CALFED Bay-Delta Program

Ecosystem Restoration Multi-Year Program Plan (Years 5-8)

Implementing Agencies:
California Department of Fish & Game
United States Fish & Wildlife Service
National Marine Fisheries Service

April, 2004

CALIFORNIA BAY-DELTA AUTHORITY

Goals, Objectives and Targets

The CALFED Programmatic Environmental Impact Statement/Report (PEIS/R) identified six strategic goals for ERP to meet over the 30-year course of the Bay-Delta Program. Strategic goals broadly define the scope and purpose of the ERP and provide the basis for a vision of a restored Bay-Delta system. These strategic goals guided how strategic objectives and targets were developed and are used to evaluate proposed restoration actions. These goals are unlikely to change as the program is implemented. Strategic objectives are listed for each goal. Strategic objectives, used to assess progress in achieving the ERP goals, also are unlikely to change over time. Strategic objectives were used to develop and organize targets and programmatic actions. Targets are qualitative or quantitative statements of a strategic objective, and as such are designed to be more flexible than the strategic objective and will change as new information and progress indicates the need for change. Targets reflect the adaptive management principle, that is, as new information is developed, targets may change—adapt—to achieve the objective or goal. Actions are those measures designed to meet the specific target; actions are also subject to adaptive management and can change to meet the target. Currently, there are more than 300 targets and 600 programmatic actions described for the ERP. For more information about ERP's strategic goals, objectives, targets and programmatic actions, please see the Ecosystem Restoration Program Plan, Volume III, of the CALFED PEIS/R. (Available at http://calwater.ca.gov/Programs/EcosystemRestoration/EcosystemVol3RestorationPlan.shtml)

The Record of Decision for the CALFED PEIS/R (ROD) (available at http://calwater.ca.gov/Archives/GeneralArchive/RecordOfDecision2000.shtml) incorporated 119 milestones contained in the endangered species programmatic biological opinions and Natural Community Conservation Plan Approval for the CALFED Program. The milestones, developed primarily from targets or actions in the ERP Plan and Water Quality Program (WQP) Plan, were those actions the fish and wildlife agencies expected would be implemented during Stage 1 (the first seven years of the 30-year program) to achieve CALFED's conservation goals.

The ERP has both a long and short-term approach to reviewing and revising targets, actions and milestones. The long-term approach is part of the ERP's regional planning effort, such as the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP). Work on DRERIP includes convening panels of experts to help examine the ERP's actions, targets, and milestones for the Delta; this process includes review by the ERP Science Board and ERP Implementing Agencies (California Department of Fish and Game, U.S. Fish and Wildlife Service, and National Marine Fisheries Service [NOAA Fisheries]) as well as opportunity for public and stakeholder input through public workshops and the DRERIP webpage (http://www.delta.dfg.ca.gov/erpdeltaplan/). The regional planning process will be the primary forums for revising ERP targets. The regional planning processes take time; the DRERIP alone will take nearly two years to complete in part due to the ERP's commitment to scientific integrity and the subsequent rigorous scientific review that proposed actions are undergoing.

The short-term approach to revising and reviewing targets is part of the Implementing Agencies' assessment of progress toward achieving milestones and the efficacy of the Environmental Water Account (EWA). This assessment is for the reinitiation of consultation for the Bay-Delta Program, as established in the ROD. To ensure that the ERP is being implemented in a manner and to an extent sufficient to sustain programmatic FESA, CESA, and NCCPA compliance for all CALFED Program elements, Implementing Agency and BDA staffs are compiling information on projects funded by CALFED (i.e., which milestones

were addressed by each project, and accomplishments of each project). A "big picture" synthesis of milestone achievements, including a description of the current trajectory and our intentions to complete unfinished milestones will be part of the assessment. The milestones assessment activity will involve input and recommendations by the ERPSB and also will involve stakeholders through the BDPAC Ecosystem Restoration Subcommittee. While the results of the milestones assessment are not yet available, information from the assessment process likely will help in setting priorities for proposal solicitations in fall 2004 and subsequent years. The milestones assessment is expected to be completed by late spring 2004.

The commitment to meet the milestones and targets outlined for Stage 1 exists among the ERP Implementing Agencies and the Authority, but responsible planning calls for a reexamination of timelines in light of current fiscal constraints. The results of the milestones assessment, for example, will be helpful in determining potential changes in timelines and in developing project priorities.

The following table shows the ERP Strategic Goals and Objectives.

CALFED Ecosystem Restoration Strategic Goals and Objectives
Goal 1: Endangered and Other At-risk Species and Native Biotic Communities Achieve recovery of at-risk native species dependent on the Delta and Suisun Bay as the first step toward establishing large, self-sustaining populations of these species; support similar recovery of at-risk native species in San Francisco Bay and the watershed above the estuary; and minimize the need for future endangered species listings by reversing downward population trends of native species that are not listed.
Objective 1: Achieve, first, recovery and then large self-sustaining populations of the following at-risk native species dependent on the Delta, Suisun Bay, and Suisun Marsh: Central Valley winter-, spring- and fall/late fall-run Chinook salmon ESUs,, Central Valley steehead ESU, delta smelt, longfin smelt, Sacramento splittail, green sturgeon, valley elderberry longhorn beetle, Suisun ornate shrew, Suisun song sparrow, soft bird's-beak, Suisun thistle, Mason's lilaeopsis, San Pablo song sparrow, Lange's metalmark butterfly, Antioch Dunes evening primrose, Contra Costa wallflower, and Suisun Marsh aster.
Objective 2: Contribute to the recovery of the following at-risk native species in the Bay-Delta estuary and its watershed: Sacramento perch, delta green ground beetle, giant garter snake, salt marsh harvest mouse, riparian brush rabbit, San Pablo California vole, San Joaquin Valley woodrat, least bell's vireo, California clapper rail, California black rail, little willow flycatcher, bank swallow, western yellow-billed cuckoo, greater sandhill crane, Swainson's hawk, California yellow warbler, salt marsh common yellowthroat, Crampton's tuctoria, Northern California black walnut, delta tule pea, delta mudwort, bristly sedge, delta coyote thistle, alkali milkvetch, and Point Reyes bird's beak.
Objective 3: Enhance and/or conserve native biotic communities in the Bay-Delta estuary and its watershed, including the abundance and distribution of the following biotic assemblages and communities: native resident estuarine and freshwater fish assemblages, anadromous lampreys, neotropical migratory birds, wading birds, shore birds, waterfowl, native anuran amphibians, estuarine plankton assemblages, estuarine and freshwater marsh plant communities, riparian plant communities, seasonal wetland plant communities, vernal pool communities, aquatic plant communities, and terrestrial biotic assemblages associated with aquatic and wetland habitats.
Objective 4: Maintain the abundance and distribution of the following species: hardhead, western least bittern, California tiger salamander, western spadefoot toad, California red-legged frog, western pond turtle, California freshwater shrimp, recurved larkspur, mad-dog skullcap, rose-mallow, eel-grass pondweed, Colusa grass, boggs Lake hedge-hyssop, Contra Cost goldfields, Green's legenere, heartscale, and other species designated "maintain" in the Multi-Species Conservation Strategy.
Goal 2: Ecological Processes Rehabilitate natural processes in the Bay-Delta estuary and its watershed to fully support, with minimal ongoing human intervention, natural aquatic and associated terrestrial biotic communities and habitats, in ways that favor native members of those communities.
Objective 1: Establish and maintain hydrologic and hydrodynamic regimes for the Bay and Delta that support the recovery and restoration of native species and biotic communities, support the restoration and maintenance of functional natural habitats, and maintain harvested species.
Objective 2: Increase estuarine productivity and rehabilitate estuarine food web processes to support the recovery and restoration of native estuarine species and biotic communities.

Objective 3: Rehabilitate natural processes to create and maintain complex channel morphology, in-channel islands, and shallow water habitat in the Delta and Suisun Marsh.
Objective 4: Create and/or maintain flow and temperature regimes in rivers that support the recovery and restoration of native aquatic species.
Objective 5: Establish hydrologic regimes in streams, including sufficient flow timing, magnitude, duration, and high flow frequency, to maintain channel and sediment conditions supporting the recovery and restoration of native species and riparian species and biotic communities.
Objective 6: Reestablish floodplain inundation and channel-floodplain connectivity of sufficient frequency, timing, duration, and magnitude to support the restoration and maintenance of functional natural floodplain, riparian, and riverine habitats.
Objective 7: Restore coarse sediment supplies to sediment-starved rivers downstream of reservoirs to support the restoration and maintenance of functional natural riverine habitats.
Objective 8: Increase the extent of freely meandering reaches and other pre=1850 river channel forms to support the restoration and maintenance of functional natural riverine, riparian and floodplain habitats.
Goal 3: Harvested Species Maintain and/or enhance populations of selected species for sustainable commercial and recreational harvest, consistent with the other ERP strategic goals.
Objective 1: Enhance fisheries for salmonids, white sturgeon, pacific herring, and antive cyprinid fishes.
Objective 2: Maintain, to the extent consistent with ERP goals, fisheries for striped bass, American shad, signal crayfish, grass shrimp, and nonnative warm water game fishes.
Objective 3: Enhance, to the extent consistent with ERP goals, populations of waterfowl and upland game for harvest by hunting and for non-consumptive recreation.
Objective 4: Ensure that Chinook salmon, steelhead, trout, and striped bass hatchery, rearing, and planting programs do not have detrimental effects on wild populations of native fish species and ERP action.
Goal 4: Habitats Protect and/or restore functional habitat types in the Bay-Delta estuary and its watershed for ecological and public values such as supporting species and biotic communities, ecological processes, recreation, scientific research, and aesthetics.
Objective 1: Restore large expanses of all major habitat types, and sufficient connectivity among habitats, in the Delta, Suisun Bay, Suisun Marsh, and San Francisco Bay to support recovery and restoration of native species and biotic communities and rehabilitation of ecological processes. These habitat types include tidal marsh (fresh, brackish, and saline), tidal perennial aquatic (including shallow water and tide flats), nontidal perennial aquatic, tidal sloughs, midchannel island and shoal, seasonal wetlands, riparian and shaded riverine aquatic, inland dune scrub, upland scrub, and perennial grasslands.
Objective 2: Restore large expanses of all major aquatic, wetland, and riparian habitats, and sufficient connectivity among habitats, in the Central Valley and tis rivers to support recovery and restoration of native species and biotic communities and rehabilitation of ecological processes. These habitat types include riparian and shaded riverine aquatic, instream, fresh emergent wetlands, seasonal wetlands, other floodplain habitats, lacustrine, and other freshwater fish habitats.
Objective 3: Protect tracts of existing high quality major aquatic, wetland, and riparian habitat types, and sufficient connectivity among habitats, in the Bay-Delta estuary and its watershed to support recovery and restoration of native species and biotic communities, rehabilitation of ecological processes, and public value functions.
Objective 4: Minimize the conversion of agricultural land to urban and suburban uses and maintain open space buffers in areas adjacent to existing and future restored aquatic, riparian, and wetland habitats, and manage agricultural lands in ways that are favorable to birds and other wildlife.
Objective 5: Manage the Yolo and Sutter bypasses as major areas of seasonal shallow water habitat to enhance native fish and wildlife, consistent with CALFED Program objectives and solution principles.
Goal 5: Nonnative Invasive Species Prevent the establishment of additional nonnative invasive species and reduce the negative ecological and economic impacts of established nonnative species in the Bay-Delta estuary and its watershed.
Objective 1: Eliminate further introductions of new species from the ballast water of ships into the Bay-Delta estuary.
Objective 2: Eliminate further introductions of new species from imp orated marine and freshwater baits into the Bay-Delta estuary and its watershed.
Objective 3: Halt the unauthorized introduction and spread of potentially harmful nonnative introduced species of fish or other aquatic organisms in the Bay-Delta and Central Valley.

