

FloodSAFE California Taking Steps to Manage Flood Risk

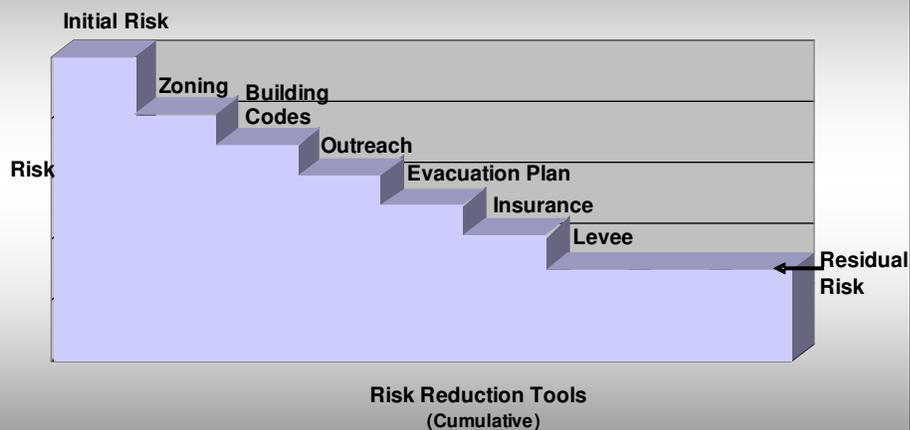
By Rod Mayer



**National Committee on
Levee Safety**
October 2008

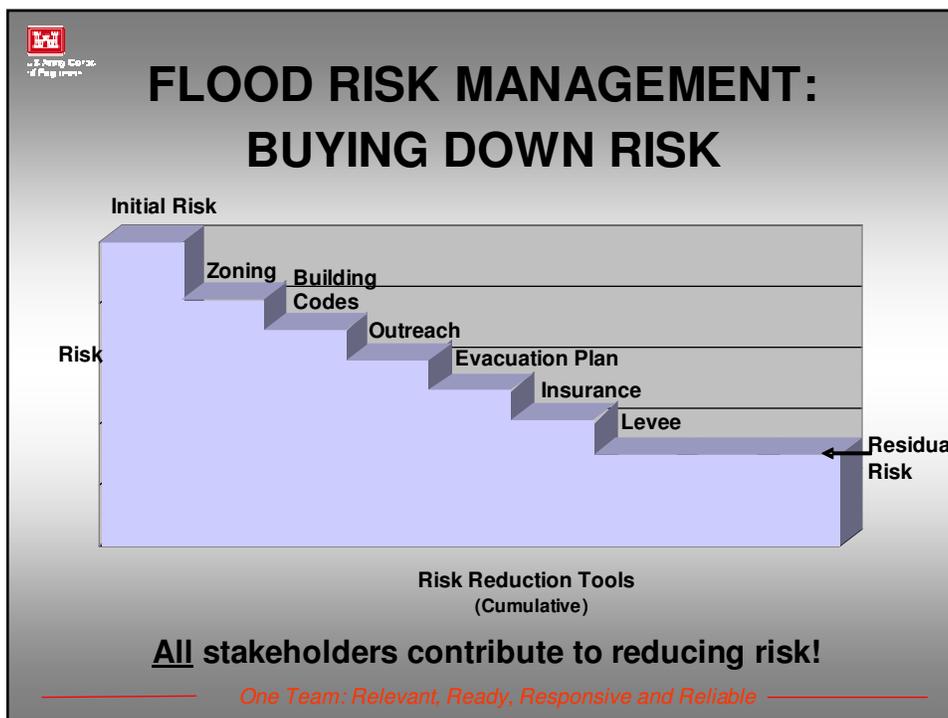
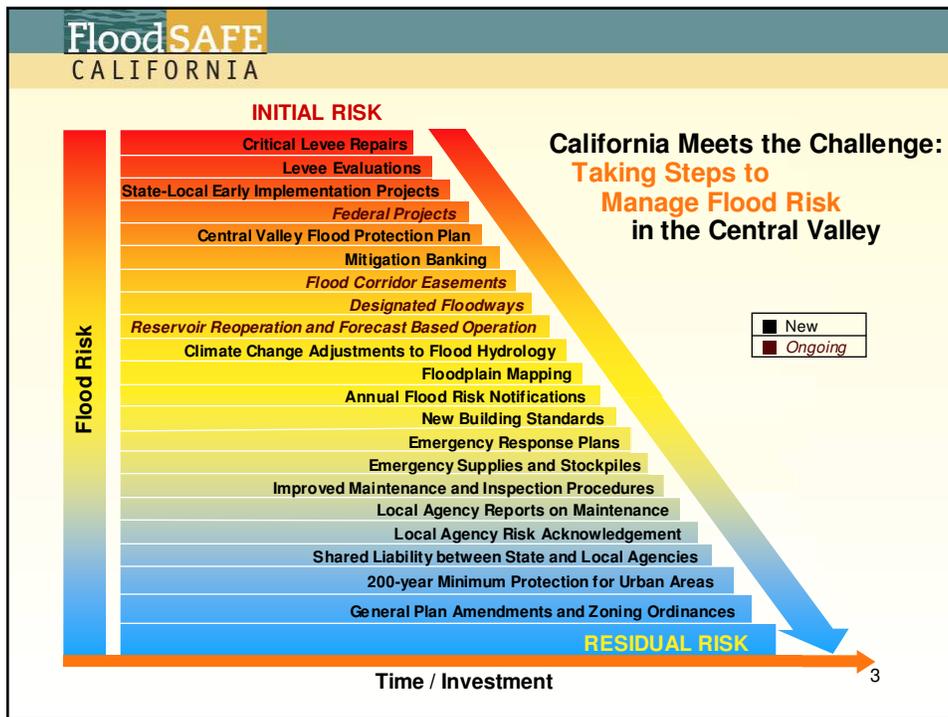


