



DELTA WETLANDS PROJECT

LEVEE SYSTEM INTEGRITY

The Delta is threatened. "...There is a two-in-three chance that 100-year recurrence interval floods or earthquakes will cause catastrophic flooding and significant change in the Delta by 2050. ... Currently, the California Bay-Delta Authority has no overarching policy that addresses the consequences of, and potential responses to, gradual or abrupt landscape change in the Delta⁶."

Stabilizing the Delta is a significant undertaking. There are over 1,000 miles of levees in the Delta and it is estimated that it would take over \$1 billion to bring them up to existing standards. It would take about 1,500 years to reverse the subsidence that has taken place over the last 100 years by restoring land uses that promote natural accretion of soils⁷.

The situation is not hopeless, however. Not all islands have peat soils and not all islands are in locations where levee failures would imperil the state's water supply. A process of careful triage can produce an effective strategy that can ensure the long term viability of the Delta. Public ownership and development of the Delta Wetlands Project would significantly advance such a strategy.

Focus on Key Islands

- **Most Critical Islands:** Failure of central and west Delta island levees has the greatest capacity to impact export water quality and water supply operations. Six islands are the most critical to water supply operations⁸.
- **Most Vulnerable Islands:** Factors contributing to Delta instability are levee length, and extent of subsidence⁹. By these measures, eight additional islands are vulnerable to failure¹⁰. While less important to water operations, they are important to maintaining the Delta as a viable conveyance system, to maintaining critical habitat for aquatic and terrestrial species, and to maintaining sporting and recreation activities dependent on Delta islands and channels.

⁶ Subsidence, Sea Level Rise, Seismicity in the Sacramento-San Joaquin Delta: Report to the Levee Integrity Subcommittee of the California Bay-Delta Authority Independent Science Board, Dr. Jeffrey Mount and Robert Twiss, December 2004

⁷ Mount and Twiss (2004)

⁸ Sherman Island, Twitchell Island, Bradford Island, Webb Tract, Jersey Island & Holland Tract

⁹ Mount and Twiss (2004)

¹⁰ Brannan/Andrus Island, Staten Island, Bouldin Island, Jones Tract, Mandeville Island, Rindge Tract, Bacon Island, & McDonald Tract

Focus on Proven Strategies

- **Levee Maintenance** Routine levee maintenance can significantly reduce but not eliminate the risk of levee failures and is an important part of any long term Delta strategy.
- **Emergency Response** Experience with the recent Jones Tract levee failure, shows that the impact of levee failure on water supply and quality can be minimized by appropriate operating measures. Shutting down export pumps in the immediate aftermath of a levee failure, and providing supplemental Delta inflows are helpful. Emergency management procedures, the availability of stand-by contractors and contracting authority are also useful features of an emergency response plan.
- **Changes in Land Use** Cultivation and draining of peat soils exposes them to rapid oxidation which is the principal cause of Delta island subsidence. Keeping peat soils undisturbed and wet is a proven antidote. Managing wetlands to promote accretion of land mass appears to be a slow but effective method of reversing subsidence. Flooding islands stops subsidence and replaces lost land mass with water, which has a similar, stabilizing effect.

Focus on Willing Landowners

Changes in land use directly affect property rights. CALFED principles suggest that such strategies first be employed on publicly-owned lands or land held by willing landowners. Four of the above critical and vulnerable islands are already in public ownership and four more (owned by Delta Wetlands) have been proposed for public ownership. Together they account for 93% of the land mass of the most critical islands, and over half of the land mass of the 14 most critical and vulnerable islands. Other Delta landowners may be willing to participate on a voluntary basis in projects designed to enhance Delta stability.

Delta Wetlands Islands Are a Large Part of The Solution

Any adequate plan for the Delta must deal with Bacon, Webb, Bouldin and Holland islands. If developed as proposed by Delta Wetlands, these four islands can become the core of a strengthened Delta. In conjunction with Delta islands already in public ownership, they can stabilize more than half of most critical and vulnerable land mass.

