

DWR CONTINGENCY PLANS FOR LOSS OF DELTA WATER SUPPLIES

**Delta Stewardship Council
Early Actions Review**

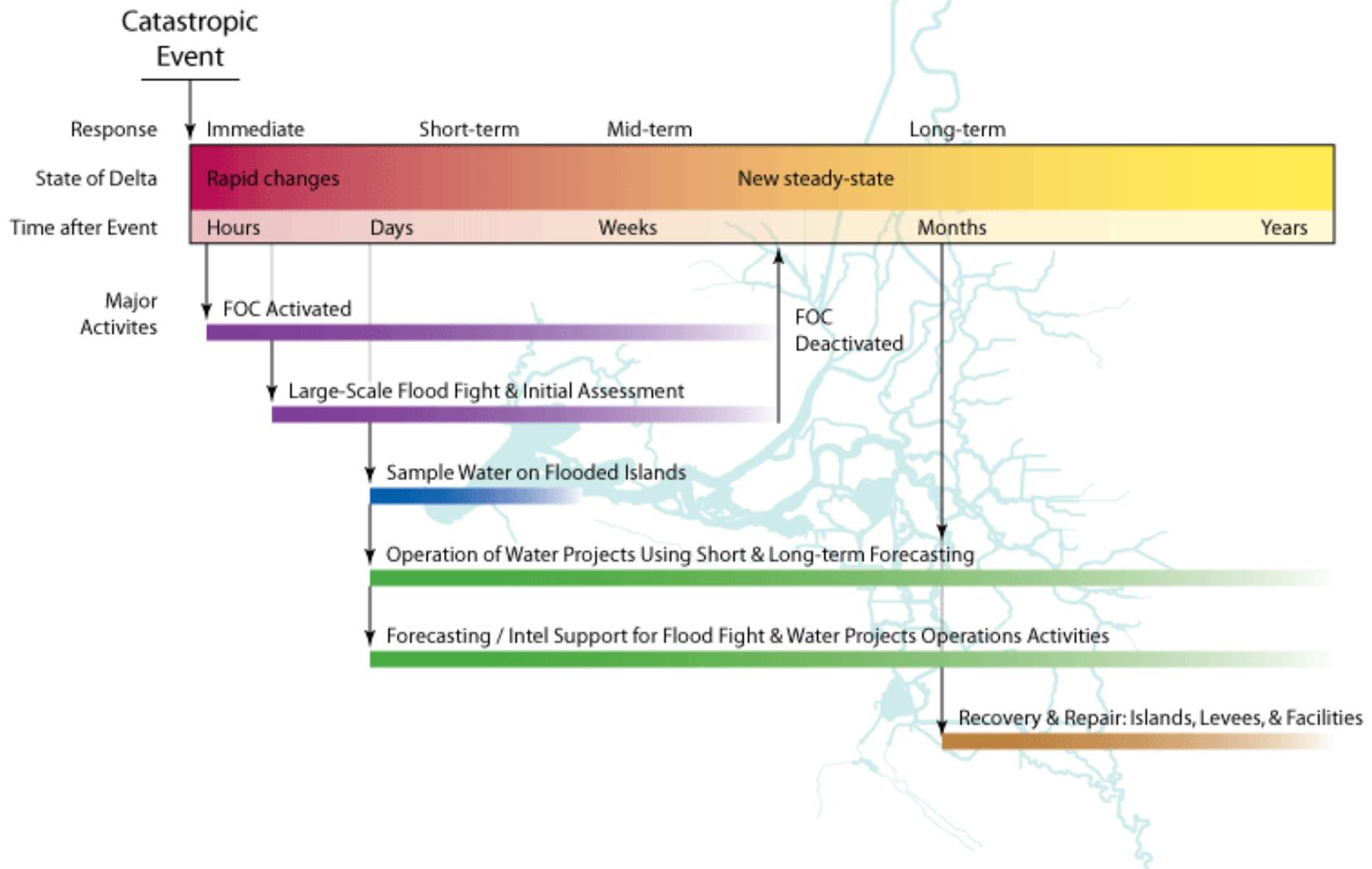
PRESENTED BY

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DEPARTMENT OF WATER RESOURCES

