

Table 3.1 Early Implementation Actions

Jan 99 Bundle Action #	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)
CMARP						
53.15	Monitoring, Assessment, and Research	Develop a process to design and implement the monitoring programs for the CALFED actions so that the data from the monitoring programs are interlinked.		CMARP	\$6.3	\$10.3
					\$6.3	\$10.3
Drinking Water Quality						
3.2	Veale/Byron Tract Discharge Management	Possible cost share with CCWD, coordination with other affected entities	Improve sources of drinking water	DWQ	\$0.5	\$0.9
3.4	Bay Area Blending Assessment			DWQ	\$0.1	\$0.1
36.1	Assessment of Sources and Magnitudes of Loads of Drinking Water Constituents of Concern: Evaluation of Existing Conditions			DWQ	\$0.1	\$0.3
36.2	Assessment of Sources and magnitudes of Loads of Drinking Water Constituents of Concern: Monitoring of Changes, Research, Model Improvements		Improve sources of drinking water	DWQ	\$0.55	\$3.2
					\$1.25	\$4.5
Ecosystem Restoration Program						
2	Ecosystem Restoration Program: South Delta Region	Identify and advance specific regional ERP goals, coordinated with other facilities and operational changes, such as flood protection, barriers, and export operations.	Improve fisheries and wildlife habitat	ERP	\$3.0	\$3.0
2.1	Agricultural Diversions Screening Program	Consolidate and screen local ag diversions based on an appropriate priority and initiate a screen maintenance program, per Water Quality Control Plan, May 1995. A component of #31.	Reduce fisheries entrainment impacts	ERP	see 31	see 31
3.6	Seek to provide water for San Joaquin River flows to meet WQ, VAMP, ESA, and other flow objectives through water purchases/transfers from willing sellers.	Component of Environmental Water Account. See #93, #94	Increased instream flows during significant periods	ERP	see 94	see 94
13	Restore Tidal Marsh and Riparian Habitats along Georgiana Slough	The assumption is that improved habitat will decrease the diversion effect on fisheries.	Improve fisheries and wildlife habitat	ERP	\$1.5	\$1.0
18	Implement Suisun Marsh Diversion Screening Program	It is assumed that fish screens in this area will aid in the recovery of threatened or endangered fish species.	Reduce fisheries entrainment impacts	ERP	\$0.25	\$1.0
19	Suisun Marsh and Van Sickle Island	Evaluate and restore tidal wetlands.		ERP	\$6.0	\$3.0
20	Provide Needs and Opportunities Analysis for Improving Ecosystem Restoration and Flood Bypass Habitat for the Yolo Bypass area	This is a portion of a general effort for flood bypass areas, including Colusa Basin, Butte Basin, Sutter Bypass, Yolo Bypass, Chowchilla Bypass, Eastside, Fresno Slough, and James Bypass. See action 42.	Improve diverse habitat, fish passage, and WQ	ERP	\$1.0	\$6.0

