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Financing Delta Improvements and Environmental Mitigation

By Dean Misczynski

*Requested by the Delta Vision
Blue Ribbon Task Force*

SEPTEMBER, 2008

CRB 08-011

C A L I F O R N I A

R E S E A R C H B U R E A U

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REVISED VERSION

ISBN 1-58703-241-4

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INTRODUCTION

Resolution of the Delta's water supply, water quality, and fish problems may involve building various structures, possibly including gates, pumps, canals, levees, and dams, and undertaking landscaping rearrangements to improve habitat for several species of flora and fauna. Resolution also involves changing water flow regimes in ways that would make more or less water, but probably less, available for human uses. This work and these changes will cost serious money. Cost estimates for many of these actions have not yet been developed.

This paper explores approaches to financing these "improvements" and "mitigations." While a little abstract, this is abstraction that matters. It will determine from whose pockets a good deal of money will come.

California has a long history of financing water projects. The first section of this paper reviews this history, in hopes of identifying water-financing principles that might be adapted to Delta improvements and mitigation. Some deep-seated controversies about how Delta improvements should be financed have roots in this history, and it may be helpful to point them out.

A core idea in California's approach to financing water projects is that beneficiaries should pay for them. Decades ago, this was a straightforward proposition – people or water districts should pay for the necessary dams, canals, and pumps and the costs of operating them in proportion to the amount of water they received. In the current age of rising environmental sensitivity, it is a little muddier. An alternative formulation that applies, at least crudely, to housing developments and highway projects, is that project proponents should pay to mitigate at least some of the environmental harm that their project is likely to cause. The second section of this paper explores this controversial subject. It seems unlikely that any consensus can be reached about how to finance facilities in the Delta without reaching some agreement about how to deal with this matter.

This paper was first issued in July, 2008. This version contains a few clarifications made in response to the Blue Ribbon Task Force's reviewers. The author is grateful for their suggestions.

SECTION 1. A BRIEF HISTORY OF WATER FINANCING IN CALIFORNIA

Water development in California has been lengthy, litigious, quarrelsome, and complicated. Writings on the subject fill rooms. The intent of this section is only to point out, in a general way, the approaches that have been successfully used to finance water projects here.

Early water development in California was financed privately, by local governmental arrangements, or by hybrids. The Los Angeles Pueblo owned and developed the water of the Los Angeles River, eventually irrigating a few thousand acres, at least in some years.¹ Miners and mining companies built dams and flumes to supply water under pressure to wash auriferous gravel through gold recovery machinery.² The primary water systems for early San Francisco and the East Bay were owned by private companies. The initial water system for the early California colony of Anaheim was designed and installed by what would now be called a developer, although one hired by the colonists who continued to work at their day jobs in San Francisco until he was done.³ George Chaffey famously designed and built a water system for the agricultural colony of Ontario and turned it over to a mutual water company controlled by the purchasers of property in the colony.⁴

Irrigation works, particularly canals, were built in the central valley by a few individual farmers, particularly Henry Miller.⁵ The Legislature passed the Wright Act in 1887, allowing smaller landowners to form irrigation districts.⁶ The Act turned out to be important. Some 50 districts were organized under its authority, including the Modesto and Turlock districts which continue to be notably successful today. These districts were authorized to sell bonds and to levy special assessments on the irrigable land in the district. The financing concept was that the assessments had to be proportional to the benefit that each parcel of land would receive from the newly available water. Application of the principle was a little imprecise, since the assessments were commonly in proportion to the assessed value of each parcel. This was tested in the courts (virtually everything having to do with water has been tested in the courts) and upheld as a good enough measure of benefit.⁷

Early big water development projects were built and financed by cities. California cities were rather slow in getting into supplying water publicly, relying instead on steadfast devotion to

¹ William Kahrl, Ed., the California Water Atlas, State of California (1978), p. 22.

² Robert Kelley, Battling the Inland Sea: American Political Culture, Public Policy, and the Sacramento Valley 1850 – 1896, (University of California Press, Berkeley) 1989, p. 16 and following.

³ Kahrl, op cit., p. 23.

⁴ Ibid, p. 24.