NOV. 5, 2010

Transition from Response to Recovery



DWR's ER Legal Authority

Water Code (Section 128):

Perform any work required during floods / storms
State OES retains authority following declaration of emergency

Emergency Services Act (Gov. Code Section 8550):

Governor may commandeer private property
Governor may suspend regulatory statutes & orders

Water Code (Section 12994):

Effect repairs up to \$200k total (\$50k per site) in Delta
without approval of Reclamation Board or Dept. Fish and
Game during a sudden emergency

Fish & Game Code (Sections 1601 & 2090):

Perform emergency work that impacts some Dept. Fish and
Game agreements after providing notice

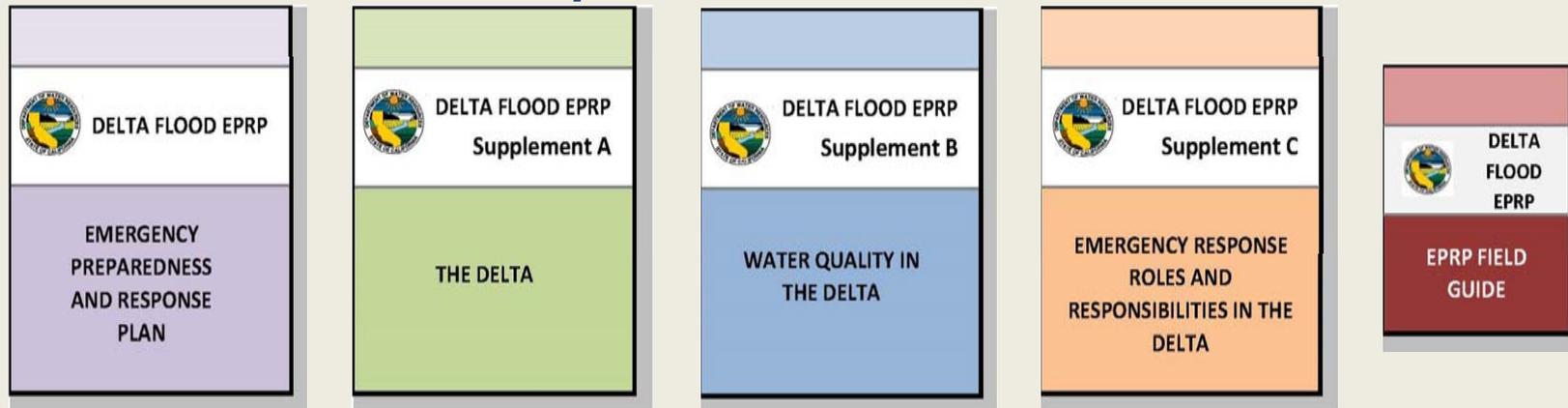
Public Contract Code (Section 10122):

Use informal bids to perform emergency repair work

Goals of DWR Response & Recovery

- DWR's mission is to manage the water resources of California in cooperation with other agencies to benefit the State's people and to protect, restore, and enhance the natural and human environments.
- In accordance with its mission, DWR will respond to a multiple levee failure disaster in the Delta in accordance with the following **priorities**:
 - **Protection of life, property, and infrastructure**
 - **Protection of water quality and water supply**
 - **Protection of the environment**

2011 Delta Flood Emergency Response & Preparedness Plan



- **Main Document** – Decision process
- **Supplement A** – Critical factual and geographic information
- **Supplement B** – Water quality in the Delta
- **Supplement C** – Clarify agency roles
- **Field Guide**

