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Before the U.S. House of Representatives  
Committee on Resources  
Subcommittee on Water and Power

Concerning: H.R. 6014, A Bill to authorize the Secretary of the Interior, acting through the Bureau of Reclamation, to improve California's Sacramento- San Joaquin Delta and water supply

September 7, 2006

## Summary

The State of California strongly supports federal funding for the maintenance of the very fragile levees in the Sacramento-San Joaquin Delta. Continued maintenance of these levees is critical to the preservation of California's water supply, including the Bureau of Reclamation's Central Valley Project.

## Introduction

Committee Chairman Pombo, Subcommittee Chairman Radanovich, and members of the Subcommittee, I appreciate the opportunity to appear before you today to discuss the fragility of the Sacramento-San Joaquin Delta and California's water supply, the need for federal funding, and how federal funding would compliment the State of California's ongoing Delta Levee Program.

The Sacramento-San Joaquin Delta is both a beautiful jewel and a place of incredible importance to California's water supply and other critical infrastructure. It is a 700,000 acre region within the Central Valley where the Sacramento and San Joaquin Rivers come together in a maze of channels and sloughs before they flow into San Francisco Bay. It is an area that is rich with benefits for both California and the nation.

The Delta was largely a tidal marsh prior to the late 1860's when the area began to be reclaimed for agriculture. The initial reclamation process consisted of using hand-labor to construct small levees to allow farmers to enclose tracts of land between sloughs and pump out the water. Modern engineering analyses and techniques were not available during the initial construction of the levees which generally rest on the original marsh soils. Over time, the weight of the levees compressed and displaced the soft, organic soils beneath them. In addition, the organic soils within the island interiors oxidized and were removed by wind over time, resulting in the land surface significantly subsiding. As a result, the levees have to be continually raised and broadened, which commonly initiates further settlement, embankment cracking, and loss of freeboard. Delta levees today are now commonly 15 to 20 feet high, and often protect island interiors that are commonly 10 to 15 feet below sea level, with some islands as much as 20 feet below sea level. The irony is that these poorly constructed levees are some of the hardest working levees in the world as they hold back water 24 hours of every day.

During the last century, there have been 162 Delta levee failures leading to island inundations. In many cases, the flooding of the islands has been extremely costly to both local residents and farmers, and to the State as a whole. Levee failures in the Suisun Marsh have also occurred with significant impacts to local and statewide interests. In February 1998, 11 exterior levee breaches in the Suisun Marsh resulted in the inundation of over 22,000 acres and threatened both the State Water Project and Central Valley Project facilities.

## The Delta is the Conduit for California's Water Supply

The State Water Project and the federal Central Valley Project export major quantities of water from the southern portion of the Delta. In addition, Contra County exports water at the western end of the Delta, and the East Bay Municipal Utility District brings water across the Delta in the three large pipelines of the Mokelumne Aqueduct. These supplies provide at least part of the drinking water for two-thirds of the people in California. This water supply also directly supports approximately \$400 billion of the total \$1.6 trillion California economy.

## Additional Critical Infrastructure and Benefits

While most of the levees in the Delta are local or private levees, they also protect other vital state interests and

infrastructure, including:

- Three State Highways (Highways 4, 12, and 160)
- Rail lines (including the Burlington-Northern-Santa Fe across the central Delta)
- A critical underground natural gas storage reservoir on McDonald Island
- Two deep water ports ( Sacramento and Stockton)
- Numerous water, natural gas, and oil pipelines
- Several major power transmission lines

In addition, the Delta is the home to over 500 species, including several endangered fish, and also provides very valued recreation opportunities for boating, water skiing, fishing, and hunting.

### California 's Delta Levee Program

The need for a Delta Levee program was recognized after the failure of the Brannan Island levee in June 1972. This dry season levee failure drew salt water into the Delta as the island filled with water. The salt water intrusion contaminated the drinking and irrigation water that was then being exported. As a result of this single levee failure, water export was halted for several weeks and more than 500,000 acre-feet of fresh water were used to flush salt from the Delta or dilute the polluted water to make it usable.