	Objective 4: Halt the release of nonnative introduced fish and other aquatic organisms from private aquaculture operations and the aquarium and pet trades into the Bay-Delta estuary, its watershed, and other California waters.
	Objective 5: Halt the introduction of nonnative invasive aquatic and terrestrial plants into the Bay-Delta estuary, its watershed, and other central California waters.
	Objective 6: Reduce the impact of nonnative mammals on native birds, mammals, and other organisms.
	Objective 7: Limit the spread or, when possible and appropriate, eradicate populations of nonnative invasive species through focused management efforts.
	Objective 8: Prevent the invasion of the zebra mussel into California.
Goal 6: Water and Sediment Quality Improve and/or maintain water and sediment quality conditions that fully support healthy and diverse aquatic ecosystems in the Bay-Delta estuary and watershed; and eliminate, to the extent possible, toxic impacts to aquatic organisms, wildlife, and people.	
	Objective 1: Reduce the loadings and concentrations of toxic contaminants in all aquatic environments in the bay-Delta estuary and watershed to levels that do not adversely affect aquatic organisms, wildlife, and human health,.
	Objective 2: Reduce loadings of oxygen-depleting substances from human activities into aquatic ecosystems in the Bay-Delta estuary and watershed to levels that do not cause adverse ecological effects.
	Objective 3: Reduce fine sediment loadings from human activities into rivers and streams to levels that do not cause adverse ecological effects.

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Accomplishments

Since its inception more than seven years ago, the ERP facilitated funding for a variety of projects contributing to ecosystem restoration within its geographic scope. ERP investments for the last four years contributed to sustaining regulatory commitments for all Bay-Delta Program elements in Years 1 through 4. There are at least three ways that ERP can assess its accomplishments: (1) tracking funding allocations (the focus of this discussion); (2) tracking progress toward targets; and (3) tracking progress toward specific goals or objectives. Work continues in all three areas, however, the current assessment and ensuing discussion focuses on the funding allocation approach. Because of the time-scale needed for ecosystem restoration, the ERP is just now approaching a time when it can begin to identify and articulate results from some of its funded projects.

> On September 22, 2003, the U.S. Fish and Wildlife Service placed into the Federal Register their "Notice of Remanded Determination of Status for the Sacramento splittail (*Pogonichthys macrolepidotus*); Final Rule". This final rule removed the Sacramento splittail from the threatened species list. The USFWS cited ERP projects and proposed actions as contributing to their decision to remove the Sacramento splittail from its threatened status.

Listed below is a breakdown of the 401 ERP funded projects by ERP goal as of December 2003. Because many ERP projects address more than one of the Strategic Goals, the following project numbers and percentages total more than 100 percent and more than 401 projects. Percentages in the table refer to the percent of total ERP-funded projects as of December 2003.

Goal 1: At-Risk Species
About 64 percent, 255 projects, address recovering endangered and other at-risk species and native biotic communities.
Goal 2: Ecological Processes
About 58 percent, 231 projects, address rehabilitating ecological processes.
Goal 3: Harvestable Species
About 13 percent, 53 projects, address maintaining or enhancing harvestable species populations.
Goal 4: Habitat Restoration
About 57 percent, 228 projects, address protecting and restoring habitats.
Goal 5: Non-native Invasive Species
About 8 percent, 33 projects, address preventing establishment of or reducing impacts from non-native invasive species.
Goal 6: Environmental Water and Sediment Quality
About 29 percent, 117 projects, address improving or maintaining water and sediment quality.

This Accomplishments section provides a "snapshot in time" of the ERP activities during the prior year only (Year 4). Accomplishments include funded projects, completed projects as well as activities such as science workshops and public meetings.

Most ERP actions span more than one year, and many projects are multi-phased, with each phase spanning several years. ERP actions are divided into five categories for program tracking: Planning,

Research, Implementation, Monitoring, and Oversight. All ERP funded projects meet one or more of the ERP Strategic Goals. Because the following discussion focuses only on Year 4 activities, not all tasks or all goals may have projects associated with them.

Not all actions planned to begin in Year 4 happened as anticipated. Among the factors affecting ERP program planning are funding uncertainties because of budget shortfall and the unwieldy length of time it takes to get contracts approved, especially for season-sensitive activities (i.e., monitoring vernal pools).

Projects Funded during Year 4. During Year 4, the Authority gave the ERP approval to fund 13 projects, for a combined total of almost $30,000,000 in grants. Table 1 lists the projects, recipient and grant amount.

Complete copies of the project proposals are available at the ERP website http://calwater.ca.gov/Programs/EcosystemRestoration/EcosystemRestorationGrants.shtml

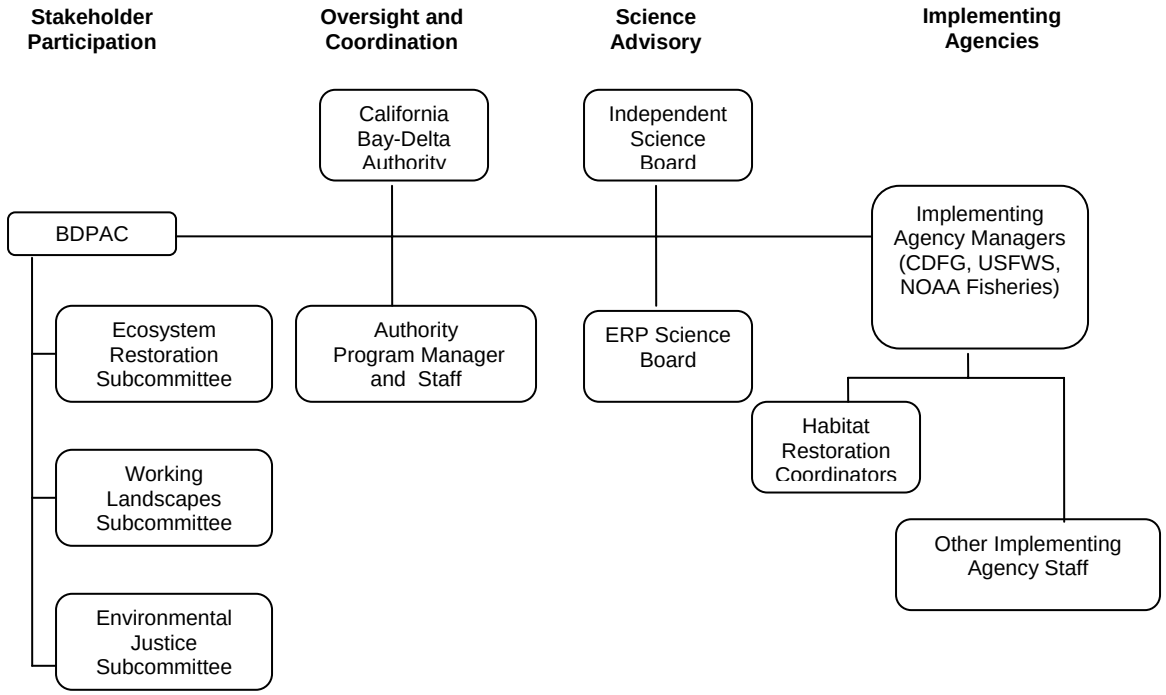
Table 1. ERP-Funded Projects during Year 4
Task: Planning
All Goals
Pacific Flyway Center Initial Planning. The project is planning for a Yolo basin interpretive and environmental education center. $334,021 to the Yolo Basin Foundation.
Goal 2: Ecological Processes
Lower Deer Creek Restoration and Flood Management: Feasibility Study and Conceptual Design. This project will evaluate the potential to improve management of lower Deer creek's floodplain, including potentially setting back its levee, to improve salmon habitat and reduce flood damage. $1,519,2000 to Deer Creek Watershed Conservancy.
Goal 4: Habitat Restoration
Restoring Ecosystem Integrity in the Northwest Delta: Phase II. The project will acquire conservation easements to secure sensitive areas along the Delta's Barker slough and will evaluate the feasibility of restoring tidal marsh and improving habitat at DFG's Calhoun Cut Ecological Reserve. $1,563,506 to Solano Land Trust (formerly the Solano County Farmlands and Open Space Foundation).
Goal 6: Water and Sediment Quality
Big Break and Marsh Creek Water Quality and Habitat Restoration Program. The project will produce a plan to restore habitat and improve water quality on Marsh Creek, a tributary to Dutch Slough in eastern Contra Costa County. $357,146 to the California State Coastal Conservancy.
Task: Research
Goal 1: At-Risk Species
Biological Assessment of Green Sturgeon in the Sacramento-San Joaquin Watershed. This project continues research about green sturgeon. $998,222 to UC Davis.
Goal 2: Ecological Processes
Physical Modeling Experiments to Guide River Restoration Projects. The project will build physical models of river restoration at the University of California's Richmond Field Station to test restoration designs and evaluate their potential effects. $2,488,033 to Stillwater Sciences.
Implementing a Collaborative Approach to Quantifying Ecosystem Flow Regime Needs for the Sacramento River. This project can provide a basis for identifying flows that can promote ecosystem functions and support other restoration actions. Results could be used to help identify ecosystem water needs tha may be affected by reservoir operations or new north of Delta storage projects. $1,500,000 to The Nature Conservancy.
Goal 5: Non-Native Invasive Species
Invasion Dynamics of Perennial Pepperweed and their consequences for protection of natural and restored wetlands in the San Francisco Bay Estuary. The project is a research project to improve eradication and control programs for pepperweed, a weed invading marshes and streamsides. $178,701 to UC Davis.
Goal 6: Water and Sediment Quality
Mercury and Methylmercury Processes in North San Francisco Bay Titdal Wetland Ecosystem. This project investigates mercury cycling in the Petaluma River's tidal wetlands, with an emphasis on quantifying and understanding process that influence the abundance of methylmercury, the highly toxic form that accumulates in organisms, biomagnifying to high concentrations in organisms atop aquatic food webs. $1,656,569 to the San Francisco Estuary Institute.
Mercury in San Francisco Bay-Delta Birds: Trophic Pathyways, Bioaccumulation and Ecotoxicological Risk to Avian Reproduction. This project investigates the bioaccumulation of methylmercury in birds and its effects on their reproduction. $5,337,012 to the US Fish and Wildlife