DWR's Delta Investment Strategy

Strategy

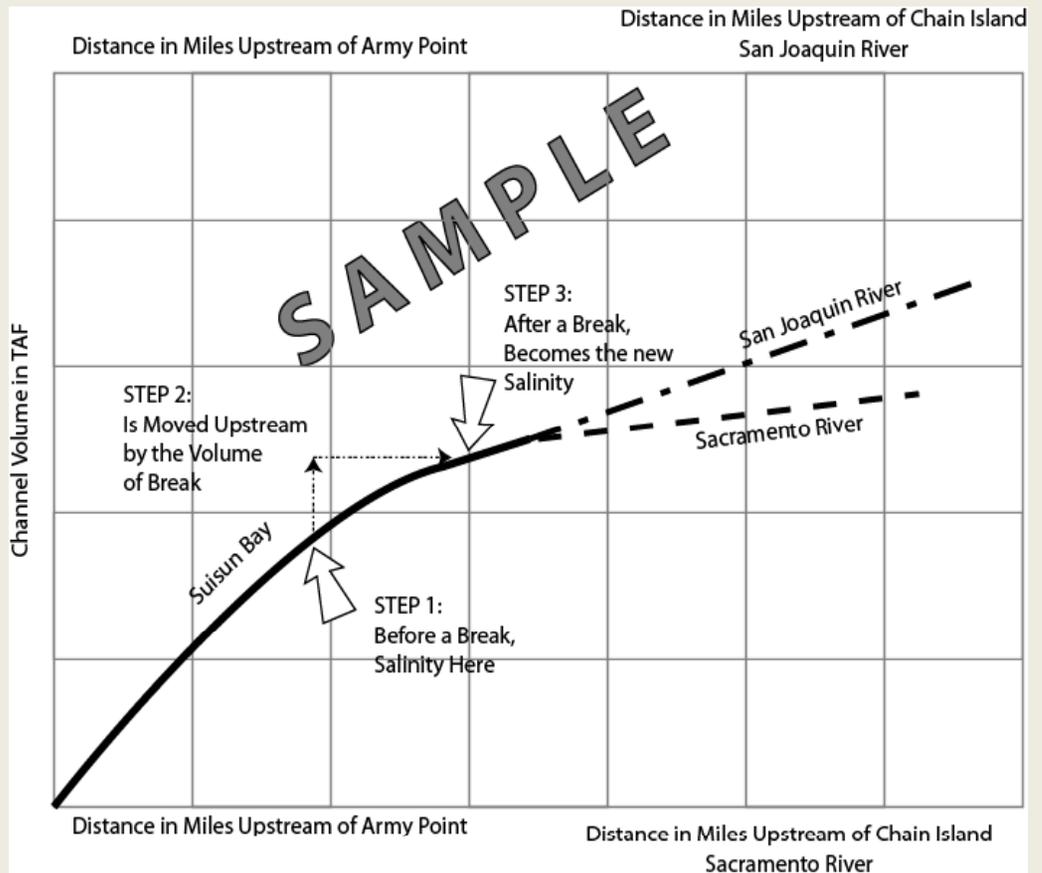
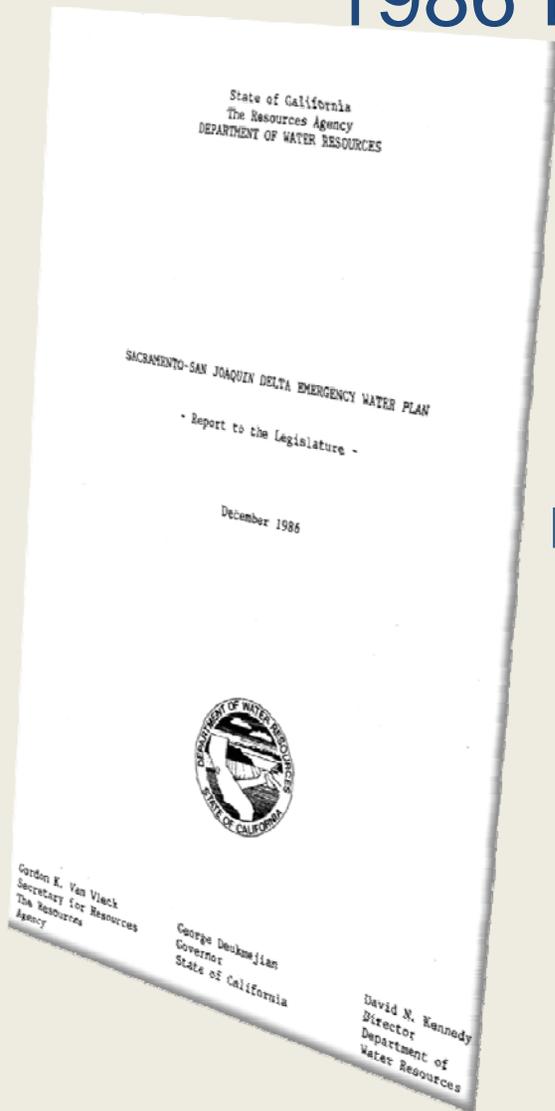
- Includes a [policy statement](#) about current and future State flood management investments in the Delta.