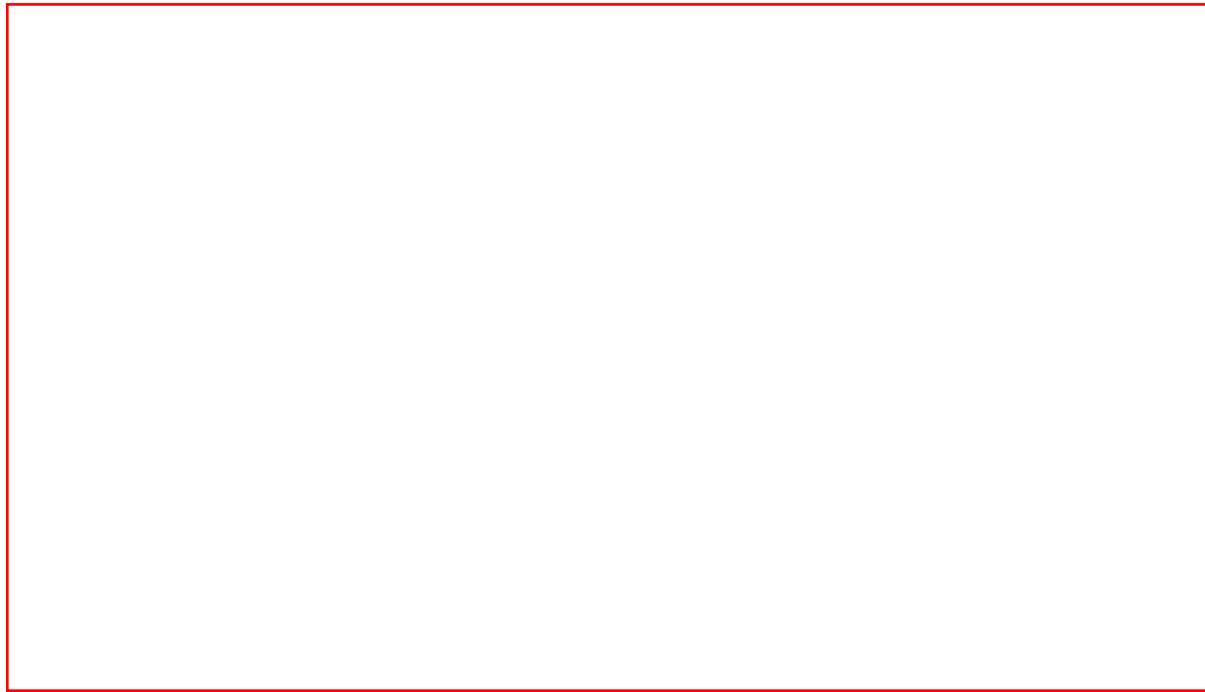
Since that failure, the State has recognized that though the levees in the Delta are generally local or privately owned, they protect significant assets that affect the economic health of the State and the Nation. In 1973 the State passed legislation to provide reimbursement of eligible costs for levee maintenance and restoration. Over the intervening years this modest program has evolved into the Delta Levees Maintenance Subventions and the Delta Special Flood Control Projects Programs:

#### Delta Levees Maintenance Subventions Program

The Delta Levees Maintenance Subventions Program (Subventions) annually receives applications for grant funds from eligible reclamation districts (RDs) in the Delta based upon their island's individual plan for levee maintenance. The Department of Water Resources reviews the maintenance plans along with the Subventions budget and recommends reimbursement amounts for each RD to the California State Reclamation Board (Board). With Board approval, the Department of Water Resources (Department) prepares work agreements with each RD to define the work eligible for reimbursement and stating the potential maximum reimbursement.

With Board approval and a signed work agreement, the RD conducts levee maintenance and improvements according to their own schedule, paying the invoices as they proceed. At the end of the fiscal year, each RD submits a claim to the Department requesting reimbursement. Under the Subventions program, the State will reimburse local RD's up to 75 percent of the eligible costs associated with levee maintenance and improvement, up to the maximum amount of funding provided by the legislature.