FLOOD RISK MANAGEMENT: BUYING DOWN RISK

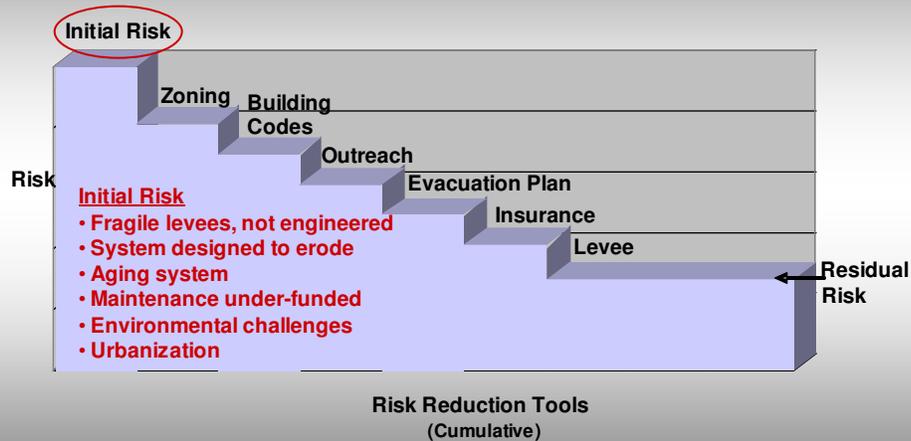


All stakeholders contribute to reducing risk!

One Team: Relevant, Ready, Responsive and Reliable



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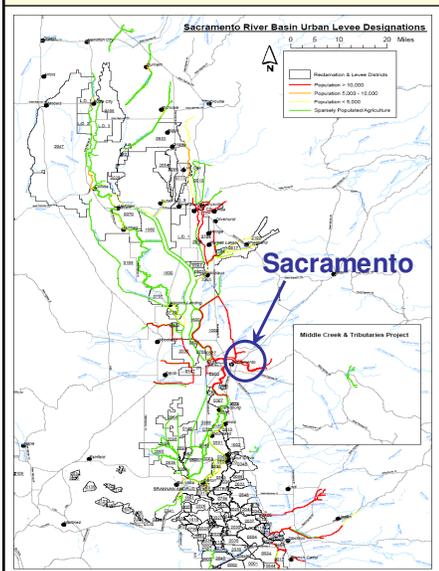
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Central Valley Flood Control System

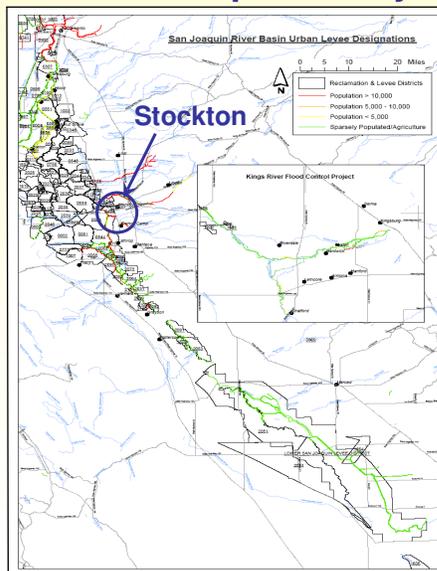
- Levees built from 1860 to 1960 by locals and later incorporated into the federal system
- 1,600 miles of federal levees
- The federal system protects:
 - 1 1/2 million acres
 - 200,000+ parcels
 - 600,000+ people
 - \$50+ billion in property
- 730 miles of non-federal levees in the Delta
- Federal levees designed for flows established by Corps of Engineers
- Levee reliability is not known well



Sacramento Valley



San Joaquin Valley



The System's Key Challenges

FLOOD WARNINGS:

Responding to California's Flood Crisis



- Aging Infrastructure
- Increasing development in floodplains
- Court decisions have increased the State's liability
- State, local, and federal funding for flood management has declined



