direct financial burden than bonds. --Competition with other state program elements. --Requires annual approval which reduces assurances of long term funding. --Would require repeated approval over 30-year period.
Federal appropriations	<ul style="list-style-type: none"> --Provides immediate sources of funding. --Focuses high-level state and federal attention on the Program. --Allows annual Congressional review. 	<ul style="list-style-type: none"> --Competition with other federal priorities. --Requires annual approval which reduces assurances of long term funding. --Would require repeated approval over 30-year period.
Private financing	<ul style="list-style-type: none"> --Can be more immediate than funding from public sources. --Some contributions have been made to solve regional problems, as well as local problems. 	<ul style="list-style-type: none"> --Is generally focused on local needs.
Broad-based user fee	<ul style="list-style-type: none"> --Dependable and ongoing source of revenues (may fit with program elements for ongoing funding needs). --Tied to diversion impacts on the Delta. --A broader-based fee would provide consistency and fairness with CVP users, who currently pay such fees. --Supported by stakeholder groups - Business Roundtable, etc. 	<ul style="list-style-type: none"> --Since revenues come in annually, the funding available initially is less than with bonding or appropriations.

and additional bond issues would require periodic, concerted efforts by all stakeholders to garner public support. General obligation bonds must compete with other state financial needs, and, where the funds are dedicated to program elements that do not require reimbursement or local cost-sharing, general obligation bonds can burden overall state budgets and financing. In addition, bonds generally cannot be used for ongoing annual expenses such as for long term management associated with habitat acquisition and restoration.

Revenue Bonds and SWP Financing. Future facilities contemplated by the CALFED Program could be constructed as components of the SWP. Currently, the principal sources for financing SWP water supply and conveyance facilities are water system revenue bonds and power revenue bonds (O'Connor, 1994). The state legislature provided general authority for the issuance of revenue bonds in 1933. As a result, revenue bonds have the advantage that additional issues do not require authorization from the legislature. However, there must be assurances in the financial markets that future water and power revenues would be sufficient to cover payments to bondholders. Therefore, this financing mechanism is most useful for those program elements that have traditionally involved repayment by water and power users. Since they are backed by contractual repayments, bonds do not compete for general state revenues. Revenue bonds also have the advantages that they are consistent with the beneficiary pays principle and are an accepted source of financing for major SWP facilities. Furthermore, because the SWP has a rate structure in which districts pay only for those facilities benefitting them, this financing mechanism has the advantage of linking financial responsibility to specific groups of beneficiaries.

State-issued revenue bonds would be an important source of funding for some segments of the CALFED program elements, particularly for program elements that are similar to those for which such bonds are currently used (major storage and conveyance facilities). Revenue bonds are not a component of federally funded water resource program elements.

State Appropriations. Another potential funding mechanism for CALFED is direct state appropriations from General Funds to finance particular CALFED actions. The advantages and disadvantages of this funding mechanism would be similar to funding through general obligation bonds. Although no direct voter approval would be required, state legislators would look for general public support. Structuring the required legislation would bring stakeholders together for the required support. Depending on the funding source, most annual financial burden on the appropriations are flexible as to their use--capital outlays, program support, and ongoing expenses such as land management. Revenues would be available immediately for the next stage of the program elements financed in this way. The disadvantages of this funding mechanism are that it would compete directly with other state budget priorities and would place a direct burden on state financing. Unlike bonding, where repayments to bondholders are made gradually over time, the financial burden on the state treasury would be immediate. In addition, depending on annual appropriations is difficult for program elements dependent on multi-year funding, such as monitoring and research.

Federal Appropriations. Funding through appropriations at the federal level has similar advantages and disadvantages to appropriations at the state level. However, federal authorizations may face a higher level of competition. Confronted with financial demands from all sectors of the federal budget and with competing nationwide demands, there would be no guarantees that funding would be continued on an ongoing basis. Even where federal moneys have been authorized over a number of years, there is no guarantee that the authorized levels would be appropriated. This problem is compounded for the CALFED Program: since the program would last for some 30 years, funding needs would bridge several Administrations and many sessions of Congress. The federal government does not have a capital budget that can assure outlays over several years. Rather each year, Congress appropriates funds principally for the budget for that year. Nevertheless, because of the visibility and importance of the CALFED Program, CALFED expects that federal legislative support would be forthcoming over the life of the Program and anticipates it to be an important component in the mix of CALFED financing options.

Given federal budget limitations, it is generally easier to convince the Office of Management and Budget and Congress to appropriate federal funds in those cases where repayment in full, or at some other level of effective cost-sharing, would be made. However, even in cases where federal expenditures are expected to have a 100% effective cost share by non-federal entities (i.e., 100% repayment), funding is not guaranteed.

Private Financing. Private financing would continue to be a part of solving water resources problems affecting the Bay-Delta area (here the term "private" is used to encompass funding by water agencies and districts). In addition, water districts would continue to make investments in local storage, conveyance, groundwater storage and pumping, water recycling, and other water efficiency improvements. In addition to these traditional activities of districts, some districts have made contributions to program elements with broad public benefits. More than \$30 million in contributions have been made to early ecosystem restoration actions related to CALFED.