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23	Frank's Tract Habitat Restoration	Further evaluate and restore portions of Frank's Tract to provide for channel islands and tidal wetland habitat using clean dredge materials and natural sediment accretion. Combine the habitat restoration with a program to control or eradicate nuisance aquatic plants.	Create shallow water habitat, riparian	ERP	\$1.5	\$1.5
24	Dredged Materials Reuse	Pilot Studies and Implementation, as materials and appropriate opportunities become available.	Materials for habitat, levees	ERP	\$0.5	\$0.5
31	Evaluate the Need to Screen Small Diversions in the Delta and Implement	Consolidate and screen local ag diversions based on an appropriate priority and initiate a screen maintenance program, per Water Quality Control Plan, May 1995	Reduce fisheries entrainment impacts	ERP	\$1.0	\$1.5
32	Nonnative Invasive Species (NIS) (Note: Expand to actions in SF Bay and Suisun Marsh, to reduce further invasions and eradication of <i>Lepidium</i>)	Demonstration projects. This action is part of an ecosystem-wide effort to control non-native invasive species with early emphasis on the Delta and the Bay.		ERP	\$2.0	\$3.0
34	ERP Levee Relocations, Berms, Veg. Management	Cost included with In-Channel Island Restoration	Delta Shallow Water, tidal wetlands, and riparian habitat	ERP	\$1.0	\$1.0
35	In-Channel Islands Restoration		Tidal wetlands, riparian habitat, special status species	ERP	\$1.0	\$1.0
37	Determine Key Acquisition Areas for Conservation of Special Status Plant Species in the Delta, Suisun Marsh, and S.F. Bay			ERP	\$0.5	\$1.0
38	Studies to Determine Propagation Techniques and Restoration Protocols of Rare Plants in the Delta, Suisun Marsh, and S.F. Bay			ERP	\$0.5	-
40	Sacramento River Meander Corridor Studies and Implementation	Continue studies and demonstration projects which address potential changes in hydrology and geomorphology, local economic impacts, and other issues associated with ongoing riparian restoration work.		ERP	\$8.0	\$8.0
41	American River Corridor Management Plan	Develop a corridor management plan		ERP	\$0.25	-
42	Develop Tuolumne River and Other High-Priority Sediment Management Plans	Develop a sediment management plan that includes evaluating coarse and fine sediment transport and the need to augment gravel supplies, and is consistent with efforts to restore the Tuolumne River corridor. First year funding for contract to cover study period.		ERP	\$5.0	-
43	Tuolumne River Restoration Implementation Actions	The Tuolumne River has been identified as a large scale demonstration stream in the ERP		ERP	see 42	-
44	Fish Management	Develop Biological and Genetic Management Plans to Address Restoration and Recolonization of Streams in the Central Valley by Chinook Salmon and Steelhead		ERP	\$2.0	\$1.0
45.1	Hatchery Operations	Develop an integrated hatchery management strategy that reduces the potential conflict with wild fish, maintains a viable harvest strategy, and optimizes progress toward the goal of self-sustaining populations of wild, native fish.		ERP	\$0.5	\$0.5

45.2	Hatchery Marking and Tagging Program	Develop and implement a comprehensive Implementation Plan for a statistically designed marking and tagging program for Chinook Salmon produced at Central Valley facilities consistent with existing programs throughout the West		ERP	\$1.25	\$1.30
46	Upgrade Weir at Butte Creek Coleman Fish Hatchery	Repair and Modify Weir		ERP	\$1.7	-
47	Butte Creek Restoration			ERP	\$5.0	\$6.0
48	Deer Creek Restoration			ERP	\$0.5	\$5.0
52	San Joaquin River & Tribe Study, possible Implementation, and Acquisition	Implementation of components of Comprehensive Flood Control Study		ERP	\$10.0	\$5.0
53.1	Initiate Ecosystem Science Program	Program to support the adaptive management element of the ERP. This will include science workshops, targeted research, assessment of relevant data and incorporation into the management process		ERP	\$7.5	\$15.0
53.2	Supplement existing monitoring programs	Implement additional system or landscape level monitoring programs to provide for measurement of progress and evaluation of performance of the ERP		ERP	\$8.0	\$8.0
54	Environmental Education Programs	Programs designed to develop a broader understanding of natural resource conservation issues at the individual and community level	Increase public awareness	ERP	\$2.0	\$2.0
55	Develop a Long-Term Plan for In-Stream Flows	Develop Ecologically-based Hydrologic Models and Water Management Strategies and apply to formulate in-stream flow augmentation plans.	Improve fisheries and wildlife habitat	ERP	\$0.5	\$1.0
56	Develop Ecologically-based Hydrologic Models and Water Management Strategies			ERP	see 55	see 55
57	Provide Needs and Opportunities Analysis for Improving Ecosystem Restoration and Flood Bypass Habitats	Areas include but are not limited to: Colusa Basin, Butte Basin, Sutter Bypass, Yolo Bypass, Chowchilla Bypass, Eastside, Fresno Slough, and James Bypass.	Improve diverse habitat, fish passage, and WQ	ERP	\$1.0	\$1.0
68	Fish Migration Barrier Removal Evaluations			ERP	\$0.5	\$0.5
93	Establish Pilot Environmental Water Account	Funding is for establishment and administration of EWA	Improve Delta env. Protection and water supply reliability	ERP	\$1.0	\$1.0
94	Environmental Water Purchases	Includes EWA funding	Enhance fisheries habitat	ERP	\$60.0	\$60.0
106	Maintain and enhance Program administration	The restoration component of the overall CALFED Program has increased substantially requiring the infusion of additional staff and related costs which is greatly above the existing project administration level.		ERP	\$4.5	\$4.5