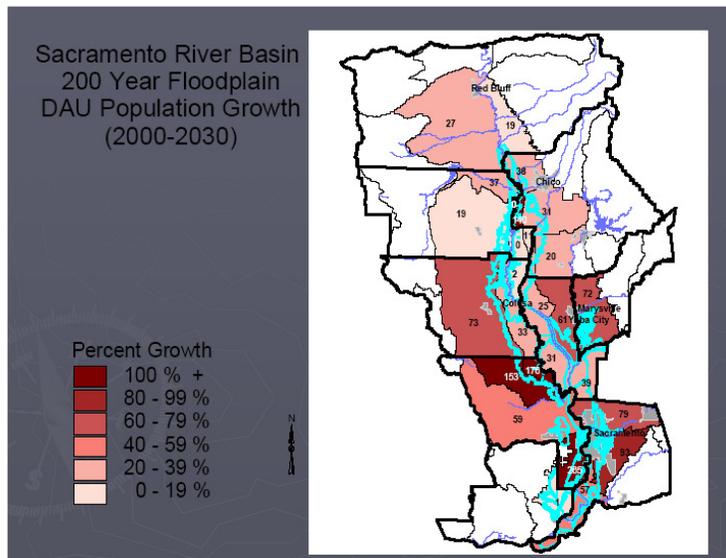
State Liability and Land Use

- State provided assurances to the federal government
- Paterno Decision identified the State as having liability as if the State had built the levee
- Land use approved by local agencies
- No restrictions on floodplain development except through NFIP
- FEMA maps inaccurate and out of date

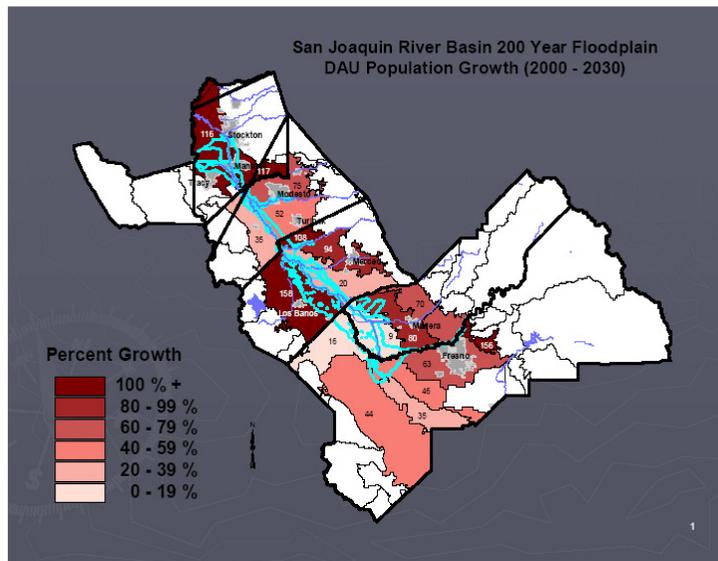


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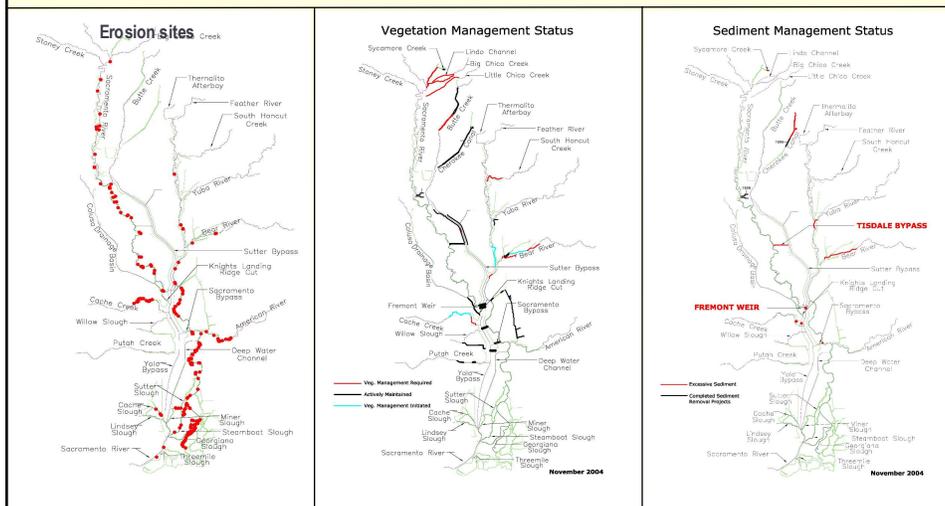
Sacramento River Basin
200 Year Floodplain
DAU Population Growth
(2000-2030)