User fees, including a broad-based Bay-Delta system user fee. The concept that beneficiaries should pay for the costs of program elements that benefit them is a principle of the CALFED Program. User payments are not new -- they have been a feature of both federal and state water resources program elements (e.g., the contractual repayments made for irrigation and M&I water, as well as charges for hydropower).

In a similar vein, the finance options discussed earlier for several of the CALFED program elements (see Section 5.4 for a discussion of each program element) include user fees that would be targeted to particular groups of beneficiaries. For example, charges designed to recover the costs of specific water quality improvements that would benefit only subsets of water users (such as all Delta exporters or exporters using the south Delta pumps) could be included with the SWP or CVP rates of only the benefitting water users.

CALFED and its stakeholders have discussed the use of a broad-based Bay-Delta system user fee, particularly to finance some of the program elements or program elements with broad-based public benefits, such as the ERP. The basic concept is a fee that would apply to all diverters, or all major diverters, of water from tributaries that flow into the Delta, as well as exporters of Delta water.

Currently, only one group of water users - the CVP contractors - are subject to user fees for contemporary environmental restoration purposes, namely the fees imposed by the CVPIA. If such a fee were extended to other users, it would have the advantage of providing an ongoing and dependable source of revenues. Reciprocally, such a fee is less suited than bonds to finance large capital projects requiring up-front expenditures. Since such fees are imposed on CVP users, extending them to others would be perceived as consistent and fair. In developing such a fee, particular issues would be raised regarding how to structure the fee in such a way as to be accepted by water users and finding the means to implement it.

A broad-based "Bay-Delta Diversion fee" to finance infrastructure needs that confer broad-based common-property or public-good benefits was proposed by the California Business Roundtable, the California Chamber of Commerce, the California Farm Bureau Federation, and the California Manufacturers Association in the report *Maintaining Momentum on California Water Issues: Business Leaders' Findings - Financing Options for Water-Related Infrastructure in California*. Their report displayed various options for such fees. Section 5.6 explores how such a broad-based user fee could be structured and what revenues could be expected from fees similar to those established in the CVPIA.

In conclusion, the CALFED Program would need to rely on a variety of funding sources to provide for all the types of actions and program elements within CALFED.

5.6 Broad-based Bay-Delta System User Fee

One item of discussion in the CALFED Program has been the use of a broad-based Bay-Delta system user fee (user fee) to finance at least a portion of those program elements, or program elements, with broad public benefits, such as the ERP and portions of the Watershed Management and Water Quality Program elements. Such a broad-based user fee can be distinguished from other user fees, targeted to particular groups of beneficiaries, and discussed under some of the options for funding individual program elements; above.

One rationale for such a fee is that impacts on the Delta are related to water use, whether the use be upstream of the Delta or by Delta exports. More generally, it is in the interest of all diverters of water from the Delta and its main tributaries to achieve security in the level of long-term water deliveries. Such security can be achieved only if environmental goals of the CALFED Program are met. Broad-based user fees are one way in which water users can contribute to the long-term stability and security of their water supplies.

CALFED has proposed that user fees of at least \$50 million per year will be needed (along with federal and state funding) to successfully implement the ERP (see Section 5.4.8). The following section does not make a proposal for how such user fees should be structured, however. An effort has been made to provide more detail on possible fee structures and potential revenues from one fee structure, based on CVPIA fees. This section represents thinking that has gone on to date. It provides a starting place for further discussions. Different types of fees and fee structures may be developed in the future.

CVPIA User Charges

As of 1994, most users of CVP water and power began paying new user charges to assist in funding current environmental restoration purposes. Because these charges were imposed by federal legislation (CVPIA), no similar fees were imposed concurrently on SWP contractors or on other major users that could be considered to impact the Delta. However, the imposition of similar fees was considered at the state level by the SWRCB in its Draft Decision 1630 (D1630). A discussion of the CVPIA user charges and the D1630 proposal follows.

One example of broad-based user charges designed to fund contemporary ecosystem needs are those imposed by the CVPIA. These charges, described more fully further on in this section, are levied on users of federally supplied CVP water and power (except the Exchange contractors and the water rights portion of the settlement contracts). The charges are collected in a Restoration Fund established by the Act and are used for environmental restoration purposes.

Table 5.4 summarizes the amounts in the Restoration Fund collected from the various sources. Because this funding source is based on water delivered, the amounts collected vary from year to year, but there is a guarantee that moneys will be added to the Restoration Fund each year. Furthermore, there are two provisions in the Act that function to even-out the funds over the longer term: (a) payments from water users are supplemented by payments from hydropower to achieve a target level of \$30 million per year (indexed to \$35 million at current price levels), and (b) the target is set as a 3-year rolling average so that shortfalls in one year can be compensated by higher collections in the two years that follow (environmental restoration measures have also been supplemented by additional federal appropriations). Table 5.4 suggests that user charges levied on a broader base of water diverters from the Sacramento and San Joaquin River basins (such as SWP contractors and other water users) could lead to substantial revenues.

