CALFED
Watershed Management Strategy
(Draft)

January 7, 1998

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Introduction

The mission of the CALFED Bay-Delta Program is to develop and implement a long-term comprehensive plan to restore ecological health and improve water management for beneficial uses of the Bay-Delta ecosystem. Watershed management is one of the elements of this plan.

For purposes of CALFED, the term watershed is defined as the geographic area that drains to the San Francisco Bay Estuary. Included in this definition are streams, lakes, reservoirs, underlying aquifers connected to surface waters, and the estuary. As part of the CALFED Bay-Delta Program, watershed management activities focus on implementing programs and projects consistent with the CALFED Solution Principles, the Ecosystem Restoration Program Plan, and adaptive management. They will be carried out in a method consistent with consensus building and cooperative programs involving federal, state, and local government agencies as well as interest groups, stakeholders, and local communities.

CALFED Vision for Watershed Management

The CALFED vision for watershed management is to reduce stressors which reduce beneficial uses of the Bay-Delta. The stressors can result from mining practices, agricultural discharges, weak levee structures, excessive runoff and erosion, wildfire, excessive timber harvest, livestock grazing, and damaging land uses practices that constrain watershed health and the ability of the watershed to contribute to the health of the Bay-Delta ecosystem.

Geographic Scope

The watershed management element of the CALFED Bay-Delta Program is divided into two primary areas, in recognition of physical characteristics of the Bay-Delta watershed:

- The upper tributary watershed above reservoirs and major fish passage obstructions (instream dams and reservoirs)
- The lower watershed, generally below those major fish passage obstructions (instream dams and reservoirs)

The geographic scope of the watershed activities addressed in this strategy is shown in Appendix A.

Watershed actions in the lower watershed are implemented as part of the CALFED Common Programs. These actions primarily focus on restoring natural processes to the watersheds, removing or mitigating for stressors, improving water quality, and developing water management activities which support a healthy Bay-Delta ecosystem. These actions could include instream flow patterns, water quality enhancements, surface and ground water integrated resource programs, and watershed restoration plans which are developed and implemented locally but form an ecosystem-wide coordinated program. Actions in the lower watersheds could also include ground water management and conjunctive use of surface and ground water as methods of supplementing water supplies for all uses.

The upper watershed area has different biological problems which effect the Delta, including coniferous forest wildfire conflagration areas, post-mining water pollution sources, and road and drainage erosion areas which contribute to high stream sediment loads. At one time, the watershed areas above the dams contributed the majority of historic spawning and rearing habitat of salmon runs.

The upper watersheds include unique upper-meadow restoration opportunities which may produce a natural process resulting in meadow ground water recharge, increases in ground water storage in meadows, increases in water yield, and a time-shifting of water releases in streams away from spring months to late summer months by these meadows. This could accrue benefits to all downstream stream segments as well as all users of water -- environmental and human.

Goals of Watershed Projects

All watershed management projects implemented in CALFED should be consistent with the goals and objectives of CALFED with respect to ecosystem quality, water quality, water use efficiency, and system vulnerability. The following are CALFED goals for each resource area along with the types of watershed projects that may meet these goals:

- Ecosystem Quality: The goal is to improve and increase aquatic and terrestrial habitats and to improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. For example, a watershed approach linked to the CALFED ecosystem goals may be implemented with the assistance of local watershed groups. These groups may examine the diversity of species across regional landscapes, and identify and analyze the heterogeneity of communities within watershed boundaries. By tracking these watershed elements and their interactions, decisions can be made with a broad understanding of ecosystem function. In addition, watershed projects which improve riparian habitat along streams, increase or improve fisheries habitat and passage, restore wetlands, or restore the natural stream morphology affecting downstream flows or species may benefit ecosystem quality.

- Water Quality: The goal of this program is to provide good water quality for all beneficial uses. Watershed management activities may benefit water quality in the

Delta by helping to identify and control nonpoint sources of pollution and identify and implement methods to control or treat contaminants. Watershed projects which reduce the pollutant loads in streams, lakes, or reservoirs could measurably improve downstream water quality.

- Water Supply Reliability: The goal for this program is to reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system. Watershed projects which increase stream base flow, such as vegetative modification and reduction in evapotranspiration, may be beneficial to water supply reliability. A watershed approach to help increase water yield and water supply reliability may be to reduce excessive soil erosion which accelerates the filling of downstream water storage reservoirs and reduces the available water storage capacity. A watershed project which incorporates meadow water storage may also increase water supply reliability. However, upstream meadow water storage is unlike lower reservoir storage. The meadows act as a natural filtering agent for water and produce much colder water during summer months than reservoirs. This provides a secondary benefit to fisheries and other aquatic species throughout the length of the system. These programs will attempt to utilize natural processes wherever possible, but recognize the need for other processes for at least an interim period in specific areas depending upon specific conditions.