Service.
Task: Implementation
Goal 4: Habitat Restoration
Recovery Implementaiton for Riparian Brush Rabbit and Riparian Woodrat on the Lower Stanislaus River. This project will restore riparian habitats along the lower Stanislaus and the San Joaquin rivers, adjacent to Caswell State Park and the San Joaquin River National Wildlife Refuge, to support endangered brush rabbits. The Department of Parks and Recreation will assist in carrying out this project. $6,427,131 to the US Fish and Wildlife Service.
Task: Monitoring
Goal 6: Water and Sediment Quality
Monitoring and Investigations of the San Joaquin River and Tributaries Related to Dissolved Oxygen. This project will investigate the sources and fate of oxygen-consuming materials in the San Joaquin River. Low levels of oxygen there, especially in the summer and fall, block migrating salmon and harm other aquatic life. $6,807,428 to the San Joaquin Valley Drainage Authority.

Projects Completed during Year 4. Since it began more than seven years ago, the ERP facilitated funding for a variety of projects contributing to ecosystem restoration within its geographic scope. Because of the time-scale needed for ecosystem restoration, the ERP is just now approaching a time when it can begin to identify and articulate results from some of its funded projects. Table 2 lists the project title and short description, project type, and project proponent for those projects completed during Year 4.

Table 2. ERP Projects Completed during Year 4.
Task: Planning
All Program Goals
Yuba Watershed Council. This project supported the ongoing efforts of the Yuba Watershed Council by funding a watershed coordinator, materials, equipment, and office space to provide coordination and assistance, adaptive management and monitoring, education and outreach.
Goal 1: At-Risk Species
Comprehensive Implementation Plan for a Statistically Designed Marking and Recovery Plan. This project developed an implementation plan for a comprehensive and statistically sound marking and tagging program for hatchery-produced fish Central Valley Chinook salmon.
Goal 6: Water and Sediment Quality
Fish Consumption Research and Outreach Education, Phase I. This project funded a scoping study to design a human consumption of fish study and develop a strategy for public education and outreach on fish contamination issues in the watershed.
Task: Research
Goal 6: Environmental Water and Sediment Quality
Assessment of Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed. To determine bioavailable sources of mercury in the Bay-Delta watershed. Obtain data on mercury levels in fish and completed pilot mine remediation feasibility studies.
Task: Implementation
Goal 4: Habitat Restoration
East Delta Habitat Corridor (Georgiana Slough). This tidal marsh and riparian restoration project improved habitat conditions along 14 miles of Georgiana Slough
Goal 5: Non-Native Invasive Species
Purple Loosestrife Prevention, Detection & Control for the Sacramento-San Joaquin River Delta System. This project surveyed and mapped the non-native invasive plant species, purple loosestrife as well as developed a site specific adaptive management plan and comprehensive local eradication and control efforts.

Program Structure



Agency	Roles and Responsibilities
California Bay Delta Authority (Authority)	Oversight and coordination
California Department of Fish and Game (CDFG)	Implementing agency
	Manages State Habitat Restoration Coordinators
	Lead for ERP regional planning
	Administers Section 1600 Stream Alteration Permits
	Administers the California Endangered Species Act, and Natural Community Conservation Planning Act; oversees MSCS implementation and state endangered species compliance for listed fish, wildlife, and plant species
U. S. Fish and Wildlife Service (USFWS)	Implementing agency
	Manages Federal Habitat Restoration Coordinators
	Lead for Environmental Water Program and Non-native Invasive Species Program
	Administers the Federal Endangered Species Act, oversees MSCS implementation and federal endangered species compliance for listed non-anadromous fish and listed wildlife
	Administers several restoration efforts under the Central Valley Project Improvement Act, including the Anadromous Fish Restoration Program and the Anadromous Fish Screen Program.

Agency	Roles and Responsibilities
National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) (formerly National Marine Fisheries Service [NMFS])	Implementing agency Administers the Federal Endangered Species Act, oversees MSCS implementation and endangered species compliance for listed anadromous fish
BDPAC Subcommittee	**Roles and Responsibilities**
Ecosystem Restoration Subcommittee	Provides BDPAC with guidance and advice regarding ERP and related CALFED activities Provides forum for information exchange, issue analysis, and fact-finding Advises about ERP implementation, ERP regional restoration and implementation plans; ERP budgets, adaptive management activities, the Environmental Water Program, and cross-program coordination and integration
Working Landscapes Subcommittee	Provides BDPAC with guidance and advice regarding working landscapes issues in ERP and CALFED related activities Provides forum for information exchange, issue analysis, and fact-finding Advises about strategies to enhance the sustainability of California agriculture while restoring the ecological health and improving water management of the Bay-Delta system, water quality, water supply reliability, and levee systems integrity.
Environmental Justice Subcommittee	Provides BDPAC with guidance and advice regarding environmental justice issues in ERP and CALFED related activities Provides forum for information exchange, issue analysis, and fact-finding Advises about environmental justice issues related to CALFED Program annual plans, ways for CALFED to integrate environmental justice into project development, and solicit and consider diverse perspectives and recommendations form a broad public
Independent Science Review	**Roles and Responsibilities**
Ecosystem Restoration Program Science Board	Provides independent scientific advice and guidance to the ERP Assists with establishing a solid scientific and technical foundation for the ERP; scientific review, advice, and guidance; integrating ecosystem-based adaptive management into the ERP; engaging the scientific and technical questions that are at the root of policy issues; help set ERP priorities.

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Major Activities

Most ERP major activities fall under two broad categories: ROD commitments or agency efforts identified using open and competitive processes. The ERP intends to continue emphasizing local input, integration with other activities, science (especially independent peer review) and public transparency in decisions about which specific activities to fund in support of priorities identified in ERP planning documents. This section does not identify or present information about specific ERP-funded projects that are undertaken by non-Implementing Agencies.

There are a couple of similarities of this section with the Accomplishments section. First, this section needs to be thought of as a "snapshot in time" regarding the ERP ongoing planning process. The ERP currently is the only CALFED Program Element that has a Strategic Plan as well as a *Draft Stage 1 Implementation Plan*. Second, the structure of this section follows the major ERP tasks as outlined by budget categories—Planning, Research, Implementation, Monitoring, or Oversight and Coordination. Not all tasks nor all goals are listed in this report because new endeavors in those areas may not be planned or foreseen at this time. Listed under each of these tasks, by ERP goal, are the major activities focusing on ERP commitments specifically identified in the ROD (indicated by [ROD] after the activity title) and on agency efforts. This table does not list those ERP-funded activities—whether grants, directed actions or efforts by Implementing Agencies—currently being carried out or identified in previous program plans. This table also does not list those ERP-funded activities that will be carried out by non-Implementing Agencies; however, a list of new projects funded in the prior year can be found in the Accomplishments section. The ERP expects to fund projects that will contribute to all ERP tasks, goals, and commitments through Stage 1. More detailed information about the projects and other issues will be available in the Ecosystem Restoration Program's Year 5 Annotated Budget for Implementing the Single Blueprint (yet to be completed).

The *Draft Stage 1 Implementation Plan* presents the restoration and information gathering priorities for the ERP in its PSP process during the first seven years of the Program. As outlined in the document, these Stage 1 efforts were structured to accomplish significant improvement in Bay-Delta ecological health using the adaptive management approach as new information became available. Two main issues have adversely affected the ERP's ability to move forward with many of the actions outlined in the draft plan. The first issue is insufficient funding; the second issue is the State contracting process.

TASK: PLANNING
All Program Goals
Develop regional implementation plans – The ERP is committed to developing and refining regional implementation plans for each of the four ERP regions within the ERP's geographic scope. The ERP will examine the scientific foundation for actions, targets and milestones and will to refine and prioritize actions during the regional planning process. Regional plans for most of the Delta Region and part of the Suisun Marsh portion of the Bay Region are underway. Remaining regional planning will be initiated during Stage 1. The Implementing Agencies will collaborate with other agency GIS staff to the extent needed to ensure this support is provided. Schedule: Through ERP implementation period.