Under the CVPIA, contractors purchasing USBR-supplied irrigation water are required to pay up to \$6 per acre foot, over and above prior contract rates or the normal "cost-of-service rates" computed by the USBR. Contractors purchasing M&I water are required to pay up to an additional \$12 per acre foot. A fee of \$25 per acre foot is assessed on water sold or transferred to non-CVP contractors for M&I use. For ease of administration, these fees are imposed by the CVPIA on contract deliveries (rather than consumptive use). All of these rates are based on 1992 price levels and subject to annual adjustment. For example, the agricultural and M&I surcharges were \$6.98 and \$13.96, respectively, for 1999. These three fees (\$6, \$12, \$25), together with

user fees assessed to hydropower users, are termed "mitigation and restoration payments" and, under the CVPIA, cannot exceed \$30 million annually (indexed from 1992 price levels), set as a three-year rolling average [Section 3407(d)(2)]. In practice, the agricultural and M&I charges have been set each year at the maximum per-acre foot levels, and the payment assessed against hydropower users has been set to cover the residual amount.

An additional user fee established under the CVPIA is assessed on CVP contractors in the Friant Division of the CVP (in the San Joaquin drainage), because they are not required to dedicate additional water to instream uses, as are other project contractors. The Friant charges, which are assessed in addition to the \$6 and \$12 fees described above, were set at \$4 per acre foot starting in 1993, with the rates increasing to \$7 per acre foot after 1999 [Section 3406(c)(1)] but not subject to annual indexing. The Friant charges would be discontinued if a plan is implemented that requires water releases for environmental purposes from these contractors.

The total collections into the Restoration Fund, including the mitigation and restoration fees on water and power users, the fee on the Friant Division, the tiered rates described in Section 5.2, and certain other fees, cannot exceed \$50 million per year (indexed from 1992 price levels) [Section 3407(c)(2)]. To date, the collections from the sources other than the mitigation and restoration fees, have consisted primarily of Friant-Division surcharges (see Table 5.4).

Although the CVPIA was passed some two years before adoption of the Bay-Delta Accord and even though the basic purpose of the CVPIA and the Restoration Fund is somewhat different than for CALFED (re-establishment of fisheries in the Sacramento and San Joaquin Rivers), many of the purposes and program elements support CALFED objectives. For Federal Fiscal Year 2000, the portion of the Restoration Fund budget estimated to support CALFED is approximately \$23.7 million.

Proposed D1630 Fees

In 1992, no charges similar to those in the CVPIA and designed to cover environmental restoration purposes were imposed on users of water from the SWP or other major users of water impacting the Delta, but such fees were proposed in D1630 of the SWRCB. However, there were some differences in the D1630 proposed fees. The D1630 fees first proposed were not differentiated by irrigation and M&I end-use, but rather by those using water within the basin of origin and those exporting water outside the basin of origin. It should be noted that D1630 was not implemented.

The D1630 fees, termed "mitigation fees," were to be assessed on all major surface water rights holders that were not subject to the federal CVPIA Restoration Fund fees. The proposed fees were to apply not only to SWP contractors, but also to other major diverters of water (defined as those with storage rights over 100,000 acre/feet or flow rights of greater than 100 cfs).

TABLE 5.4
CVPIA Restoration Fund Revenues¹

	Restoration Payments				Friant Div. Surcharge	M&I Surcharge	Contri- butions	Total ²
	Irrigation	M&I	Hydropower	Total				
1993	-	-	-	-	\$8,051,964	-	-	\$8,051,964
1994	\$10,352,625	\$2,867,240	\$5,472,398	\$18,692,263	\$2,288,281	-	-	\$20,980,544
1995	\$14,940,635	\$3,321,476	\$10,582,809	\$28,844,920	\$4,717,142	-	-	\$33,562,062
1996	\$25,472,420	\$4,372,886	\$8,328,838	\$38,174,144	\$8,117,936	\$1,073	\$531,875	\$46,825,028
1997	\$22,716,942	\$5,931,731	\$1,945,430	\$30,594,103	\$6,040,929	\$544	\$36,386	\$36,671,962
Total	\$73,482,622	\$16,493,333	\$26,329,475	\$116,305,430	\$29,216,252	\$1,617	\$568,261	\$146,091,560
Percent	50%	11%	18%	80%	20%	0%	0%	100%

Notes:
¹ Based on Annual Financial Reports for the Central Valley Project Improvement Act for the years 1993 through 1997, U.S. Bureau of Reclamation (Sacramento, CA). The information reported is from Schedules 1, 2, and 3.
² Total includes minor amounts from other CVPIA fee sources.

D1630 contained a list of these entities, which included some 60 water rights holders in addition to the rights held by the major public storage projects (the SWP and the CVP). The D1630 fees were also to apply to those CVP water deliveries that were not assessed charges under the CVPIA, for example to the Sacramento water rights settlement contractors and those receiving water under the Delta-Mendota Exchange contract.