- System Vulnerability: The goal for this 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. A watershed approach to enhance levee stability may be to move the timing, variability, and duration of floodplain inundation and water table elevation closer to an undisturbed condition through meadow restoration and wetland development. A watershed project which restores stream banks affecting downstream conditions may also reduce system vulnerability.

Need for a Coordinated CALFED Watershed Management Strategy

Management efforts throughout the watersheds will achieve maximum efficiency and effectiveness if they are carried out as part of a coordinated effort. This will allow integration of various local and regional interests and needs with the objectives of the watershed management strategy. The coordinated CALFED watershed management strategy is necessary for the following reasons:

1. In recognition of the need for a strategy to coordinate widely separated, locally implemented watershed management efforts. Such a strategy and coordination are not in place at this time. It will be developed through a comprehensive program involving interagency cooperation between CALFED agencies, local governments, watershed councils, stakeholders, and local communities.

2. To more effectively coordinate the expenditure of funds, actions, and planning within the watershed management program.

3. To provide standardized methods of data collection, monitoring programs, and reporting mechanisms. These are recognized as necessary, critical tools in adaptive management.

4. To provide a forum for peer scientific examination of the hypotheses being tested in an adaptive management program for watershed management.

5. To provide a "clearinghouse" function in information exchange, across local watershed boundaries, as part of the watershed management program.

The coordinated CALFED watershed management program will:

- Utilize the watershed management structure (see Watershed Oversight section) to provide for intergovernmental, interagency, and interwatershed coordination of restoration and management efforts including planning, data collection, implementation, and monitoring of results. A complete inventory of watershed plans, programs, and projects would also be included.

- Implement a planning process which takes advantage of local watershed management councils, Coordinated Resource Management and Planning efforts, and similar stakeholder ongoing processes. The planning process would include participation by CALFED agencies as well to provide technical assistance and identify federal land management agency matching of efforts with state and local actions. The output would be a strategy for achieving coordinated, restored watersheds.

- Provide for inclusion of the adaptive management process of CALFED to be utilized in the restoration effort. This will require a much greater degree of cooperation, coordination, data collection, data monitoring, and reporting standards than is possible without the watershed management strategy.

- Provide for long-term coordination, new funding, and prioritization programs for watershed management and restoration through the watershed management structure (see Watershed Oversight section). These programs should take advantage of existing funding programs which are currently in place, such as: EPA/RWQCB Clean Water Act Program, Proposition 204 (one time) grants, CVPIA Category III, NRCS watershed programs, etc. New funding sources developed as part of CALFED and other opportunities will also be identified. CALFED will provide a coordination point for participating CALFED agencies to more effectively coordinate their watershed budget dollars and use them in conjunction with CALFED funds.

- Implement data collection, standardization, monitoring, interpretation, and reporting mechanisms as part of the CALFED adaptive management program. This information would be available for incorporation into CALFED scientific analysis and reporting.

- Provide for prioritization, review, and funding recommendations for ongoing watershed restoration efforts as part of the watershed management strategy.

Implementation Plan

When a watershed management structure is decided upon, the implementing authority should prepare a detailed implementation plan, which would be a component of the overall CALFED Implementation Plan.

The watershed implementation plan should contain:

1. A description of the process by which the implementing authority will carry out the CALFED goals and objectives.

2. A coordination framework which describes the mechanism to integrate watershed efforts among agencies and organizations.

3. A description of a process through which partnerships with key agencies and local entities will be formed.

4. A process to foster local efforts in watershed management to achieve CALFED objectives. Outreach and educational processes will be included.

5. An identification of priority watershed projects in terms of solutions to critical problems affecting the Bay-Delta estuary to include technical feasibility and cost effectiveness.

6. An identification of involved agencies and time lines for implementation of watershed projects along with other detailed information.

7. Mechanisms for continuous review and adaptive management to include meeting the objectives of CMARP.

8. A package of assurances to address the long-term sustainability of watershed projects.

9. A comprehensive compilation of funding sources and guidance for funding assistance for watershed projects. This will involve coordination of existing funding programs in various state and federal agencies as well as the development of long-term funding for this resource area as part of the CALFED solution. An example listing of potential funding sources is included in Appendix E.

10. A process to assemble, store, and disseminate information on watershed projects related to the CALFED goals and objectives.