⁵ Gene Rose, The San Joaquin – A River Betrayed (Quill Driver Books, Sanger, Ca) 2000, p. 45. Also David Iglar, Industrial Cowboys: Miller & Lux and the Transformation of the Far West 1850 – 1920 (University of California Press, Berkeley, and Los Angeles) 2001 p 71 et seq.

⁶ Kahrl, op cit, p. 26.

⁷ Irrigation District v. Bradley, 164 U.S. 112 Fallbrook (1896)

private enterprise. Eastern cities had been supplying water since the 1750's, and by 1860 most of them had public water systems.⁸

Conceptually, California's big city water systems all faced essentially the same financing problem. In the beginning, there was no project. Water rights would have to be acquired, a dam or other means of collecting the water would need to be constructed in uncertain terrain, and a pipeline or canal would be needed to carry the water from its distant source to the city where it would be used. Money would have to be raised to pay for right of way, engineering, and construction. Eventually, of course, there would be revenue from the charges paid by the city's inhabitants for water delivered. But that possibility did not help too much with raising the capital to do the construction. These projects were path breaking to the point of falling in the messianic visionary category. Investors would have regarded them as pretty risky, so selling bonds backed by the promise of revenue from the eventual sale of water would have been impossible or at least very expensive. The most practical solution at the time was to ask the city's voters to authorize the sale of general obligation bonds. At the same time, they approved increasing their property taxes as needed to pay the debt service on the bonds. That way, regardless of whether the project was successfully completed and delivered water, the bondholders would be paid.

San Francisco led off by damming Hetch Hetchy Valley north of Yosemite Valley, a lengthy undertaking that it began working on in roughly 1900. The colorful story has been told many times and well. Of relevance here is only that The Dam, other dams, and the aqueduct to carry the water from the reservoirs to the city were financed through a combination of local general obligation bonds, revenue bonds, and income from the sale of water to the citizens of San Francisco and later other communities in San Mateo, Santa Clara, and Alameda Counties, and through sale of electricity generated at the dams. Perhaps timid about asking its voters to approve bonding for the entire cost of the project, San Francisco voters approved additional bonds for the project in 1908, 1910, 1924, 1928, 1930, 1932, 1933, and on through the 1940's and 50's. The project was expanded over the years to include dams at Cherry Lake and Lake Eleanor, and part of the construction of New Don Pedro Reservoir.⁹ The federal government made a valuable contribution of the dam and reservoir sites, and of some additional right of way. The project has more than paid for itself.

There has been recent complaint that San Francisco was not investing enough in maintaining and replacing the parts of the Hetch Hetchy water system. In particular, there has been fear that the system might not hold up very well in a major earthquake. The San Francisco Public Utilities Commission launched a \$4.3 billion upgrade to the system in 2005. These costs will be paid ultimately by water users, about 2/3 of who are in communities other than San Francisco.

⁸ California Water Atlas, p. 29.2

⁹ John Warfield Simpson, Dam! Water, Power, Politics and Preservation in Hetch Hetchy and Yosemite National Park (New York, Pantheon Books) 2005 and Warren D. Hanson, San Francisco Water and Power: A History of the Municipal Water Department and Hetch Hetchy System (SFPUC Communications Group, San Francisco) 2002.

Los Angeles acquired a major part of its water supply from the Owens Valley more or less simultaneously with San Francisco, although it completed the first phase of its project far more quickly and at much lower cost.¹⁰ Controversy about this project has also been legendary, closely rivaling San Francisco's story. The financial arrangements were similar to those used in San Francisco. Los Angeles voters approved general obligation bond issues in 1905 and 1907 totaling \$24.7 million, which stretched the city to its maximum borrowing capacity. The costs of bond repayment, operating the system, and of financing further expansion were paid from a mix of property tax revenues from the property owners of Los Angeles and of revenue from the sale of project water and electricity. Eventual revenues from the project more than repaid the costs. So this is another slightly mixed case of water-user-beneficiary-pays financing.

Another major example with a nearly identical financial structure was the construction of Pardee and later Comanche Dams on the Mokelumne River and the associated aqueduct and storage reservoirs by the East Bay Municipal Utility District (EBMUD). East Bay voters approved the first bond issue for this project in 1924, and water reached the Bay Area in 1929.¹¹ Again, bond repayment and operation costs were paid from a combination of property taxes and revenues from the sale of water and power.