15	Acquire and Convert Land for Shallow Water, Wetland, and Riparian Habitat	This action will contribute to establishment of a Mokelumne River Corridor.	Flood control and habitat creation w/ breached levees	ERP	\$3.0	\$3.0
					\$142.0	\$145.3
	Ecosystem Restoration Program/Water Quality					
3.3	Selenium- Integrated Farm Management and regional Treatment	Salinity and Selenium management.	Reduce transport of salinity and selenium contaminants to San Joaquin River	ERP/WQ	\$1.3	\$1.3
3.5	Evaluate/Implement as Appropriate Release of saline agricultural drainage water during high flow periods	Implement regional and on-farm drainage retention facilities and manage discharges.	Improve late season WQ in lower San Joaquin River, potential drinking water quality impact	ERP/WQ	\$0.1	\$0.1
21	Cache Creek/Delta Mercury Source Control Projects		Develop ways to reduce Hg transport to waterways	ERP/WQ	\$3.0	\$2.0
22	Clear Lake upper watershed mercury remediation actions			ERP/WQ	\$1.0	\$1.0
50	Sacramento River Mercury Source ID and Control/Remediation Study			ERP/WQ	\$0.5	\$0.8
58.1	Urban Pesticides BMP Development and Implementation	Assess the fate and transport of diazinon and chlorpyrifos; begin implementation to reduce water quality impacts, using BMP's.		ERP/WQ	\$0.4	\$0.0
58.2	Diazinon and chlorpyrifos Education	Develop an educational program that provides information on ways to reduce water quality impacts. Possible test market areas include Sacramento and Stockton. 1997/1998 Eco funding provided to develop BMPs. 2000- develop BMPs		ERP/WQ	\$1.8	\$0.8
3.1	Stockton Dissolved Oxygen Solution Alternatives	Evaluate and implement appropriate actions to improve San Joaquin River dissolved oxygen conditions.	Improve WQ in San Joaquin River in vicinity of Stockton	ERP/WQ	\$2.0	\$2.0
58.3	Impact studies for juvenile salmon			ERP/WQ	\$1.0	\$1.0
33	TOC?				\$10.9	\$9.0
	Levee Program					
27	Levees Subventions		Levee System Integrity	Levees	\$10.0	\$11.0
28	Levees Special Projects		Levee System Integrity	Levees	\$11.0	\$11.0
29	Emergency Response Program		Levee System Integrity	Levees	\$11.0	\$3.0
30	Identify Risks to Delta Levees and Develop a Risk Management Strategy		Levee System Integrity	Levees	\$1.0	\$1.0
					\$33.0	\$26.0
	Storage/Conveyance					

