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October 30, 2007

Environmental Defense appreciates the opportunity to comment on "A Vision for California's Delta", October 16, 2007, prepared by the staff of the Delta Vision Blue Ribbon Task Force. For more than thirty five years, Environmental Defense has been committed to both the restoration and protection of California's rivers, estuaries and wetlands and to policies that will provide reliable water supplies for California's farms and cities. Currently, Environmental Defense is actively participating as a member of both the Delta Vision Stakeholder Coordination Group and the Bay-Delta Conservation Plan Steering Committee.

Overview

Any plan or "vision" for the Delta must include not only elements pertaining to physical management of the Delta's land, water and ecosystem, but also elements that will guide an ongoing decision-making process and fairly allocate payment responsibilities for system improvements. Also, since as much as fifteen percent of the State's developed water supply has passed though the Delta in recent years, any sustainable solution must be linked to efficient and equitable water management policy statewide.

The draft Vision accurately assesses much of what is needed to "fix" the Delta, including actions to accomplish more environmentally friendly water management, ecosystem restoration and levee system improvements. The draft Vision also clearly acknowledges that a robust governance structure is needed, yet provides neither clear suggestions for how to develop a governance plan nor recommendations for how to sort out financial responsibilities.

Environmental Defense supports the draft Vision's identification of "the water system and the ecosystem of the Delta as co-equal values that must be preserved on equal footing". In that spirit we offer the following selected specific comments.

Storage

Environmental Defense remains unconvinced that new storage should be developed as part of a solution for the Delta. Recent surface storage proposals to build dams at Sites and Temperance Flat and to expand Los Vaqueros Reservoir appear to be political in nature and are not based on any serious operational plan that would benefit either the environment or particular communities or that defines who will pay the nonsubsidized portions of the dam's costs. As noted in our recent Sacramento Bee Editorial Opinion (attached), "Dam Distraction Won't Help Save Delta" (October 27, 2007), water districts throughout California have successfully invested in water storage over the last fifteen years without asking taxpayers across the State for help. The Blue Ribbon Task Force should not adopt any recommendations to build new storage, above or below ground, without a much clearer understanding of how it would be operated, who would receive the benefits and who would pay for it. To date, none of this information has been made available.

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Environmental Flows

Environmental Defense agrees with the draft Vision that water exports from the Delta will likely be reduced in the future in order to enable the estuary to support not only its resident fish species but also the anadromous fish that migrate through the Delta and spawn in Central Valley streams. It is important that this recommendation not be "watered down", as has happened in prior efforts to assert this principle.

We commend the draft Vision for making this point clearly, and note that implementation of the CALFED Plan delivered far less environmental water than it promised. The attached report, "Finding the Water" (Environmental Defense, 2005) documents CALFED's shortfalls in providing Environmental Water Account and CVPIA (b)(2) supplies during the 2000-2004 period. Had these supplies of environmental water been available and efficiently applied, it is likely that the recent sharp decline of Delta smelt (and subsequent federal court ruling) and other pelagic fish would not have been so severe. The Blue Ribbon Task Force should take note of this failure of CALFED's and take steps to make certain that its final plan is fully implemented.

Governance

We are encouraged that the draft Vision prioritizes the need for developing a governance structure to successfully implement any final plan. Such a structure is critically important, given that the Delta serves a wide variety of purposes in supporting its communities, its ecosystem, a water system that provides much of California's supplies and other utility and transportation infrastructure. Exactly because of this complexity, however, the Blue Ribbon Task Force should pursue a governance structure as soon as possible. It is disappointing that more has not already been done in this area and that more detailed work will not be pursued until 2008.

Finance

The cost of any Delta plan will be measured in billions of dollars at a minimum, and possibly in the tens of billions. Planning without adherence to a feasible budget will result in a bloated, unworkable Vision that will be doomed to failure.

Many of the elements of Delta plan will primarily benefit certain communities, and those communities should pay for those benefits. For example:

- Water exporters should pay for all facilities necessary to move water thorough the Delta, including the costs of mitigating for their impacts on estuarine and anadromous fish, just as those who deplete and divert water from streams above and in the Delta should be responsible for mitigating their impacts on the environment.
- Communities that benefit from flood control projects should pay for them.
- PG&E and EBMUD customers should pay for a fair share of the cost of protecting their infrastructure from potential levee collapse.

It will not be possible to assign the costs of all actions necessary to implement a Delta Vision to particular communities. Some amount of statewide funds will be necessary. The Blue Ribbon Task Force, however, should tackle the "who pays" question candidly and immediately so that it can develop a workable Delta Vision.

FOUNDED 1857

The Sacramento Bee

Saturday, October 27th , 2007

Dam distraction won't help save Delta

By Spreck Rosekrans

It's the end of a dry year in which a federal court ruled that exports from the Sacramento-San Joaquin Bay Delta, which provide 15 percent of the state's total water supply, must be reduced to prevent the extinction of bellwether endangered fish. The supposed solution is a proposal to spend billions of taxpayer dollars for new surface storage to address both water supply needs and the Delta's environmental woes.

The proposal to build new reservoirs is less than half-baked. Despite vigorous efforts, there is no common understanding of how the reservoirs would be operated, who would pay for the local cost-share portions or how the reservoirs would provide environmental benefits.

The dam debate is a distraction. Our political leaders need to focus on what we must do today, and tomorrow, to save the West Coast's largest estuary and hub of our water supply system. This once-bountiful system is in deep trouble. Increased diversions of freshwater have contributed to a severe decline in the estuary's fisheries that goes beyond the near-extinction of Delta smelt. A collapse of the Delta's fragile and long-neglected levees could devastate the environment and water supply for many Californians, flooding homes and nearby communities.

Much of the rhetorical war Californians see playing out in television advertising and in the Legislature has focused on whether to go forward with taxpayer-funded bonds for three proposed dams: Temperance Flat Reservoir on the San Joaquin River, Sites Reservoir – off-stream but near the Sacramento River – and an expansion of Los Vaqueros Reservoir in Contra Costa County.

The dams proposal does not stand up on its own merit, so the sponsors added it to a bond package that includes worthwhile and important projects.

Many of the more than 1,000 dams built throughout California during the past century have enabled our population and economy to grow, even though many have caused severe environmental harm. However, since the completion of New Melones Reservoir on the Stanislaus River in 1980, large dams have collected the majority of flows from all large streams in the Central Valley. Building additional storage there would yield only limited incremental water supply at exorbitant costs.

Significant investments in new water storage, totaling more than 6 million acre-feet, have occurred in the last 15 years. Two large off-stream reservoirs, Diamond Valley and Los Vaqueros, recently have been built, providing an additional 900,000 acre-feet in storage capacity. The customers who benefit from the two reservoirs paid the full tab for construction.

Water agencies more often find groundwater development to be preferable to new surface storage. Infrastructure can be installed at less cost so previously depleted aquifers can be replenished in wet years to store supplies for use in dry years. While most of the more than 5 million acre-feet of new groundwater storage has been developed in the Central Valley, contractual arrangements and an extensive conveyance system allow for providing additional supply to communities in both Northern and Southern California.

Progressive and fiscally conservative water supply agencies continue to pursue alternatives that include water conservation, recycling and purchasing supplies on the open market. These approaches not only have worked well, they have saved ratepayers billions of dollars. These alternatives represent everything that California strives to be: innovative, efficient and willing to protect the natural resources that underpin its successful economy.

California leaders should walk away from the attempts to use the Delta's crisis as justification for building the three proposed dams. They should focus now on the most urgent priorities: protecting the Delta's ecosystem and weak levees from potential collapse. Those actions are what will benefit our environment, our economy and future generations of Californians.

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Finding the Water

NEW WATER SUPPLY OPPORTUNITIES TO REVIVE THE SAN FRANCISCO BAY-DELTA ECOSYSTEM

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Finding the Water

NEW WATER SUPPLY OPPORTUNITIES TO REVIVE THE SAN FRANCISCO BAY-DELTA ECOSYSTEM

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ENVIRONMENTAL DEFENSE

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Cover image: Thomas B. Dunklin (salmon), California Department of Water Resources (river)

Our mission
Environmental Defense is dedicated to protecting the environmental rights of all people, including the right to clean air, clean water, healthy food and flourishing ecosystems. Guided by science, we work to create practical solutions that win lasting political, economic and social support because they are nonpartisan, cost-effective and fair.

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The complete report is available online at www.environmentaldefense.org.

