

Sacramento Levees Challenges for the Future

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Outline

- Current Issues with the Sacramento Levees
 - Real Estate Encroachments
 - Vegetation Encroachments
 - Structural Integrity
- Extent of System and Risk
- Challenge to FPMS and PAS Programs to help avoid, mitigate and lessen consequences of disaster

Real Estate Encroachments

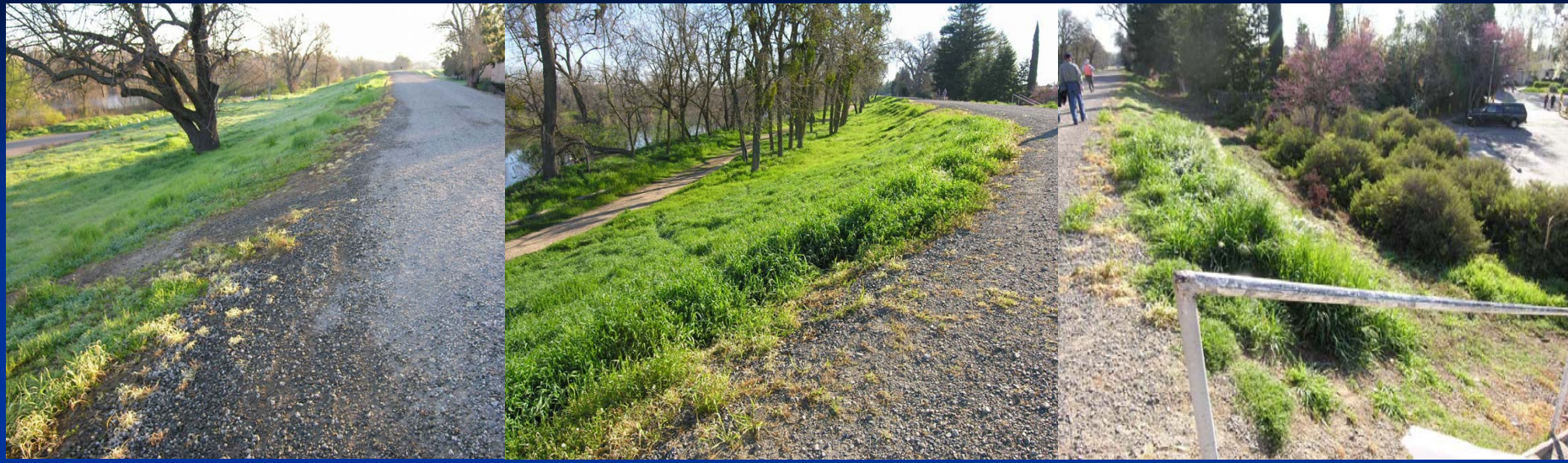


Examples are fences, vegetation, irrigation systems, structures, swimming pools, retaining walls in levee slope, and other property

Real Estate Encroachments

- State and/or local maintaining agency has an **easement**, but property is privately owned.
- Only **typical cross-sections are available** in much of the Sacramento River Flood Control Project.
- 10' easement required by project design, but current Corps standard is **15 ft clearance**.
- CA DWR does inspections and Corps SPK does QC/QA.

Vegetation Encroachments



- Many heritage oaks were present when the project was transferred.
- Riparian vegetation provides habitat for Federally-listed Central Valley Steelhead and Valley Elderberry Beetle, Chinook Salmon, Delta Smelt, Giant Garter Snake, Clapper Rail and State-listed Bank Swallow and Swainson's Hawk.
- Many miles of levee would require partial rebuild.
- Still, vegetation may impair levee integrity and hinder inspections and flood-fighting.

Vegetation Encroachments— Where are we today?