Criteria for Qualifying Project Types

All watershed projects implemented as part of CALFED must be consistent with the goals and objectives of CALFED with respect to ecosystem quality, water quality, water use efficiency, and system vulnerability.

CALFED may participate in watershed projects of the following types where such projects meet CALFED objectives:

1. Improved water quality
2. Improve riparian habitat along streams
3. Increased water yield
4. Beneficial time-shifting of accretion and runoff through non-structural methods
5. Reduced sediment loads in streams
6. Increased or improved fisheries habitat
7. Restoration of meadows affecting downstream flows
8. Restoration of stream banks affecting downstream flows or species
9. Reduced pollutant loads in streams, lakes, and reservoirs
10. Restoration of natural stream morphology affecting downstream flows or species
11. Restoration of meadow ground water tables affecting downstream flows

To qualify for CALFED participation, clear linkage must be demonstrated to correcting the problems of the Bay-Delta estuary and species dependent on the estuary.

Monitoring, assessment, and reporting will be essential features of all activities in which CALFED participates, as these activities make adaptive management possible. Adaptive management occurs when new information becomes available and a different approach is desired. It is a method to manage the risks and uncertainties involved during early or long-term implementation. Therefore, CALFED participation will necessitate compliance with the CALFED Comprehensive Monitoring , Assessment, and Research Plan (CMARP). The CMARP is an adaptive management tool intended to assure scientific products of value. The emphasis of the CMARP is not on data collection alone, but on data evaluation and use for decision making.

The CALFED watershed management strategy centers on coordinated local, regional, state, and federal participation. Activities that are fully coordinated and supported at multiple organizational levels will receive priority consideration for CALFED involvement. Watershed activities conducted to meet CALFED goals and objectives will be in compliance with state and federal watershed initiatives and policies. Appendix B contains a list of key watershed initiatives and policies.

Basic principles of good watershed management are also listed in Appendix C. These basic principles should help guide the development of projects to achieve CALFED goals and objectives.

Watershed Oversight

A technical oversight entity will be needed to implement the components of the watershed management strategy. The strengths and weaknesses of various options for an oversight authority will be considered. Options for an oversight authority to manage implementation of the strategy are proposed and may include (example schematics are shown in Appendix D):

1. Appointing a current CALFED state or federal agency (co-lead or cooperating agency) to implement the strategy.

2. Forming a Joint Power Authority (JPA) to implement the strategy. The JPA can be governed by a Board of Directors, consist of local government and stakeholders, and CALFED agency representatives.

3. Creating an Interagency Watershed Steering Committee consisting of CALFED agencies (co-lead and cooperating), local government, and stakeholders, who would jointly implement the watershed management strategy.

4. Implementing the watershed management strategy under the proposed new legal entity which may be formed to implement the Bay-Delta solution alternative. As presently discussed, this entity would be a new institution or government agency, a public corporation, or some other construct, legally distinct from existing agencies, with its own management and governance.

This list of options should be considered preliminary and does not exclude the inclusion and selection of other viable options.

As an example, the services of a technical Interagency Advisory Watershed Team (IAWT) could be utilized. The IAWT would include key technical representatives from federal agencies, state agencies, local agencies, stakeholders, and watershed councils actively participating in or funding watershed efforts. The IAWT would serve in a technical advisory capacity to the CALFED entity responsible for implementing the Bay-Delta solution alternative.

The function of the IAWT would be to provide a liaison between CALFED management and entities actively carrying out watershed restoration efforts and participating in the development of plans for those efforts. The IAWT would meet on a quarterly basis, throughout the watersheds. It would provide a forum to facilitate communications between entities carrying out watershed management and restoration efforts. It would provide a conduit for technical assistance and information to reach entities carrying out watershed management and restoration efforts. The IAWT would also provide input into the annual reporting of the CALFED entity responsible for implementing the Bay-Delta solution alternative.

Sample Project Types

Examples of different types of watershed management projects are listed below. Depending upon local circumstances and plans, these projects may achieve the listed objectives.

1. Stream bank restoration. These projects could include establishment of stream side riparian vegetation, stabilization of stream banks, and prevention or repair from stream bank down cutting.

2. Stream stabilization. These projects could include prevention and restoration of stream segments which have been unstabilized. This may include stream bed restructuring, stream elevation stabilization and corrective action to the stressor which resulted in the damage.

3. Road stabilization. These projects could include restoration and stabilization of roads which are resulting in significant erosion into streams and springs, or which are damaging meadow aquifers.