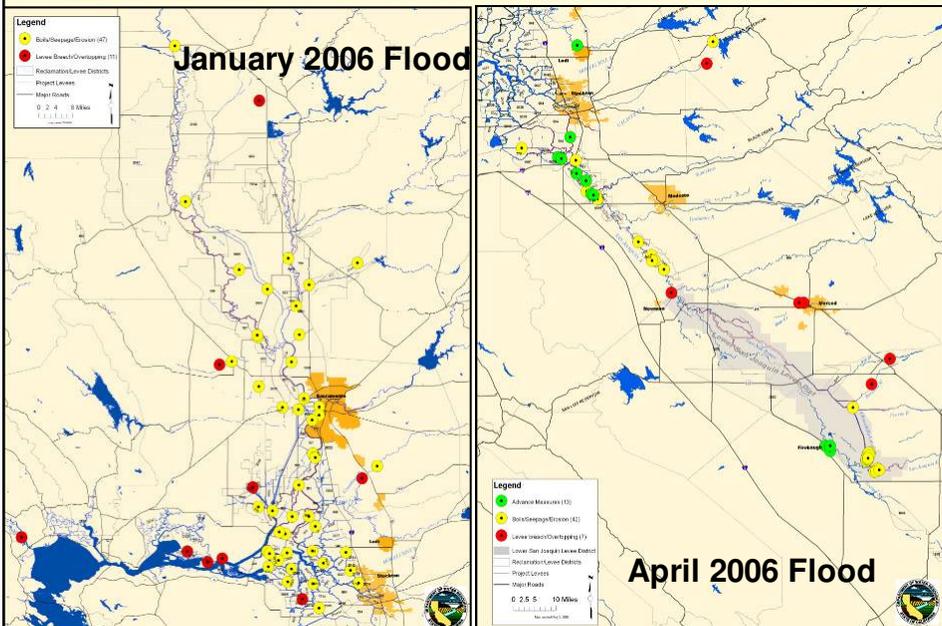
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Erosion, Vegetation, and Sedimentation



2005 KATRINA IMAGES



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Propositions 1E and 84 Distribution (\$4.89 B)



\$3.275 billion
(67%)

Central Valley

Repair and improvements to levees and flood projects in the State and Federal Project system and the Delta



\$680 million
(14%)

Outside Central Valley

Subventions (federal flood control projects outside of the Central Valley, primarily Bay Area and Southern California)

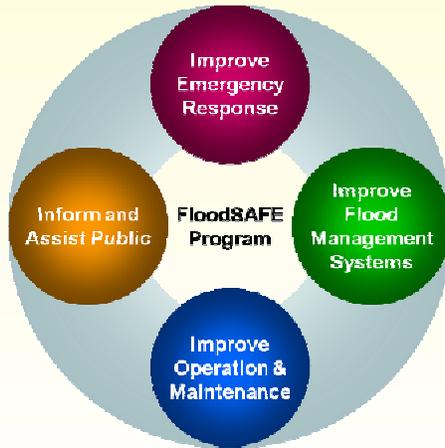


\$935 million
(19%)

Statewide

Floodplain mapping, flood corridors, stormwater grants and other flood improvements statewide.

A multi-faceted program to improve public safety through integrated flood management.



- **Statewide program**
- **Four major emphases**
- **Primarily funded by Propositions 1E and 84**
- **Big focus on State-Federal system in Central Valley and Delta**
- **~10 year effort**

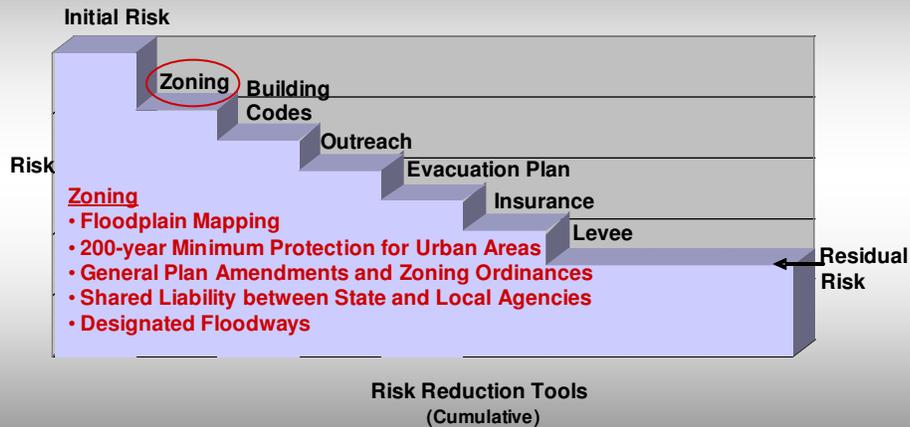
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2007 Flood Reform Legislation

- **SB 5 / AB 5**
 - Floodplain Development
 - Central Valley Flood Protection Plan
- **SB 17** – Reclamation Board Reform
- **AB 70** – Shared Liability
- **AB 162**
 - General Plan amendments
 - Flood hazard zones / land use
- **AB 156**
 - Mapping, Notification
 - Mitigation Banking, Ecosystem Restoration
 - Maintenance Area Formation

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FLOOD RISK MANAGEMENT: BUYING DOWN RISK



All stakeholders contribute to reducing risk!

