Essential Elements and Associated Cost Estimates - Draft

Note: ***The activities listed here represent essential elements that would be implemented in all alternatives. The costs represent preliminary estimates and are still in process of refinement. These costs represent the total cost to implement the action regardless of funding source. The next step in refining these cost will be to segregate costs funded by existing programs from costs to be funded by the CALFED Program.***

Physical and Structural Features

Habitat Restoration

Activities	Estimated Activity Cost ($1,000)		
	Capital	O&M	Annual
• Restore **Bay-Delta shallow water** (tidal) **habitat.** • Convert 800 to 1,200 acres of existing leveed lands to tidal actions. • Include shallow water habitat in reconstruction of 25 to 75 miles of levees (coordinate with *Flood Protection and Levee Stabilization* activities).	115,000	2,300	
• Restore **Bay-Delta riparian habitat.** • Improve riparian conditions on 75 to 125 acres of degraded riparian lands above the 200 to 400 acres improved through Core Action activities. • Establish new areas of riparian habitat through acquisition of 400 to 600 acres of riparian land.	44,500	970	
• Restoration of **Suisun Bay habitat.** • Restore 750 to 1,250 acres of diked wetlands to tidal wetland habitat.	15,000	300	
• Restore **riverine habitat** on the **Sacramento River** between Verona and Collinsville and along **Delta channels.** • Reconstruct river banks and shallow water habitat on 50 to 75 miles of leveed banks along the Sacramento River. • Protect and enhance 300 to 500 acres of riverine habitats on channel islands above the 500 to 1,000 acres protected through Core Action activities.	47,400	220	

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Restoration of **floodway corridor habitat.** • Modify floodways to convert 5,000 to 7,000 acres of agricultural lands to wetland habitat.	21,000	300	
Total Category Cost ($1,000)	**242,900**	**4,090**	

Fish Protection and Transport

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Continue to evaluate acoustic barrier at **Delta Cross Channel** to block outmigrating fish from entering the interior Delta.	1,000	20	
• Install **fish screens** on high priority diversions in the Delta, rivers, and tributaries.	13,000		
Total Category Cost ($1,000)	**14,000**	**20**	

Flood Protection and Levee Stabilization

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Implement a comprehensive **Delta Long-Term Protection Plan** at a **modest level** • For levee maintenance and stabilization actions to attain and maintain a uniform standard at or above the Hazard Mitigation Plan for all Delta levees.			15,000
Total Category Cost ($1,000)			**15,000**

Operational and Management Features

Water Supply Management

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Encourage temporary **land fallowing** during drought periods to reduce dry year demand by approximately 100,000 to 300,000 AF through use of incentives and other programs.			20,000
• Expand **groundwater banking and conjunctive use** in Delta export areas such as the San Joaquin Valley and the Tulare Lake Basin and in the Sacramento Valley.	80,000	13,600	

• Increase the implementation of **municipal and industrial water conservation** to reduce demand by 100,000 to 200,000 AF over current implementation commitments.
  • Use incentives or other means to achieve implementation of Best Management Practices (BMP's) by more suppliers and water users.
  • Expand the BMP's to include additional practices and higher implementation rates.
• Increase the level of **agricultural water conservation** to reduce demand by an additional 100,000 to 200,000 AF.
  • Use incentives or other means to achieve implementation of Efficient Water Management Practices (EWMP's) by more suppliers and water users.
  • Expand the EWMP's to include additional practices.
			2,000

• Develop an incentive driven program to modify **upstream reservoir releases** on all tributaries to maximize coordination with water quality, fish and wildlife, and water supply needs.			4,000
Total Category Cost ($1,000)	**80,000**	**13,600**	**26,000**

Water Diversion Management

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• **Acquire about 100,000 AF** of water from willing sellers in the San Joaquin Valley or develop from expanded surface water or groundwater storage.			20,000
• **Improve CVP and SWP operations** through predation control and coordinating operations.			300
• Improve **real-time monitoring for presence** of fish species of special concern and modify water diversions to avoid fish entrainment.			1,250
Total Category Cost ($1,000)			**21,550**