4. Meadow restoration. These projects could include the rehabilitation and restoration of meadows to serve as aquifers and ground water storage basins. This may include assessment of and action to reduce stressors which originally caused problems.

5. Slope stabilization. These projects could include restoration and stabilization of slopes which are resulting in significant erosion into streams and springs, or which are damaging meadow aquifers.

6. Drainage structure improvement. These projects could include modification or removal of drainage structures which are resulting in significant erosion into streams and springs, or which are damaging meadow aquifers.

7. Point source pollution control programs. These projects could include remedial action to correct point source water pollution sites.

8. Fisheries habitat restoration. These projects could include restoration of areas of damaged fisheries habitat as a result of adverse conditions within the watershed. Emphasis would be on restoration of fisheries habitat as a byproduct of all related watershed restoration efforts.

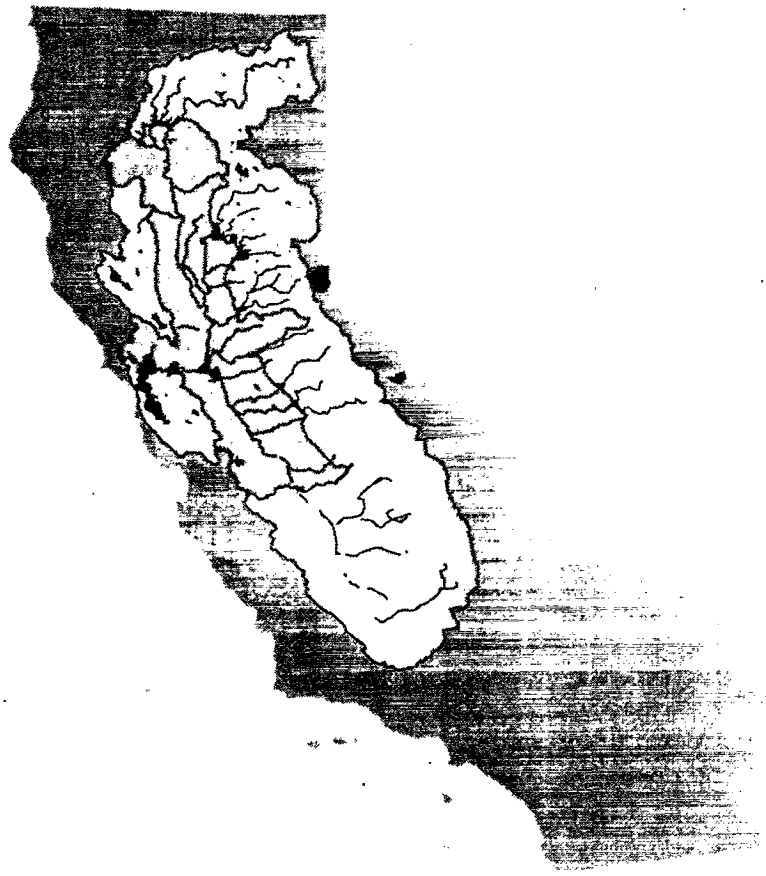
9. Fisheries passage problems. These projects could include the development of fisheries passage facilities in areas where is could be feasible to reintroduce anadramous fisheries populations in a manner consistent with the overall Delta Ecosystem Restoration Program.

10. Wetlands restoration. These projects could include the restoration of wetland areas which have been damaged or impacted. This would involve reintroduction of native plant species where necessary.

APPENDICES

APPENDIX A

REPRESENTATION OF THE UPPER AND LOWER WATERSHED AREAS ADDRESSED BY THE CALFED BAY-DELTA PROGRAM WATERSHED MANAGEMENT POLICY



Rivers in the Bay-Delta Watershed

Water Bodies

Prescriptive Area: The Lower Watershed

Programmatic Area: The Upper Watershed

The State of California

APPENDIX B

INVENTORY OF CURRENT WATERSHED INITIATIVES AND POLICIES (not inclusive)

State Policies and Agency Activities

On January 9, 1997 Governor Wilson proposed a $3.8 million Watershed Initiative to provide funds to four State agencies to conduct watershed management activities. These funds would be used to develop watershed management teams, provide guidance and technical assistance to community-based watershed groups, make grants for habitat restoration, conduct watershed assessments, and provide GIS data base support.

