E-005314

Table 1. Draft Early Implementation Bundles & Cost Estimates

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
2	**Lower San Joaquin River and South Delta Region Bundle**								
3	Plan, Design & Construct CVP Tracy Fish Facility, First Stage Module, 2500 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	ERP	$6.5	$6.0	USBR	
4	Plan, Design, & Construct:Process for SWP Export Capacity to 10,300 cfs: New Screened Intake with Gates and LH Pumps, Head of Old River and Ag Barriers or Functional Equivalent, Channel Enlargement as Reqd. Potential Selected Channel Improvements, Signage, and Access for Recreation	Interim increase to 8500 cfs export capacity may be sought if benefits justify	Improve fish survival, water supply flex. and reliability, drinking water quality stages, circulation, and water quality	S/C	ERP	$2.0	$2.0	DWR,USBR	
5	Implement the Proposed Vernalis Adaptive Management Plan (VAMP) Agreement	Manage San Joaquin River flows, Delta exports, conduct fishery studies, evaluate benefits and impacts	Improve salmon survival, cu/gw management u/s, improve understanding of fish vs flow	external	ERP	$4.0	$4.0	USBR, DWR, and SJRGA	
6	Veale Tract Drainage Discharge Relocation Feasibility Study and Environmental Documentation	Possible cost share with Contra Costa Water District.	Improve drinking water	WQ		$1.0	$4.0		
7	Evaluate/Implement as Appropriate Release of TDS Buildup during High Flow Periods		Improve late season WQ in lower San Joaquin River, potential drinking water quality impact	WQ: not yet listed		$0.1	$0.1	Local Water Distr. W/ grant assistance	
8	Feasibility Study: Evaluate Recirculation Benefits and Impacts		Potential to improve water quality and meet VAMP flow requirements in lower San Joaquin River	S/C	ERP, WQ	$0.1	$0.1	DWR,USBR	
9	Study: Investigate Dissolved Oxygen Causes and Solutions for Lower San Joaquin River and begin implementation	Refine and implement real-time management of discharges	Find ways to improve WQ in San Joaquin River in vicinity of Stockton	WQ	ERP	$1.0	$1.0	Multi-Agency: RWQCB lead	
10	Pilot Studies, Selenium: Integrated On-Farm Management	On farm selenium control management practices.	Evaluate techniques for reducing Se drainage	WQ	ERP	$0.5	$0.5	Grasslands Water District	
11	Study: Non-seawater sources of bromine (Br) in San Joaquin drainage.	Determine if non-seawater sources of Br in San Joaquin Drainage are significant and impact water quality	Improve drinking water source quality: ID most important sources; develop abatement strategies	WQ	ERP	$0.5	$0.5	RWQCB and Other Entities	
	Subtotal					***$15.7***	***$18.2***		

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Attachment 3

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
12	***Lower Sacramento River, North Delta Bundle***								
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		
14	Feasibility Study: Lower Mokelumne River channels dredging and limited levee setbacks, Modify/raise levees in selected reaches	Investigate the feasibility of offsetting impacts to fisheries which may result from this action	Flood control and habitat creation w/ levee berms	S/C	ERP	$1.0	$2.0	DWR	
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: Mokelumne Corridor		$15.0	$3.0	DWR, DFG, and others	
16	Study Feasibility of Delta Cross Channel Reop.and 2-4K cfs Hood Diversion		Balance water quality and fisheries benefits, potential for improved drinking water quality	S/C	ERP, WQ	$1.0	$1.0	DWR	
	Subtotal					***$18.5***	***$7.0***		

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E-005315

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
17	***Yolo Bypass, Suisun Marsh, and West Delta Bundle***								
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	CALFED: Multi-Agency	
21	Cache Creek Mercury Source Control Study		Develop ways to reduce Hg transport to waterways	WQ/ERP		$3.0	$2.0	RWQCB	
22	Clear Lake upper watershed mercury remediation actions			WQ/ERP		$1.0	$1.0	RWQCB,DWR	
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	DWR, Corps	
24	Dredged Materials Reuse	Pilot Studies and Implementation, as materials and appropriate opportunities become available.	Materials for habitat, levees	Levees	ERP	$0.5	$0.5	DWR, Corps	
25	Barker Slough Watershed Restoration		Improve WQ, sediment, and habitat (Watershed severely impacts North Bay Aqueduct water quality.	WQ	ERP	$0.8	$0.8	Local: County and Special Districts	
	Subtotal					***$14.1***	***$15.8***		