Southern Californians were not the originators of proposals to build a dam in Boulder Canyon on the Colorado River, but they quickly became enthusiastic supporters.¹² Their interest was initially especially in the electricity that could be generated at the dam. The potential water supply grew more urgent after a particularly dry 1923. The project required construction of what was then the world's highest dam, a 242 mile long aqueduct through mountains and desert, pumping plants, diversion and distribution works, electrical generators and transmission lines. The expense was enormous, beyond even Los Angeles' means. The financial arrangements were complex. Construction of the dam was financed by the Bureau of Reclamation. The Bureau had a long-standing program of building dams to supply irrigation water to stimulate economic development in the west, which began with the Reclamation Act of 1902. Roughly, the plan for the dam was that the cost would be recovered mostly through the sale of electricity (most of which was sold to Southern California) and some through the sale of water. The Bureau's actual financial transactions are opaque at best, and it is hard to verify that this plan was followed in all particulars. But it seems to be at least approximately accurate.

The structures needed to bring the water to Southern California, including the aqueduct, pumping stations, and storage reservoirs, were financed by the Metropolitan Water District (MWD). Initially made up of 13 Southern California cities, including Los Angeles, MWD now has 27 member agencies and serves a 5,000 square mile area. MWD was authorized to levy a property tax within its member agencies, and also to sell water at wholesale to the many water districts and municipalities that cover the same area. It uses the flow of tax and

¹⁰ Kahrl, op cit, p. 31.

¹¹ John Wesley Noble, Its Name Was M.U.D. (Oakland, East Bay Municipal Utility District, 1970, 1999 (East Bay Municipal Utility District, Oakland) 1999 p. 46.

¹² Kahrl, op cit, p. 39.

water sales revenue to pay the debt service on bonds sold to finance its capital construction projects. As with San Francisco, the East Bay, and Los Angeles' Owens Valley Project, the facilities were paid for through an artful mix of property tax revenues and water revenues, all from the communities that were entitled to get the water. The water fees are at least in proportion to the amount of water actually delivered to each jurisdiction (although not necessarily in proportion to the precise cost of delivering that water to each community). The property tax portion is not proportional, since some communities have actually taken a smaller portion of MWD water than their property tax share. Arguably, they are buying an entitlement to a larger share of water in the future, or to a higher priority of water delivery in the event of drought, so perhaps it is worth it.¹³

Many other cities have developed their own water systems. Some rely on a conveniently placed river; some obtain water through a Bureau of Reclamation or Corps of Engineers project, the State Water Project (SWP), or use groundwater. Many use their cheapest source, and then the next cheapest, and then another. They rely on varying combinations of tax revenue and income from water and occasionally electricity sales to pay their share. With the possible exception of cases where water is obtained from a federally built project, most of these urban water systems have populations paying amounts at least crudely proportionate to the cost of providing the water.

California's largest water projects are the federal Central Valley Project (CVP) and the state's State Water Project. Both ratcheted up the scale of water development to a level that was truly statewide. They are large enough that they required a quantum leap in financial structures.

The financing aspects of the federal CVP are messy, controversial, unclear, arguably deceptive, and consequently not very instructive, at least if we are looking for models to replicate.¹⁴ The project was financed and built by the Bureau of Reclamation. The Bureau started its campaign of dam building throughout the west early in the 20th century, inspired by the prospect of bringing economic development and prosperity to otherwise waste, vacant lands (we now have a somewhat greater appreciation of the natural functions of these places). The original plan was that the Bureau would build dams and basic distribution structures, and then recover the cost from the sale of the water, and, later, electricity. From the beginning, no interest was charged.¹⁵ But the plan did not work out. The farmers in many western states simply could not make enough money farming to pay anything like the full cost of developing a water supply. It did not help that many of the early projects were at fairly high altitudes and in places with long winters and limited agricultural productivity. So Congress

¹³ The MWD board approved a new set of rules in February 2008, for allocating water in the event of shortages. It is unclear how the new rules relate to the older financing system. The new rules have been challenged on several grounds, including that they ignore water rights related to the old financing system. See Los Angeles Times, April 18, 2008, at <http://www.latimes.com/news/local/la-me-water18apr18,1,7175600.story>.

¹⁴ Probably the most extensive critique is Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water* (Penguin Books, New York) 1993.