Policy Statement

- Considers flood management investments that protect important State assets & interests in the Delta, consistent with objectives from the [California Water Plan](#):

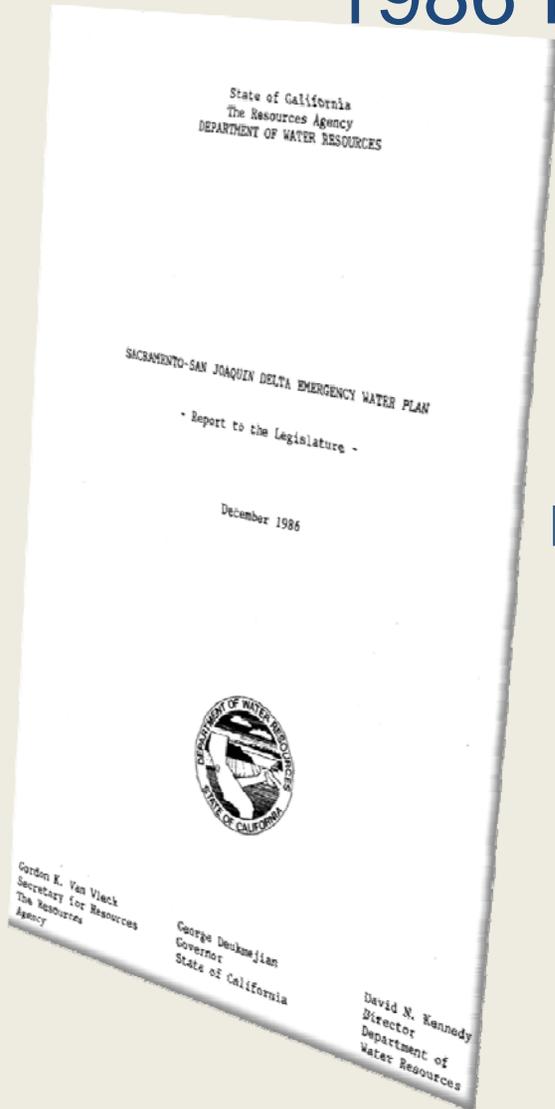
Water Management Objectives		
 Provide Water Supply Benefit	 Reduce Flood Impacts	 Reduce GW Overdraft
 Improve Water Quality	 Improve Drought Preparedness	 Energy Benefits
 Environmental Benefits	 Operational Flexibility & Efficient	 Recreational Opportunities

Delta ER & Contingency Plans: 1986 Emergency Water Plan



Assessing Water Quality Impacts

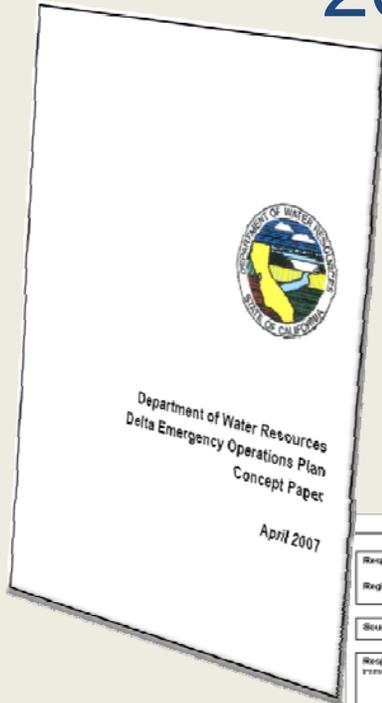
Delta ER & Contingency Plans: 1986 Emergency Water Plan