On July 31, 1997 Governor Wilson signed Executive Order W-159-97 which established a Watershed Protection and Restoration Council to develop a coordinated State effort to improve watershed habitat necessary for healthy populations of coho salmon, steelhead trout, and other anadromous fish species. The Council is responsible for developing a Watershed Protection Program with conservation efforts designed to protect and enhance anadromous fish populations while providing resources to safeguard community businesses and jobs. The Council provides policy to direct the expenditure of $5 million for salmon and steelhead conservation projects and $15 million is from funds provided in Proposition 204 passed by California voters in the November 1996 general election.

In addition to the Governor's watershed policies, watershed programs are being implemented by individual State agencies in compliance with their respective mandates and regulations. One program particularly relevant to the CALFED problem area is the Sacramento River Watershed Management Program being conducted by the Regional Water Quality Control Board and participating agencies under the auspices of the federal Clean Water Act and the State Porter Cologne Act.

Federal Policies and Agency Activities

Federal watershed policies have been primarily derived from the Clean Water Act, Section 319 of the 1987 amendments, which relate to non-point source pollution.

> *Watershed management activities have been identified primarily with the investigation and voluntary abatement of non-point sources. Non-point source programs are relatively new as compared to traditional point source programs which are designed to control discharges from a pipe or other structure. Point source programs have been successful and supported but it is primarily the non-point sources that result in*

the remaining pollution and resulting habitat degradation (USEPA - National Water Quality Inventory: 1993 Report to Congress).

Section 319 of the Clean Water Act requires each State to submit (1) an assessment of State waters not expected to meet water quality standards because of non-point source pollution, and (2) a management program for controlling non-point source pollution. Many watershed projects are sponsored under Section 319 grants.

To abate non-point sources, EPA and other federal regulatory and planning agencies rely on provisions of the Clean Water Act and a combination of other laws, regulations, policies, and programs including:

- President Clinton's Forest Plan (USDA) - Key elements of the President's plan include watersheds as the fundamental building block, setting aside reserve areas for conservation to protect specific species; establishing ten adaptive management areas for intensive ecological experimentation and social innovation from both ecological and economic perspective: calling for a new rule from the Fish and Wildlife Service to ease restrictions on timber harvest from certain nonfederal lands; and federal assistance to reduce the backlog of timber sales from Indian reservations.

- Conservation Title of the Farm Bill (from the Farm Security Act of 1985) - This legislation provides for technical assistance in planning, design, and implementation of Best Management Practices to conserve and protect highly erodible or otherwise environmentally sensitive lands. Activities under this legislation also include providing technical assistance to landowners and decision makers in watershed basins, providing funds for demonstration projects, and providing reconnaissance and intensive inventories of resources.

- Safe Drinking Water Act's Source Water Protection Program, Section 1454 (amendments of 1996) - The Source Water Protection Program employs a watershed assessment approach to inventory sources of contamination, to understand the susceptibility to the public water system, and to develop source control Best Management Practices. State assistance is available to develop and implement source assessment and protection activities.

- Rivers and Trails Conservation Program of the National Park Service.

- National Oceanic and Atmospheric Administration (NOAA) Sea Grant and the National Marine Sanctuaries Programs that support the State Coastal Zone Management Programs

- Fish and Wildlife Service efforts in wetlands acquisition and conservation under the Emergency Wetlands Resources Act of 1986

- Bureau of Land Management and Forest Service initiatives to protect or rehabilitate watersheds of public lands and in national forests.

APPENDIX C

GENERAL PRINCIPLES OF GOOD WATERSHED MANAGEMENT

Restoration must be consistent with watershed level assessment, analysis and evaluation; restoration includes protection of existing healthy conditions,

Restoration should assure the preservation of existing healthy conditions by removing known threats and protecting from future threats,

Restoration must include eliminating continuing causes of watershed degradation,

Restoration projects should be prioritized within each watershed for effectiveness on the basis of maximum ecological benefit and on the benefits to sustainable local community economics and/or revitalization,

Restoration and stewardship decisions should be based on explicit objectives and benchmarks from an approved watershed restoration plan,

Restoration that alters environments should give highest priority to project results that use natural processes,

Progress of restoration must be effectively monitored, using explicit objectives and benchmarks, in order to evaluate ongoing restoration and stewardship efforts,

