State Plan of Flood Control: Are all its levees worth keeping?

Elizabeth (Betty) Andrews, MS, PE, and Jessica Ludy, CFM
Presentation

1. Background: modification of the SPFC*
2. Why consider modification?
3. Which levees?
4. Why DWR should lead
5. Recommended next steps

*SPFC = State Plan of Flood Control
Background: What is the SPFC?

“A complex system of dams and reservoirs, levees, weirs, bypasses, and other features constructed piecemeal over the last 100 years protects urban and rural areas against most flooding. This system has prevented billions of dollars in damage in its lifetime. A portion of this complex flood protection system includes State and federally authorized projects for which the Central Valley Flood Protection Board or DWR has provided assurances of cooperation to the federal government, known as the SPFC.”

- 2017 SPFC Descriptive Document Update
Background: What is the SPFC?

The comprehensive system of SPFC levees, river channels, overflow weirs, drainage pumping plants, and flood bypass channels is the largest flood management system in California. This system includes the following major SPFC facilities:

- About 440 miles of river, canal, and stream channels (including an enlarged channel of the Sacramento River from Cache Slough to Collinsville)
- About 1,000 miles of levees (along the Sacramento River channel, Sutter and Yolo basins, and Feather, Yuba, Bear, and American rivers)
- Four relief bypasses (Sutter, Tisdale, Sacramento, and Yolo bypasses)
- Knights Landing Ridge Cut, connecting the Colusa Basin to the Yolo Bypass
- Five major weirs (Sacramento Weir, built in 1916; Fremont Weir, built in 1924; and Moulton, Tisdale, and Colusa weirs, built in 1932 and 1933)
- Two flood relief structures and one natural overflow area (M&T Flood Relief Structure, Three B’s Natural Overflow Area, and Goose Lake Flood Relief Structure)

- Two sets of outfall gates
- Five major drainage pumping plants
- Cache Creek Settling Basin, maintaining the flood conveyance integrity of the Yolo Bypass
- Numerous appurtenant structures such as minor weirs and control structures, bridges, and gaging stations
Background: What is the SPFC?

Major SPFC facilities along the San Joaquin River and tributaries include the following:

- Chowchilla Bypass (and levees), which begins at the San Joaquin River downstream from Gravelly Ford, diverts San Joaquin River flows, and discharges the flows into the Eastside Bypass.
- Eastside Bypass (and levees), which begins at the Fresno River, collects drainage from the east, and discharges to the San Joaquin River between Fremont Ford and Bear Creek.
- Mariposa Bypass, which begins at the Eastside Bypass and discharges to the San Joaquin River (and levees).
- Approximately 99 miles of levees along the San Joaquin River.
- Approximately 135 miles of levees along San Joaquin River tributaries and distributaries.
- Two major pumping plants.
If we choose inaction, we are choosing to accept the status quo.
Background: What is SPFC Modification?

Modification or removal of lands and levees from the State Plan of Flood Control could take many forms:

• Levees could be physically altered: If a protected area carries a flood easement, or if the land use is flood-compatible, SPFC levees could be physically breached, penetrated by culverts, lowered, or removed altogether.

• Levees could be administratively modified without physical changes: for example, segments could be classified as no longer part of the SPFC, thereby eliminating any need to meet state or federal O&M standards or participate in continued inspection and oversight. Alternative risk reduction measures (e.g., floodproofing or flood easements) could be provided if appropriate.

• As a different type of administrative change, levee maintenance standards could be eliminated or modified without removing the levee from the SPFC.

• Even where levees are removed from the SPFC, the easements on the lands beneath them could be retained by the state, if desired (e.g., to allow access to certain funding streams) and compatible with project goals, thereby retaining a state interest in what occurs there.
Why consider modification? The law requires it.

- The California Water Code (CWC) Sec. 9614 (h) states that “the evaluation [of the SPFC in the CVFPP] shall include a list of facilities recommended to be removed from the State Plan of Flood Control.”

- The CWC further stipulates that for each facility recommended for removal, the evaluation shall include both: “1) the reasons for proposing the removal of the facility from the SPFC, and 2) any additional recommended actions associated with removing the facility from the SPFC.”
Why consider modification? We can’t afford to keep them all.

• The cost of OMRR&R is dramatically more significant today than it was when assurances of maintenance were given, both for local maintaining agencies (LMAs) and DWR and the USACE as oversight agencies.

• The permitting complexity of OMRR&R activities creates significant hurdles for LMAs.

• The CVFPP 2017 Update estimates a need for investment of $17-$21B over the next 30 years in California’s flood system, a need which will require significant new funding sources.
Why consider modification? Not all are worth keeping.

- Not all facilities provide the same value.
- Climate change effects on the flooding regime will require major changes in our flood system, making some existing levees obsolete.
Why consider modification? Some are in our way.

• California and the federal government have invested heavily in habitat enhancement projects that require floodplain connectivity to restore key functions.
• Recovery of many special-status and at-risk species will require more functional, connected floodplain in the Central Valley.
• Transitory floodplain storage projects, part of the CVFPP strategy, also require floodplain connectivity.
Why consider modification? Summary

• We can’t afford to keep them all.
• Not all are worth keeping in the SPFC.
• Some are in our way.
Which facilities?

Attributes to screen for:

- Mutual interest
- Risk tolerability
- Cost versus benefits
Why DWR should lead: Process is murky.

Multiple layers of interests and authorities are involved beyond the LMA:

1. LMA landowners, adjacent landowners
2. USACE
3. Central Valley Flood Protection Board
4. DWR
Why DWR should lead: Making it happen is sometimes in the state’s interest.

- Projects and floodplain management strategies with statewide benefits can be implemented, probably more efficiently
  - (While LMA’s and project proponents may support SPFC modification, they sometimes don’t have the means or sufficient benefits to warrant the investment)
- Reduction in State liability
- Reduction in State oversight and support costs
Why DWR should lead: Potential projects

Mid San Joaquin Region: Dos Rios, Three Amigos, and RD 1602
Why DWR should lead: Potential projects

Great Valley Grasslands

Photo from American Rivers
Why DWR should lead: Potential projects

Middle Creek (Lake County)
Recommended next steps

1. DWR leadership in collaboration with CVFPB
2. Create an initiative and get USACE to partner
3. Sponsor CVFPP issue working group consultation on issue and process
4. Begin pilot process
   1. Identify candidate projects through reconnaissance screening
   2. Establish MOU with LMAs/landowners, others as needed
   3. Perform detailed analyses needed to support change
   4. If appropriate, implement change (modification or removal)
5. Initiate an investigation on current SPFC expected annual damages avoided for each Levee Flood Protection Zone to inform future recommendations of potential levee segments for removal, as required by law
If we choose inaction, we are choosing to accept the status quo.
Questions?

bandrews@esassoc.com