- 2007 Inspections applied **current** standards.
- Levees that fail to meet existing standards will be rated as **unacceptable**.
- Vegetation Symposium (Aug '07) followed by Roundtable meeting of senior representatives of Corps, DWR, Rec Board, FWS, NMFS, DFG, Rec District 2068, and SAFCA.
- State will collaboratively draft **phased system-wide plan, with substantial vegetation removal deferred during development**. Draft plan expected in 2008.
- HQUSACE currently reviewing existing policy and guidance, based on science and engineering practices.
- A Regional **Variance may be granted** provided that
 - Requirements of collaborative plan are met, and
 - **Variance retains the safety, structural integrity and functionality** of the flood damage reduction system.
- **National Levee Safety Summit on Feb 26-27, 2008** in St. Louis, MO.
(ASFPM & NAFSMA)

Structural Integrity

Animal Burrowing



Erosion



- Seepage and Piping
 - Under seepage-unforeseen geology
 - Through seepage-animal burrows as example
- Erosion
- Stability
- Seismic

National Flood Insurance Program Ramifications

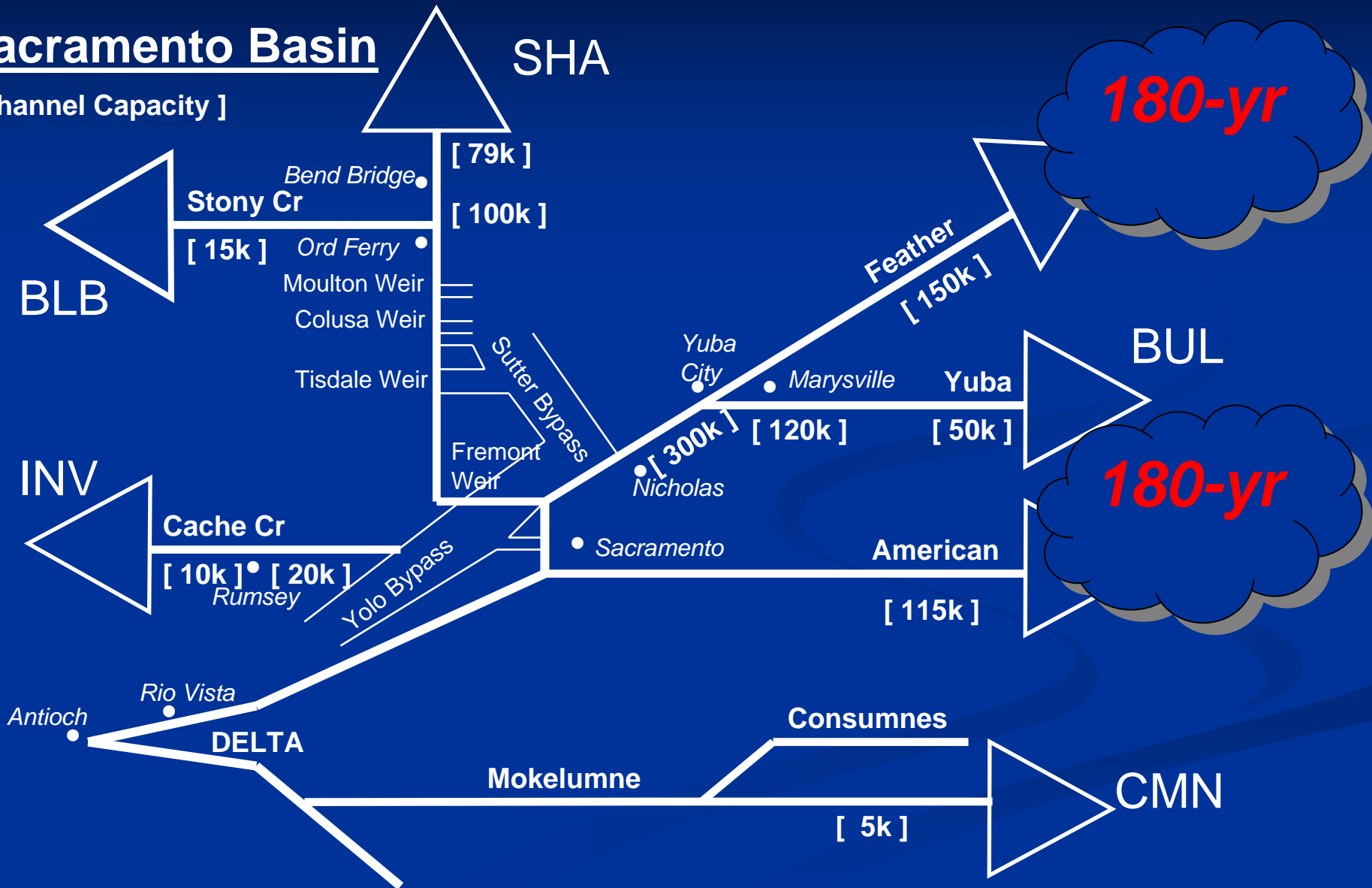
- PL 84-99 ineligibility is not only concern; as FEMA updates NFIP maps, areas 'protected' by levees known not to be certifiable will be new SFHAs (A zones).
- Various A zones have very different effects:
 - A99: flood control project is nearly complete; insurance is required, but premiums are low; development relatively unrestricted.
 - AR: previously accredited system is decertified and is in the process of being restored; insurance is required—premiums are more than A99, but less than A1-30; substantial improvement not required to elevate and new construction must elevate to 3' above highest adjacent grade
 - A1-30: base flood elevation is 1-30; insurance is required—premiums rated according to elevation; all new and substantially improved construction must have lowest floor elevated to BFE; non-residential may floodproof to BFE.
- FEMA denied A99 status for Natomas September 2007. AR designation is under study.