The upper limit of the fee was set at \$5 per acre foot for water rights used in the basin of origin, \$5 per acre foot for CVPIA water rights holders not subject to the CVPIA fees, and \$10 per acre foot for water rights exported outside the basin of origin. Similar to the CVPIA, an annual target was set for the fees (\$60 million), with 5% to come from hydropower users. The monies collected were to be deposited in a Bay/Delta Estuary Project Mitigation Fund "to pay for activities and projects that would help mitigate the effects of water diversion and storage projects on survival of fisheries that live in or pass through the Bay/Delta Estuary."

D1630 proposed additional user fees to cover the costs of monitoring. These were to be based on the costs of monitoring and apportioned 75% to Delta exporters, 22.5% to in-basin users, and 2.5% to hydropower. Among the groups of water rights holders, the fees were to be shared proportionally.

Discussion of Options for Fees

Several different types of user fees have been discussed by CALFED agencies and stakeholders. The following includes a brief summary of some of the different types of fees that have been discussed to date. Other fees may be developed and considered in the future.

Major fees:

- a. **Fees on acre/feet delivered**, similar to current CVPIA fees.
- b. **Fees on water deliveries and hydropower**, similar to current CVPIA fees. To be more completely parallel to the CVPIA and the D1630 proposal, fees would be charged on hydropower users as well. The rationale would be that although hydropower use consumes little or no water, hydropower use can alter flow patterns and release times and can make water less available for environmental purposes when it is needed. In the case of the CVPIA, the total contributions by hydropower are intended to reflect the overall cost allocation to power.
- c. **Variations on the above**, for example setting different dollar amounts for the fees. Any of the fees discussed could be varied in the dollar amounts per acre foot or in the overall target level (with the residual amount possibly being the responsibility of hydropower uses).

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- d. **Variations that more closely parallel D1630**, which has higher proposed fees for Delta exporters. Among the variations in fees would be variations that more closely track those of draft D1630 fees, where a major differentiation is between in-basin and out-of-basin use.
 - e. **\$1 per acre foot or \$1 per person per year (for M&I uses), whichever is larger.** The rationale for this fee structure is that it would be closely tied to population and ability to pay, rather the direct impact of diversions.

Other specialized fees:

- f. **Broad-based Bay-Delta pollutant discharge fees.** Similar to a diversion fee, the concept would be to place fees on those that contribute to pollutant loading on the Delta. Such a fee, or system of fees, would be targeted to those pollutants that are most widely recognized as contributing to water quality concerns and ecosystem problems in the Delta.
- g. **Boating fees in the Delta.** The rationale for these fees would be that they are justified by impact that boat wakes have on levees. One variation of the concept would be to establish boating permit fees for high-speed boating and cruises that make a circuit through the Delta.

Options for User Fees and Potential Revenues

In this section, only Major Fee (a), fees on acre-feet delivered, is discussed. More options for user fees may be developed and considered in the future.

Fees on Acre-feet Delivered, Similar to Current CVPIA Fees. Table 5.5 contains very general estimates of the revenues that could be expected for similar fees assessed on different categories of water users at the 1999 indexed levels of the CVPIA fees (\$7 for agriculture and \$14 for M&I use)

Water delivery and potential revenue amounts in Table 5.5 are intended to be somewhat conservative and to show a range of values. For example, the SWP deliveries do not include surplus and unscheduled deliveries. Also the period from 1986 through 1996, used in the table, contained a prolonged period of reduced deliveries (from 1986 to 1992). In concept, a broad-based user fee could be applied to all users having an impact on the Bay-Delta system, including at least some in-Delta agriculture and major historical diversions out of the basin, such as the City and County of San Francisco and the East Bay Municipal Utility District. This is the approach taken in the Business Roundtable Report and reflected in Table 5.5. The proposed draft D1630 fees were to apply to approximately 60 of the largest water rights holders, but this included only a portion of the "major districts" included in Table 5.5. To show a reasonable range of values, Table 5.5 contains an estimate of average annual water use for "all other

TABLE 5.5
Broad-Based Bay-Delta System User Fee
Estimated Diversions and Potential Revenues
(excluding CVPIA Restoration Fund Revenues)

	Average annual deliveries 1985 - 1996 (million af/yr)			Potential annual revenues ¹ (\$ millions)		
	Ag	M&I	Total	Ag @\$7/af	M&I @\$14/af	Total
SWP	0.9	1.1	2.1	\$6.5	\$15.9	\$22.4
SWP settlement contracts ^{2,3}	0.9	0.0	0.9	\$6.1	\$0.0	\$6.1
CVP exchange contract ⁴	0.6	0.0	0.6	\$4.5	\$0.0	\$4.5
CVP settlement contracts ^{2,5}	1.4	0.0	1.4	\$9.5	\$0.5	\$9.9
All other diverters ⁶	n/a	n/a	9.0	\$59.4	\$7.7	\$67.2
Major districts only ⁷	2.8	0.6	3.3	\$19.3	\$7.7	\$27.0
TOTALS						
SWP & CVP (see above) and other major districts	6.5	1.7	8.3	\$45.8	\$24.1	\$69.9
SWP & CVP (see above) and all other diverters	12.3	1.7	14.0	\$85.9	\$24.1	\$110.0

Notes:

af = acre-feet

M&I = Municipal and Industrial

"n/a" denotes not available.