¹⁵ Bureau of Reclamation, *Reclamation Law and the Allocation of Construction Costs for Federal Water Projects* (1997), p. 2.

adjusted the Reclamation Act several times, providing for an increasingly extended pay-back period to ease the burden on the farmers. In return, the law limited the size of farm that could benefit from federally developed water, and enacted other safeguards intended to limit program benefits to relatively small farmers.

This evolutionarily jerry-rigged financing system was applied to California through the CVP. The Bureau eventually built 22 reservoirs and canal systems that deliver 7 million acre-feet in an average year. It supplies water in 29 California counties.¹⁶ Its water deliveries are over twice those of the State Water Project.

The financing of this most enormous of all California water projects is probably not a very good model for replication. It is simply incomprehensible. Nothing is at it seems. In broad theory, the cost of the project is supposed to be repaid by the water users. But Congress had already made the various “adjustments” described above, so no interest was charged, repayment time periods were long, and acreage limitations apply, in theory. Even so, only modest amounts have been repaid by many water districts and users, with no apparent penalty. The acreage limitations and resale price controls that are supposed to apply to land benefiting from Bureau water seem to have had little practical effect. Exactly how this apparent avoidance of federal law came to pass is a tangle of litigation, bureaucratic obfuscation, and perhaps other things. It has been the subject of a good deal of critical study by academics and other writers. Perhaps the struggle has now reached a stable equilibrium. In any case, it is hard to imagine why anyone would create a new financing system that replicated any part of this morass.

The State Water Project, in contrast, offers a remarkably well thought out and rational example of water financing. It may be that the comparative simplicity of its financing is the primary reason that the SWP was pursued, instead of simply encouraging the Bureau of Reclamation to continue with its plans to build additional dams and canals as part of the CVP.

Initial construction of facilities for the state project was financed by a \$1.75 billion state general obligation bond act approved by the voters in November of 1960.¹⁷ These were state general obligation bonds, meaning that the state promised to pay the principal and interest on the bonds as they came due out of its general fund or even to raise additional taxes if necessary to do so. Since the state water project was initially unbuilt, had no water or electricity to sell, and was an inherently risky undertaking, state general obligation bonds were the cheapest available option for raising the money needed to pay for construction. But the intent, clearly stated in the bond act, was that the debt service on the bonds would be paid through sale of the water to the water districts and municipalities that contracted for it.¹⁸ In addition, the water districts were given special authorization to levy taxes or assessments as

¹⁶ See www.publicaffairs.water.ca.gov/swp/cvp.cfm.

¹⁷ California Water Code, Section 12930 et seq. and Department of Water Resources, Bulletin Number 200, *California State Water Project, Vol. I: History, Planning and Early Progress*, November, 1974, pp. 8 and 9.

¹⁸ California Water Code, Section 12937.

needed to make payments required by their water contracts.¹⁹ Finally, the state general fund provided a guarantee – if money from the contractors was not enough, the state would kick in whatever was needed to make the debt service payment in full and on time. For the most part, this arrangement worked out as planned. Although the state did contribute some money that it got from the lease of tideland areas that it controlled for petroleum production, the bulk of bond repayment and operating expenses of the system have come from water sales.

The arrangements for apportioning these costs among the many districts that contract for SWP water are obsessive, but also elegantly rational. The capital and operating costs of Oroville Dam, of the gates and levees in the Delta that help get water to the pumps, and the capital cost of the pumps, are paid in proportion to the amount of water which each contractor is entitled to receive that year. So if contractor A has signed up for 18 percent of the water that year, that contractor pays 18 percent of these “water supply” costs. The canal heading south is divided into reaches. Each contractor pays for each reach in proportion to the amount of water that will be delivered to that contractor through that reach. So the contractors along the northern reaches of the canal pay for their proportionate share of the cost of the reaches between their diversion point and the pumps. The Southern California contractors pay a part of the cost of the northern reaches, and all of the cost of the most southerly reaches. The variable costs of delivering water, such as the costs of electricity to operate the pumps, are charged based on an approximation of the actual cost of moving the water to each contractor.

Financing in the sense of raising capital to buy right of way and build the structures that make up the system has been handled through the initial state general obligation bonds authorized in 1960, bonds authorized years earlier when the state thought it might build what became the Bureau’s Central Valley Project, revenue bonds backed by the sale of water and electricity, and probably other arrangements. Raising capital in these ways is not especially difficult or controversial if there is a reliable flow of revenue to pay the debt service as it comes due.