3.7	Study: Evaluate Recirculation Benefits and Impacts	If feasible, acquire from willing sellers water to recirculate to meet WQ and VAMP objectives.	Potential to improve water quality and meet VAMP flow requirements in lower San Joaquin River	S/C	\$0.1	\$0.1
4	Plan, Design & Construct CVP Tracy Test Fish Facility, 500 cfs screen, plus Sorting, Holding, Transport, and Release	New fish screens for TPP full export capacity to be completed by end of Stage 1	Improve fish survival	S/C	\$6.5	\$30.0
5	Plan, Design, & Construct new SWP Clifton Court Forebay Intake, including fish screens and salvage facilities, average daily capacity 10,300 cfs: New Screened Intake with Gates and LH Pumps		Improve fish survival, water supply flex. and reliability, drinking water quality stages, circulation, and water quality	S/C	\$2.0	\$4.0
6	Feasibility and Environmental study of SWP/CVP interties between export facilities and canals	Based on results of this investigation, either construct intertie and add 4600 cfs screened export capacity to CCFB or build new screen and salvage facilities at Tracy Pumping Plant. Also evaluate intertie between Delta Mendota Canal and Cal. Aqueduct between Delta pumping plants and O'Neill Forebay.	Optimize efficiency and reliability	S/C	\$1.0	\$2.0
7	SWP 10,300 cfs Permits, with appropriate regulatory constraints	Interim increase to 8500 cfs export capacity may be sought if benefits justify	Increased operational flexibility for water supply and environmental benefits.	S/C	-	-
8	Plan, Design, and Construct one or more Permanent Operable Barriers at Head of Old River, Middle River, Old River at Tracy, and/or Grant Line Canal	Phase out temporary barriers as soon as feasible (permanent barriers, dredging, and ag intakes extensions completed. Retain options for future construction of permanent operable Grant Line Canal barrier if other actions fail to address local water supply availability needs. Costs shown are for design.	Improve fish passage (HOR), and local water supply availability and quality (MR, ORT)	S/C	\$0.5	\$2.0
8.1	Barrier Operations	Establish Barrier Operation Coordination Team, operate for fisheries, water quality, and water supply availability goals.	Improve availability of water of adequate quality and quantity to ag. diverter, contribute to restoring aquatic resources	S/C	-	-
8.2	Barrier Monitoring	Monitor barrier effects on fish, stages, circulation, and water quality to support real time ops and planning process.		S/C	\$0.5	\$0.5
9	Channel Dredging of Selected Channel Segments	Dredge to limit scour velocities, for water supply availability, for navigation, and flood control. Costs shown are for design.		S/C	\$0.2	\$1.0
10	Agricultural Diversions Extension and Screening	Extend ag intakes where necessary, with operable barriers in place, to meet local water supply availability needs. Costs shown are for design and agreements.	Improve availability of water	S/C	\$0.2	\$1.0
11	Flood Conveyance improvements in lower San Joaquin River System, including Paradise Cut, San Joaquin River, Old River, and Middle River, per FEET Report, 1997	Channel dredging, limited levee setbacks, and flood plain restoration in conjunction with ERP actions	Improve levee integrity, channel conveyance, flood plain storage, fisheries and wildlife habitat	S/C	\$1.0	\$1.0
14	Study North Delta ecosystem and flood control improvements including the Lower Mokelumne River		Flood control and habitat creation w/ levee berms	S/C	\$1.0	\$2.0
16	Study Feasibility of Delta Cross Channel Reop. and 2-4000 cfs Hood Diversion		Balance water quality and fisheries benefits, potential for improved drinking water quality	S/C	\$1.0	\$1.0
59.2	Overall Storage Strategy		Improve Storage/CU utility	S/C	\$1.0	\$1.0
60	Groundwater/CU Feasibility Studies with local sponsors		Improve Storage/CU utility	S/C	\$2.0	\$5.0
61	Groundwater/CU Programs: (Develop and Impl. GW Monitoring and Modeling Programs)		Improve Storage/CU utility	S/C	\$2.0	\$4.0