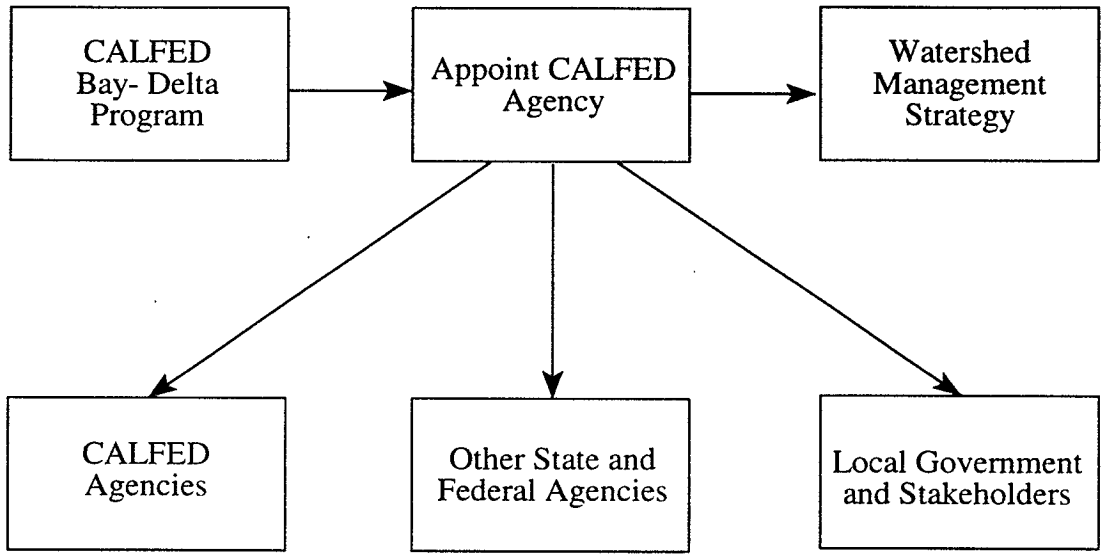
Restoration plans and/or projects must no sacrifice one ecosystem for another,

Restoration must be accomplished consistent with existing applicable environmental laws.

(Adapted from "Principles of Watershed Restoration", March 1997. Sierra Nevada Alliance and Regional Council of Rural Counties.)

APPENDIX D

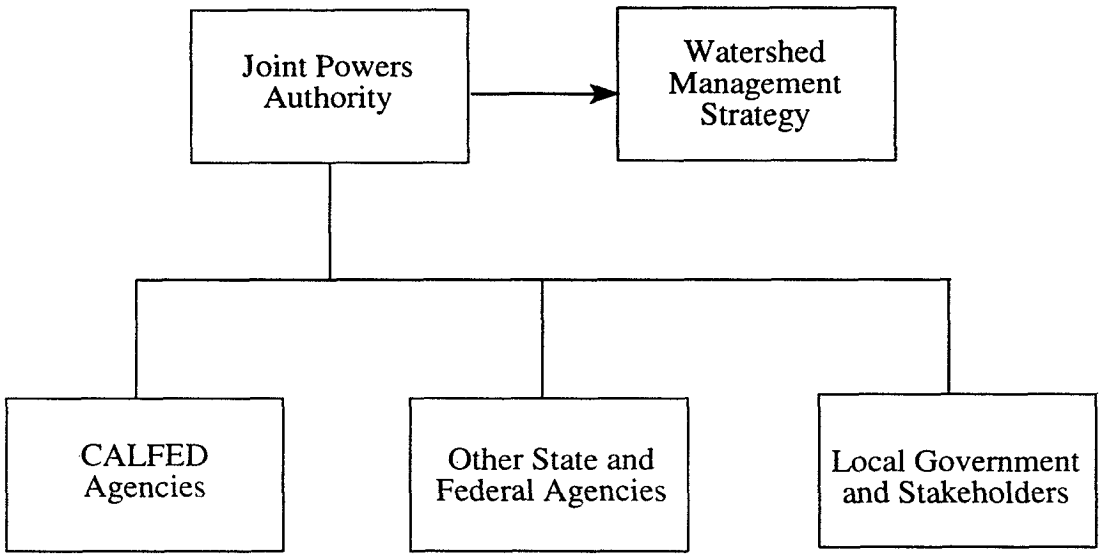
Option #1



Appoint a current CALFED State or Federal agency to implement the strategy. A set of agreements can be developed as assurances that effective implementation will occur.