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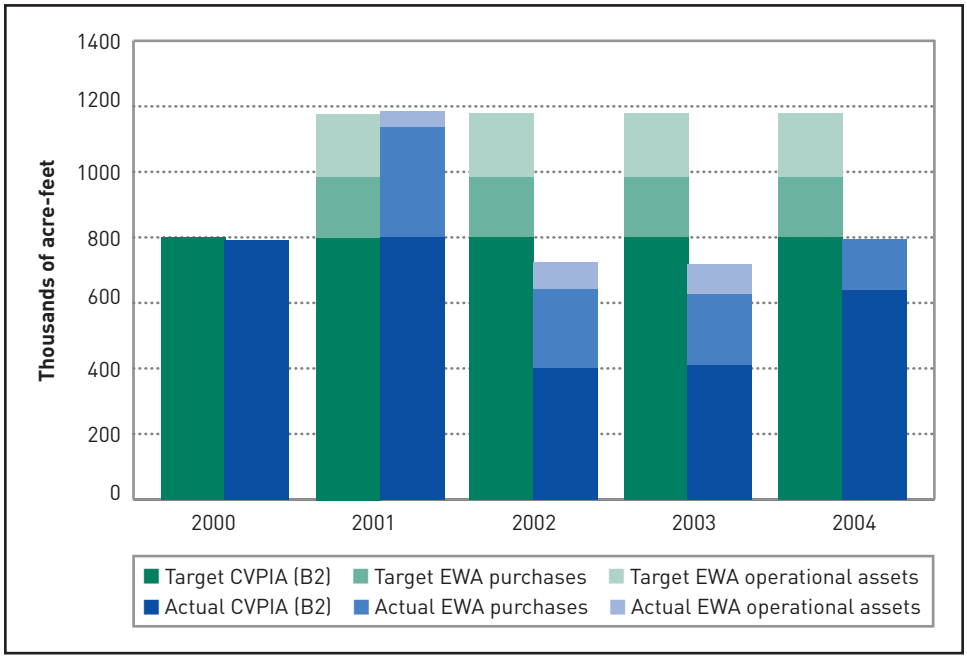
Executive summary

The San Francisco Bay-Delta is in crisis. Fish populations have dropped to record lows in the West Coast's largest estuary, which is a source of drinking water for 22 million California residents and supplies irrigation water for much of the state's agriculture industry. Now, new threats are on the horizon as the state of California plans to increase the capacity of its export pumps to divert even greater volumes of fresh water out of the Delta. At the same time, environmental water targets set forth in the CALFED Plan (specifically those of the Environmental Water Account [EWA] and the Central Valley Project Improvement Act [CVPIA]), intended to protect and restore the estuary and lessen the impacts of water project operations, have not been met for the last three years and face an uncertain future. If the Bay-Delta is to be restored, it is imperative that managing agencies follow through on their commitments to provide environmental water. Meeting the environmental water objectives set forth in the CALFED Plan is an essential element in restoring not only the estuary but also in renewing public confidence in our water management agencies.

In this study, Environmental Defense concludes, based on analysis of water operations data, that in the past few years the environment has been underendowed by approximately 420,000–460,000 acre-feet annually (Figure ES-1)

FIGURE ES-1
Unmet environmental water targets, 2000–2005



Since 2002, the EWA and CVPIA have been under endowed on average by 436,000 acre-feet. The EWA, which began in 2001, has seldom had adequate assets (i.e., water) available largely due to limited funding. CVPIA supplies began diminishing after the Interior Department's 2003 Decision (already in place in 2002), which offered far less protection than the previous policy. Current trends indicate that neither the EWA nor CVPIA water supplies are likely to be available in 2005 and beyond, as intended in the CALFED Plan, unless significant changes are made.

Source: California Department of Water Resources, U.S. Bureau of Reclamation

CALIFORNIA DEPARTMENT OF WATER RESOURCES

The San Francisco Bay-Delta is the hub of California's water supply system. In recent years, the health of this important estuary has significantly declined and populations of key fish species have dropped to record lows. Now additional threats are on the horizon as the State of California plans to increase the capacity of Delta freshwater exports.

The shortfalls in water dedicated to environmental protection are largely due to diminished state and federal funding, unavailable operational assets through the EWA and revised accounting rules for environmental water under the CVPIA. As a result, fishery agencies have been significantly constrained in their ability to dedicate water at key times of the year to protecting fisheries—particularly endangered species—as promised in the CALFED Plan.

Fortunately, as actions are taken to modify and modernize water management in California, there will be opportunities for obtaining the water necessary to provide environmental protection. In this report, Environmental Defense identifies key opportunities to acquire water to finally realize the protective assurances promised in the CALFED Plan. These opportunities include:

- Increasing the usable storage in San Luis Reservoir
- Dedicating increased export capacity
- Integrating state and federal water projects
- Restoring the CVPIA's commitments to fisheries protection and restoration
- Implementing CALFED's Environmental Water Program (EWP) and Section B3 of the CVPIA
- Retiring drainage-impaired land in the San Joaquin Valley
- Implementing user fees

To ensure sustainable and reliable supplies, the water acquired through these opportunities could be required as part of the regulatory standards to which the water projects must adhere. As such, these regulatory standards could help protect fisheries by allowing pumping *only* when it is safe for fish, similar to both EWA and CVPIA protections.

With some creativity and foresight, it is possible to address the problems in the Bay-Delta. The health of the estuary largely depends on a reliable set of environmental safeguards, including dedicated water supplies. In order to ensure the availability of sustainable water supplies, a plan must be developed that identifies long-term supplies, provides assurances that water will be supplied and includes consequences for noncompliance. In light of the dire condition of the Bay-Delta and the looming threat of increased freshwater diversions, government agencies, water contractors and the interested public need immediately to develop a viable plan to assure adequate fresh water supplies for the long-term health of the San Francisco Bay-Delta.

FIGURE 1

The San Francisco Bay-Delta: the hub of California's water system

The San Francisco Bay-Delta is one of California's most valuable and unique ecological resources. The Bay-Delta also supplies drinking water for 22 million California residents and irrigation water for much of the state's agricultural industry via the state and federal pumping facilities, Harvey O. Banks and Tracy, respectively.

CHAPTER 1

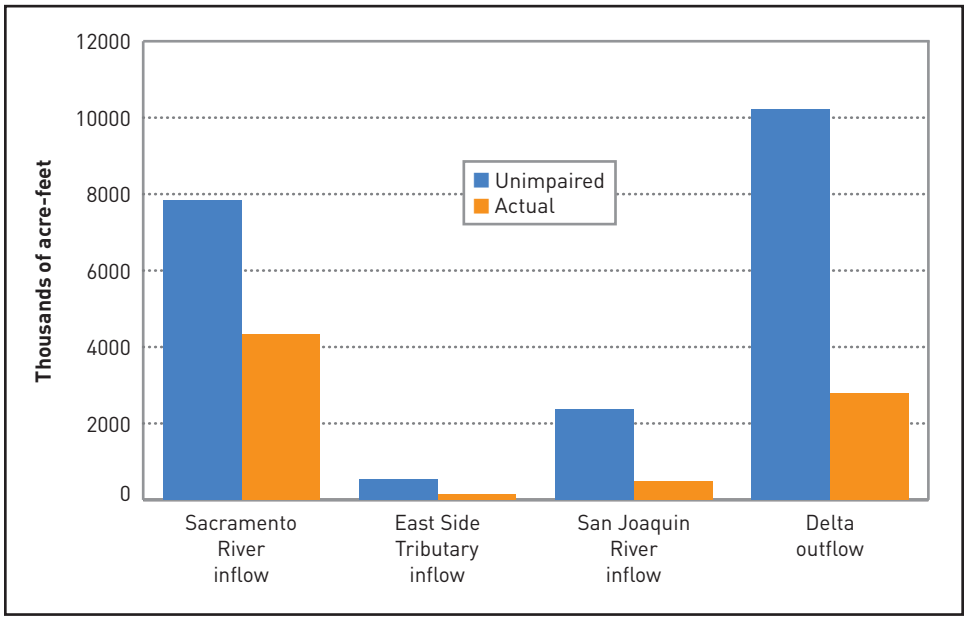
Introduction

The San Francisco Bay-Delta Estuary has been the hub of California's water supply system since the state's early days when farmers first diverted its freshwater inflows to grow food for hungry gold miners. As the state has grown, the Delta has become the center of a water system delivering supplies from the wetter northern region to the more populous and drier southern region. As Figure 2 shows, land conversion, water development and flood control projects throughout the Central Valley have drastically altered freshwater flows in the estuary.