Zoning

Floodplain Mapping

- Maps of Central Valley 100-year and 200-year floodplains
- Mapping studies for FEMA's NFIP
- Maps of Levee Flood Protection Zones
- Awareness flood maps

200-year Minimum Protection for Urban Areas

- Highest standard in the nation
- DWR developing specific criteria
- Applies to urban areas in the Central Valley
- No new development after 2015 without "adequate progress"
- No new development after 2025 in 200-year floodplain



Zoning

General Plan Amendments and Zoning Ordinances

- Local agencies to amend General Plan consistent with flood hazards
- Guidance on flood hazards under the Safety Element of General Plan
- State review of Safety Element of General Plan Amendments
- Local agencies must address State's comments on Safety Element
- Local agencies must adopt an amended Zoning Ordinance

Shared Liability between State and Local Agencies

- Local agencies that unreasonably approve new development
- Special concerns prior to completing General Plan Amendments

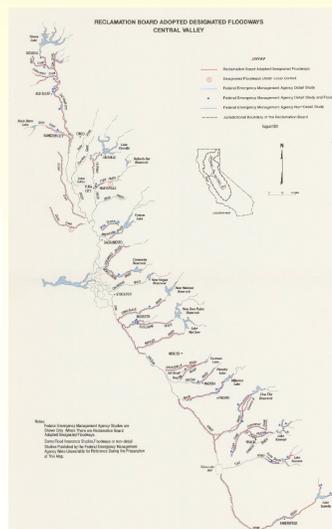


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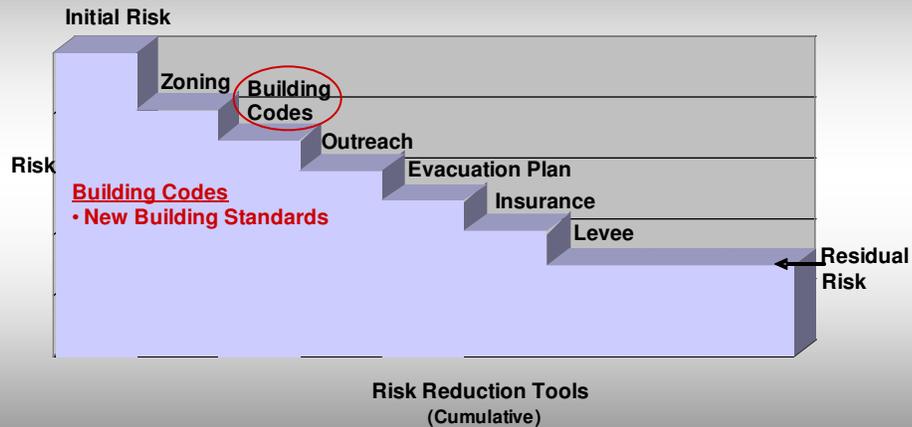
Zoning

Designated Floodways

- Keep people away from flood waters
- Prevent changes that aggravate flooding
- 1,200 miles of designated floodways
- Controlled through permits



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Building Codes

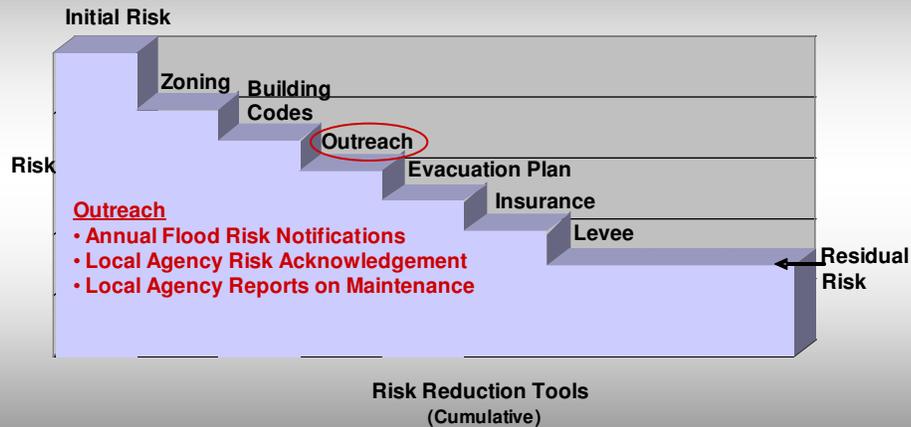
New Building Standards

- By January 1, 2009 submit to California Building Standards Commission
- Standards for construction in areas
 - where 200-year flood would exceed 3 feet deep, and
 - protected by facilities of the Central Valley Flood Protection Plan
- Reduce flood damage
- Protect life, safety, and construction



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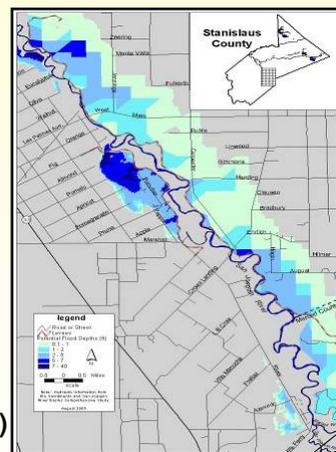
Outreach