¹ Based on 1985 - 1996 deliveries.

² Settlement contracts provide project water to pre-project water rights holders at no cost.

³ Diverters in the Feather River area.

⁴ Includes those districts that exchanged portions of San Joaquin River water used for the Friant-Kern Division for a CVP water contract from the Delta-Mendota Canal.

⁵ Includes Sacramento River, Delta-Mendota Canal, and San Joaquin River areas. Sacramento River deliveries tabulated include only the larger contracts. Includes all Delta-Mendota Canal and San Joaquin River deliveries.

⁶ Information separating agricultural and M&I water uses in this category was not tabulated except for major districts. To estimate revenues, the remaining diversions were assumed to be agricultural and the \$7/AF rate applied. Values are based on DWR Bulletin 160-98 estimates for 1995-level applied water.

⁷ Major districts include such districts as San Francisco, East Bay MUD, Turlock ID, Oakdale and South San Joaquin ID's, Merced ID, Modesto ID, Yuba County WA, and Nevada ID.

diverters” based on information from DWR Bulletin 160-98. This estimate is intended to encompass all other water users whose diversions may impact the Delta and tributaries, including not only smaller districts but individual diverters. However, it may not be practical to levy a fee on all diverters in the system because of the high administrative costs of collecting a fee on small diverters, possibly making the fee not cost effective to collect. In summary, the estimated deliveries and potential revenues depends upon which water users are included in the fee assessment.

Of course, there are additional factors that could cause future average deliveries and revenues to differ from the historical values over the 12 year period from 1985 through 1996. In the case of SWP contractors, contractor entitlements have increased over that period. On the one hand, environmental restrictions may reduce future deliveries to some water users. On the other hand, new storage facilities or other measures may increase the level of future deliveries. Regardless of whether new storage is added, there is substantial uncertainty over the level of future water deliveries (due to differences in regulatory and modeling assumptions). Finally, the revenue estimates in the table do not take into account that the fees themselves could reduce, at least to some extent, the amount of water used.

For these various reasons the values in the table should be considered estimates only; there could be higher deliveries and revenues for SWP, settlement contracts, and major districts in some years and lower values in other years. Based on the annual revenues estimated in Table 5.5, Table 5.6 contains potential revenues from user fees over 7 years and over 30 years. These estimates are based on current price levels; i.e., there is no cost escalation built into the table since no cost escalation is assumed in the Stage 1 cost estimates discussed in Section 5.7.

Discussion

The next step in considering a broad-based Bay-Delta system user fee in the CALFED Program is to consider a range of such fees and fee levels in relation to the costs of selected CALFED purposes. This would allow CALFED and stakeholders to assess which program elements are most appropriate to finance through a broad-based user fee, as well as to consider which program elements (or portions of program elements) and their associated costs could be expected to be covered by different magnitudes and types of fees. Accordingly, Table 5.6 arrays potential revenues from one type of user fee (per acre foot fees similar to those in the CVPIA) along with the costs of selected CALFED program elements. Only the costs of those program elements with greater percentages of broad public benefits are included. For each program element, the total costs are shown; no attempt has been made at this stage to separate out only the costs for those aspects of the Program with broader public benefits. Both the costs for the first two years and the average costs over the first seven years are shown.

A fee structure based on per acre foot diversions isn't the only fee structure that may be considered by CALFED. However, it provides an example of the revenues that could be expected from user fees based on fee structures established in the CVPIA. This represents a starting point, and other fees and fee structures may be considered in the future.

Principal Criteria. There are three principal criteria that could be used to consider possible matches between these program elements and potential fees.

(1) Broad-based user fees are appropriately targeted to funding those program elements with broader public benefits. Although several program elements have some public benefits, the program with the greatest percentage of public benefits is the ERP. Other program elements with elements that provide broad public benefits are (a) those WUE measures that result in additional protected instream flows, (b) those water quality improvements that have specific ecosystem benefits, and (c) several aspects of watershed management program elements.

For example, CALFED would require ongoing funding, regardless of the success of other elements of the Program, for the maintenance of a reserve for funding short-term leases of water to dedicate to in-stream flows or other environmental protection matters. For several reasons this would be an example of an action that would appear to match particularly well with funding based on a broad-based user fee. For one, the needs would be recurring and would require a dependable source of revenues. Second, such a program needs to have a reserve account to be spent in times of emergency. Finally, the success of this program element would be particularly beneficial to water diverters, as it might prevent curtailment of diversions due to environmental restrictions.