The financing arrangements interact with the project’s rules for allocating shortages in years when the project can’t deliver as much water as the contractors are entitled to and actually want. The original contracts provided that, in the event of a shortfall, available water would first be cut for agricultural users for up to seven years up to a specified limit. After that, cuts would be allocated in proportion to the maximum amount of water for which each contractor had signed up²⁰. So if a contractor has signed up, and paid the capital cost, for 25 percent of the hypothetical full delivery water that year, the contractor was entitled to 25 percent of the available water during dry times. A district that signed up for more water than it needed, at

¹⁹ California water Code, Section 11652.

²⁰ The contractors and DWR have agreed to amend these provisions, removing the agriculture-takes-the-first-cuts feature, among other things. This agreement was successfully challenged in court and now exists subject to a settlement agreement, and awaits completion of a legally acceptable Environmental Impact Report by the Department of Water Resources. See http://www.des.water.ca.gov/mitigation_restoration_branch/rpmi_section/projects/.

least for some years, could be understood to be in a priority position during dry periods as well as entitled to a larger delivery of water when it might eventually need it in the future.

SECTION 2. WHO SHOULD PAY FOR ENVIRONMENTAL BENEFITS?

A. The Early SWP Understanding

These financing arrangements have been generally accepted as both fair and practical for nearly 50 years. Minor adjustments have been negotiated, and there is an ongoing dispute about the rules for allocating water during dry times.²¹ Implicit in these arrangements, and in the statutes that provide the legal framework for their existence, is an understanding about how the costs of providing water and other protections for fish and wildlife should be financed.

The State Water Project was built before passage of much of our current environmental law. There was no California Environmental Quality Act or Endangered Species Act (state or federal). Protecting the fisheries of the Delta does not appear to have been a prominent item of discussion. The legislation authorizing the project was followed one year later by another law, the Davis Dolwig Act, which dealt with financing for fish and wildlife and recreational facilities.²² It began by declaring two basic state policies relating to the water project:

- (1). That “preservation of fish and wildlife be provided for in connection with construction of the state water project.”
- (2). That the project should be built to provide for “the enhancement of fish and wildlife and to meet recreational needs” and that project construction costs for these purposes should be paid for by the general public.²³

A later section in the law is even more explicit about how the costs of building and operating the project should be divided up. It maintains the distinction between “preservation” and “enhancement” of fish and wildlife. It says:

- (1). The department should set charges for project water “sufficient to repay all costs incurred for the preservation of fish and wildlife and determined to be allocable to the costs of the project works constructed for the development of such water and power, or either.”
- (2) “Costs incurred for the enhancement of fish and wildlife or the development of public recreation shall not be included in the prices, rates, and charges for water and power, and shall be nonreimbursable costs.”²⁴

²¹ See Monterey Agreement and litigation (http://www.des.water.ca.gov/mitigation_restoration_branch/rpmi_section/projects/).

²² California Water Code Section 11900 *et seq.*

²³ California Water Code Section 11900.

²⁴ California Water Code Section 11912.

The first item contains a somewhat cryptic qualification. It directs the department to bill the contractors for the costs of fish preservation to the extent that it determines those costs to be “allocable” to, well, the rest of the sentence is difficult to decipher. A reasonable guess is that it means DWR should bill the contractors for money spent for fish preservation needed to offset possible harm to fish caused by “project works.” To use more modern phrasing, it requires that DWR find that there is a “nexus” between fish preservation spending and harm caused by the project before billing the contractors.

A nexus requirement seems essential if the cost assignment rules in the Davis Dolwig Act are to be fair to the contractors. If there were no nexus requirement, preservation could mean that the contractors were responsible to pay for maintaining fish populations even if the damage was done by others. Fish biologists tell us that fish populations have declined for many reasons, including things that have nothing to do with water diversions to the contractors, such as changing ocean conditions, introduction of foreign species which eat the natural food of native fish species, cities or farmers upstream from the Delta taking a lot of water from rivers flowing into the Delta, and pollution from upstream sewage treatment plants. But the nexus finding requirement asks DWR to assign “blame,” or at least financial responsibility, about phenomena where the best available science is elusively inconclusive. It is an unenviable assignment. It does not appear that these kinds of complexity were much talked about when the state water project was authorized.