Matrix of possible actions

	1 or 2 Island Failure	EBMUD Structural Failure	Multiple Island Failure in Winter	Multiple Island Failure in Summer
1. Immediate curtailment of pumping at Banks and Tracy	X	X		X
2. Fill Clifton Court Forebay on next high tide	X			X
3. Increase north of Delta (Folsom, Oroville, and Shasta) releases	X			X
4. Increase south of Delta (New Melones) releases, after Delta salinity has stabilized	X			X
5. Request Delta farmers to stop irrigation until flooded islands are filled	X			X
6. Connect Contra Costa Canal to Mokelumne Aqueduct to improve CCWD water quality	X			X
7. Place riprap on ends of break to stabilize levee erosion & install wave erosion protection on interior of Western Delta Islands	X			X
8. Close levee break for western Delta Islands only	X			X
9. Monitor saltinity intrusion into Delta & evaluate need for increased reservoir releases		X	X	
10. Monitor channel salinity & scale back emergency measures when possible	X			X
11. Install pumps at EBMUD's Bixler emergency pumping plant at French Slough		X		
12. Reestablish 1977 water transfer from South Bay Aqueduct to San Antonio Reservoir to EBMUD at Hayward		X		
13. Install pumps to reverse flow & reinstall a pipeline on Richmond-San Rafael Bridge to bring water from Marin County to EBMUD		X		
14. Connect Contra Costa Canal to Mokelumne Aqueduct to bring water to EBMUD		X		
15. Place pipeline on Carquinez Bridge to bring North Bay Aqueduct-Vallejo water or Solano water to EBMUD		X		
16. Place pipeline on Benicia Bridge to bring North Bay Aqueduct-Benicia water to CCWD for exchange blend		X		X
17. Place Riprap on ends of Upper Jones levee break		X		
18. Place wave erosion protection on interior of Jones Tract levees		X		
19. Close break and dewater Upper and Lower Jones Tracts		X		
20. Replace damaged section of Mokelumne Aqueduct		X		
21. Compute volume to fill islands in 2-days & compare with NDO to see if salinity intrusion is likely			X	
22. Aerial survey to determine which islands are flooding			X	X
23. Place pumps at CA Aqueduct check stations to move water upstream for South Bay Aqueduct				X
24. Install temporary barriers in Sacramento River below Georgiana Slough to increase Delta Cross Transfer Flow				X

Delta ER & Contingency Plans: 2007 Delta Emergency Ops Plan



Actions have regional trade-offs

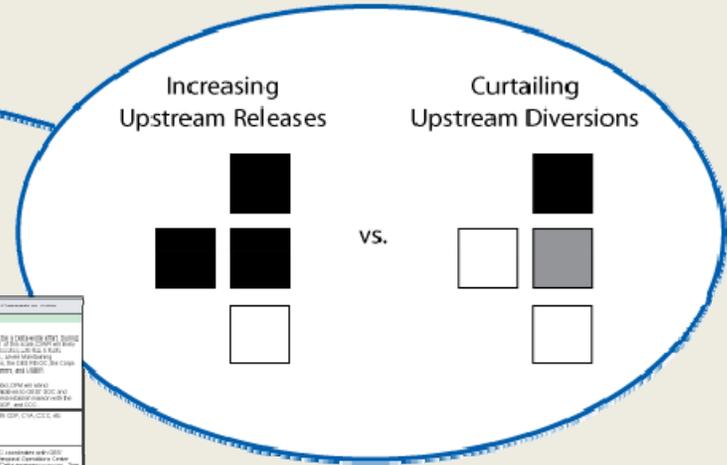


TABLE OF ACTIONS

Response Action	Region	Priority	Comments	Implementation Status
Reduce CVP Tracy Pumping Plant Exports	South Delta	High
Place riprap and wave erosion protection on interior of footed islands	Central Delta	Medium

RESPONSE ACTION

Response Action: Decrease CVP Tracy Pumping Plant Exports

Region Affected: South Delta (primarily) and Central Delta

Source: Ref 2 - 1988 S&J Delta Emergency Water Plan

Response Action Description: Upon report of a low-Delta inflow, multiple-island flooding event, immediately reduce Tracy export pumping to one pump only (approximately 900 cfs).