Annual Flood Risk Notifications

- Written notifications by September 1, 2010
- All landowners behind State-federal levees
- Depth of flooding
- Potential cost of damage
- Flood insurance purchase recommended

Local Agency Risk Acknowledgement

- Cities and counties benefiting from EIP funds
- Adopt by formal resolution
- Level of protection (use best available data)
- DWR approval to modify or rescind



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Outreach

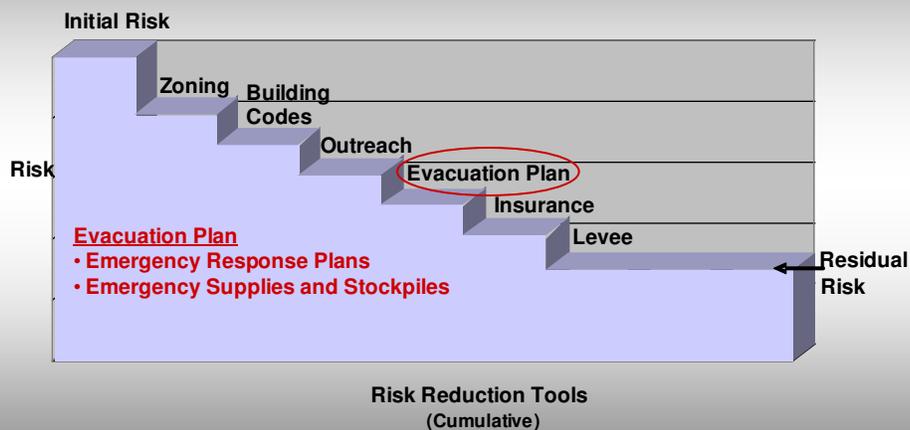


Local Agency Reports on Maintenance

- Local maintaining agencies to report annually
- Information on the levees maintained
- Summary of maintenance performed
- Fiscal year budget and planned work
- Annual maintenance ratings
- Reports compiled by DWR and disseminated



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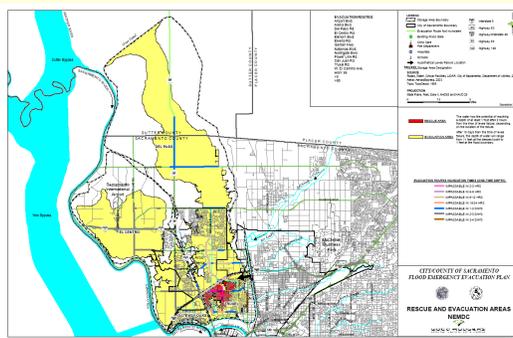


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Evacuation Plan

Emergency Response Plans

- Evacuation
- Rescue
- Flood Fight
- Relief Cuts
- Recovery
- DWR taking the lead to develop plans working with local agencies
- Models for alluvial fans, unleveed areas, leveed areas
- Required by law for semi-urban and urban communities receiving state funds



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Evacuation Plan

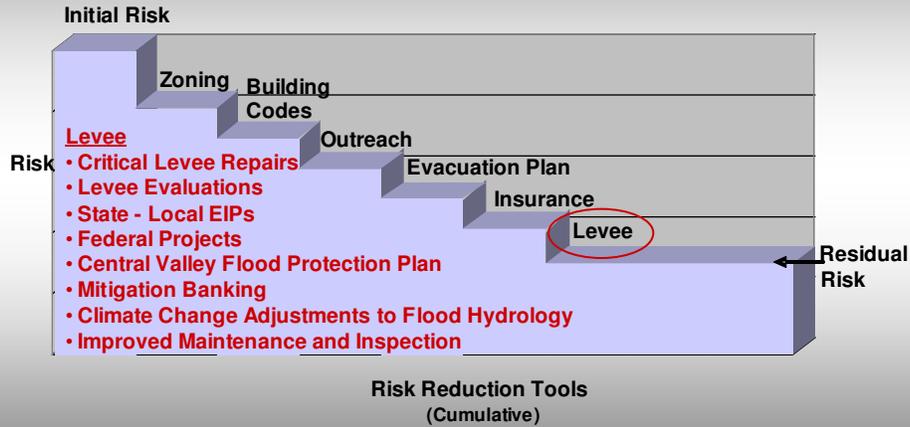
Emergency Supplies and Stockpiles

- Flood fight materials stockpiles in warehouses and containers
- Rock stockpiles for Delta
- Loading and transfer facilities for Delta
- Developing Delta emergency plan and stockpiles



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Levee

Critical Levee Repairs

- 60 critical erosion sites repaired
- 63 critical PL 84-99 sites rehabilitated
- 111 non-critical PL 84-99 sites rehabilitated
- \$295 million State funds spent
- Continuing work
 - 12 critical sites
 - 243 non-critical sites

Levee Evaluations

- 350 miles urban federal levees (\$85 M)
- Up to 150 miles urban local levees (\$45 M)
- 10 - 15 holes per mile
- Helicopter Electromagnetic Surveys
- Topographic/Bathymetric Surveys
- Geomorphologic/Performance Studies
- 1,250 miles non-urban federal levees