The “enhancement” part of this cost assignment system seems easier to understand. The concept was that if water from the project was made available for a wetland, say, so ducks could land and entertain hunters and maybe birdwatchers, then that water was providing a benefit to the public. If the state built campgrounds, or parking lots and trails for fisherpersons to get to reservoirs and canals, these clearly benefited the public. Therefore, paying for project costs for these purposes should come from the state’s general fund, or maybe bond funds to be repaid from the state general fund. The state’s voters approved tacking a \$60 million state general obligation bond act onto the Davis Dolwig Act in 1970 (worth about \$320 million today), with direction that the money be used for “recreation and fish and wildlife enhancement in connection with state water projects.”²⁵

It would be reasonable to suppose that this policy direction would have been converted to practical, understandable, detailed language in the contracts that DWR signed with water agencies throughout the state for project water. The contracts might spell out the specific facilities that DWR might install to help preserve fish populations, such as fish screens, or the restrictions that it might impose on pumping or water exports in order to preserve fish populations. Alas, the contracts make no mention of fish, their preservation, or recreational facilities at all. Since the contracts spell out how project costs will be apportioned among the contractors in great detail (the standard contract and its collected amendments runs to some 300 pages), this silence is remarkable.

²⁵ California Water Code Section 11922.2.

The contracts do provide a way to pay for fish preservation, despite the absence of articulation about how to do that. The project includes fish screens, for example, to prevent at least larger fish from getting sucked into the pumps at Clifton Forebay and crushed. These screens serve fish preservation purposes. They are simply treated as part of the intake structures for the aqueduct and paid for through the Delta Water Charge, in proportion to each contractor's annual entitlement to water. This interpretation does not seem to have caused controversy.

The Davis Dolwig Act is the product of an environmentally simpler age. Major declines in fish populations, restrictions on pumping from the Delta in hopes of preventing further declines, and construction of structures such as a canal to isolate water flow to the project's pumps for fish protection (among other reasons) were not envisioned by people in the 1960s, other than the apocalyptically-inclined. It is not surprising that the Act does not provide explicit instruction about how to allocate the costs of responding to these new urgencies. It does, however, give us by far the most relevant financing principles from the founding years of the State Water Project about how to allocate the financial burden of dealing with our more modern difficulties. There is room for disagreement about whether these nearly 50 year old principles should still be controlling, of course.

B. The State Water Resources Control Board

The department's minimalist approach to allocating responsibility for environmental mitigation from the state project left something of a vacuum. It was filled, in part, by the State Water Resources Control Board (SWRCB). Its predecessor agency, the State Water Rights Board, issued permits to the Bureau of Reclamation for water rights for the CVP in 1961. The Board was aware of problems with salt water working its way up into the Delta at the time, was not sure what to do about it, and reserved authority to impose conditions on the CVP to help solve this problem. It suggested that the Bureau, Delta landowners, and the state work out some mutually acceptable solution to the salt problem, which resulted in the "Tracy Standards." The Board imposed a similar reservation, as well as more specific conditions related to the Tracy Standards, when it issued permits to the Department of Water Resources for water for the State Water Project in 1967.

The SWRCB was created in 1967 by combining the old State Water Rights Board with the old State Water Quality Control Board. The merger explicitly tied the state agency with authority over water rights together with the agency responsible for ensuring water quality, a combination pregnant with possibility. The Legislature, on a roll, enacted the state's backbone water quality law, the Porter-Cologne Act, in 1969.²⁶ The Act created the current system of regional water quality boards, but left responsibility for statewide policy with the SWRCB. The Board had broad power to draw up water quality plans. Water quality was defined broadly, to include not just chemical and sewage pollution, but also anything that might affect the biological function of the water, and the Board was charged to protect

²⁶ California Water Code Section 13000 *et seq.*

beneficial uses of water including the ordinary human uses as well as “preservation and enhancement of fish, wildlife” and aesthetic enjoyment.²⁷