Responsible Party: USBR - Operations

Impact: Reduction of export pumping will decrease the influx of salinity into the central and southern Delta. This is important because the southern Delta is very difficult to flush.

Constraints/Limitations

Key Event Characteristic	Environmental	Time to Implement	S/C (S)	Legal/Contractual	Coordination
Low-Inflow	L	L	L	L	L

Difficulty Scale: High (H), Medium (M), Low (L)

RESPONSE ACTION

Response Action: Place riprap and wave erosion protection on interior of footed islands

Region Affected (Include Delta Isles): Local

Source: DWR, Delta Emergency Operation Contingency Water Plan

Response Action Description: This response action will be utilized when strong winds accompany high water to prevent wave erosion of levee slopes. Levees adjacent to wide stretches of water should be watched during periods of strong wind to detect the early stages of wave erosion. During sustained periods of strong wind and high water, personnel should stand by to observe and monitor the effected area. Riprap and wood panels can be used to prevent or protect slopes from wave erosion. Placement of riprap can also protect levee slopes from wind erosion and is a longer-term action.

Responsible Party: DWR, Division of Flood Management

Impact: The emergency repair methods are used to prevent levee failure.

Constraints/Limitations

Key Event Characteristic	Environmental	Time to Implement	S/C (S)	Legal/Contractual	Coordination
Riprap	M	M	L	L	L
Wood Panel	M	M	L	L	M
Riprap	M	M	H	M	H

Difficulty Scale: High (H), Medium (M), Low (L)

Comments: Wave erosion protection can be fabricated with plastic (Vegaplan) or wood panels for temporary solutions or riprap can be placed to provide longer-term protection, as summarized below.

Vegaplan Wave Erosion Protection

Vegaplan wave wash protection involves placing Vegaplan fabric in 20-foot wide by 100-foot long by 10 mill (in) along the water-side levee slopes. Wooden stakes and sandbags are used to anchor the Vegaplan to the levee slope.

Wood Panel Wave Erosion Protection

Wood panels are generally prefabricated, 3-foot high, and 18-foot long and are secured to the levee face with belling wire, wood stakes, and sandbags.