Levee

Improved Maintenance and Inspection

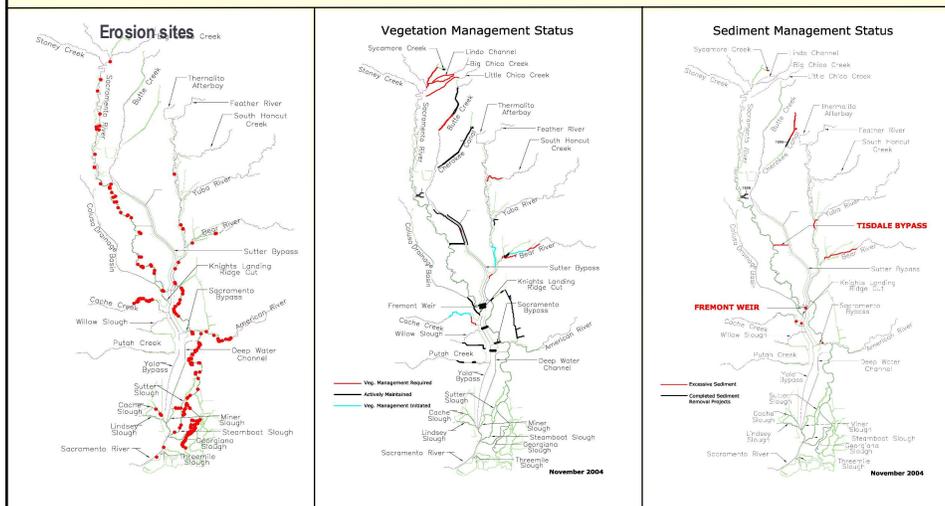
- Interagency Collaborative Program
- Channel clearing projects
- Sediment removal projects
- Channel management plans
- Only nonfederal sponsor with delegated inspection responsibilities
- Added engineers to inspection team
- Improving inspection procedures
 - hydraulic studies
 - levee and channel surveys
 - Corps rating system



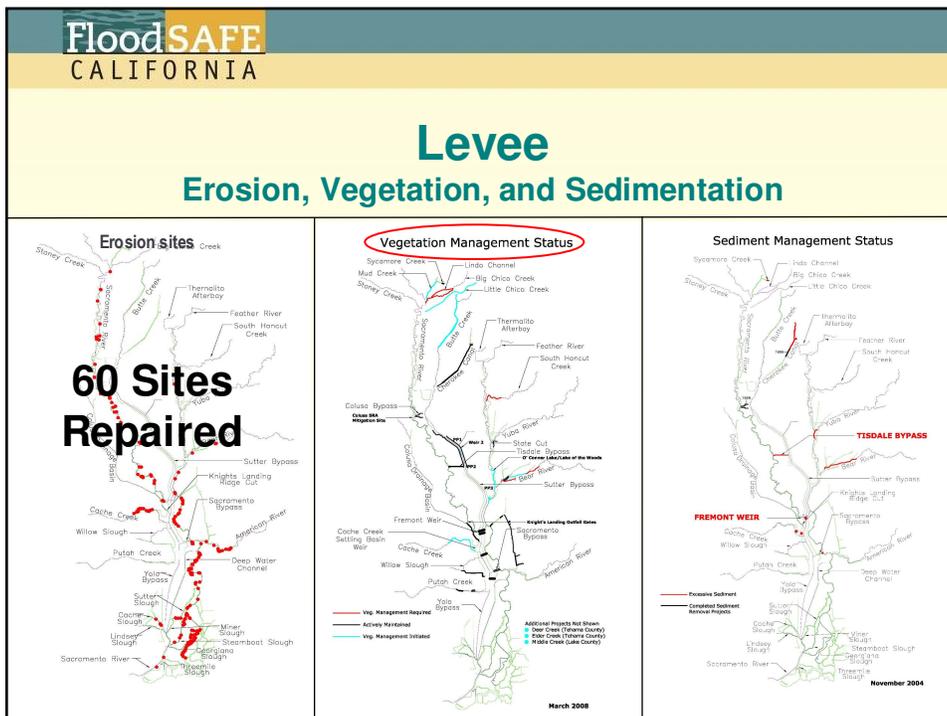
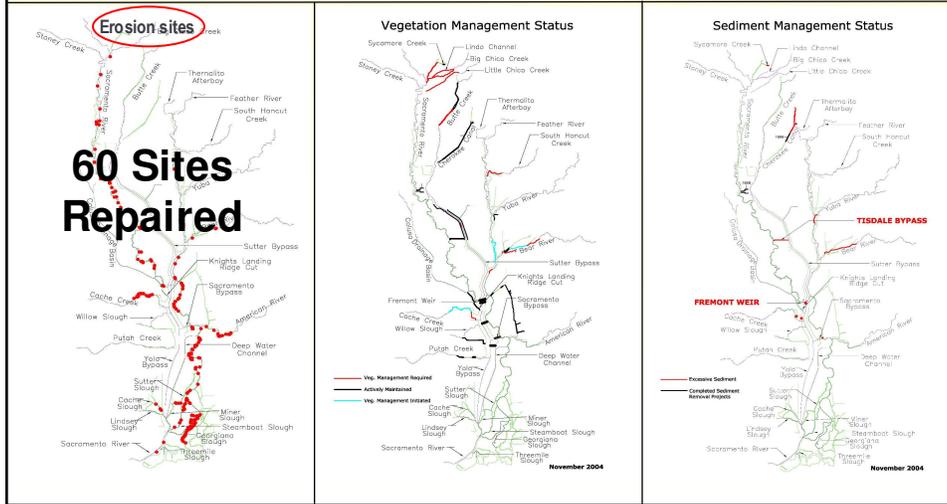
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Levee