Develop strategies for high priority topics – The ERP is committed to developing and refining strategies for addressing high priority topics as needed. The ERP expects to continue implementing the strategy to address mercury and to develop a strategy to address restoration-related dissolved organic carbon issues, and a multi-species, habitat-based conservation strategy focusing on giant garter snake and other related wetland-dependent species.

Schedule: Through ERP implementation period.

Milestones Assessment—Milestones are a list of ERP, Multi-Species Conservation Strategy (MSCS), and Water Quality Program actions the CALFED Program will implement in Stage 1 to address covered species. The MSCS-ERP Milestones represent the Implementing Agencies' objectives for ERP implementation that would allow covered species to make significant progress toward restoration and recovery. As stated in the ROD, the ERP Implementing Agencies will revise the milestones as necessary. During Year 5, a long-term program of milestone assessment will be developed to ensure that the ERP, MSCS, and Water Quality Program are implemented in a manner and to an extent sufficient to sustain programmatic FESA, CESA, and NCCPA compliance for all Program elements. The assessment process could include an extended scientific analysis of the milestones, annual reports and completing data base linkages between agencies and programs.

Schedule: 2007.

Develop an annual budget for the Single Blueprint for Restoration and Recovery – The ERP has produced a Single Blueprint—now entitled the Annotated budget for Implementing the Single Blueprint—budget document for Years 1 through 4. The ERP is working on a Year 5 Annotated Budget for Implementing the Single Blueprint, and will continue to work with Implementing Agencies to make the document effective and timely. This annual budget document shows funding allocations that help support the unified and cooperative approach to restoration activities among the Implementing Agencies and other CALFED agencies for carrying out the Single Blueprint concept for restoration and recovery.

Schedule: Completed annually

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Goal 1: Recover Endangered and Other At-Risk Species and Native Biotic Communities

Wild Chinook Salmon and Steelhead Studies in the Upper Yuba River Watershed and Other Fish Passage Projects through the Fish Passage Improvement Program – ERP established the stakeholder group and identified key issues. ERP also completed the scopes of work for implementing the studies and a Technical Review Panel review of the study plans. The study team has initiated work on the studies and is currently collecting information to characterize current conditions. In addition, work to be accomplished includes: developing analysis scenarios for the five passage options; preparing interim work products for the Bay-Delta Program, stakeholder, and Technical Review panel review; initiating analysis of preliminary fish passage options; and preparing a final feasibility report for the Bay-Delta Program, stakeholder, and Technical Review Panel review.

Schedule: Ongoing

Focused Research in Suisun Marsh—A Bay-Delta Science Consortium workshop conducted in collaboration with the Science Program identified key research needs for the Suisun Marsh, including levee stability, subsidence, waterfowl management, and at-risk species recovery. Research that meets these needs will be considered when priorities for the next project proposal solicitations are developed by the Science Program and the ERP. A list of goals, issues, and possible solutions that were developed at the workshop can be found at http://www.baydeltaconsortium.org/education/workshops/index.

Schedule: Ongoing

Goal 2: Rehabilitate Ecological Processes

Restore Habitat and Hydraulic Needs on Frank's Tract in the Delta [ROD] –The ERP funded the *Feasibility Study of Ecosystem and Water Quality Benefits Associated with Restoration of Frank's Tract, Big Break, and Lower Sherman Lake*. This $1.2 million study is scheduled for completion one year after subcontracts were signed. After the feasibility report is completed a preferred pilot project proposal will be submitted for next-phase funding. After the feasibility report is completed an assessment of the contributions of a preferred pilot project to ecosystem restoration will be completed to determine if a proposal will be submitted for next-phase ERP funding.

Schedule: Completion one year after subcontracts are signed.

Implement Integrated Flood Management, Ecosystem Restoration, and Levee Restoration under the *Sacramento-San Joaquin River Basins Comprehensive Study* – An interim report and technical documentation for the Comp Study are complete Bay-Delta Program funding was secured for the Hamilton City Flood Damage Reduction and Environmental Restoration Feasibility Study, which is an initial component of the Comp Study. ERP will continue working with the USACE as it develops the Comp Study to ensure that future Comp Study projects coordinate with the CALFED Bay-Delta Program. Funds were provided for the California State Reclamation Board's *Two-Dimensional detailed Hydraulic Model for Determining Flood Conveyance Impacts of Ecosystem Restoration Projects in the Yolo Bypass and for the Deer Creek Watershed Conservancy's* Lower Deer Creek restoration and Flood Management Feasibility Study and conceptual Design. These reports may provide guidance for future Comp Study implementation projects that could be carried out consistent with achieving the ERP strategic goals and objectives.

Schedule: Ongoing

Goal 5: Prevent Establishment of and Reduce Impacts from Non-Native Invasive Species

Analyze Alternatives and Develop Implementation Plan for Ridding Northern Pike From Lake Davis—An analysis of alternatives for removing all northern pike (*Esox lucius)* from Lake Davis and preventing reintroductions or introductions elsewhere in California will be developed working closely with stakeholders such as the locally-based Lake Davis Steering Committee, the NIS Watershed Coordinator, and NIS Program Coordinator. When the alternatives have been fully screened and addressed in public forums, an implementation plan will be developed and undergo full environmental analysis. Protecting public health will be a critical component in plan development and implementation, and will be fully coordinated with the appropriate state and county entities. A plan to rid pike from Lake Davis will then be implemented in the future.

Schedule: Completion 2005.

Goal 6: Improve or Maintain Water and Sediment Quality

Assist Existing Agency Programs to Reduce Turbidity and Sedimentation; Reduce Impairment Caused by Low Dissolved Oxygen Conditions; Reduce Impacts of Pesticides; Reduce Impacts of Trace Metals, Mercury, and Selenium; Reduce Salt Sources; and Increase Understanding of Toxicity of Unknown Origin [ROD] – The ERP has provided approximately $44 million for 42 water quality projects. Staff will continue to work with state and local water quality agencies to collaborate and coordinate water quality activities such as joint projects and information sharing. Water quality projects that have been funded to date will be evaluated and data gaps will be identified. Additional research, monitoring, and source control projects will be solicited and funded, as appropriate.

Schedule: Ongoing

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TASK: IMPLEMENTATION

All Program Goals

Proposal Solicitation Package– The ERP will use the results of the first milestones assessment to help identify those elements of the *Draft Stage 1 Implementation Plan* that ought to be considered as high priorities for the 2004-05 proposal solicitation cycle. The Working Landscapes Subcommittee has provided a framework to guide solicitation for projects to assist farmers in integrating agricultural activities with ecosystem restoration, as defined in the "State Water Quality, Supply and Safe Drinking Water Projects, Coastal Wetlands Purchase and Protection Act" (Proposition 50). The ERP will use this framework as it develops its 2004-05 solicitation cycle.

Schedule: Completion 2005

Goal 1: Recover Endangered and Other At-Risk Species and Native Biotic Communities

Improve Fish Passage on Butte Creek, Pacific Gas & Electric Company diversion dams on Battle Creek, Woodbridge Dam on Mokelumne River, and Clough Dam on Mill Creek [ROD] – Since 1995, the ERP has funded 19 fish passage modification or dam removal projects on the above-listed streams for about $66.5 million. Clough Dam was removed and an improved Woodbridge Dam is under construction. The ERP expects projects to continue on lower Butte Creek and Battle Creek and to complete review of restoration plans for Battle Creek.

Schedule: Completion 2007

Implement Constant Fractional Marking Program for Central Valley Chinook Salmon – The ERP funded the planning phase of the Constant Fractional Marking Program for Central Valley Chinook Salmon. This program is designed to monitor the progress toward meeting ERP goals for recovery of at-risk salmon stocks and harvest management of non-listed stocks by accurately assessing the hatchery contribution to Central Valley Chinook production. The program now needs to be carried out throughout the ERP implementation period.

Schedule: Ongoing

Improve Salmon Spawning and Juvenile Survival in Upstream Tributaries by purchasing up to 100 TAF per year by the end of Stage 1 [ROD] – The USFWS, an ERP Implementing Agency, is leading the Environmental Water Program (EWP) efforts to acquire the 100 TAF annually by the end of Stage 1. EWP planning is well underway, incorporating science-based implementation and local involvement. Negotiations for specific blocks of water began in 2004. The EWP has a goal of making one to three water acquisitions during Year 5, anticipates making annual water acquisitions through the end of Stage 1, and anticipates preparing an annual report summarizing program acquisitions and the degree to which science and adaptive management have been incorporated into the program.

Schedule: Ongoing to meet 100 TAF annual target

Fish Screen Projects—The ERP and Implementing Agencies, in collaboration with the CVPIA's Anadromous Fish Screen Program, anticipates reviewing and funding a selected number of fish screen projects as articulated in the *Draft Stage 1 Implementation Plan*. The AFSP manages federal funds that require a non-federal match, which highlights the need to coordinate the federal and state investments in this area. After the AFSP reviews are complete, the ERP Selection Panel would still be responsible for making recommendations about awarding funds to specific screen projects to ensure that these projects meet ERP standards and are integrated with other ecosystem restoration actions.

Schedule: Ongoing

Goal 2: Rehabilitate Ecological Processes

Complete Protection and Restoration of the Sacramento River Meander Corridor as part of the Sacramento River Conservation Area/SB 1086 Program (now referred to as the Sacramento River Conservation Area Forum) [ROD] – The ERP has allocated approximately $25 million to 11 projects directed at protecting and restoring the Sacramento River meander corridor. More than 2,000 acres have been acquired and 300 acres were restored; additional funding has been allocated to protect another 270 acres. ERP will continue to fund restoration and monitoring and complete sub-reach planning in coordination with the Sacramento River Conservation Area Forum. ERP actions in protecting and restoring the Sacramento River meander corridor include efforts to maintain and improve the existing flood control system.