Subventions funding over time has been as follows:



### Delta Special Flood Control Projects Program

In the 1990's the California Legislature developed the Delta Special Flood Control Projects Program (Special Projects) to accomplish projects of specific interest to the State. Special Projects funds are managed by the Department and are used to provide grants to RDs for levee stability improvements, to reduce the risk of flooding, for emergency preparedness and response, for habitat improvements, for subsidence control, and studies to guide program implementation.

Requests for grant funds are received by the Department as the RDs recognize there is a need for work. The requests are prioritized based on program priorities and commitments are made to eligible districts with the highest priority work. Before development of work agreements, cost shares are negotiated and expenses are estimated to implement the work. The work agreements are prepared and signed by the RD, the Department of Fish and Game, and the Department. Once the Department signs, the agreement is executed.

The Special Projects program is well suited to work closely with RDs to accomplish clearly defined objectives of the State, or the Federal government. Similar to Subventions, this program allows the RD to contract its own work and, therefore, the RD retains liability for the construction and ongoing maintenance.

Special Projects funding over time has been as follows:



These programs have a history of successfully working with local interests to make gradual improvements in levee stability, and reduce flood risk, while leaving the liability for levee performance with the responsible local RD. Some of the accomplishments include:

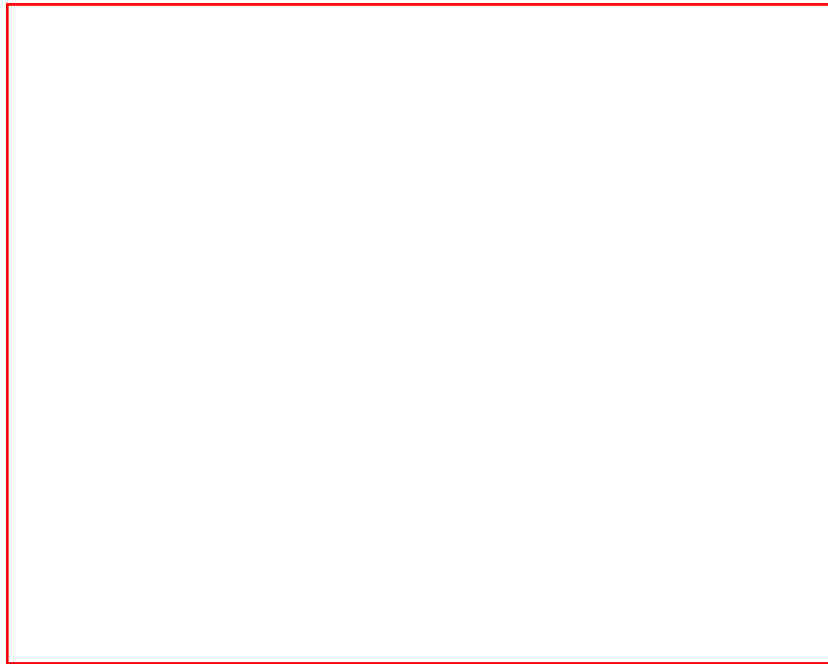
- Provided \$288 million for levee maintenance, upgrades, and habitat restoration over the last 32 years
- Reduced the incidences of Delta levee failures
- Provided funding to upgrade 42 miles of levees to PL84-99 Standards
- Provided funding for the reuse of 2,000,000 cubic yards of dredged material
- Participated in the restoration of 2,600 acres of habitat
- Provided funding for emergency advance actions to prevent the failure of 4 islands during the January 2006 storm events
- Provided funding for the Delta Risk Management Strategy

#### Potential for Catastrophic Levee Failure

As our dependence on the Delta has grown over time, so has the threat of catastrophic failure of the Delta levees. Traditionally we have viewed the flood threat of winter storms as the greatest vulnerability of the Delta. We recognize that this threat has grown over time as the Delta islands have subsided, requiring taller and taller levees to protect them. Today, we recognize that global climate change poses additional threats in the form of both higher peak flood flows and sea level rise. Over the next century we expect sea level in the Delta channels to rise by a foot or more.