E-005316

E-005316

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
26	***Delta Wide ERP/Levees Bundle***								
27	Levees Subventions		Levee System Integrity	Levees		$10.0	$15.0	DWR, Corps	Congressional authorization may be required for Corps participation with Non-Project Levees
28	Levees Special Projects		Levee System Integrity	Levees		$12.0	$13.0	DWR	
29	Emergency Response Program		Levee System Integrity	Levees		$11.0	$3.0	DWR	
30	Identify Risks to Delta Levees and Develop a Risk Management Strategy		Levee System Integrity	Levees	WQ, ERP, Conveyance	$1.0	$1.0	CALFED	
31	Evaluate the Need to Screen Small Diversions in the Delta and implement		Reduce fisheries entrainment impacts	ERP		$1.0	$1.5	DFG, DWR	
32	Nonnative Invasive Species (NIS) (Note: Expand to actions in SF Bay and Suisun Marsh, to reduce further invasions and eradication of *Lepidium*)	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	USFWS	
33	Total Organic Carbon Evaluation	General Evaluation and Pilot Study: Total Organic Carbon Reduction, DWR to do engineering and technical oversight.	Improve in-Delta drinking water source quality:	WQ/ERP		$4.5	$0.5	DWR, Local RD	
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	DWR,DFG	
35	In-Channel Islands Restoration		Tidal wetlands, riparian habitat, special status species	ERP		$1.0	$1.0	DWR,DFG	
36	Assessment of sources and magnitudes of loadings of constituents of concern for drinking water	Includes TOC, nutrients, salinity, pathogens, and Br on Delta wide basis		WQ		$0.5	$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	-		
	Subtotal					***$45.0***	***$41.0***		

E-005317

E—005317

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
39	***Sacramento River, San Joaquin River, and Tribs Bundle***								
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	DWR	
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		ERP		$5.0	-		
43	Tuolumne River Restoration Implementation Actions	The Tuolumne River has been indentified 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	Hatchery Operations	Develop 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		$0.5	-		
46	Upgrade Weir at Battle Creek Coleman Fish Hatchery	Repair and Modify Weir		ERP		$1.5	-		
47	Butte Creek Restoration			ERP		$5.0	$5.0	DWR	
48	Deer Creek Restoration			ERP		$0.5	$5.0	DWR	
49	Comprehensive Flood Control Study			External	Coord. Levees, S/C			Corps, DWR	
50	Sacramento River Mercury Source ID and Control/Remediation Study			WQ		$0.3	$0.8		
51	Sacramento River Levees Restoration			S/C		$2.0	$2.0	Corps, DWR	
52	San Joaquin River Meander Corridor & Tribs Study, Implementation, and Acquisition			ERP		$10.0	$5.0	DWR, Corps	
	Subtotal					***$35.1***	***$26.8***		

E-005318

E—005318

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
53	***Integrated Water Management Bundle***								
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	WQ	$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	CALFED: Multi-Agency	
58	Diazinon and chlorpyrifos Assessment	Assess the fate and transport of diazinon and chlorpyrifos; begin implementation to reduce water quality impacts, using BMP's.		WQ	ERP	$0.4			
59	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		WQ		$1.6	$0.8		
60	Groundwater/CU Feasibility Studies with local sponsors		Improve Storage/CU utility	S/C		$2.0	$5.0	Local Cooperating Entities and CALFED	
61	Groundwater/CU: Develop and Impl. GW Monitoring and Modeling Progr., Butte Co. or other		Improve Storage/CU utility	S/C		$1.0	$2.0	Local Cooperating Entities and CALFED	
62	Friant Dam Enlargement Recon Study		Improve Flood Control and Storage/CU utility	S/C		$0.2	$0.2	Proposed Joint study: USBR , Corps, and Rec Board	
63	Sites and Alternatives Feasibility Study		Improve Storage/CU utility	S/C		$10.0	$10.0	DWR	
64	Shasta 6.5 ft Raise Feasibility Study		Improve Storage/CU utility	S/C		$3.0	$3.0	USBR	
65	In-Delta and Adjacent to Delta Storage: Feasibility Study		Improve Storage/CU utility	S/C		$0.2	$0.2	DWR	
66	Power Facilities Reop. For Water Supply Study		Improve Storage/CU utility	S/C	ERP	$0.5	$0.5	DWR, FERC, PUC, SWRCB	
67	Overall Storage Strategy		Improve Storage/CU utility	S/C		$1.0	$1.0	CALFED	