APPENDIX D

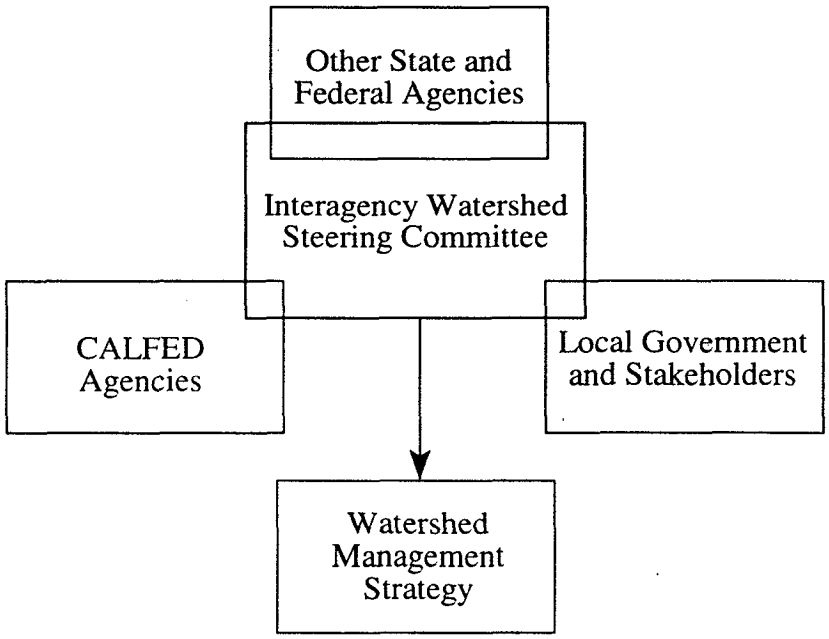
Option #2



Form a Joint Powers Authority (JPA) to implement the strategy. The JPA can be governed by a Board of Directors and consist of local government and stakeholders, and CALFED agency representatives. The Board of Directors appoints an Executive Director. A set of agreements occur among the agencies and participating stakeholders to provide assurances for effective implementation through the JPA. Each agency delegates implementation authority to the JPA or agrees to operate its programs in accordance with the direction provided by the JPA.