Today, we also have a growing realization that the Delta also faces threats from seismic events. An earthquake could liquefy Delta levees and their foundations and cause catastrophic damage and flooding. We have considered the effects that a 6.5 magnitude earthquake in the Delta region would have. This magnitude earthquake may have about the same occurrence probability as a hurricane like Katrina. Such an earthquake could cause 30 levee breaches, flooding 16 islands in the Delta. 300 billion gallons of salt water would be drawn into these subsided islands from San Francisco Bay. The salt in the Delta would render it useless as a water supply source, shutting down the Central Valley Project and the State Water Project for several months, if not years. Under several scenarios, the levees would become so damaged that many islands would become permanently flooded. When water deliveries could resume, they would be smaller in quantity and much lower in quality than Californians have come to expect.

California's economy would be severely affected, and it would become a national disaster. Economic losses would easily reach \$30-40 billion in the five years after the earthquake, and such estimates are notorious for underestimating the true extent of damage (often a factor of 5 to 10 underestimating the true impacts). Thirty thousand jobs would be lost. Agriculture in the San Joaquin Valley would be greatly impacted. All of these economic effects would ripple throughout the nation and the global economy.



## California's Delta Initiatives

### Delta Risk Management Strategy

The 2000 CALFED Record of Decision presented its Preferred Program Alternative that described actions, studies, and conditional decisions to help fix the Delta. Included in the Preferred Program Alternative for a Stage 1 implementation was the completion of a Delta Risk Management Strategy that would assess major risks to the Delta resources from floods, seepage, subsidence and earthquakes. It would also evaluate the consequences, and develop recommendations to manage the risk.

The current study being initiated is an outgrowth of the risk management program element described in the Record of Decision. It is intended to accomplish the goals originally set forth in the Record of Decision for the risk management strategy, and to provide a set of alternative risk reduction plans that would be considered in subsequent decision/implementation phases. Risk reduction measures that would be common to all alternative plans would be recommended for immediate implementation.

The Delta Risk Management Strategy is being jointly conducted by the California Department of Water Resources and the United States Army Corps of Engineers in conjunction with the California Department of Fish and Game. Under the Record of Decision, these three agencies are the implementing agencies for the Levee program.

***However, the funding for this joint State-federal effort has been entirely provided by the State of California.***

The objectives of the Delta Risk Management Strategy are as follows:

- Evaluation and documentation of ongoing and future risk of levee failure over the next 100 years (flooding, subsidence, climate change, earthquake).
- Identification and documentation of probable consequences following levee failures (e.g. ecosystem functions and values, water quality and supply, agriculture, recreation/navigation, infrastructure, life and property).
- Identification of risk reduction measures, including levee upgrades and land use changes
- Evaluate alternative strategies to reduce risk

### Delta Vision Process

We are recognizing that many of the benefits we derive from the Delta may not be sustainable over time if we use “*business-as-usual*” approaches. The Delta Vision Process was created to encompass and integrate many ongoing, but currently

separate, planning efforts. Its goals are as follows:

- Develop a durable Delta and Suisun Marsh vision that provides for the sustainable (100 years or more) use and protection of the Delta, Suisun Bay and Suisun Marsh.
- Develop a strategic implementation plan to achieve that common vision, including recommendations for public policy, resource management, levee maintenance, and funding options.

The Delta Vision Process will make use of the results of the Delta Risk Management Strategy together with a Delta Science Panel and a Blue Ribbon Task Force. Its Final Delta Strategic Plan is due in December 2008.

### California's Current Levee Crisis and State of Emergency

The flood control system in California's Central Valley experienced extensive damage during the recent January and April 2006 flood events. Although there were no levee breaks on the federal project levees, water flows attacked the levees for a sustained period and the levee system was severely strained. The State Flood Operations Center was mobilized and the federal Emergency Operations Center was activated for both events. Both the President and the Governor declared an official state of emergency for multiple counties. In addition to flooding of several communities, over 300 sites along federal project levee sustained significant damage following these two flood events. Additional erosion damage to the levee system has made even more levee sites extremely fragile.