Since the completion of Friant Dam in the 1940s, most years the entire flow of the upstream reaches of the San Joaquin River is diverted, leaving a dry riverbed upstream of its confluence with the Merced River. In 1956, the federal Central Valley Project (CVP) began to export large volumes of water into the Delta Mendota canal to assist farmers along the San Joaquin River whose supplies had been diverted south by the Friant project, as well as to support expanded agriculture on the arid west side of the San Joaquin Valley. Figure 3 illustrates how Delta exports have grown over the last 50 years. Exports sharply increased in the late 1960s, when the California State Water Project (SWP) was completed, principally to provide additional water supplies to urban southern California and the agriculture industry in Kern County. At the same time, the CVP completed its San Luis Unit, including a contract for more than 1,000,000 acre-feet with the Westlands Water District. Exports of fresh water steadily increased until 1991, when a lengthy drought forced their reduction.

FIGURE 2

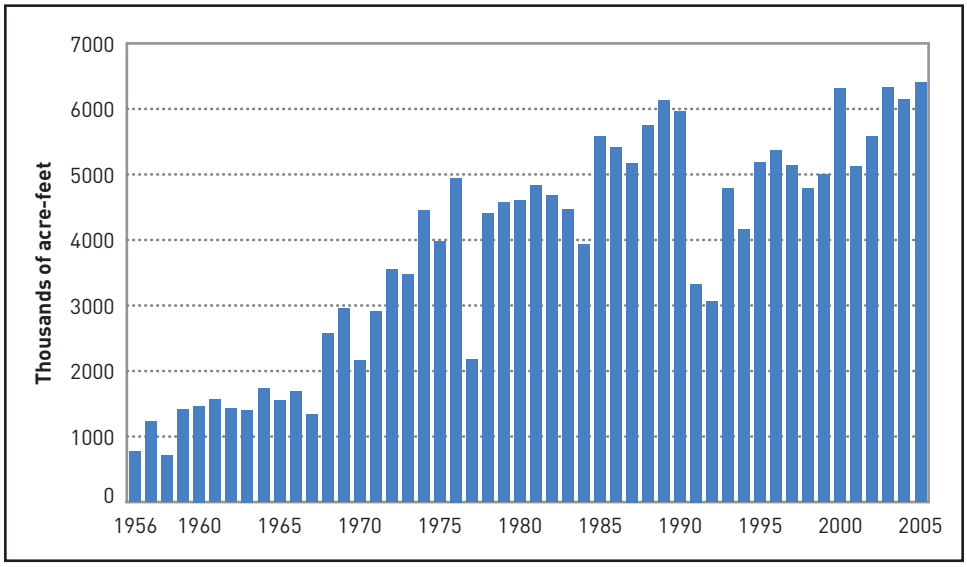
Changes to Delta flows, February–June, 1987–1992 drought



Land conversion, water development and flood control projects throughout the Central Valley have altered the volume and timing of flows into and out of the estuary. The changes are particularly noticeable in dry years such as the 1987–1992 drought.

Source: California Department of Water Resources, Interagency Ecological Project

FIGURE 3
Historic Delta exports, 1956–2005



In recent years, both state and federal exports have been steadily rising, with three out of the past five years reaching record highs, and an all-time high of 6.4 million acre-feet was reached in 2005.
Source: California Department of Water Resources

Exports are once again on the rise, reaching the highest levels ever in three out of the past five years, with an all-time high of 6.4 MAF at the export pumps in 2005.

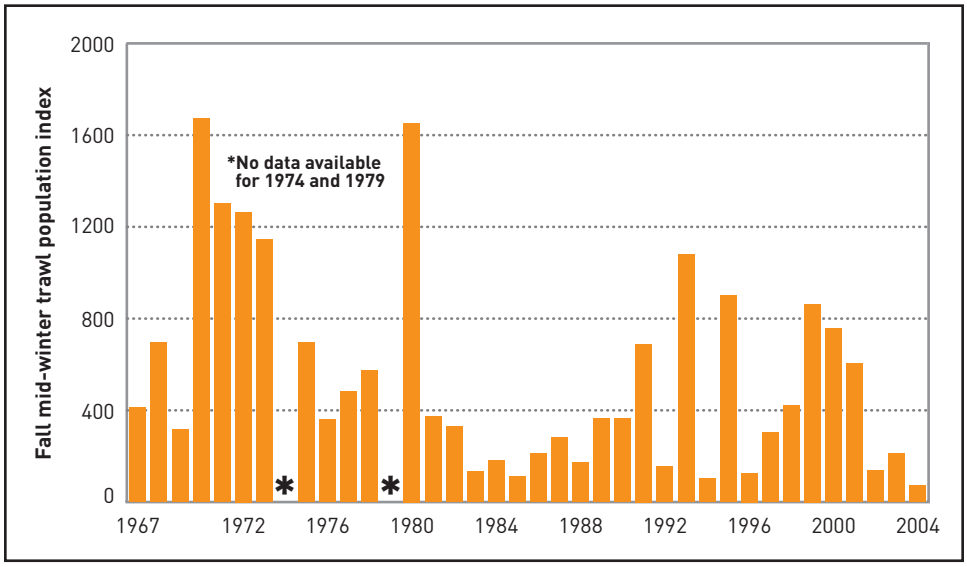
Historical impacts on the estuary

As the physical and ecological processes in the Bay-Delta system have changed, the estuary's fisheries have been devastated. By the late 20th century, the overall decline of the aquatic environments in the Central Valley and Bay-Delta was apparent. The winter-run Chinook salmon population had, until 1978, always been measured in the tens of thousands, but was down to 191 fish returning in 1994. Populations of

BRANDON D. COLE/CORBIS

Human demands on the Bay-Delta system have strained the species dependent on it. Chinook salmon spend most of their lives in salt water, but they spawn and hatch in freshwater streams. The winter-run Chinook salmon population had, until 1978, always been measured in the tens of thousands, but was down to 191 returning fish in 1994.

FIGURE 4
Historic Delta smelt abundance, 1967–2004



The protective mechanisms of the WQCP, the CVPIA and the EWA are in place to protect sensitive species such as Delta smelt, an estuarine fish found only in the Bay-Delta. Populations of Delta smelt, listed under the Endangered Species Act a decade ago, are at the lowest levels ever, down from a population index of 864 in 1999 to 74 in 2004. Source: California Department of Fish and Game fall mid-water trawl

both the Bay-Delta's resident fish and the salmon and steelhead that passed through the Delta en route to and from spawning grounds in Central Valley streams showed similar trends. Shortly after a severe drought from 1987–1992, a number of species were listed for protection under the state and federal Endangered Species Acts. The listing of Delta smelt is of special concern as its one-year life cycle makes it particularly vulnerable to extinction. One year of very low numbers could be devastating to the smelt population. Initial Endangered Species Act listings include:

- Winter-Run Chinook, Endangered, California ESA, September 22, 1989
- Delta Smelt, Threatened, Federal ESA, March 5, 1993
- Steelhead, Threatened, Federal ESA, May 18, 1998
- Spring-Run Chinook, Threatened, California ESA, February 6, 1999
- Splittail, Threatened, Federal ESA, March 10, 1999 (subsequently removed)

A declining resource

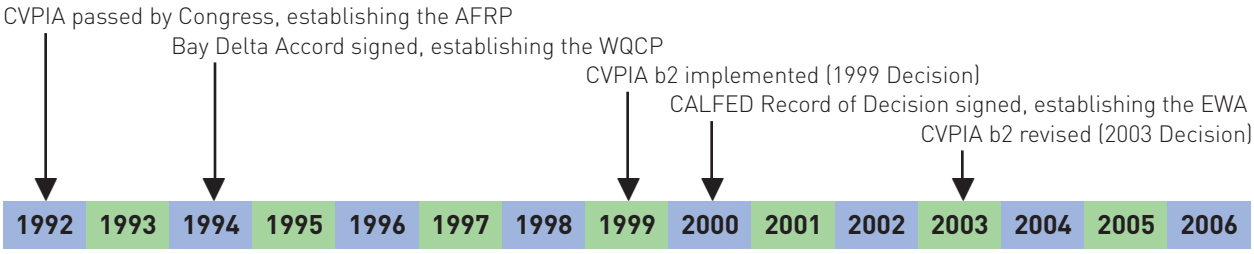
In recent years, the health of the Bay-Delta ecosystem has become increasingly precarious and new threats are on the horizon, in particular the proposed increase in capacity to export water from the Delta. As exports have continued to rise, recent surveys have shown a sharp decline in populations of estuarine fish. Delta smelt, listed under the Endangered Species Act a decade ago, are at their lowest level ever (Figure 4).[1] In addition, juvenile striped bass are at their lowest levels in four decades and both longfin smelt and threadfin shad populations are reaching near-record lows.[2] Contributing to these declines is a sharp reduction in the abundance of zooplankton, particularly a calanoid copepod, which is the primary food for young estuarine fish as

well as older life stages of Delta smelt. The Interagency Ecological Program, a collaboration of state and federal agencies focusing on the ecology of the Bay-Delta estuary, is currently conducting a comprehensive review of the possible causes of this most recent decline in Delta fisheries. The program will specifically investigate the degree to which pollution, invasive species and water project operations are responsible for the decline.