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62	On-Stream Storage Enlargement Studies (Friant Dam Enlargement Recon Study)		Improve Flood Control and Storage/CU utility	S/C	\$0.2	\$0.2
63	North of Delta Off-Stream Storage Investigation		Improve Storage/CU utility	S/C	\$10.0	\$10.0
64	On-Stream Storage Enlargement (Shasta 6.5 ft Raise Feasibility Study)		Improve Storage/CU utility	S/C	\$3.0	\$1.5
65	In-Delta and Adjacent to Delta Storage: Feasibility Study		Improve Storage/CU utility	S/C	\$1.5	\$2.0
66	Power Facilities Reoperations Evaluation		Improve Storage/CU utility	S/C	\$0.2	\$0.2
92	Local assistance for Groundwater Management	Incentive program for ground water management. Coordinate with conjunctive use program/incentives. Incentive dollars would not be through the Water Transfer program.	Increase use of groundwater as a water management tool.	S/C	-	-
96	Field Surveys for all special status species in and around all potential surface storage and groundwater sites			S/C	\$1.0	\$1.0
3.8	Implement spring flow management action, such as the VAMP	Manage San Joaquin River flows, Delta exports, conduct fishery studies, evaluate benefits and minimize impacts. Establish San Joaquin River Water Quality Protection Reserve Fund to address impacts. Report on how VAMP funds will be used to improve water management practices.	Improve salmon survival, cu/gw management u/s, improve understanding of fish vs flow	external	\$4.0	\$4.0
6.1	Implement Joint Point of Diversion	Allow SWP and CVP to shift allowable exports between pumping plants to minimize environmental impacts and improve operational flexibility and water supply reliability.	Optimize operational flexibility	external	-	-
49	Comprehensive Flood Control Study	Major evaluation of Sacramento River and San Joaquin River systems, coordinated with ERP flood plain restoration opportunities.		External		
					\$38.9	\$73.5
Watershed Management						
95.1	Fund and implement watershed planning activities within watersheds of the greater Bay Delta ecosystem	Assist local watershed groups and government agencies to develop watershed plans through grants, directed actions training and technical support.	Manage land use, vegetation, and stream zones to reduce sediment, reduce stream flashiness, improve base flow, Reduce fire danger, reduce pathogens, and TDS	WM	\$18.0	\$18.0
95.2	Fund and implement watershed conservation, maintenance and restoration activities within watersheds of the greater Bay Delta ecosystem.	Assist local watershed groups and government agencies to develop and implement programs, projects and other community based watershed improvement activities through grants, directed actions training and technical support.	Manage land use, vegetation, and stream zones to reduce sediment, reduce stream flashiness, improve base flow, Reduce fire danger, reduce pathogens, and TDS	WM	\$12.0	\$12.0
95.3	Establish, fund and maintain assistance to local watershed groups, and landowners for project concept, design, and implementation	Ensure adequate levels of technical assistance and scientific support to locally led watershed management programs.	Sound scientifically based watershed plans, and projects.	WM	\$3.0	\$3.0