Schedule: Ongoing

Goal 4: Protect and Restore Habitats

Implement Large-Scale Restoration Projects on Clear Creek, Deer Creek, Cosumnes River, San Joaquin River, and tributaries including the Tuolumne River [ROD] – The ERP has funded more than $79 million for restoration projects on the above-listed streams and rivers. The ERP highlighted critical information gaps; therefore, in Year 5, the ERP will continue to work with the Science Program to institute an Investigative Team to determine improve adaptive management opportunities for Clear Creek, Merced River and Tuolumne River, created by these investments. The ERP will continue to solicit proposals for specific activities.

Schedule: Ongoing

Restore Habitat in the Delta, San Pablo Bay, Suisun Bay and Suisun Marsh, and Yolo Bypass [ROD] – Nearly $73 million in ERP funds have been allocated to 34 restoration projects in the areas listed above. The ERP Implementing Agencies, USACE, and the State Coastal Conservancy will complete restoration plans and environmental documents for the Napa River salt ponds. The USACE and Coastal Conservancy, and DFG (for Napa River), will seek congressional authorization and appropriation for the USACE to implement the Hamilton Air Force Base-Bel Marin Keys and Napa River salt ponds restorations, which will be carried out by USACE and state co-sponsors. The ERP will continue to develop the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) and Suisun Marsh Implementation Plan. The Dutch Slough Tidal Marsh Restoration Project and North Delta Flood Control and Ecosystem Restoration Project are two large-scale Delta habitat restoration projects currently in the planning stages. Dutch Slough is expected to be a showcase for how the principles of adaptive management can be used to determine the best course of action.

Schedule: Ongoing

Goal 5: Prevent Establishment of and Reduce Impacts from Non-Native Invasive Species

Implement an Invasive Species Program [ROD] – In Years 5-8 the NIS Program will continue to focus on implementing the NIS Strategic Plan which includes evaluating progress and revising the implementation plan. Work will continue in providing technical assistance and coordination to regional efforts and watershed groups focusing on assessment and monitoring for NIS to improve rapid response to new invasions. Hazard Analysis and Critical Control Point (HACCP) training will be provided so implementation and monitoring projects can create HACCP plans to minimize the spread of NIS. Developing and maintaining an aquatic NIS reference collection will continue. The NIS program will also continue working with the results from ERP funded research, technical assistance, and implementation and restoration projects and working with state agencies to implement California's Aquatic Nuisance Species Management Plan.

Schedule: Ongoing

Goal 6: Improve or Maintain Water and Sediment Quality

Implement a Mercury Strategy—The ERP priorities for implementing the mercury strategy include: establishing a scientific review panel and a quality assurance program; developing a monitoring program; continuing public outreach and education activities related to fish consumption; seeking mercury research projects to fill critical gaps, and mine remediation projects that qualify for funding from Prop 13; and coordinating between researchers, restoration managers, agencies and stakeholders on mercury contamination issues. CDFG will complete the quality assurance program. The Department of Health Services will continue coordination of outreach and education activities, including pilot studies on fish consumption to identify people with the highest risk. Efforts will include recruitment of a mercury coordinator and establishment of scientific review panel for annual review workshops. All other priorities will be reflected in the PSP.

Schedule: Ongoing

Toxicity and Pesticide Investigations – Funds will be provided for the Regional Board to collect and evaluate existing information on current use pesticides and their potential for ecological effects. This will result in a prioritized list of watersheds and chemicals with the highest likelihood of causing toxicity to aquatic life.

Schedule: Ongoing

Improve Dissolved Oxygen Conditions in the San Joaquin River Near Stockton [ROD] – As a result of ERP funded research, the following actions were identified for ERP: gap analysis and screening of non-aeration alternatives; award projects for additional information about possible non-aeration alternatives; identify local agency/sponsor for aeration demonstration project; award aeration demonstration project to local agency/sponsor; and solicit, award, construct, operate an aeration demonstration project by a local agency/sponsor; and establish a scientific review panel.

The implementing agencies are proposing actions in the Delta over the next few years which carry out key ROD commitments. One of these actions includes the South Delta Improvements Program (SDIP) which could impact dissolved oxygen in the San Joaquin River. The agencies recognized certain implementation actions, such as dissolved oxygen implementation and SDIP are inter-related and should be coordinated. Plans are underway to develop an integrated Delta Improvements Package which will address certain water quality problems such as dissolved oxygen, concurrently with proposed water supply improvements.

Schedule: Ongoing

TASK: MONITORING

All Program Goals

Continue to develop and assess indicators – The ERP has been developing indicators since 1996 and recently worked with the Science Program to develop a draft set of prototype presentations of indicators. The ERP expects to develop a plan for further development of indicators, to solicit comments on that plan from the ERP's Science Board, the Science Program, and stakeholders to proceed with further development and monitoring of indicators.

Schedule: Draft indicators complete in fall 2004; development, assessment and refinement continuing thereafter

Focused Proposal Solicitation Package (PSP)—The ERP plans to solicit proposals for monitoring and evaluation of previously-funded projects. Without continued funding to monitor previously-funded projects, the ERP risks losing the opportunity to collect information necessary to inform future decisions. A broader solicitation (see under Implementation) will address other ERP tasks.

Schedule: Initiation in 2004; completion in 2005.

Implement Terrestrial and Aquatic Monitoring—The ERP, in collaboration with the Science Program and Interagency Ecological Program, will begin implementing key elements of the Terrestrial and Amphibian Monitoring Program (TAMP) and the Aquatic Monitoring Program (AMP) critical to assessing ERP processes and successes.

Schedule: Ongoing

Goal 1: Recover Endangered and Other At-Risk Species and Native Biotic Communities

Develop and Implement Comprehensive Monitoring Plans for Central Valley Steelhead and Central Valley Chinook Salmon Escapement– Development and implementation of monitoring plans for Central Valley steelhead and Chinook salmon escapement, including continued adult salmonid monitoring activities such as ladder counts, redd counts and carcass surveys, that will contribute to tracking progress toward achieving species recovery goals and ERP strategic goals and related objectives.

Schedule: Ongoing

Conduct Juvenile Salmon and Steelhead Outmigrant Sampling in the Mainstem and Tributaries to the Sacramento and San Joaquin Rivers- Continue to conduct monitoring activities such as operating rotary screw traps to track progress toward achieving species recovery goals and ERP strategic goals and related objectives.

Schedule: Ongoing

Goal 3: Maintain or Enhance Harvestable Species

Assess the Potential Need for Additional Fish Contamination Monitoring and Consumption Advisories in the Bay-Delta Watershed [ROD] – The ERP and other entities are jointly funding Phase I of a fish consumption study that includes public outreach and education. Several potential directed action projects that include fish tissue monitoring and public outreach and education will be revised and combined into one integrated proposal for resubmittal and potential funding in summer 2005.

Schedule: Completion 2007

Goal 6: Improve or Maintain Water and Sediment Quality

Data integration on water and sediment quality and fish contamination: A multi-agency coordinated effort has led to the development of a "consensus" database for reporting water, sediment and tissue data in a consistent and compatible format that facilitates data sharing and web-based availability. Funds will be provided for Dept. of Water Resources, in collaboration with CDFG and SWRCB, to implement the refined "consensus" database for new projects collecting water, sediment and tissue data, and to convert the existing data sets into the new format.

Schedule: Ongoing

TASK: OVERSIGHT AND COORDINATION

All Program Goals

Authority Oversight and Coordination for the CALFED Bay-Delta Program ERP – This task includes agency coordination for restoration, activities for regional coordinators, review and assistance with regulatory compliance issues, establishing and maintaining scientific review committees, developing annual work plans, developing a Single Blueprint for Restoration and Recovery, administering proposal or grant solicitation processes, tracking program progress, developing cross-cut budgets, and developing and reviewing State budget change proposals.

Schedule: Ongoing

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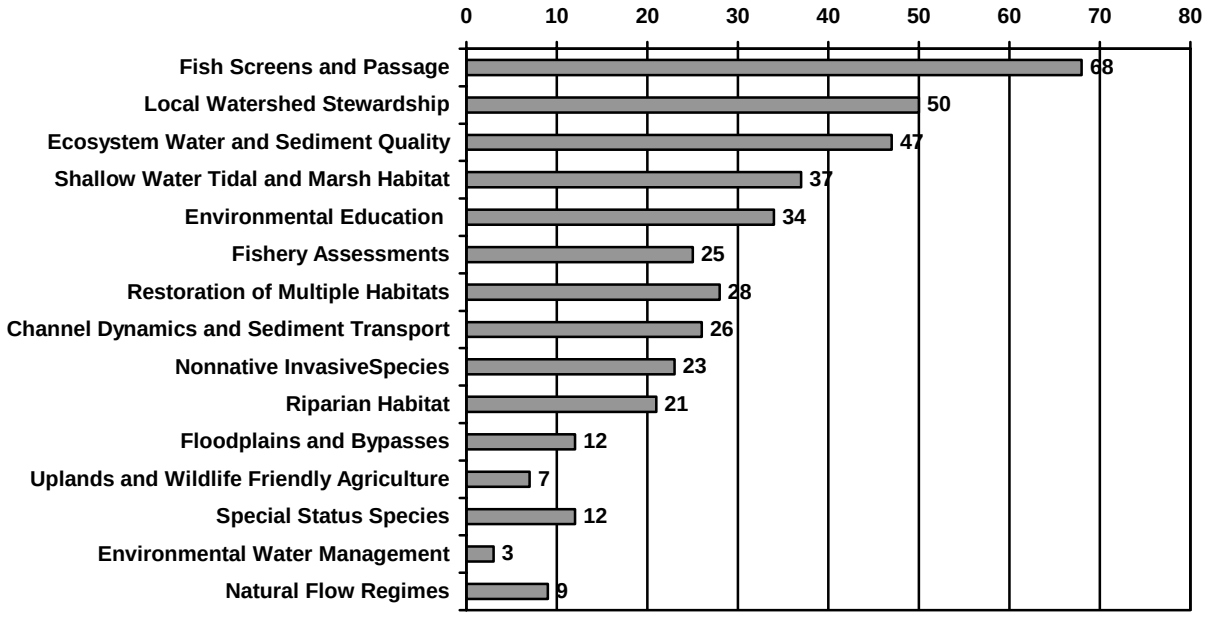
Schedule

The 30-year plan for ecosystem restoration has guided the 400-plus ERP projects directly designed to address ecosystem restoration. Given the time-scale of ecosystem restoration projects, many of the funded projects need to take place in phases; many ERP projects are at a point of needing next phase review and possible funding while others are in various stages of completion or just starting. Since ecosystem restoration has a 30-year implementation schedule, the information below provides insight into the areas in which ERP actions are taking place. Definitions of the project types may be found in the ERP *Draft Stage 1 Implementation Plan*.