CHAPTER 2

Overview of environmental water requirements

Timeline of environmental water requirements



In response to the declining condition of the Bay-Delta in the 1990s, a number of environmental water requirements were developed to lessen the impacts of the water projects. These requirements were designed to provide increased instream flows or curtail export pumps at key times to protect fisheries. Today, three important requirements fall under the plan developed in 2000 by the state-federal CALFED Bay-Delta Authority.[3] In particular, the CALFED Plan provides three tiers of protection which include the Environmental Water Account (EWA), the Central Valley Project Improvement Act (CVPIA) and the Water Quality Control Plan (WQCP). An overview of these three environmental water requirements follows.

CALFED and the EWA

In 1995, to address the conflict over competing human demands in the Delta and declining fisheries, state and federal agencies, water contractors, public interest and environmental groups and others went to work on a long-term plan. Many elements of the vast program under CALFED's purview were contentious, though perhaps none so much as the rules governing export pumping. Fishery agencies and environmentalists asserted that additional protections were needed to reduce exports, especially when at-risk populations were in the vicinity of the pumps. Others agreed that some additional protection was necessary but pointed out that it was not always possible to identify in advance when export curtailments to protect fish from direct entrainment would be needed.

At the behest of then-Secretary of Interior Bruce Babbitt, CALFED agencies and stakeholders were tasked to find a mechanism for applying export reductions on a real-time basis, rather than on a fixed schedule. The idea was that the most efficient way to balance competing objectives for water export and environmental protection was not to determine in advance when exports ought to be curtailed to reduce fish mortality, but to provide a mechanism whereby fishery scientists with detailed monitoring capabilities could request reductions when fish would otherwise be entrained in large numbers at the export pumps.

After months of comprehensive "gaming" exercises, during which fishery scientists, project operators and others simulated how such real-time changes to project operations might be accomplished in response to monitoring data, a plan for the EWA emerged. Successfully negotiating the EWA was a key component that allowed the final CALFED Plan to be released in 2000.

The EWA was adopted as a water management tool intended to protect endangered fish from the harmful operational impacts of the federal and state water projects without reducing existing water supply or deliveries from the Delta. In general, U. S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and California Department of Fish and Game (DFG) would act as management agencies, using monitoring data, scientific understanding and professional judgment to decide which actions were required to protect and recover Delta fish populations and ecosystem function. The U.S. Bureau of Reclamation and California Department of Water Resources (DWR) would act as the project agencies that oversee the operation of the EWA and implement those actions deemed necessary by the fishery agencies. EWA water supplies would be acquired either through applying a set of different tools used to gain supplies during system operations (i.e., operational assets) or through purchases (i.e., purchased assets) (Table 1).

The EWA would protect fish from mortality due to entrainment in the pumps and ensure reliable supplies for the water contractors while providing them with near-absolution from additional compliance with the Endangered Species Act. Without the EWA in place, additional pumping would increase the number of fish "taken" at the pumps, thereby increasing the likelihood of ESA non-compliance for water contractors. The EWA is thus effectively an insurance policy for water contractors—providing substantial economic benefits by assuring reliable supplies without fear that the

CALFED's three tiers of environmental protection

Tier 1: Consists of regulatory requirements including Delta smelt and winter-run Chinook salmon biological opinions, WQCP and 800,000 acre-feet of supplies pursuant to CVPIA Section 3406(b)(2).

Tier 2: Comprised of environmental benefits provided by the EWA and Ecosystem Restoration Program. Tier 2 is a mechanism to assure that water is provided for fish protection and recovery, without a reduction in deliveries to water users.

Tier 3: Founded on the commitment of state and federal agencies to make additional water available if the combined protections of Tier 1 and 2 were inadequate to protect ESA-listed species.[4]

TABLE 1
Proposed sources of water for the EWA

Action description	Water available annually (average)
Operational assets	**195,000 acre-feet**
SWP pumping of (b)(2)/ERP upstream releases	40,000 acre-feet[2]
EWA use of joint point	75,000 acre-feet
Export/inflow ratio flexibility	30,000 acre-feet
500 cfs SWP pumping increase	50,000 acre-feet
Purchased assets	**185,000 acre-feet**
Purchases—south of Delta	150,000 acre-feet
Purchases—north of Delta	35,000 acre-feet
Total	**380,000 acre-feet**

Source: CALFED Record of Decision

Endangered Species Act will diminish their supplies.

The CALFED Plan describes the EWA as the second of three "Tiers" of environmental water supplies (see sidebar). Tier 1 includes regulatory requirements that were already in place, including the WQCP, CVPIA supplies and rules for project operations, to protect Delta smelt and winter-run Chinook salmon under the Endangered Species Act. Given that the EWA would interact so closely with actions taken pursuant to the CVPIA, the CALFED Plan made clear that Tier 1 would include CVPIA supplies that were available under the federal policy for B2 supplies established in 1999 by the Department of the Interior.

During CALFED's gaming process, agency staff projected that an annual average of 195,000 acre-feet would be available for the EWA in the normal course of CVP and SWP operations (Table 1). Additionally, agencies elected to commit to purchasing supplies amounting to 185,000 acre-feet per year. Together, these operational and purchased assets would total 380,000 acre-feet per year on average.

In exchange for CALFED's three-tiered suite of protections, the fishery agencies agreed that they would require no further reductions beyond existing regulatory levels in CVP or SWP Delta exports for the protection of state and federally listed, threatened and endangered species. In essence, the water users were guaranteed a reliable supply of water, without unscheduled interruptions due to compliance with the Endangered Species Act. These ESA commitments were to be renewed annually and were contingent on full funding and availability of the three tiers of protections.

CVPIA and the Anadromous Fish Restoration Program

Prior to the EWA, Congress passed the CVPIA in 1992, largely in response to the ecosystem decline in the Bay-Delta and Central Valley watersheds. The Act made protection of fish and wildlife a priority and included a directive to achieve a reasonable balance between the requirements of fish and wildlife and other project purposes. The CVPIA contains a number of landmark provisions that substantially modify and

The Sacramento River and the San Joaquin River are the two main tributaries that flow into the Bay-Delta. Of the two, the Sacramento River provides the bulk of outflow to the Bay and is a critical spawning habitat for winter-run Chinook salmon.

modernize the CVP, including directives to provide additional water for the benefit of fisheries and wetlands in the Central Valley and Bay-Delta.[5]

The Act's most controversial element has been its Anadromous Fish Restoration Program (AFRP) and the subsequent authorization to modify water project operations to accomplish its goal of doubling anadromous fish populations by 2002.[6] To implement the AFRP, the Act provides three water management tools. The authorized modifications are usually referred to as B1, B2 and B3 supplies, named after the sections of the law in which they appear. In short:

- Section B1 instructs the CVP to modify project operations for fish protection as long as the timing and volume of deliveries of the Project's contractors are not impaired.
- Section B2 annually dedicates 800,000 acre-feet of the Project's water supplies for fish protection.
- Section B3 provides funding for additional flow purchases by levying a surcharge on water users.[7]

Due to its controversial nature, Section B2 was not fully implemented until seven years after the CVPIA had passed. In October 1999, the U.S. Department of the Interior released a final decision for administering Sections B1 and B2 jointly. Its principal provisions included measuring reservoir releases that were increased to improve conditions for fisheries on four federally controlled streams (Sacramento River, Clear Creek, American River and Stanislaus River), as well as any curtailments that were made at the Delta export facilities to reduce entrainment of fish in the pumps. Under most circumstances, these flow increases and export reductions were based on the cumulative net change to CVP operations during the course of a water year. The 1999 Decision also, in recognition of the Act's primary purpose of doubling anadromous fish populations, insisted that a significant portion of the CVPIA's B2 dedication be applied to protect salmon habitat on CVP-controlled streams for spawning and rearing, rather than simply providing safe passage through the Bay-Delta.

The Bay-Delta Accord and the WQCP

As the U.S. Department of the Interior struggled to implement the CVPIA, efforts to deal directly with the Bay-Delta's ecological problems continued. After the State of California withdrew from its own effort to develop alternative regulation for water project operations, the U.S. Environmental Protection Agency (EPA) threatened to promulgate water quality standards under the Clean Water Act.[8] Responding to this warning, federal and state agencies, water contractors and environmentalists negotiated a package of environmental protections, operations protocols and funds for habitat restoration. On December 15, 1994, state and federal agencies, joined by ten "interested parties" including Environmental Defense, signed the Bay-Delta Accord. The Accord established interim standards for water project management and encouraged parties to work together on a long-term solution. As a result, the state and federal government initiated the CALFED program, with a mandate of developing long-term solutions that would address water supply, water quality, levee stability and ecosystem issues facing the Delta.