Under Public Law 84-99, the United States Army Corps of Engineers (Corps) is authorized to make repairs to rehabilitate federal project levees back to their pre-flood conditions. Following past floods in California such as the 1997 flood event, the Corps made massive efforts and used federal funds to repair in a single year several hundred levee reaches which had sustained damage. Now we face a similar emergency. Due to the extended period of high water, levee evaluations are only now being completed in California's Central Valley. The Corps' Sacramento District has identified approximately 220 levee sites which qualify for PL84-99 rehabilitation from the January 2006 flood event, and another 81 or so levee sites which qualify as a result of the April 2006 flood event. Approximately 108 of the ~300 PL84-99 levee sites were identified by the Sacramento District as being critically damaged and subject to failure in the next flood season, 34 of which protect urban areas.

The list of critically damaged PL84-99 levee sites is provided in the Sacramento District's August 25, 2006 memorandum entitled **"Imminent Threat of Flooding Due to Damaged Federal Levees."** In separate evaluations, the District's preliminary cost estimate for repairing the critically damaged urban levee sites is approximately \$60 million. The cost for repairing the critically damaged non-urban levee sites is approximately \$130 million. No firm estimate has been made for the repair of the less critical levee damage at the other 190 or so PL84-99 sites, but the cost is likely to range up to another \$200-300 million. However, the District is not currently funded to undertake even the most critical PL84-99 repairs that are now desperately needed.

In addition to the PL84-99 flood damaged levee sites, there are another 27 critical erosion sites that have just been identified by the Corps' annual survey of federal project levees that need urgent repairs. These 27 sites are in addition to the 29 critical erosion sites which were associated with Governor Schwarzenegger's February 24, 2006 emergency proclamation. The first 29 sites are now being repaired principally using State funds. However, these erosion repairs are also a federal responsibility under the Sacramento River Bank Protection Project. This project is a federal program to correct severe levee and channel erosion as a result of a design deficiency in the system, and is typically cost-shared with the federal government paying 75 percent and the State paying 25 percent. In order to have these first 29 sites repaired, the State is providing \$156 million because there was insufficient federal funding for the Corps to proceed. We are again seeing this same situation for the additional 27 levee erosion sites whereby the Corps has insufficient funding to initiate the needed repairs. Further, as the system deteriorates, we expect more levee reaches to sustain critical erosion damage and the need for federal funding will only grow.

***The bottom line is that the State of California more and more has to step into the traditional role of the federal government with respect to levee repairs. California is spending hundreds of millions of dollars for repairs that are a federal responsibility, many of them in the Delta.***

### Recommendation on Providing Federal Funding to Improve California's Sacramento-San Joaquin Delta and Water Supply

The State of California appreciates the initiative of Congress to provide federal funding to maintain and improve Delta levees. It is critical that the levee system be maintained while long-term solutions are developed. Losing portions of the system now, in

the absence of an overall management strategy, may foreclose numerous opportunities and long-term strategies to protect the many benefits that the Delta provides.

This proposed legislation would direct the U. S. Bureau of Reclamation to provide \$10 million per year into the Delta Levee Program. We believe that federal funding directed to either the Subventions or Special Projects programs will benefit the interests of the Department of Interior, U.S. Bureau of Reclamation (Reclamation), and the Central Valley Project by reducing the risk of levee failure. The advantages of federal funding include:

- Brings needed federal money for levee maintenance/upgrades to the Delta
- Provides funds to help maintain Delta levees which provide water conveyance for the Bureau of Reclamation's Central Valley Project
- Reduces the risk of levee failure and threats to California's Water supply, including the Central Valley Project
- The level of funding proposed in H.R. 6014 (\$10 million/ year) is comparable to the historical average provided for Delta levees by the State

We recognize that this funding level represents a small step with regard to the billions of dollars that will be needed to upgrade the Delta into a sustainable system.

Nevertheless, it represents an important federal commitment to its responsibilities in the Delta and a continuing interest in upholding its end of the partnership with the State of California. We hope that the Congress will recognize the many actions and funding that the State has put forward to protect against catastrophic levee failures and threats to California's water supply.

Thank you for the opportunity to testify before this Subcommittee. I would be happy to answer any questions that the members may have.