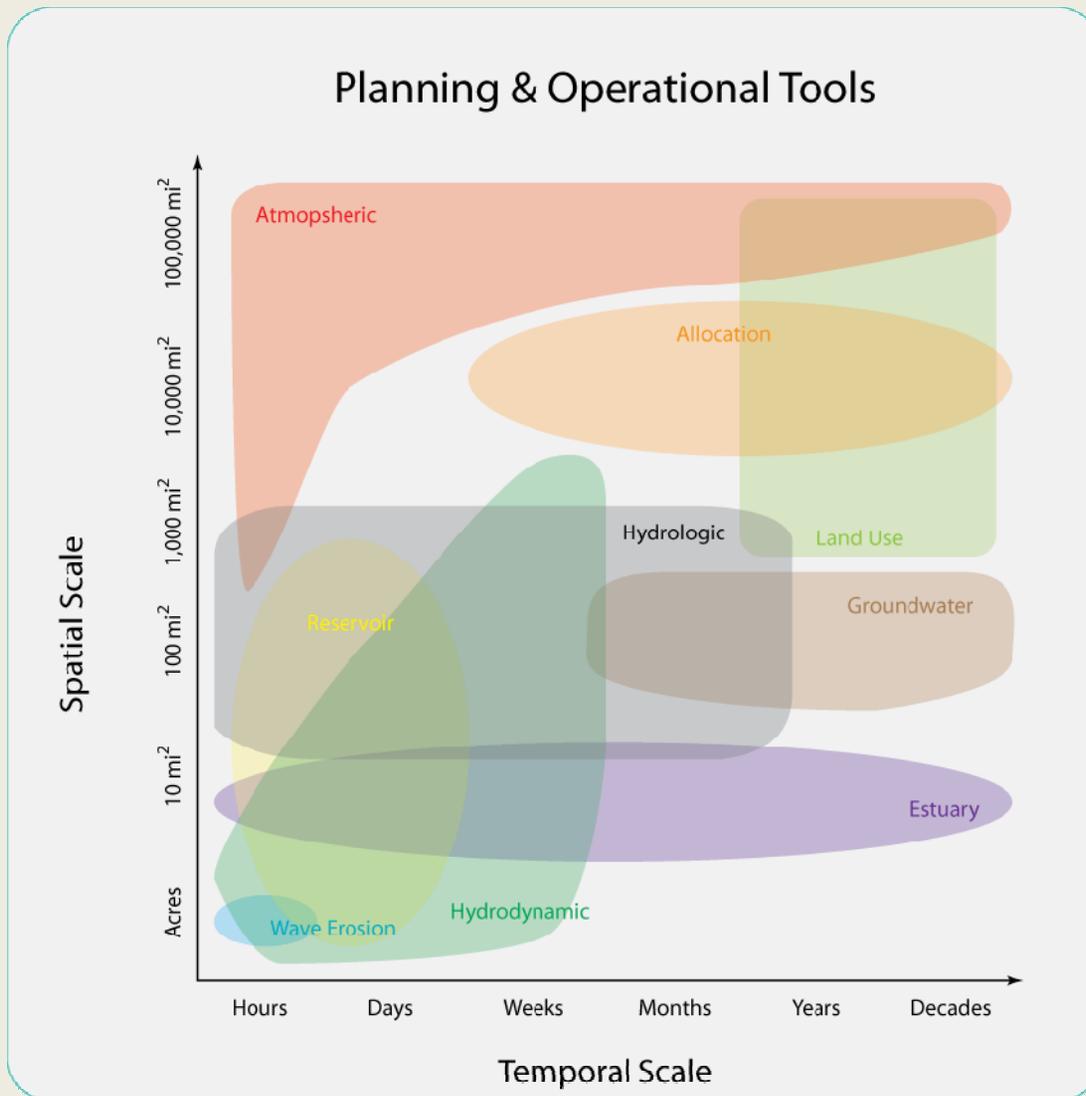
Riprap Wave Erosion Protection

Riprap or rock slope protection can be strategically placed by trucks or barges to armor levee slopes. The rock slope protection prevents scour and erosion caused by wave action. The size of the riprap should be appropriate for the velocity of the channel; the higher the velocity, the larger the size and weight of the rock should be. Ideally, filter material or bedding should be placed between the existing levee slope and the riprap. Regular maintenance of protected slopes will ensure longer-term slope protection.

FACT SHEETS

FACT SHEETS

Use of Real-Time Analytical Tools



- Similar suite of analytical tools will support emergency response & recovery operations
- Multiple scenarios will be considered, each starting with the same initial conditions
- Decisions will be made by experts with a variety of backgrounds

Potential Actions – In Delta

- Barriers
- Repair key levees
- Pumping
- Additional reservoir releases
- Temporary pipelines

Catastrophic Event Response – south of Delta

- Assist SWP Contractors & local agencies to implement own Contingency Plans
- Implement DCP
- Implement emergency SWP allocations
- Coordinate with affected area(s)
- Implement emergency conservation measures

Catastrophic Event Response – south of Delta

- Identify current reservoir storage conditions
 - State
 - Federal
 - Local
- Identify / facilitate transfer options
 - In-basin – San Joaquin
 - Colorado River options

Additional Actions – south of Delta

- Implement water conservation measures
- Increase groundwater pumping
- Implement water use efficiency measures
- Water recycling
- Economic incentives
- Desalination
- Pursue additional options based on severity of event

SWP Long-Term Water Supply Contracts

- Article 18
 - Allow DWR to reduce Table A allocations as needed
 - Meet “minimum demands of contractors for domestic supply, fire protection, or sanitation”
- USBR has similar framework
 - Meet minimum M&I for public health & safety
 - CVP contractors required to develop/maintain Water Conservation Plans

Urban Water Management Plans

- Urban Water Suppliers required to implement water shortage contingency analysis (started 2005)
 - Need comprehensive review / analysis for adequacy
 - Update every 5 years
- Agricultural Water Suppliers to complete management plans by 2012