The SWP and CVP agreed to bear the full responsibility for meeting the Accord's flow objectives, with the

expectation that the State Water Resources Control Board (SWRCB) would consider whether other water agencies should also provide flows for the Delta.[9] According to the agreement, the majority of this burden would be met by the CVP, using a portion of its B2 account. The SWP's contribution to the Accord's objectives was smaller on average, but significant in wet years. The Accord's objectives would be implemented as the newly-formed CALFED Program worked on a long-range plan.

The Bay-Delta Accord's standards were formally adopted in 1995 by the SWRCB as the WQCP for the San Francisco Bay and Sacramento-San Joaquin Delta Estuary. In particular, the WQCP limits state and federal export pumping to 35% of Delta inflow during February through June when estuarine fish breed, and to 65% of inflow during the rest of the year. The WQCP also implemented the Accord's "X2" recommendations for Delta outflow through requirements for low-salinity habitat during the February through June period.[10] In any given month during this period, Delta outflow requirements are determined based on the natural flows of the eight largest rivers in the Sacramento and San Joaquin Valleys.

Most elements of the WQCP have been incorporated by the SWRCB in its water rights orders. As a result, the WQCP's outflow requirements, export curtailments and Sacramento River inflow requirements are met annually through the operation of the CVP and SWP. The WQCP's inflow objectives for spring inflow to the Delta from the San Joaquin River, however, are only partially met by compensated contributions from local water agencies as part of the Vernalis Adaptive Management Plan.[11]

While some salmon populations have improved considerably, largely in response to improved instream flows in upstream tributaries and removal of upstream passage impediments, the Delta's estuarine fish are faring poorly. Populations of Delta fisheries have hit record lows at a time when project exports have reached record high levels. At the same time, the guarantees of environmental water envisioned in the CALFED Plan have fallen short of their objectives. As a consequence, the ability of fishery agencies to manage Delta exports through application of the CVPIA and EWA supplies has been significantly compromised. The following is an overview of the CVPIA's and EWA's performance and an estimate of how much the environment has been underendowed.

Diminished CVPIA fisheries commitments

Changes in the application of the CVPIA have significantly reduced its ability to protect fish both upstream and in the Delta. As a consequence, the EWA is now expected not only to do the job intended for it when the CALFED Plan was adopted but also to make up the water lost when the CVPIA's protections were weakened.

Though it was incorporated as a cornerstone of the CALFED Plan, the Interior Department's 1999 Decision for administering Sections B1 and B2 jointly was in force for only two years—2000 and 2001—after it was signed. During this period, only the annual increased use of CVP supplies for fishery enhancement, in terms of either additional reservoir releases for streamflow or export curtailment to reduce entrainment, was counted toward the CVPIA's 800,000 acre-feet of yield, as defined by Section 3406(b)(2). Occasions in which flow increases were subsequently "offset" by flow decreases, or vice versa, were attributed to the "reoperation" authorized by CVPIA Section B1, pursuant to the CVPIA, as they did not affect water contractors. Similarly if winter storms followed fishery actions and reservoir storage was "reset" as a result, the operational change was attributed as a reoperation and not charged to the B2 account. Also, in 2001, the 1999 Decision's provision that no more than 450,000 acre-feet of the 800,000 acre-feet B2 account would be charged to meet Delta obligations (i.e. WQCP standards), was applied. As a result, an additional 75,000 acre-feet of environmental water was purchased with CALFED funding.

The Interior Department's 1999 Decision was not to last, however. In 1997, CVP contractors initiated litigation against the United States challenging the Interior Department's initial interpretation of Section 3406(b)(2). Various environmental groups, including Environmental Defense, and fishing groups joined the suit soon thereafter. The U.S. District Court eventually ruled on a complex series of issues involving various Department of Interior decisions over a five-year period.

In January 2002, the court issued key rulings that forced Interior to revise its policies for "offset" and "reset." As a result, virtually all operational changes implemented to improve fisheries would be charged to the B2 account, even if the changes had no effect on con-

tractors. The ruling did not address how Interior should apply the fishery provisions in Section 3406(b)(1) which authorize the Secretary "to provide flows of suitable quality, quantity, and timing to protect all life stages of anadromous fish" as long as they "do not conflict with fulfillment of the Secretary's remaining contractual obligations to provide Central Valley Project water for other authorized purposes". In addition, the court ruled that the Interior Department had no discretion to limit how much of the B2 account could be used in meeting its share of WQCP obligations.[12] The effect of these rulings meant that, in many years, the entire B2 account might be applied to meet the WQCP obligations within the Delta, leaving no water to enhance spawning and outmigration of anadromous fish.

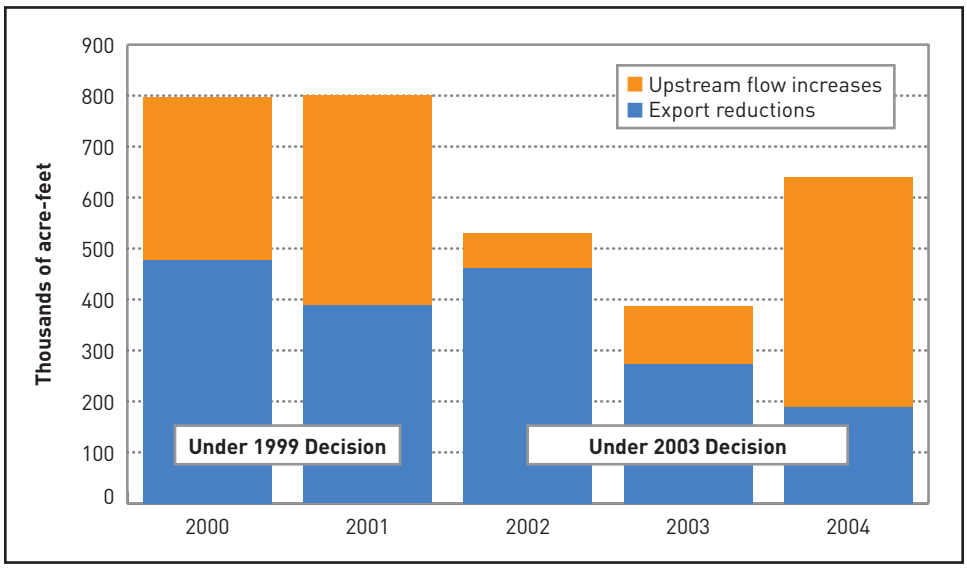
The Interior Department's 1999 Decision for use of CVPIA supplies was unofficially displaced in 2002 by a new policy incorporating the court's rulings. In 2003, Interior formally adopted a new policy that included not only the ruling but also further diminished how much environmental water it would provide in dry years. The 2003 policy allows water delivered to CVP contractors to be counted as water dedicated to fisheries protection.

Under the 2003 policy, the Fish and Wildlife Service is forced to make difficult choices with its limited B2 supplies between taking upstream actions to protect anadromous fish, or in-Delta actions to reduce direct entrainment. In 2002, for example, approximately 331,000 acre-feet was charged to the B2 account that would not have been charged under the 1999 policy (Figure 5).

The court rulings and the Interior Department's revised policy have

FIGURE 5

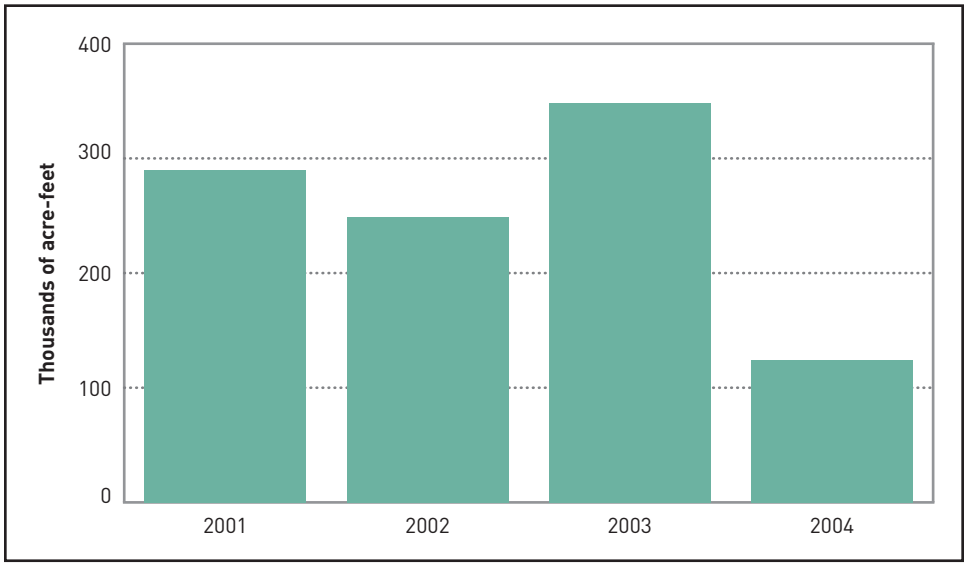
Changes in Central Valley Project Improvement Act environmental "b2" water supplies



The Interior Department's 2003 change in policy for applying the CVPIA's environmental water significantly reduced the amount of water provided to protect and restore fisheries. This change has undermined the protections provided in the CALFED Plan and has put additional pressure on the EWA.