No consideration is being given to using new broad-based user fees for the construction of major new surface storage projects benefitting water and power contractors or to many other program elements where private cost-sharing has been the norm. For example, as discussed elsewhere in this section, construction for surface storage facilities has traditionally been funded through other means and is linked to contracts for water user payments. Those mechanisms can provide for a much more direct link between the benefits and costs of those program elements that could be provided by the kind of broad-based user charge being discussed here. Similarly, as regards to the O&M of new storage facilities, institutions are already in place either to give program beneficiaries direct responsibility for O&M or for O&M expenditures to be covered by water rates. Therefore, broad-based user fees are not being considered to fund O&M where repayment by direct beneficiaries is the norm.

(2) The magnitude of potential revenues must be considered in relation to program costs. Depending on which fee levels are chosen and what group of water diverters a broad-based fee is levied on, some program elements (or combinations of program elements) could have costs that substantially exceed the potential user fees in Table 5.6. Further work would be required to see whether this would be true if only those costs associated with program elements with public benefits were displayed in the table. Of course, higher user fees could be proposed to cover a

TABLE 5.6
Broad-Based Bay-Delta System User Fee
Potential Revenues in Relation to Selected Program Costs
(Including CVPIA Restoration Fund Revenues)
(\$ in millions)

A. Potential Revenues	Annual Revenues	Total over 7 years¹	Total over 30 years¹	
Existing Restoration Fund revenues supporting CALFED objectives ²	\$23.7	\$166	\$711	
Additional Broad-Based Bay-Delta User Fee³				
SWP, CVP, and other major diverters	\$69.9	\$489	\$2,096	
SWP, CVP, and all other diverters	\$110.0	\$770	\$3,300	
Total^{2,3}				
Restoration Fund, SWP, CVP, and other major diverters	\$93.6	\$655	\$2,808	
Restoration Fund, SWP, CVP, and all other diverters	\$133.7	\$936	\$4,011	
B. Costs of Selected CALFED Program elements⁴				
	Year 1 costs	Year 2 costs	Average Annual Stage 1 Costs	Total Stage 1 Costs (1st 7 years)
Ecosystem Restoration Program	\$263	\$207	\$189	\$1,326
Watershed Program	\$40	\$45	\$43	\$300
Environmental Water Quality Program	\$15	\$33	\$40	\$280
Notes:				
¹ The total revenues over 7 years and 30 years are computed as 7 times and 30 times the annual revenues. They do not take into account cost escalation and are not discounted to present worth.				
² Includes the portion of CVPIA Restoration Funds estimated for FFY 2000 that supports the CALFED ERP objectives.				
³ Information regarding the additional broad-based user fee is contained in Table 5.5. Includes SWP, SWP settlement contracts, and CVP exchange and settlement contracts.				
⁴ The costs of selected CALFED program elements do not include O&M costs.				

wider range of program elements and higher levels of program costs. But unless higher fee levels were also sought by amending the CVPIA, fee levels on SWP and non-project users higher than those applying to CVPIA contractors would again raise the issues of fairness and consistency - the very principles which the fees are designed in part to address. Also, the higher the fees, the greater the burden would be to analyze and consider the impacts on potential water use, as well as other economic impacts.

(3) The matching of potential fees to program elements would also need to take into account the time profile of funding needs in relation to that provided by different funding sources. For example, some program elements, such as improvements in Delta conveyance require a large-up front investment. Other program elements require sustained funding over time.

In conclusion, broad-based user fees as described in Table 5.6 (which includes a portion of CVPIA Restoration Fund revenues) would total up to somewhere near \$93 to \$133 million. Depending on what portions of the CALFED Program the fees would be needed for, the revenue shown from Table 5.6 may not cover both 100% of the future ERP and portions of other program elements. At a minimum, this focuses more attention on identifying which elements of program elements have the broadest public benefits and merit potential funding by a broad-based user fee.

Crediting and Incentives for Payment of User Fees. The CALFED Program has established the principle that financial contributions would be credited toward the ultimate obligations for the CALFED program. An example of payments that may be credited toward CALFED obligations is the portion of CVPIA Restoration Fund payments that are related to CALFED objectives and made after the December 1994 signing of the Bay-Delta Accord. Crediting has already been approved for financial contributions made by the Metropolitan Water District of Southern California, Santa Clara Water District, East Bay Municipal Utility District, San Francisco Public Utilities Commission, Alameda County Water District, and Contra Costa Water District for early ecosystem actions. It has also been established that financial contributions would accrue interest. Although the precise rules governing these credits has not been established, the basic rule that interest credits would be given provides an incentive for early contributions.

Table 5.7 illustrates the value of hypothetical interest credits to date, using annual compounding and 100% of the CVPIA payments. [This table is for illustrative purposes only-- neither the actual historical amounts to be credited nor the interest rates for determining such credits have yet been determined.] As the totals in the table indicate, the total value with the interest credits would be about 13% greater than the total value without interest credits. Put in other terms, a similar per acre foot fee imposed on non-CVP users would have to be 13% greater than the CVPIA charges to garner the same revenues per acre foot on an annual basis.