System Considerations

Sacramento Basin

[Channel Capacity]

SHA



What Could Have Happened



- Feather River levee break in 1997-3 died

- West Sacramento

Residual Risk



- 16,000 Units planned in West Sacramento

- 11,000 Units planned at River Islands

FPMS

- To identify the **magnitude** of the flood hazard and for **planning** wise use of the flood plain.
- Technical Services can
 - Develop and interpret data
 - Provide information on flood plain resources and flood loss potentials.

FPMS

- **Special Studies** include:
 - Flood Plain Delineation/Flood Hazard Evaluation
 - Dam Break Analysis
 - Flood Warning/Preparedness
 - Regulatory Floodway
 - Urbanization Impact
 - Stormwater Management
 - Flood Proofing
 - Inventory of Flood Prone Structures
- FPMS can also provide guidance and assistance for
 - **NFIP** and **Community Rating System** standards,
 - **workshops and seminars on non-structural measures,**
and
 - **Education.**

Current FPMS Efforts in the Sacramento System

- Urban Levee Technical Evaluation program (\$900K)
- Non-Urban Levee Technical Evaluation program (scoping)
- Hydrologic evaluation of the Sacramento and San Joaquin for FEMA use(\$7.4M over 3-4 years)
- Hydraulic evaluation of Sacramento and San Joaquin (in negotiation)
- All are **voluntarily contributed funds**
(Thomas Amendment not a barrier)

Additional FPMS Opportunities in the Sacramento System

- Assistance in developing **Community Rating System** activities
 - reduce risk
 - reduce NFIP premiums
- Credit is given for:
 - **Public Information**
 - **Mapping and Regulations**
 - **Flood Damage Reduction**
 - **Flood Preparedness**
- When appropriate, **certification support** (15 Aug 06 HQ Memorandum)

PAS

- Similar to FPMS--**development, utilization, and conservation of water and related land resources....**
- PAS differences:
 - **Cost-shared** 50-50
 - Funding limited to **\$500K per state** per year,
 - **State** priorities.
- Typical studies include:
 - Water Supply and Demand
 - Water Quality
 - Environmental Conservation/Restoration
 - Wetlands Evaluation
 - Dam Safety/Failure
 - Harbor/Port Studies

Current PAS Efforts in the Sacramento District

- Floodplain Awareness Mapping
 - ongoing with State of California, nearing completion.

Questions
and
Panel Discussion