Source: U.S. Bureau of Reclamation provided daily operational data as well as the B2 accounting under its various policies. Environmental Defense applied the Bureau's accounting policy under its 1999 Decision to the 2002–2004 project operations.

FIGURE 6
Environmental Water Account export reductions to protect fisheries, 2001–2004



The EWA is principally used to curtail exports for the benefit of threatened Delta fish species. Since 2001, the ability of the EWA to do its job has been limited due to inadequate acquisition of both operational and purchased assets.
Source: CALFED EWA Team, a multi-agency stakeholder group helping to coordinate the implementation of the EWA.

effectively reduced CALFED's Tier 1 capabilities to near zero. As a result of these changes, the EWA has been expected not only to do the job intended for it as part of the CALFED Plan but also to make up the water lost as a result of the court's and the Interior Department's interpretations of the CVPIA.

Diminished EWA

The EWA has had significantly less water than expected to do its job. Combined, the CVPIA and EWA have been underendowed by an average of 436,000 acre-feet over the past three years.[13] Yet, the need for a sustainable and reliable supply of environmental water, in the context of both record levels of high exports and low fish populations, is even more important today.

The EWA was created as an innovative tool intended to solve some of the serious ecosystem problems in the Delta. Unfortunately, due to a combination of insufficient operational assets and dwindling funding, early on the EWA was effectively robbed of some of its potential (Figure 6). As a result, in its four years of operations, the EWA has received mixed reviews.

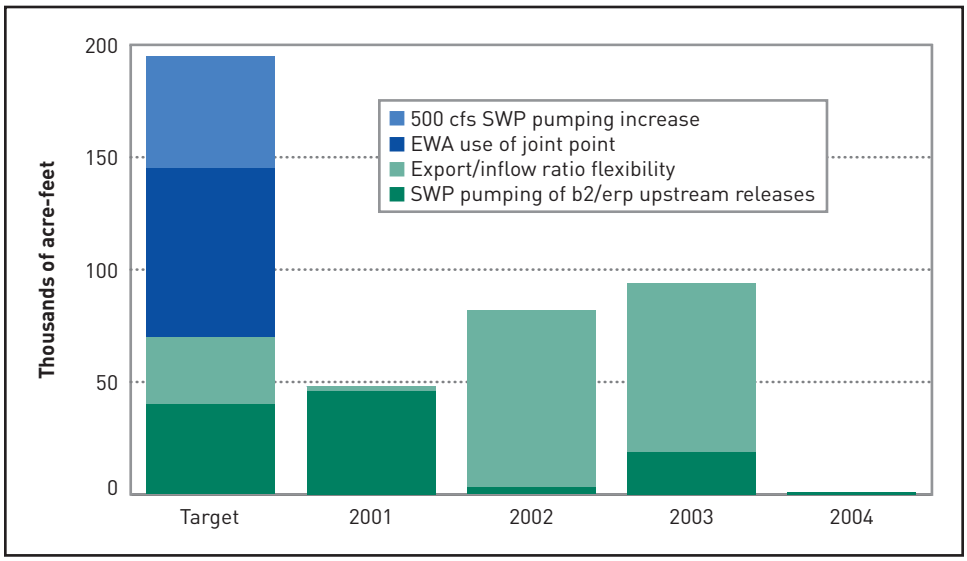
From an operational perspective, the EWA has worked well to ensure reliable supplies to water users and has had some positive effects on the Delta's aquatic habitat. EWA purchases, when executed, have provided some environmental protection, which CALFED's EWA Technical Review Panel has noted as one of the most effective elements of the program.[14] There have been various examples of fishery scientists using EWA supplies effectively to provide additional Delta inflows or decreasing export pumping to improve estuarine conditions.

Unfortunately, however, the EWA has never received the amount of water anticipated by the CALFED Plan. On average, only 29% of the expected

195,000 acre-feet of operational assets have been available. The initial assumptions from CALFED's gaming process that preceded the EWA, projecting the EWA could expect significant supplies through the normal course of project operations, have proven overly optimistic (Figure 7).

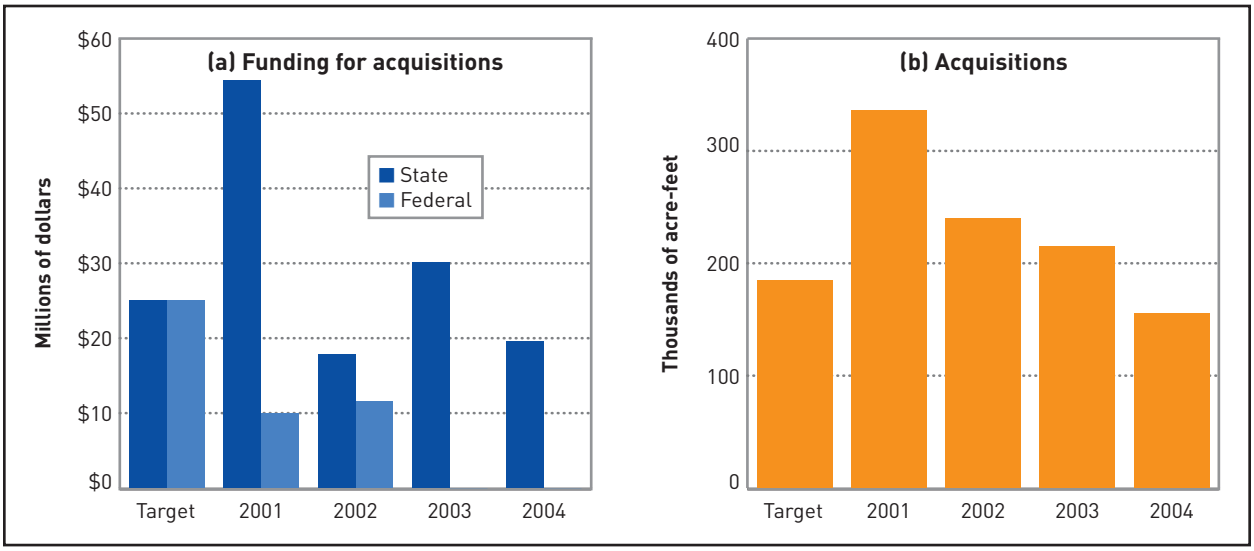
As a consequence, the EWA has had to rely almost entirely on purchases

FIGURE 7
Environmental Water Account operational assets, 2001–2004



The CALFED Plan targeted 195,000 acre-feet of operational assets for the EWA. Since 2001, many types of operational assets have seldom been available and have, on average, only produced 29% of the target.
Source: California Department of Water Resources, CALFED Plan

FIGURE 8
The Environmental Water Account

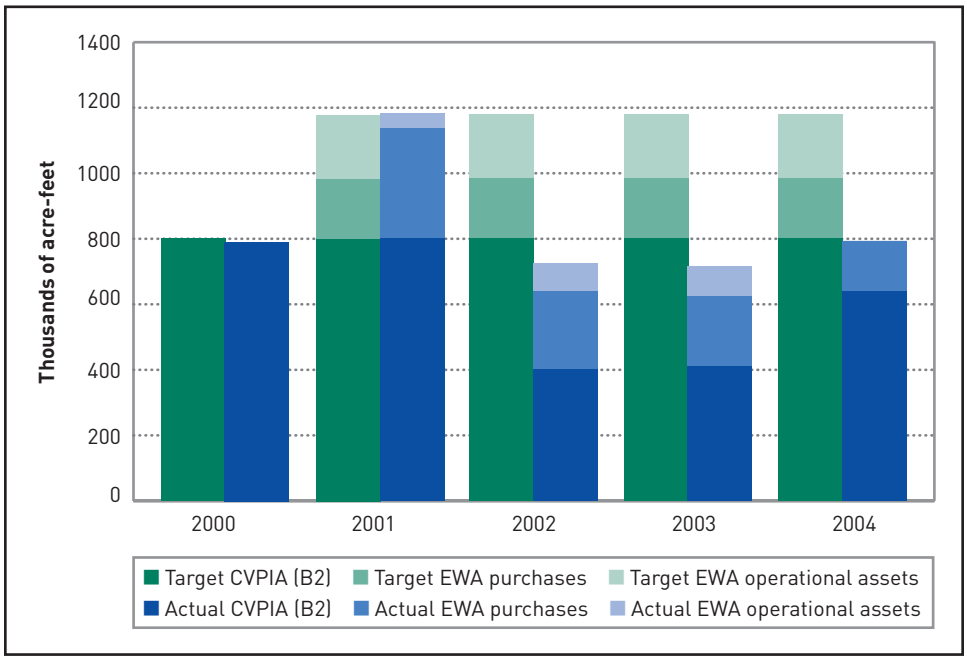


(a) The CALFED Plan targeted a 50/50 cost-sharing goal for the EWA among state and federal sources. Since 2001, however, the state has covered the majority of the EWA's costs. The state sources, comprised of various propositions, are running out and it is unlikely that the state will be able to continue to fund the EWA. (b) In the absence of available operational assets, the EWA has had to rely heavily on purchased assets to acquire water.[15]
Source: California Department of Water Resources, U.S. Bureau of Reclamation