TABLE 5.7
Hypothetical Interest Credits¹
CVPIA Restoration Fund
(\$ in millions)

			Hypothetical Interest Credits	
	Annual Revenues ²	Cumulative Revenues	Interest rate (6-month) ³	Cumulative Revenues With interest Credits
1995	\$33.6	\$33.6	5.59	\$35.4
1996	\$46.8	\$80.4	5.09	\$86.5
1997	\$36.7	\$117.1	5.18	\$129.5
1998 ⁴	\$40.0	\$157.1	5.00	\$178.0
Cumulative Total Percent		\$157.1 100%		\$178.0 113%

Notes:

¹ Credits are computed after the December 1994 signing of the Bay-Delta Accord.

² Detail for Restoration Fund annual revenues are shown in Table 5.4.

³ A value of \$40 million is assumed for 1998 in order to assess compound interest through the end of 1998.

⁴ Interest rates for 1995 through 1997 are from the Economic Report of the President, Table B-73. The rates used are 6-month borrowing rates.

When the cumulative revenues from past and future charges are taken into account, the impacts of interest credits would be more substantial. For example, a new user fee assessed on irrigation water not covered by the CVPIA user fees and with the new fee starting in the year 2000 and extending to the year 2030 would have to be set more than \$2 per acre foot higher than the parallel CVPIA fees to have the same financial value (on a present-worth basis). The increment required to achieve parity with CVPIA collections would increase for starting dates later than the year 2000. These examples illustrate that if the burden of environmental restoration is to be shared equally on a per acre foot basis, then the sooner that broad-based user charges are imposed, the lower such charges would be.

5.7 Program Element Cost Estimates

CALFED has developed preliminary cost estimates for the Program for Stage 1 (first 7 years of implementation). These costs are shown below in Table 5.8. These estimates are a gauge of possible future budget requests and do not represent a commitment to request these funds. Stage 1 costs are in current year dollars, and exclude interest, inflation, O&M, and individual state and federal agency costs. Also, the program management costs of CALFED (or other oversight coordination entities) are not included.

Table 5.8 includes proposed cost shares for each of the program elements. These proposed shares represent a work in progress. In most cases they are based not on available sources of funds but on an assumed equal split between federal and state sources or between federal, state, and local/user sources. More precise cost sharing allocations will be made as specific projects are developed and receive authorization. Cost share arrangements will be developed through agreements and will be consistent with applicable federal and state requirements. The exact share of costs will depend on the specific projects that are implemented, and will vary year to year.

In the first few years of Implementation, large shares of public funding will be needed to move the Program forward. State and federal funds may be used not only for program elements with mostly public benefits, but may also be used for program elements that will likely have multiple benefits, including substantial non-public benefits. However, it is expected that beneficiaries will reimburse the public and pay for larger shares of the costs in the latter years of Stage 1. For example, public funds may be used for the planning and evaluation of storage projects to ensure a comprehensive and fair comparison of storage options. However, should a storage project proceed to construction, then the public funds used for planning and evaluation will be reimbursed by the project beneficiaries.

CALFED has adopted an adaptive management approach, which will allow the Program to be flexible. CALFED will be able to identify if proposed solutions are working, and choose future projects based on scientific information and monitoring. This makes developing cost estimates in future years difficult, however, so cost estimates for future years will change to some degree as CALFED adaptively manages the Program. Refining cost estimates will be an ongoing process, and better estimates will be developed for future years as information becomes available regarding specific actions and projects.

TABLE 5.8

CALFED Bay-Delta Program Stage 1 Estimated Costs ¹ (\$ in millions)											
Program Element	Program Year(s) ²							Total	Cost Sharing (\$) ³		
	1	2	3	4	5	6	7		Fed	State	Other
Ecosystem Restoration ^{4,5}	\$263	\$207	\$175	\$170	\$170	\$170	\$170	\$1,326	\$513	\$513	\$300
Water Use Efficiency ⁶	\$31	\$62	\$299	\$641	\$641	\$641	\$641	\$2,956	\$759	\$759	\$1,438
Water Transfers ⁷	\$3	\$3	\$3	\$2	\$2	\$1	\$1	\$15	\$7.5	\$7.5	-
Watershed Management ⁸	\$40	\$45	\$45	\$45	\$45	\$40	\$40	\$300	\$138	\$138	\$24
Environmental Water Quality ⁹	\$15	\$33	\$38	\$48	\$50	\$48	\$48	\$280	\$90	\$90	\$100
Drinking Water Quality ⁹	\$41	\$78	\$82	\$110	\$116	\$120	\$128	\$675	\$200	\$200	\$275
Levees ¹⁰	\$33	\$76	\$78	\$82	\$45	\$65	\$65	\$444	\$142	\$88	\$34
Storage ¹¹	\$50	\$75	\$138	\$208	\$266	\$349	\$339	\$1,425	\$237	\$237	\$200
Conveyance ⁵	\$25	\$61	\$145	\$188	\$170	\$110	\$48	\$747	\$188	\$366	\$193
CALFED Science Program ^{7,12}	\$25	\$30	\$45	\$50	\$50	\$50	\$50	\$300	\$150	\$150	-
Total	\$525	\$670	\$1,048	\$1,544	\$1,555	\$1,594	\$1,530	\$8,468	\$2,425	\$2,549	\$2,564

¹ Preliminary; current year dollars based on staff estimates. Total costs assume contributions from State, Federal, and User/Private funding. This table provides estimates of outlays by year. It does not represent requested budgets for each budget year. Budget year information will be provided in future tables.