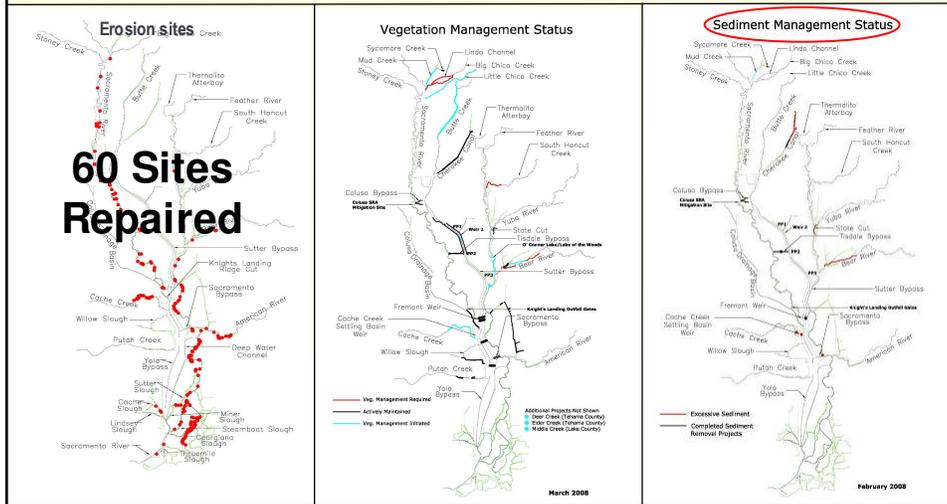
Erosion, Vegetation, and Sedimentation



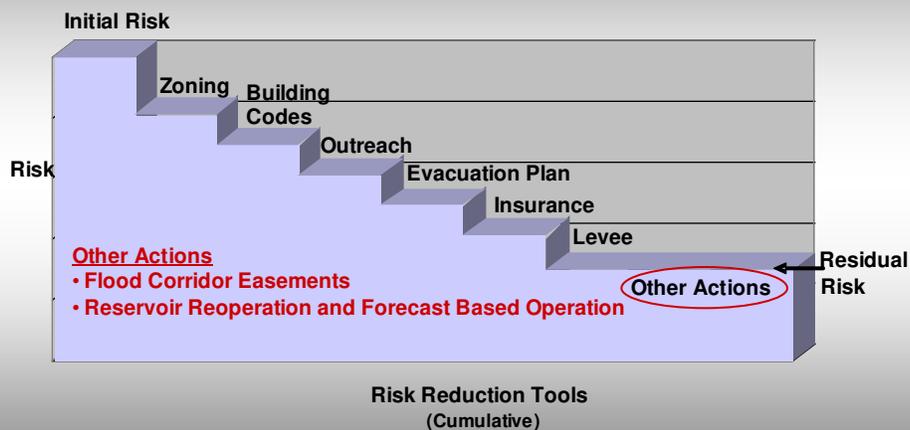
Levee Erosion, Vegetation, and Sedimentation



Levee Erosion, Vegetation, and Sedimentation



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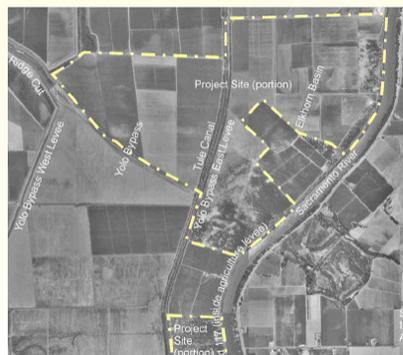


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Other Actions

Flood Corridor Easements

- Acquire flood easements
- Acquire conservation easements
- Reduce flood risk
- Preserve agriculture and/or habitat
- Restore habitat and/or mitigate
- Expand floodways
- Relocate and floodproof structures
- Applies in rural and urban areas



Other Actions

Reservoir Reoperation and Forecast Based Operation

- Improve operation under existing diagrams
- Modify reservoir operation rules
- Forecast-based operations
- Coordinated operations of reservoirs
- Integration of flood control and water supply components of the reservoirs
- Long-term effort