from willing sellers to acquire its supplies.[16] This approach worked well the first few years when significant bond funds were available to endow the EWA with purchasing power.[17] As these various bonds, including Proposition 50, run out, it is uncertain how the EWA will be funded in the future (Figure 8). Without extensive changes, future prospects for a fully endowed EWA look poor, given the state's budget crisis and exhausted bond funding.

Dwindling assets have limited the EWA's ability to do its job. In a typical year, most EWA actions to protect fisheries are taken by curtailing export pumping to reduce entrainment and increase survival. Other actions have been taken to supplement upstream flow releases for spawning and to control water temperature. In recent years, the EWA has increasingly been unable to achieve desired fish actions, despite growing evidence of declining fish populations. In 2004, the only fish actions taken were to implement the Vernalis Adaptive Management Plan and extend its protections into the late spring. More recently, in February 2005, after monitoring indicated that Delta smelt populations were at record low levels, fishery biologists recommended that exports be curtailed to reduce entrainment. Agency managers, keenly aware that the EWA's supplies were scarce and concerned that there would be inadequate supplies avail-

FIGURE 9
Unmet environmental water targets, 2000–2005



Between 2002 and 2004, the EWA and the CVPIA have been underendowed, on average, by 436,000 acre-feet. CVPIA supplies began diminishing after the Interior Department's 2003 Decision (already in place in 2002), which offered far less protection than the previous policy. The EWA, which began in 2001, has never acquired the operational assets that were assumed in the CALFED Plan and its purchased assets dropped significantly in 2004 due to funding limitations. Current trends indicate that neither the EWA nor the CVPIA supplies are likely to be available in 2005 and beyond, as intended in the CALFED Plan, unless significant changes are made. Without adequate and reliable CVPIA and EWA supplies, it is unclear whether the EWA's role as an insurance policy protecting water contractors from the Endangered Species Act can or should continue.

Source: California Department of Water Resources, U.S. Bureau of Reclamation

able later in the year, sharply reduced the amount of EWA water that would be provided to the endangered fish and did not curtail exports as much or as long as was requested.[18]

In summary, it is apparent that fishery agencies now have more than 400,000 acre-feet *less* water per year in CVPIA and EWA supplies alone, compared with the requirements of the CALFED Plan, with which to comply with ESA objectives and restore the health of the Bay-Delta ecosystem (Figure 9). The backstop for this shortfall, CALFED's Tier 3, has no assets, no plan and has been virtually ignored. And, as the health of the Bay-Delta continues to spiral downward, exports from the estuary have reached record high levels.

CHAPTER 4

Future funding prospects are highly uncertain

Since its inception, funding for the CALFED program, and particularly the EWA, has largely relied on annual allocations from California's General Fund and financing from bond revenues. Both of these sources are quickly dwindling, contrary to the CALFED Plan's expectations that long-term funding would be available from the state and federal government. After its first year, funding for the EWA has steadily declined, hindering the ability of the account to purchase water. As sources of public funding are becoming scarce and without reliable operational assets, it is uncertain how the protections included in the EWA, as set forth in the CALFED Plan, will be assured.[19] Without a viable EWA, it is unclear whether its role as an insurance policy protecting water contractors from the Endangered Species Act can or should continue.

Given the funding uncertainty, the Bay-Delta Authority was charged with completing a ten-year finance plan in 2004 to determine how best to support CALFED in the long-term. Given the lack of available public funding, there has been a growing interest in looking to the "beneficiary pays" principle included in the CALFED Plan, which relates directly to the concept of a "user fee." Under this principle, the costs of a project are allocated to specific entities in the same proportion as the direct and indirect benefits the entity is intended to receive from the project.

The potential role of user fees and other finance strategies are currently coming into play as the CALFED program undergoes an audit to evaluate its finance strategy, program management, overall program effectiveness and governance. The review process is expected to be completed in late 2005 and will include recommendations for the future of the program. Our recommendations for providing and potentially increasing the environmental water supplies required in the CALFED plan are outlined below.

CHAPTER 5

Opportunities for greater environmental protection

There are many opportunities to realize the environmental water assurances promised in the CALFED Plan and to extend additional protection to the Bay-Delta estuary. The CALFED Plan clearly states that the EWA should be expanded with an appropriate share of newly developed water supplies.[20] The most logical approach to meeting CALFED's objectives for improving fisheries protection is to increase the water supplies available to fish when they are at risk through flexibility in project operations. Such protections should be required as operating guidelines included in the regulatory standards to which water projects much adhere.

As actions are taken to modify and modernize water management in California, opportunities will arise for obtaining the water necessary to provide additional flexibility. Some of the most promising opportunities for additional environmental water are as follows.

Flexibility through integration of existing projects

At a closed-door meeting in Napa in 2003, state and federal export agencies, along with their contractors, identified how integrated operation of the SWP and CVP could generate additional water supplies.[21] By integrating the conveyance-rich SWP with the storage-rich CVP, water contractors have shown that exports can be increased. These additional supplies should be provided to the environment as a first priority to ensure additional operating flexibility to mitigate the adverse effects of water project operations, rather than to the export agencies that are already enjoying historically high export levels.

Flexibility in increased export capability

Current proposals by the federal and state water projects and their contractors to increase the capacity to export water at the Delta pumping plants have met substantial resistance, given their potential impact on the Bay-Delta and its fisheries. In the event that pumping capacity is increased, however, we recommend that the additional capacity (estimated at 200,000 acre-feet) be dedicated to improving the timing of exports in order to protect fisheries. We also recommend that the overall volume of exports should not be increased until, and unless, there is a viable long-term upward trend in estuarine health. At a minimum, imposing such a constraint would motivate the water contractors to act creatively on behalf of estuarine recovery. Even with these caveats, however, it may well not be feasible to combine even higher levels of pumping with strong estuarine recovery programs, no matter how much flexibility is given to the operators in timing exports.

Increase usable storage in San Luis Reservoir

The CVP and SWP share San Luis Reservoir, a 2 million acre-foot storage facility located south of the Delta along the federal and state aqueducts. San Luis is the primary reservoir for storing EWA supplies, but the EWA has only junior rights in the reservoir and its supplies can "spill" when the CVP and SWP fill their shares of the reservoir. Due to poorly located outlets, San Luis Reservoir's current storage capacity is not fully usable without rendering the Santa Clara Valley Water District

(SCVWD) unable to access its supplies. Solving this "San Luis Reservoir Low Point problem" by physically modifying the reservoir would provide SCVWD with both improved water quality and year-round access to the CVP while creating another 200,000 acre-feet of additional active storage. The CVP and SWP have not, as of today, allocated this storage to a specific purpose. This additional capacity should be dedicated to the EWA to enhance the environment and provide additional protection without affecting water contractors. If, on the other hand, the additional storage is dedicated to increased water supply, it may increase exports by 200,000 acre-feet annually without mitigation and thereby exacerbate environmental problems in the Delta.

Restoring the CVPIA's commitments to fisheries protection and restoration

There are several opportunities to attain greater protection using the environmental water provided to the Central Valley and Bay-Delta by the CVPIA. The Interior Department should:

- Revise and greatly expand the use of "reoperation" pursuant to Section 3406(b)(1)(B).[22] Perhaps the single most useful application of the reoperation criteria is clarifying that B1 reoperation can be used to allow reduced late summer reservoir releases to compensate for increased springtime releases to aid outmigration, without additional charges to the B2 account.[23]
- Formally implement the May 2003 ruling of the Court of Appeals for the Ninth District regarding the "Primary Purpose" of B2. As a result, the WQCP would still be fully applied but significant portions of the B2 supply would in all years be dedicated to providing for the spawning and outmigration of salmon and steelhead. The WQCP would still be fully implemented. In 2004, the Interior Department did dedicate an additional 166,000 acre-feet to comply with obligations under the WQCP, but has shown no indication of how, or when, it will establish an official policy consistent with the court's ruling.
- Develop a policy to facilitate the authorized "banking" of B2 water (Section 3408(d)). Currently, the B2 account is in a "use it or lose it" situation, in which at the end of the water year (September 30) any remaining B2 water is eliminated. In the 13 years since the CVPIA became law, the U.S. Department of the Interior has made no serious attempt to implement the CVPIA's authorization of banking.