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1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
68	Fish Migration Barrier Removal Prioritization and Evaluations			ERP	S/C	$0.5	$0.5		
69	Financial Incentive Program	Local assistance (loans & grants) for cost effective water conservation/recycling actions, Low interest loans	reduce Demand	WUE					
70		Urban		WUE		$3.0	$10.0	CALFED, Multi-agency	
71		Ag		WUE		$13.5	$45.0	CALFED, Multi-agency	
72		Managed Wetlands		WUE		$0.8	$2.5	CALFED, Multi-agency	
73		Recycling		WUE		$7.5	$25.0	CALFED, Multi-agency	
74	Technical Assistance	Recoverable loss studies, on-farm conservation studies, funded through member agencies (USBR, DWR)	reduce Demand	WUE					
75		Urban		WUE		$0.8	$1.0	CALFED, Multi-agency	
76		Ag		WUE		$3.0	$3.5	CALFED, Multi-agency	
77		Refuges or Managed Wetlands		WUE		$0.2	$0.3	CALFED, Multi-agency	
78		Recycling		WUE		$0.8	$1.0	CALFED, Multi-agency	
79	Directed Studies			WUE					
80		Research ET		WUE		$0.2	$0.25	DWR, UC	
81		Pilot Measurement Program		WUE		$0.5	$0.65	CALFED, Multi-agency	
82	Establish water transfer clearinghouse	Features of Clearinghouse in 2000/01; develop website to disseminate transfer information and approval process requirements. No user fees. Possibly house in new division of SWRCB.	Imp. Market efficiency	WT		$0.5	$0.5	CALFED	
83	Streamline approval process/ Standardize application checklist for water transfers	Working with SWRCB, DWR, USBR to create a more standard application process. Would be available through the Clearinghouse, among other things. Several year effort. Initial effort is to clarify existing process thru SWRCB guidebook.	Assure disclosure of proposed actions	WT		$0.04	$0.04	USBR, DWR, SWRCB	
84	Expedite approval process for water transfers	SWRCB preparing guidebook on existing approval process. Help ID additional opportunities to expedite.	Imp. Market efficiency	WT		$0.02	$0.02	USBR, DWR, SWRCB	
85	Develop Definitions of Transferable Water	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		$0.04	$0.04	USBR, DWR, SWRCB	

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E-005320

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
86	Carriage water Determination for Water Transfers	Coordinate with EWA to understand impacts on carriage water. Refine DWR/USBR policies after that. Work effort is dependent on outcome of EWA so defer until FY2001.	Imp. Market efficiency	WT		$0.07	$0.02	CALFED, Multi-agency	
87	Refill criteria determination for Water Transfers	Coordinate with SWRCB water rights hearing that involve negotiations on refill criteria (may be completed before stage 1)	Imp. Market efficiency	WT		$0.02	$0.02	DWR, USBR	
88	Advance Provision for In-stream Water Transfers	Develop accounting/tracking measures for 1707 transfers	Facilitate ERP Impl.	WT		$0.08	$0.08	CALFED, Multi-agency	
89	Forecast conveyance capacity	May be increased work effort at DWR and USBR	Imp. Market efficiency	WT		$0.05	$0.05	DWR, USBR	
90	Capacity Access	Work with stakeholders and DWR/USBR to make some capacity available for transfers.	Imp. Market efficiency	WT		$0.02	$0.02	DWR, USBR	
91	Evaluate Need for Water Rights Legislation	CALFED is preparing a recommendation. No additional funding expected.		WT		-	-	CALFED	
92	Funding in ground water/conjunctive use	Incentive program for ground water management. Coordinate with conjunctive use program/incentives. Incentive dollars would not be through this program.	Increase use of groundwater as a water management tool.	WT	S/C	-	-	CALFED	-
93	Establish Pilot Environmental Water Account		Improve Delta env. Protection and water supply reliability	ERP	S/C	$1.0	$1.0	CALFED	
94	Environmental Water Purchases		Enhance fisheries habitat	ERP	S/C	$6.0	$20.0	CALFED	
95	Fund and implement watershed restoration, maintenance, conservation, and monitoring activities.	Assist local watershed groups and government agencies to address common issues on a community basis through grants, directed actions, 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	ERP	$24.0	$24.0	CALFED	
96	Field Surveys for all special status species in and around all potential surface storage and groundwater sites			S/C		$1.0	$1.0		
	Subtotal					***$87.0***	***$163.2***		

E-005321

E—005321

1	Action Description	Detail/Assumptions	Primary Effects	CALFED Program	Secondary CALFED Program	FY 2000 Cost (millions)	FY 2001 Cost (millions)	Implementing Entity	Implementing Authority Required?
97	***Governance Bundle***								
98	CALFED Entity			Gov		-	-		Existing Structure or Leg. Required.
99	Determine/Establish governing structure for CALFED Program Elements, including ERP, WQ, Levees, WM, S/C, CMARP,WUE, WT			Gov		-	-		Existing Structure or Leg. Required.
100	Water Quality Actions Immunity: Federal Leg.	Develop appropriate balance of risk to cleanup entities and environmental due process responsibilities	Allow WQ actions to proceed w/o unacceptable liability risk	Gov	WQ	-	-	CALFED	New Federal Legislation
101	Identify Urban Water Certification Entity (UWCP)			Gov	WUE	-	-	DWR	
102	Implement Ag Water Use Certification			Gov	WUE	-	-	DWR	
	Subtotal					***$0.0***	***$0.0***		
	Total					***$215.3***	***$272.0***		

E-005322

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