Types and Number of Restoration Projects Funded by the ERP



Fund Sources and Amount of Funding to Support ERP Projects Through the 2002 PSP including Directed Actions in 2003

Fund Source	Percent of Total ERP Funding	Fund Source	Percent of Total ERP Funding
CVPIA Habitat Restoration Program (b)(1)(other)	0.3%	CVPIA Anadromous Fish Restoration Program (3406)(b)(1)	2%
Federal Cost Share for PSP Projects	7%	State Cost Share for PSP Projects	13%
Local Cost Share for PSP Projects	11%	Prop. 13. DWR Flood Protection Corridor Program	0.9%
Prop. 13. Environmental Water Quality	0.8%	Prop. 204, Chapter 7	65%

Integration with Science, Environmental Justice, and Tribal Relations

Science:

The ERP is committed to a science-based, adaptive management approach to ecosystem restoration. Ensuring the scientific credibility of the ERP is an important responsibility of the Authority and the Implementing Agencies because a science-based approach will help maximize the effectiveness of the ERP and build confidence and support for the program's efforts.

The ERP coordinates with the Science Program to incorporate review, insights, and advice from independent science experts to ensure that the best possible scientific information guides decision-making within the ERP and within programs linked to the ERP. The Science Program's approach for incorporating independent science expertise involves four levels of working groups along with independent peer review by individuals: the CALFED Bay-Delta Program-wide Independent Science Board, program-specific Science Boards[1], Standing Boards[2], and Technical Panels. In Years 1 and 2, the ERP provided more than $15 million to the Science Program to support scientific studies associated with restoration.

The Science Program is involved in ERP efforts such as the Agency/Stakeholder Ecosystem Team (ASET), provided assistance in developing the *Draft Stage 1 Implementation Plan*, assists with external scientific review and research technical review for proposals, and many more scientific review coordination efforts.

Several linkages exist between the ERP Implementing Agencies and the Science Program to ensure integration and coordination of resource management, policy decision-making, and science program activities. For example, DFG, USFWS, and NOAA Fisheries are member agencies of the Interagency Ecological Program (IEP) of the Sacramento-San Joaquin Estuary. The Science Program is integrated with the IEP at various levels within the IEP organization and is represented in the IEP Science Advisory Group and Agency Coordinators. The Science Program provides input to the IEP work plan and provides updates of its activities at the annual IEP conference. Another example of integration is the collaboration between ERP, Science Program, and CVPIA Anadromous Fish Restoration Program's independent review processes, including the Adaptive Management Forums for Clear Creek and the Tuolumne and Merced rivers.

The ERP uses these various levels of science boards and panels, and promotes overlap in membership across the panels to provide panelists with an increased understanding of ERP-wide issues. The ERP's Science Board (ERPSB) consists of 13 international and local experts. ERP standing boards (or panels) include the Selection Panel, the Upper Yuba River Studies Technical Review Panel, the Mercury Peer Review Panel, and the Adaptive Management Forum for Large-Scale River Restoration. The ERP plans to

[1] Science Boards advise programs regarding the application of science and effectiveness of science practices within that program.

[2] Standing Boards combine the expertise and experience of individuals who together can represent the range of interdisciplinary knowledge of the variety of issues and challenges that converge in a program, a complicated issue, a specific region (e.g., the Delta), or a circumstance where multiple issues need to be addressed.

initiate additional standing review panels including a Wetland and Floodplain Restoration Standing Review Panel, the Stockton Dissolved Oxygen Review Panel, and a Sacramento River Corridor Restoration Standing Review Panel.

In its recent draft Annual Report, the ERPSB noted the significant progress the ERP has made in incorporating independent, objective science into program planning and implementation. Notable examples include using outside peer reviews in selecting restoration projects for funding; requiring project applicants to include conceptual models with their project applications; establishing the Adaptive Management Forum to review large-scale river restoration projects; and reviewing and reorganizing the ERP milestones and developing science-based rationale for these milestones.

Even with the progress so far, the ERPSB made several recommendations regarding how the ERP could improve the scientific foundation of its program and more effectively engage science in the management decision making process. Recommendations included:

- Providing more attention to and scientific engagement in the monitoring and assessment aspects of funded restoration projects. These are critical steps in adaptive management. Continuous monitoring (including pre-project monitoring), evaluation, and adaptation will be needed if long-term restoration is to be realized.
- Increasing the existing feed-back loop component of Adaptive Management, assessing and acting upon the results.
- Implementing recommendations from the Adaptive Management Workshop. The ERPSB is concerned about the slow rate in which the concepts and practical steps developed at the workshop are being carried out.
- Enhancing efforts to develop conceptual and operation models to aid decision making. These should include a set of nested models, including an integrated regional model and location and issue specific models that are consistent with this larger model.
- Continuing the work in critically analyzing and articulating the scientific rationales for ERP Milestones.
- Completing a comprehensive review of ERP funded projects (Phase 3 of the Projects Evaluation).
- Updating and refining the ERP Strategic Plan to provide timely guidance for the ERP.
- Developing and adopting a set of performance indicators.

The ERP and Science Programs will use the ERPSB's recommendations as a basis for planning staff and project actions. Members of the ERPSB anticipate continued collaboration with both the ERP and Science Program staff in assisting those programs in their respective efforts at using science to help direct program actions.

Another issue of concern, but not called out by the ERPSB as a specific recommendation is the "closing of the adaptive management loop." In the adaptive management model preferred by ERP and Implementing Agencies, information from activities would feedback into the decision making chain and allow for modified approaches as new information is developed. This feedback loop requires monitoring and reporting on a timely basis. Among the factors limiting the feedback loop is adequate funding and contracting ability.

Performance Measures and Indicators. Indicators are ways to evaluate ecological responses to program actions. In 1996, the ERP worked with agencies, stakeholders and other interested parties to develop indicators for ecosystem restoration. After developing a framework for selection rationale, a slate of about 150 indicators were selected for the ERP; these can be found in the Ecosystem Restoration Program Plan Volume I. In 2003 a workgroup representing the CALFED Bay-Delta Program implementing agencies was charged with refining the ERP indicators. The refined set of indicators will be more sensitive to the scale of ecological changes that could result from ERP actions than general indicators previously selected, which reflected general ecological conditions, many of which are affected by factors and events beyond the scope of the CALFED Bay-Delta Program. A draft work plan is under review by the Authority's management, and is subject to subsequent review by ERP's Science Board, the Science Program, and stakeholders.

The Science Program is charged with developing performance measures that demonstrate the progress that a program has made toward its stated goals. The measures do not focus solely on ecological trends. They can include administrative considerations such as the number of projects completed, number of dollars spent, etc. This process integrates with, but does not replace, the ERP's efforts in refining its ecological indicators.

One ERP-focused effort that contributes to the Science Program's and implementing agencies workgroup's charge is the slate of conceptual models being developed by the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) workgroup and the Suisun Marsh Charter Process workgroup. The conceptual models will show the interrelationships among the selected indicators and performance measures with ERP actions.

Environmental Justice and Tribal Relations:

Environmental Justice and tribal relations are important implementation commitments of the Bay-Delta Program, and are important components of the ERP. The ERP maintains an extensive list of local agencies, tribes, and nonprofit organizations, including many representing economically disadvantaged communities, to whom it provides notices about the ERP's activities and proposal solicitation packages. The ERP holds workshops to explain grant-making guidelines, criteria and processes in communities in its solution area and provides assistance to grant seekers through a toll-free telephone number and on-line materials. Local agencies and tribes are notified when the ERP receives proposals within their jurisdictions so they are aware and can provide comments if they choose to do so. Their comments are considered in grant recommendations.

Two activities illustrate how ERP integration of environmental justice concerns and tribal relations: the ERP funded studies involving fish consumption and the Environmental Water Program.

Recent data indicate that fish in the Bay-Delta watershed can have concentrations of mercury, PCBs, and organochlorine pesticides that may present a health hazard to certain populations that may be disproportionally affected by the contaminants. These populations include people who rely heavily on local fish as a food resource, pregnant women and children, who are particularly sensitive to the effects of fish contamination. In addition, some of these potentially high risk groups may be more difficult to inform due to language and cultural barriers. Since 2001, ERP staff has worked collaboratively with members of the Environmental Justice Subcommittee, water quality and public health agencies, and other community groups to develop a strategy to address fish contamination and public health concerns. ERP has funded studies and environmental outreach education efforts to address bioaccumulation and fish consumption.

The Environmental Water Program (EWP) undertakes its process for identifying willing sellers and designing and monitoring projects by using teams made up of local stakeholders, local agency representatives, a science team, and other agency representatives to ensure that all projects are locally-sponsored and locally-acceptable. All interested parties are welcome to participate on these teams. EWP staff has done extensive outreach to inform local interests about each priority watershed of the program, and how they can participate and have direct input into the EWP. EWP communicates with local organizations, local legislative representatives, tribal interests, and local government and government staff. EWP publishes notices of its meetings in local papers; routinely makes presentations to Bay-Delta Public Advisory Committee's ecosystem restoration, watershed, and environmental justice subcommittees, and participated in a federally-sponsored Tribal Forum in early 2004.