APPENDIX D

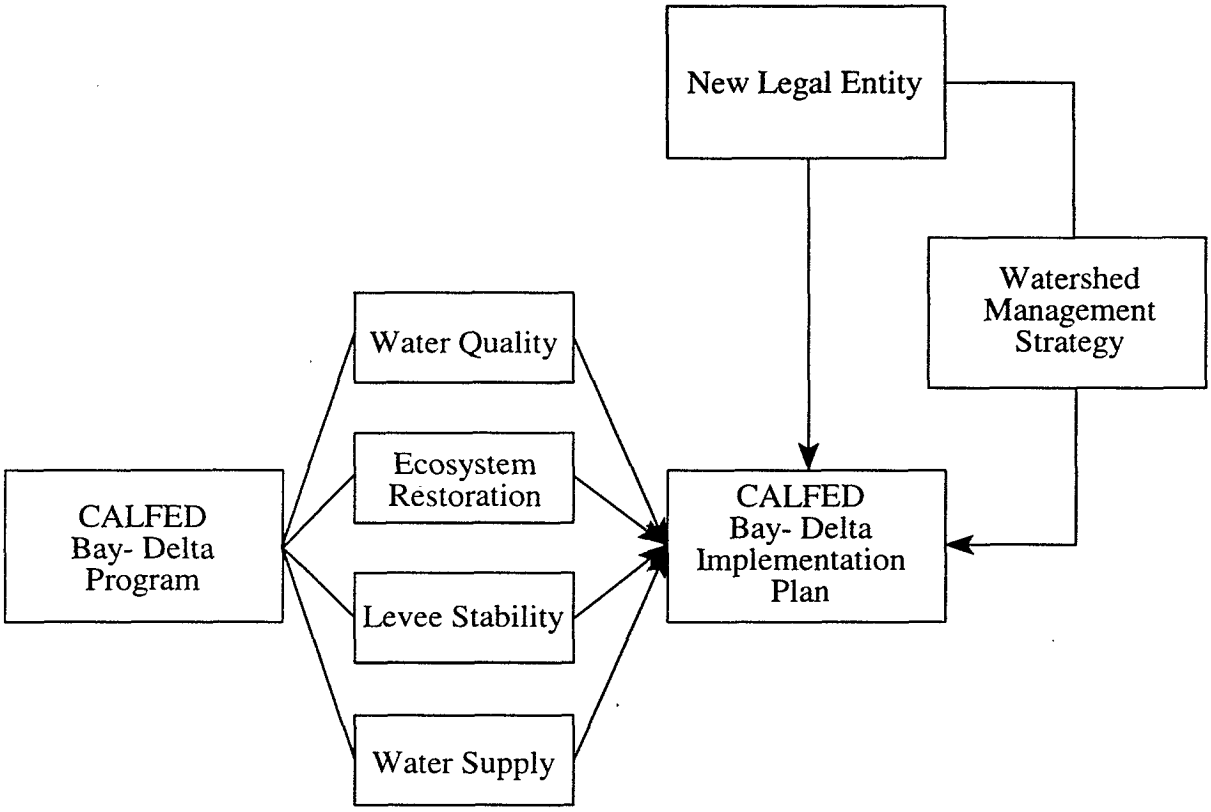
Option #3



Create an Interagency Watershed Steering Committee to jointly implement the strategy. The Committee members will consist of the CALFED agencies (co-lead and cooperating), local government, and stakeholders who will jointly implement the watershed program. A chair is appointed by the members. Each member representing their agency has an equal vote and a set of agreements are drawn to implement the CALFED watershed objectives. The management structure, implementation processes, and appropriations to fund the Committee activities is strengthened through legislation.

APPENDIX D

Option #4



Implement the strategy under the proposed new legal entity which may be formed to implement the Bay-Delta solution alternative. As presently being discussed, this entity would be a new institution or government agency, a public corporation or some other construct, legally distinct from existing agencies, with its own management and governance.

APPENDIX E

POTENTIAL FUNDING SOURCES FOR WATERSHED PROJECTS (not inclusive)

The watershed management approach seeks to maximize cost sharing opportunities between CALFED and other watershed restoration funding sources. A comprehensive compilation of watershed funding sources. A comprehensive compilation of watershed funding sources and assistance programs must be developed and regularly updated as part of the watershed management activities.

The CALFED Bay-Delta Program has identified watershed activities and cost estimates for long-term implementation under Proposition 204 (Senate Bill 900, Chapter 7). There is $390 million (and federal appropriations) identified for implementation of the CALFED Bay-Delta Ecosystem Restoration Program through Proposition 204.

The CALFED Restoration Coordination Program, a near term program which addresses coordination of existing restoration programs and administers Category III funds, has recently released a Request for Proposals for projects such as fish screens and ladders, habitat restoration, water quality improvements, gravel restoration and watershed management actions. A total of $71 million is available during this funding cycle (it will reoccur every 6 months).

The State Water Resources Control Board has recently released a Request for Proposals for watershed projects under the authority of Proposition 204 (Senate Bill 900, Article 5 - Delta Tributary Watershed Program). The State Board is authorized to spend $15 million to implement and fund rehabilitation activities in watersheds draining to the Sacramento- San Joaquin Delta or the Trinity River. The Secretary for resources, in consultation with its Departments and associate programs (including CALFED), will provide written recommendations regarding each application to the SWRCB.

Other funded programs that focus on watershed restoration include existing programs conducted by CALFED agencies, other federal and State agencies, local government and local watershed groups. Through jointly funded projects that are closely aligned with the CALFED mission and objectives, these programs offer opportunities to enhance the solution outcome. Some of the key agencies and programs include:

APPENDIX E

State

State Water Resources Control Board and the Central Valley Regional Water Quality Control Board	Sacramento River Watershed Program - $500,000
Department of Forestry and Fire Protection	California Forest Improvement Program - cost share up to 75%
	Stewardship Incentive Program - cost share up to 75%
	Forest Stewardship Program - funds change each funding cycle
Department of Fish and Game	California Riparian Habitat Conservation Program
	Fisheries Restoration Grant Program - up to $2 million/yr

Federal

Department of Agriculture - Forest Service	Economic Recovery/Rural Development - up to 20% matching
Natural Resources Conservation Service	Forest Incentives Program - cost share up to 65%
	Watershed Projects - funding changes each cycle
	Soil Surveys - funding changes each cycle
Federal Emergency Management Agency	Hazard Mitigation Grant Program - cost share up to 75%
Bureau of Land Management	Land Exchange Program - funding changes each cycle
Geological Survey	Water Resources Research Institute Program - funding changes each cycle
Bureau of Reclamation	Departmental Irrigation Drainage Program - funding changes each cycle
	Small Reclamation Projects - funding changes each cycle
Fish and Wildlife Service	Fish and Wildlife Management Assistance - funding changes each cycle
Corps of Engineers	Ecosystem Restoration - funding changes depend on annual budget cycle
	Project Modifications for Improvement of the Environment (Section 1135) - funds awarded on a project-by-project basis as applied for

APPENDIX E

Other

Americorps - Watershed Stewards Program - funding changes each cycle
Biodiversity Council
Cache Creek Watershed Project
Laguna Creek and Deer Creek Watershed Study
Yolo County Habitat Management Program
Cow Creek Coordinated Resource Management and Planning Program
San Francisco Estuary Project
San Joaquin Valley Drainage Program
Stone Lakes National Wildlife Refuge

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