² Stage 1 will begin with the Record of Decision, scheduled for September 2000. Some funds will be expended in the latter part of federal fiscal year 2000 (for example, Prop 204 funds on ERP projects). The bulk of expenditures will occur in FY 2001. Because most of the federal fiscal year 2000 is not considered part of Stage 1, FFY 2000 and FFY 2001 have been combined in this table, and funds projected to be spent after the ROD in FFY 2000 are included.

³ Cost sharing represents a work in progress. More precise cost sharing allocations will be made as specific projects are developed and receive authorization. Cost share arrangements will be developed through agreements and will be consistent with applicable federal and state requirements. Exact share of costs will depend on the specific projects that are implemented, and will vary year to year. Initial years will be heavily funded by federal and state dollars. In most cases these are proposed cost shares—they are based not on available sources of funds but on a 50/50 split between federal and state sources or a 33/33/33 split between fed/state/users.

⁴ Proposed cost sharing for the ERP is a split between users (~\$35 million per year from a new broad-based fee & \$15 million per year in CVPIA Restoration Funds), and public dollars (assumed split equally between federal and state sources of funding). The main source of State funds would be Prop 204. The proposed source of federal funds could include Bay-Delta Act and/or other sources. This Table assumes revenues from new broad based fees would become available beginning in 2003. This includes \$50 million per year for the first four years for the Environmental Water Account.

⁵ Cost estimates differ from Appendix A in "California's Water Future: A Framework for Action" (June, 2000) because some actions which were considered complementary to CALFED were included in Appendix A, but are not included in this table.

⁶ Proposed expenditures in Federal Fiscal Years 2005 - 2007 are tentative. Actual expenditures will be determined after ongoing evaluation of effectiveness of program investments during the first four years of Stage 1 (federal fiscal years 2000/2001 - 2004). Availability of State and Federal funds is dependent on the availability of local funds.

⁷ Cost sharing for the water transfers program and Science Program assume equal federal/state shares.

⁸ Cost shares include a 10% contribution from locals for community based watershed activities, with the rest funded equally between federal & state sources.

⁹ In general cost sharing is assumed to be 50/50 fed/state or 33/33/33 fed/state/user, depending on the action. Some water quality actions assume federal and state funding in the initial 2 years, with 100% of the funding in latter years from users.

¹⁰ Total cost includes the Suisun Marsh Levee Program, which provides substantial ecosystem, water quality, and flood control benefits. Cost shares do not include this Program.

¹¹ Initial funding will be largely state and federal sources. This does not include cost-sharing for surface storage construction. Final cost shares (including reimbursements by beneficiaries) will depend on allocation of costs and identification of beneficiaries for individual projects. This assumes a 50% local match for full-scale groundwater storage projects.

¹² Science Program will provide for implementation of adaptive management and more cost-effective decision-making throughout the rest of the Program.

5.8 Cross-cut Budget

In order for the CALFED Bay-Delta Program to be efficient and cost-effective, CALFED will need more integration with all of the federal, state, and local agencies that have programs or projects contributing to Program goals and objectives. In an effort toward meeting this goal, CALFED took steps to better coordinate with all of the various agencies and programs operating in the geographic scope of the CALFED Bay-Delta Program by developing a cross-cut budget for Federal Fiscal Year 2000 and State Fiscal Year 99-00.

CALFED staff worked with many state and federal agencies in developing the crosscut budget, but it is anticipated that additional programs and funding will be adjusted and additional agencies added in the Federal Fiscal Year 2001/State Fiscal Year 00-01 Cross-cut Budget. For example, CALFED is in the process of working with the USFS to identify which of their programs relates to the CALFED watershed program or other CALFED program elements.

The cross-cut budget provides the following information:

- List of programs/projects that are located within the geographic scope of CALFED, and contribute to the goals and objectives of the Program.
- Identifies what the sources of funding are for the above programs/projects.
- Identifies the amount that was appropriated or budgeted for the above projects in FY 2000 (Federal) and FY 1999-2000 (State).

All of the programs identified in the Cross-cut Budget will continue to be evaluated and refined in order to guide CALFED Program implementation, increase financial efficiency and identify additional funding needs. During implementation of the Program, a cross-cut budget will be developed on an annual basis. The information developed through this process will be used as a tool for developing future finance strategies and funding requests.

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