Among the other issues that the ERP and the Environmental Justice Subcommittee will work to address is that of identifying potential third party impacts from environmental restoration activities.

The ERP and Implementing Agencies also will work with the CBDA Tribal Relations Coordinator to help foster more meaningful tribal input and participation on issues or concerns of the tribes. Among the opportunities to do so are:

- Tribal Water Programs (Clean Water Act 106, 319H, etc.) The majority of California Tribes developed USEPA Tribal Environmental Programs with extensive water protection and water quality programs that should be considered in ecosystem restoration project planning and implementation.
- Tribal MOU'S/Programmatic Agreements (PA's). Memorandums of Understanding (MOUs), Memorandums of Agreement (MOAs) and Programmatic Agreements (Pas) with California Tribes are an effective method of conducting initial consultation and final decision-making in implementing the ERP.
- Stewardship. Tribes are very aware of stewardship concepts and have formed partnerships with many local agencies and environmental groups to promote such concepts and on-the-ground projects. The ERP may be able to assist in its capacity-building function in helping to continue existing connections and foster new relationships between Tribes and other stakeholder groups to meet mutual environmental restoration needs.
- Bay-Delta Public Advisory Committee (BDPAC) Tribal Representatives. California Tribes have been involved with CALFED for several years in various stakeholder groups and other public forums. There currently are two Tribal Advisory Members serving on BDPAC and several of its subcommittees, including the Ecosystem Restoration Subcommittee. CBDA's Tribal Coordinator, along with the ERP and Implementing Agencies, can assist in relaying information about ERP implementation between BDPAC, its subcommittees and the California Tribes.
- Role of the Bureau of Indian Affairs (BIA). Although the BIA is not a CALFED member agency, it is the lead federal agency for protecting Indian Trust Assets (ITAs). The BIA reviews environmental compliance documents of CALFED projects impacting ITA's.
- Grant opportunities/educational outreach. The ERP and Implementing Agencies will work with the CBDA Tribal Coordinator to continue to notify tribal governments of grant opportunities that promote ecosystem restoration.

The ERP, Implementing Agencies, and the CBDA Tribal Coordinator will continue to work together to explore other opportunities to enhance tribal relations and outreach to tribes regarding ecosystem restoration and related issues.

Cross-Program Relationships

Environmental Water Account (EWA) – Ensuring that the short- and long-term water management efforts of the projects protect the ecosystem or are consistent with or complementary of the ERP is a key linkage that will be the responsibility of CDFG, NOAA Fisheries, and the USFWS.

EWA Implementing Agencies are CDWR, USBR, USFWS, NOAA Fisheries, and CDFG. USFWS, NOAA Fisheries, and CDFG are also ERP Implementing Agencies.

Storage, Conveyance, and Conjunctive Use – Ensuring that the short- and long-term water management efforts of the projects protect the ecosystem or are consistent with or complementary of the ERP is a key linkage that will be the responsibility of CDFG, NOAA Fisheries, and the USFWS.

Many planned Conveyance Program actions could have ecosystem impacts that will be addressed in project-specific environmental documents. Planned Conveyance Program actions include constructing a new screened intake at Clifton Court Forebay, increasing SWP pumping, constructing operable barriers on the south Delta, revising Delta Cross Channel (DCC) operation, and implementing restoration efforts as part of the North Delta Flood Control and Ecosystem Restoration Improvement Program. ERP involvement in the North Delta Flood Control and Ecosystem Restoration Improvement Program planning efforts includes ongoing participation on the North Delta Agency Team, North Delta Improvement Group, and recently increased communication among ERP agency scientists and North Delta Program staff.

The ERP Implementing Agencies engage in the Storage program through their regulatory processes, participating on technical panels, and in their efforts to develop and share science supporting Storage Program decisions.

Water Transfer – The EWA, ERP, and the Environmental Water Program (EWP) are all interconnected by the shared goal of recovering at-risk fish species. There are undeveloped opportunities for cross-program linkages between ERP and the Water Transfer Program. To develop cross-program linkages, the EWP developed a process for selecting pilot water acquisitions that includes a related program coordination plan (potential EWP projects will be evaluated by staff from all programs that seek to acquire or transfer water).

Drinking Water Quality (DWQ) – The ERP has worked closely with the DWQ Program in developing information and selecting projects to address water quality issues that impact both ecosystem and human health. For example, ERP coordinates its San Joaquin Salinity and Selenium Reduction activities with DWQ. To date, the ERP has invested over $44 million in water quality projects, many of which have drinking and environmental water quality benefits. In addition, ERP investments in other areas, such as watershed protection and restoration of riparian buffer zones are likely to reduce run-off from urban and agricultural sources and therefore improve drinking water quality. An example of an ERP project that meets both ERP and DWQ goals is the San Joaquin River Real-time Water Quality Management Program.

In cases where ERP investments may adversely affect drinking water quality, the ERP has invested in research and monitoring to better understand potential effects. The ERP has invested over $10 million

in six different research projects that investigate the potential impacts to drinking water from wetland restoration and organic carbon as a food resource for the aquatic ecosystem.

Water Use Efficiency (WUE) – Improvements in water use efficiency have the potential to benefit aquatic habitats, through improvements in both the quality and quantity of instream flows. The water use efficiency investments take place at the local level, and to that end, the Implementing Agencies' regional coordinators play a significant role in the ERP-Water Use Efficiency Program linkage.

Watershed – Prior to the Watershed Program developing its ability to provide funding, the ERP funded capacity building for local watershed groups. Now that the Watershed Program funds such capacity building, the ERP has focused on funding restoration projects developed in support of local watershed plans. Complementary efforts in numerous watersheds have been funded by both programs through close collaboration during project selection processes. Two ERP Implementing Agencies (DFG and USFWS) are also Implementing Agencies for the Watershed Program.

The ERP established the EWP to acquire water on upstream tributaries to the Bay-Delta system to improve spawning and rearing habitat for salmonids and to implement ERP flow-related objectives on these tributaries. EWP water acquisitions will use communication networks established by prior ERP and continuing Watershed efforts.

Levee System Integrity – The ERP has invested more than $85 million in at least 31 projects related to the Levee System Integrity Program, including projects that specifically address levee system integrity and others that help the Levee program meet its habitat enhancement requirements for levee maintenance. An example of an ERP project that meets both ERP and Levee System Integrity needs is a *Feasibility Study of the Ecosystem and Water Quality Benefits Associated with Restoration of Franks Tract, Big Break, and Lower Sherman Lake*. A wildlife-friendly levee habitat restoration and management project on McCormack-Williamson Tract also contributes to improved levee system integrity.

1 Funding

Ecosystem Restoration ($ in millions)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Subtotal	Yr 8	Grand Total
State	$36.8	$158.3	$128.2	$128.9	$94.7	$7.1	$7.7	$561.7	$7.7	$569.4
Federal	$11.5	$3.5	$4.7	$2.6	$0.6			$22.9		$22.9
Local	$19.7	$16.5	$16.5	$20.0				$72.7		$72.7
Water User	$18.8	$34.0	$25.5	$22.5	$27.8	$7.3	$7.3	$143.2	7.3	$150.6
Program Funding Total	$86.8	$212.2	$174.9	$174.1	$123.1	$14.4	$15.0	$800.5	$15.0	$815.5
Projected Needs Estimate										
Original ROD Estimate (Aug, 2000)	$228.0	$190.0	$163.0	$168.0	$220.0	$218.0	$218.0	$1,405.0		$1,405.0

NOTES:

1. Original ROD Estimate represents the original Stage 1 funding estimates from the Record of Decision (Aug 2000).

2. Funding for Years 1 - 3 reflect actual State, Federal and Local obligations, commitments, encumbrances and expenditures updated to reflect actual fund amounts for each task. State funds for Years 4 & 5 reflect the April 1st Governor's budget. Federal funds are the Year 4 enacted and President's FY 2005 proposed budget. Projected funding shown in Years 6 - 8 includes remaining state bond funds that have been scheduled for future years and ongoing State base funding, plus estimates for local matching to grants for years where bond funding is available. Federal appropriations beyond Year 5 are unknown.

3. The State budget includes funding for the California Bay-Delta Authority (CBDA), Department of Water Resources (DWR), Department of Fish and Game (CDF), Resources Agency, and the Wildlife Conservation Board (WCB).

4. The Federal budget includes funding for the U.S. Bureau of Reclamation (Reclamation), U.S. Army Corps of Engineers (USACE), U.S. Fish & Wildlife Service (USFW), and the National Marine Fisheries Service (NMFS).

5. Water User/Local funding includes State Water Project Funds and CVPIA Restoration Funds that are collected from state water contractors and Central Valley Project water users, but are budgeted and appropriated through the federal and state governments. Local grant matching funds are estimated and updated as information becomes available.