Fisheries Management

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• **Mark salmon** produced in hatcheries.			2,000
Total Category Cost ($1,000)			**2,000**

Water Quality Management

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Permanently **retire,** through use of incentives and land purchases, approximately 70,000 to 100,000 acres of **agricultural lands** and lands from willing sellers that contribute to water quality problems	320,000	8,000	
• **Manage drainage timing** (i.e., restrict drainage discharges by 15 to 25 percent during periods of low Delta inflow) to reduce instream impacts of water quality.			440
• Improve **management of urban stormwater runoff** to retain an additional 15 to 25 percent of runoff volume contained presently.			2,500
• **Construct wetlands** to treat 3,000 to 5,000 acre-feet of upstream wastewater effluent and Delta agricultural drainage.	120,000	6,000	

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Increase enforcement of source control regulations for **agricultural drainage** to modestly: • Reduce leachate concentrations and volumes. • Restrict spray programs adjacent to waterways. • Reduce runoff volumes. • Reduce the concentrations of pollutants in runoff.			500
• Implement moderate on-site **mine drainage remediation** measures learned from site specific studies at the Walker Mine, Malakoff Diggins, Leviathon Mine, Iron Mountain Mine and Penn Mine sites, and control runoff from those and other high priority mine sites based on current water quality objectives for pollutants.	30,000	600	
Total Category Cost ($1,000)	**470,000**	**14,600**	**3,440**

Management of System Vulnerability

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Establish **landside buffer zones** adjacent to some levees on islands with deep peat soils.			70
• Establish and recommend modest funding for an **emergency levee management program** that provides funding and direction for reclaiming Delta islands in the event of levee failures and for the continued protection of Delta functions. • Identify funding sources for **continuing levee maintenance** activities beyond the planning horizon of this program. • Identify funding sources for a **continuing levee stabilization program** that will work beyond the planning horizon of this program towards improving all important Delta levees to a P.L. 99 standard.			1,540
Total Category Cost ($1,000)			**1,610**

Institutional and Policy Features

Habitat Programs

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Coordinate recommended **habitat restoration actions from other state and federal programs,** including the Anadromous Fish Restoration Program.			1,000
• Establish a CALFED Regulatory Team to coordinate and **expedite habitat restoration permits.**			1,000
• Encourage and provide incentives for farmers and levee maintenance districts to **leave habitat areas undisturbed** through working with resource agencies.			55
Total Category Cost ($1,000)			**2,055**

Water Supply Management

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Establish **incentives for long-term conjunctive use** in the Sacramento and San Joaquin valleys and ease institutional barriers.	10,000		5,000
• **Long-term planning for drought contingencies.** • Create a coordinated CALFED program to expedite and expand the use of **water transfers** to meet water needs during droughts.			500
• Ease **institutional barriers** to facilitate water transfers. • Improve **planning and coordination** procedures for water transfers. • Improve **operational procedures** to facilitate water transfers. • Establish a water transfer **brokering mechanism** or institution.	1,500		270

Activities	Estimated Activity Cost ($1,000) Capital	O&M	Annual
• Improve coordination of **land use and water supply planning.** • Develop incentives for local and regional coordination of land use and water supply planning. • Implement long-term institutional measures to increase coordination of state/federal project planning and operations with local and regional water planning and operations.			1,000
Total Category Cost ($1,000)	**11,500**		**6,770**

Total Cost Estimate	Estimated Activity Cost ($1,000) Capital	O&M	Annual
Physical and Structural Features			
Habitat Restoration	242,900	4,090	
Fish Protection and Transport	14,000	20	
Flood Protection and Levee Stabilization			15,000
Operational and Management Features			
Water Supply Management	80,000	13,600	26,000
Water Diversion Management			21,550
Fisheries Management			2,000
Water Quality Management	470,000	14,600	3,440
Management of System Vulnerability			1,610
Institutional and Policy Features			
Habitat Programs			2,055
Water Supply Management	14,500		6,770
Total Essential Element Cost ($1,000)	**818,400**	**32,310**	**78,425**