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95.4	Provide funding and assistance to help build the capacity of locally led watershed programs to collaborate with landowners and other stakeholders within their watersheds, and administer watershed education programs.	Fund the development of local education programs through communities, schools, and universities, non-governmental organizations, local agencies and watershed stewardship	Increased awareness and understanding within communities of the importance of a health functional watershed	WM	\$5.0	\$5.0
95.5	Assist CALFED's monitoring program to develop appropriate watershed management performance measures and monitoring protocols	Ensure that adaptive management can be applied at multiple scales (including site, project, and program) and across land ownerships by developing a suite of protocols to help track a wide range of watershed responses to change.	The program will have reliable data and information with which to adaptively manage the program, and program activities.	WM	\$0.5	\$0.5
95.6	Improve the use and usefulness of existing watershed resource information centers	Support the expansion of an active network of watershed data and information to assist watershed programs to conduct effective watershed management, conservation and restoration activities.	Expanded capability of watershed managers to collect, store, retrieve and exchange data and information.	WM	\$1.0	\$1.0
95.7	Provide oversight for the program through the CALFED oversight entity	Insure adequate funding to conduct administrative, management, and oversight for the watershed program, within the framework of the overall CALFED oversight entity.		WM	\$0.5	\$0.5
					\$40.0	\$40.0
Water Transfers						
82	Establish the California Water Transfer Information Clearinghouse	Features of Clearinghouse in 2000/01; develop website to disseminate transfer information and approval process requirements. No user fees.	Imp. Market efficiency	WT	\$0.5	\$0.5
83.1	Streamline the Water Transfer Approval Process	Working with SWRCB, DWR, USBR to create a more standard application process. Would be available through the Clearinghouse web site.	Imp. Market efficiency	WT	\$0.45	\$0.10
83.2	Require Impact Analysis Disclosure for Water Transfers	Working with SWRCB, DWR, USBR to require transfer applicants to disclose socio-economic, groundwater, and cumulative impact assessments with approval applications. Several year effort. Requires agencies to adopt/modify existing requirements.	Provide more information to third-party interests	WT	\$0.10	\$0.10
84	Expedite the SWRCB Approval Process for Some Water Transfers	SWRCB preparing guidebook on existing approval process. Help ID additional opportunities to expedite.	Imp. Market efficiency	WT	\$0.04	\$0.04
85	Develop Transferable Water Definitions for Various Types of Transfers	Develop definitions of transferable water for types of transfers that are of issue as identified in guidebook. Have to have agencies and stakeholders work closely.	Imp. Market efficiency	WT	\$0.10	\$0.10
86	Clarify Carriage Water Requirements for Cross-Delta Water Transfers	Evaluate applicability of carriage water concept to transfers and develop consensus on methods to calculate it.	Imp. Market efficiency	WT	\$0.09	\$0.04
87	Refine Refill Criteria for Reservoir Storage Based Water Transfers	Establish more consistent application of refill criteria. Facilitate discussion between SWRCB, DWR, and USBR.	Imp. Market efficiency	WT	\$0.03	\$0.03
88	Improve Instream Water Transfers Tracking Protocols	Develop accounting/tracking protocols for 1707 transfers; maintain consistency with other types of transfers	Facilitate ERP Impl.; ensure water is meeting its purpose	WT	\$0.08	\$0.08
89	Forecast and Disclose Conveyance Capacity in State and Federal Project Facilities	May be increased work effort at DWR and USBR	Imp. Market efficiency	WT	\$0.50	\$0.50
90	Evaluate Policies for Transporting Water in Existing Project Facilities.	Work with DWR/USBR to ID and assess options to make capacity available for transfers. Then take to stakeholders.	Imp. Market efficiency	WT	\$0.02	\$0.02

					\$1.91	\$1.51
	Water Use Efficiency					
70		Urban		WUE	\$0.4	\$5.0
71		Ag		WUE	\$0.4	\$24.0
72		Managed Wetlands		WUE	\$0.1	\$1.5
73		Recycling		WUE	\$0.0	\$14.0
75		Urban		WUE	\$0.4	\$0.8
76		Ag		WUE	\$0.3	\$3.0
77		Refuges or Managed Wetlands		WUE	\$0.1	\$0.2
78		Recycling		WUE	\$0.1	\$0.8
80		Research ET		WUE	\$0.1	\$0.20
81		Pilot Measurement Program		WUE	\$0.1	\$0.50
					\$2.0	\$50.0

List of Abbreviations

Ag	Agricultural
BMP	Best Management Practices
Br	Bromide
CCFB	Clifton Court Forebay
CMARP	Comprehensive Monitoring, Assessment, and Research Program
Corps	U.S. Army Corps of Engineers
cu/gw	Conjunctive use/groundwater
CVP	Central Valley Project
DFG	Department of Fish and Game
DWR	Department of Water Resources
Eco	Ecosystem
Env.	Environmental
ERP	CALFED Ecosystem Restoration Program
ET	Evapotranspiration
External	Related action, not part of the CALFED Program
FY	Fiscal Year (assumed to be federal in this document)
Hg	Mercury
ID	Identify
Imp.	Improve
Levees	CALFED Levee System Integrity Program
LH	Low Head
RD	Reclamation District
RWQCB	Regional Water Quality Control Board
S/C	CALFED Storage and Conveyance Programs
Se	Selenium
SJRGA	San Joaquin River Group Authority
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids, mg/l
TOC	Total Organic Carbon
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VAMP	Vernalis Adaptive Management Program
w/	with
WM	CALFED Watershed Management Program
WQ	CALFED Water Quality Program Elements
WT	CALFED Water Transfer Program Elements
WUE	CALFED Water Use Efficiency Program