Funding by Task

Ecosystem Restoration ($ in millions)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Subtotal	Yr 8	Grand Total
1) Planning	$9.0	$9.4	$10.1	$14.0	$0.7	$0.1	$0.7	$44.0	$0.7	$44.7
2) Research	$1.2	$3.7	$1.9	$8.8				$15.6		$15.6
3) Implementation	$74.6	$189.7	$155.1	$123.8	$120.4	$12.3	$12.3	$688.1	$12.3	$700.4
4) Monitoring		$3.6	$3.1	$4.1				$10.9		$10.9
5) Oversight & Coordination	$2.0	$5.8	$4.7	$23.3	$2.0	$2.0	$2.0	$41.9	$2.0	$43.9
Program Funding Total	$86.8	$212.2	$174.9	$174.1	$123.1	$14.4	$15.0	$800.5	$15.0	$815.5
Projected Needs Estimate										
Original ROD Estimate (Aug, 2000)	$228.0	$190.0	$163.0	$168.0	$220.0	$218.0	$218.0	$1,405.0		$1,405.0

NOTES:

1. Original ROD Estimate represents the original Stage 1 funding estimates from the Record of Decision (Aug 2000).
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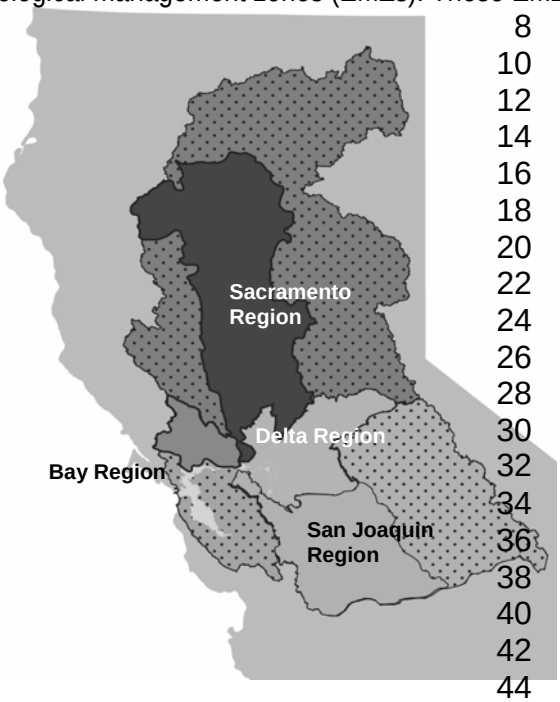
Geographical Distribution of Activities

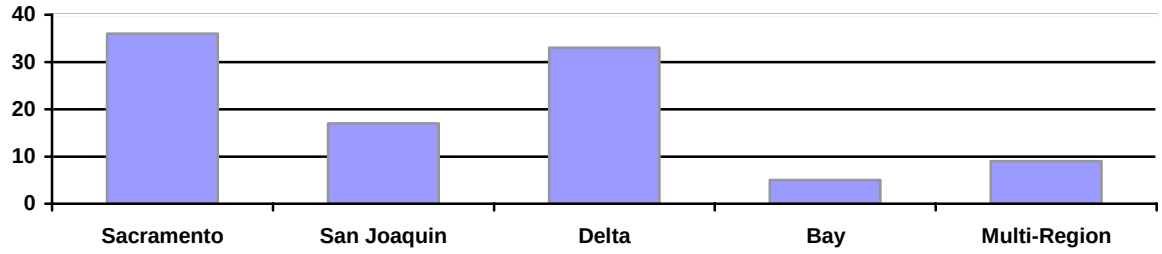
Among the ways in which ERP categorizes its activities is by ERP Region, or geographical distribution of its activities. The ERP geographic scope differs slightly from the overall Bay-Delta Program regions because the focus of the ERP is on the Bay-Delta and its watersheds. The ERP geographic scope fits within four of the five CALFED regions; activities within the ERP geographic scope are further divided into ERP ecological management zones (EMZs). These EMZs are subdivided into smaller ecological management units (EMUs).For example, EMZ-1, the Sacramento-San Joaquin Delta and EMZ-11, the Eastside Delta Tributaries are both part of the ERP Delta Region. These EMZs are divided into four and three EMUs, respectively.



The figure shows the ERP geographic scope; the solid areas represent the area where most of the ecosystem restoration activities have taken place, as guided by the Ecosystem Restoration Program Plan (ERPP) and other guiding documents. For more information please see the ERPP Strategic Plan.

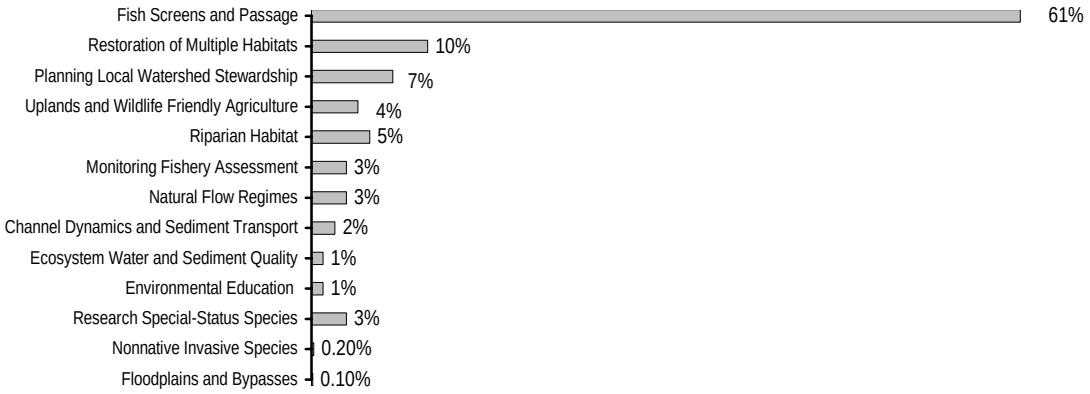
The tables below show ERP funding by ERP Region and by ERP topic areas. Topic areas provide a better depiction of the variety of ERP projects than organizing by goals would achieve. In terms of percent of total money allocated ($476,062,604), two-thirds of the funds are allocated to projects in the Sacramento and Delta regions, while the remaining two regions and the Multi-Region, Landscape and Program-wide category make up the final third. Chart 1 shows the percentages of project dollars spent in each region.

Chart 1. ERP Project Funding by ERP Region

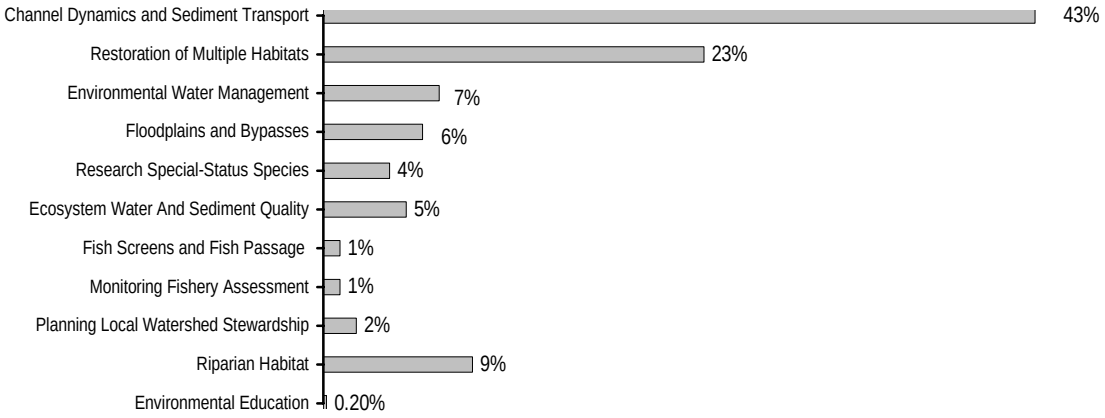


Regional Spending

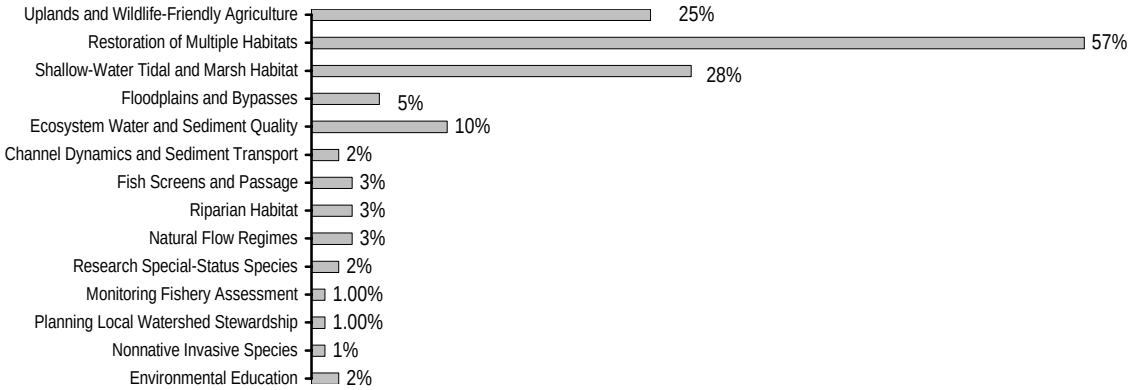
Percent of total spent on Sacramento Region ERP Actions



Percent of total spent on San Joaquin Region ERP Actions



Percent of total spent on Delta and Eastside Tributaries Region ERP Actions



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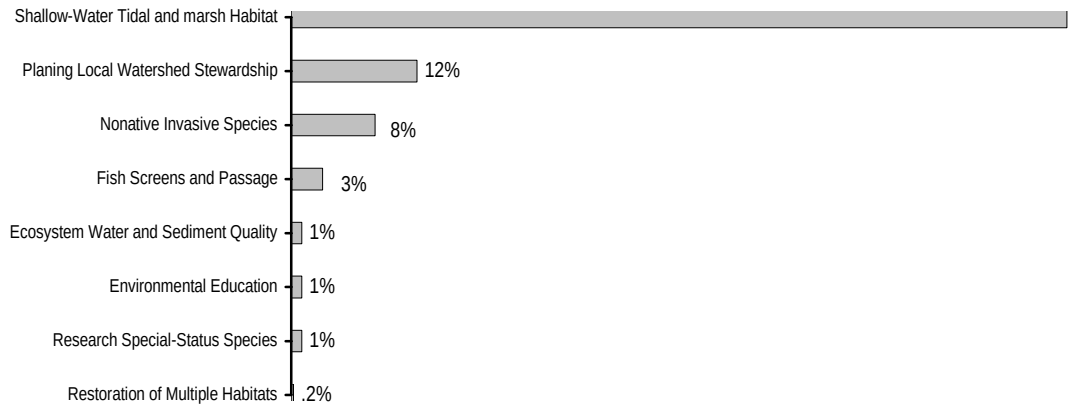
Percent of total spent on Bay Region ERP Actions



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