Implementing CALFED's EWP and Section B3 of the CVPIA

CALFED's Environmental Water Program and Section B3 of the CVPIA are tools created to purchase water to enhance instream flows on upstream tributaries. To date, however, neither tool has lived up to its potential largely due to a lack of dedicated funding. A serious commitment is needed to fully fund and implement these tools, which could result in improvements to both upstream and Delta environmental conditions.

Retiring drainage-impaired land in the San Joaquin Valley

The U.S. Bureau of Reclamation is currently reviewing alternatives to provide drainage service to dispose of salt-laden agricultural run-off on the west side of the San Joaquin Valley. The environmentally preferred alternative in the draft Environmental Impact Statement

involves the retirement of lands impaired by drainage which has left the soil saline and unproductive. A significant portion of the water saved as a result of land retirement should be dedicated to the environment to fulfill the assurances in the CALFED Plan.

Implementing user fees

The CALFED Plan included several commitments to user fees and to the beneficiary pays principle. In particular, it promised the creation of the Ecosystem Restoration Program, financed partially by user fees in the amount of $35 million per year. Revenues from such a water use fee (as opposed to the reallocation of existing user fees such as those in the CVP Restoration Fund, as has been proposed by some water users) could help assure that sufficient funds are available for additional operational flexibility and could be less subject to significant shortfalls than would be the case where reliance is placed on state and federal general funds.

A water use fee would also provide water contractors with significant incentives to manage their own supplies in the most efficient manner. If the fee is high enough, water contractors might find that rather than export additional water, they might better develop their own supplies or improve efficiency in their water use.

CHAPTER 6

Conclusion

State and federal projects are exporting record volumes of fresh water from the Bay-Delta while the Delta's fisheries and food web are severely distressed. Stakeholders have made great efforts over the years to forge creative solutions to meet a variety of program objectives, including Bay-Delta protection, but they have not been fully implemented. This report illustrates that while the environmental water supplies set forth in the CALFED Plan have not been provided, a number of opportunities exist to find the water needed to revive the Bay-Delta.

Debate will continue not only on how to balance the competing needs of environmental and developed water, but also how and when environmental water might best be applied. Research is needed to investigate the connection of introduced species, chemical contaminants and other factors to recent fishery declines. Regardless, the health of the San Francisco Bay-Delta estuary depends on a reliable set of environmental safeguards, including dependable water supplies. The EWA and CVPIA supplies that have been lost should be replaced, and potentially expanded, as soon as possible.

Any plan to sustain the estuary must include a methodology for using environmental water, assurances that water will be provided and consequences for non-compliance. It is necessary that fishery interests have a strong hand in the operation of the water projects that control the flows into and out of the Delta. Over the last five years, the failure to implement the protective operating criteria outlined in the CALFED Plan has been unacceptable. It is time for government agencies, water contractors and the interested public to implement a sustainable plan to guarantee the long-term health of the San Francisco Bay-Delta estuary.

Notes

[1] Abundance of Delta smelt and other estuarine species are estimated by a population index that is determined by the results of the "fall mid-water trawl," conducted monthly September through December at locations throughout the estuary.

[2] Interagency Ecological Program Workplan to Evaluate the Decline of Pelagic Species in the Upper San Francisco Estuary, 2005.

[3] The CALFED Plan was formally released as a "Programmatic Record of Decision," pursuant to state and federal environmental laws on August 28, 2000.

[4] Tier 3 was intended to be a set of actions that would be available if the EWA did not have sufficient assets to accomplish its objectives. Despite the erosion of Tier 2, Tier 3 assets have never been provided nor is there a plan in place to do so.

[5] The CVPIA also addresses pricing policies, contract renewal, water marketing and water conservation issues. All of these elements have been subject to at least some degree of controversy and have faced difficulties in their implementation.

[6] Anadromous fish live in the ocean but return to freshwater to breed. Most of the focus of the AFRP has been on the four runs of salmon native to the Central Valley: winter run, spring run, fall run and late-fall run. The AFRP lists as a primary purpose the doubling of the natural production of anadromous fish (an objective not met by the 2002 target date).

[7] Thoroughly addressing the use of Section B3 of the CVPIA is beyond the scope of this report. To date, the use of this tool has been limited.

[8] The EPA has no authority to directly affect water rights under the Clean Water Act but the practical consequence of requiring salinity reduction in the estuary is that outflows would need to be increased.

[9] Other "local" water projects, in both the Sacramento and San Joaquin basins, have negotiated for the sale of water, both as transfers to other agencies or for environmental protection, but have not been required to make any uncompensated contributions. For example, a group of water agencies have formed the San Joaquin River Group Authority to provide additional spring flows at Vernalis to assist with outmigration of salmon.

[10] X2 is the location, measured in kilometers from the Golden Gate Bridge, where average daily salinity is 2 parts per thousand. The scientific underpinnings of the X2 standard were established in a series of workshops. See "Managing Freshwater Discharge to the San Francisco Bay/Sacramento-San Joaquin Delta: The Scientific Basis for the Estuarine Standard," San Francisco Estuary Project, 1993, J.R. Schubel et al.

[11] The Vernalis Adaptive Management Plan (VAMP) is an experiment to determine the extent to which flows and exports impact San Joaquin River juvenile salmon survival as they outmigrate. The purpose of VAMP is to support the outmigration of San Joaquin River salmon and reduce exports at the federal and state pumps between April 15 and May 15 (or when San Joaquin smolts tend to be outmigrating). Challenges to VAMP that point out its inadequacies in meeting the salmon doubling objective on the San Joaquin River have not been squarely addressed by the SWRCB.

[12] The CVPIA states that the AFRP's primary purpose is to double populations of anadromous fish, leaving water quality objectives in the Bay-Delta and Endangered Species Act compliance as secondary purposes. The Court of Appeals later ruled that the Interior Department did in fact need to apply the CVPIA's primary purpose of giving anadromous fish first priority. The Interior Department has issued no ruling clarifying its adherence to the ruling, but did dedicate additional supplies to its WQCP obligations beyond the B2 account in 2004.

[13] EWA data was provided by the Department of Water Resources. CVPIA data was provided by the U.S. Bureau of Reclamation. Environmental Defense applied Interior's 1999 Decision to the Bureau's data for 2002–2004.

[14] Review of the 2003–04 Environmental Water Account (EWA). Submitted by the 2004 EWA Technical Review Panel, January 17, 2005.

[15] A target of $50 million annually for the EWA was initially proposed in "California's Water Future: A Framework for Action", released in June 2000 shortly before the CALFED Plan. This original estimate assumed that more than 80% of purchased supplies would be acquired south-of-Delta. Water managers have found it to be more cost-effective to purchase water north-of-Delta and move it south through the Delta export pumps when monitoring indicates that relatively few fish will be entrained in the Delta export pumps.

[16] Availability of willing sellers has not been the problem. Acquiring funding to pay the sellers has been the challenge.

[17] Whether bond funds were intended to be spent on annual operations, rather than on long-term or permanent capital improvements or acquisitions is an issue that has not explicitly been addressed in CALFED's decision-making.

[18] Summary of interagency "Data Assessment Team" conference call February 1, 2005.

[19] The acquisition of assets and assurance of reliable supplies need not be identical to those defined in CALFED's EWA. The key is to assure a sustainable and reliable supply of environmental water for the purpose of flexible and prescriptive actions for optimum environmental protection.

[20] CALFED Programmatic Record of Decision, August 28, 2000, p. 57.

[21] Formally titled "Draft Proposition Concerning CVP/SWP Integrated Operations", the Napa Proposition was made available to the public in August 2003.

[22] The California Resources Agency tends to agree with this suggestion. See January 15, 2005 letter from California's Department of Water Resources and Department of Fish and Game to the U.S. Bureau of Reclamation and the U.S. Fish & Wildlife Service regarding "Integration of Central Valley Project Improvement Act Actions with the Environmental Water Account."

[23] This amount of reoperation often approaches 195,000 acre-feet since the CVP no longer makes releases to support its own exports through "D1485 Wheeling" at the state's pumps in late summer. The CVP's export reductions at that time are properly considered to be charges to the B2 account.

environmental defense

finding the ways that work

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