The Board’s most significant first application of this authority involved adoption of a water quality plan for the Delta in 1978’s Water Right Decision 1485. D-1485 modified the water rights permits held by the Bureau and the Department to require the federal and state projects to release enough water, or to export less water, to maintain salinity and other water quality objectives in the Delta. The decision was challenged in court. The appellate court decision, famously known as the Racanelli decision (after Justice Racanelli) upheld the board’s authority to condition the water rights of the two projects, but complained that it had not gone far enough in protecting “fish and wildlife that make up the delicate ecosystem within the Delta.”²⁸

A 1991 SWRCB plan for the Bay-Delta, a USEPA draft of water quality standards for the area, and federal/state coordination efforts followed, culminating in the adoption of the 1995 Bay-Delta Water Quality Control Plan by the Board. It included specific objectives for salinity as measured at several designated places in the Delta, Delta outflow objectives to protect fish, more specific flow objectives in the southern Delta, and a “narrative” goal of doubling chinook salmon numbers.

The Board conducted a series of hearings during 1998 and 1999 on how it would allocate responsibility for implementing the flow objectives of the 1995 Plan among water right holders. Allocating responsibility in this sense is essentially equivalent to determining who will pay, except that the payment is made in acre-feet of water rather than dollars. The Board encouraged the interested parties to work out agreements among themselves about how to allocate this responsibility, and several at least partial agreements emerged. For example, the “San Joaquin River Agreement” proposed to meet springtime flow requirements in the southern Delta through a combination of water releases from several water districts (the Merced, Turlock, Modesto, Oakdale, and South San Joaquin Irrigation Districts), with compensating payments from the Bureau and DWR, and with the Bureau and DWR agreeing to provide whatever additional water was needed to meet the flow requirements.

In some cases, the Board made its own analysis about responsibility. For example, it found that salinity concentrations in the southern Delta resulted principally from the operation of the CVP. The project added to salinity both because its upstream diversions reduced San Joaquin River flow (and therefore reduced the dilution effect) and because of salty drainage water from lands on the west side of the valley that were irrigated with CVP water. So the Board determined that the CVP would be responsible for meeting the board’s salinity standards at Vernalis in the southern Delta. However, it declined to tell the Bureau whether it should get the water for this purpose from New Melones Reservoir or by increasing releases from Friant Dam or by exporting less water from the Delta to the west side of the San

²⁷ California Water Code Section 13050.

²⁸ United States v. State Water Resources Control Board, Cal.App.3d p. 182.

Joaquin Valley, for example. It simply set conditions in all of the CVP's water rights permits that required that the project as a whole meet the Vernalis salinity standards.

The Board determined that the CVP and the SWP together were at least partly responsible for meeting salinity standards and flow requirements elsewhere in the Delta, and set conditions in their water rights permits requiring that they jointly manage their projects to ensure that these requirements are met. It was not specific about the proportion of responsibility each project should bear, but said that it would revisit this matter and presumably be more detailed in a future water rights hearing.

The Board also examined whether the East Bay Municipal Utility District was providing a reasonable share of the water needed to maintain Delta flows. EBMUD operates two dams on the Mokelumne River, and sends some of the water to the Bay Area through an aqueduct. Although the district does not take water out of the Delta directly, it does divert water that would otherwise flow through the Delta. So the Board determined that it shared some responsibility for maintaining Delta flows. However, the Board also decided that the district had agreed to provide flows and otherwise help restore fish populations through the "Joint Settlement Agreement" that it signed as a condition for renewing and amending its licenses for the dams from the Federal Energy Regulatory Commission in 1998, and that this was enough.

The Board was also aware that many other individuals and water districts divert water from streams flowing into the Delta, and arguably contribute to the salinity and fish problems that the Board was interested in correcting. These parties should reasonably bear some of the responsibility for providing water to the Delta that the Board had assigned to DWR and the Bureau. In "Phase 8" of the Board's D-1641 proceedings held in 1999, the Board invited these parties to come to some agreement about how much each would contribute, and to bring that agreement to the Board. The invitation came with the implicit threat that, in the absence of an agreement, the Board might assign those responsibilities by itself. After some months of apparently fruitless conversation with these other water users, the Bureau and DWR asked the Board not to pursue their Phase 8 inquiry. They also assured the Board that they would continue to provide enough water to meet the Board's salinity and flow standards.

An interesting blind spot in the Board's work to assign responsibility for maintaining water flows for the health of the Delta is that its jurisdiction only applies to water rights obtained after 1914, when the Board's predecessor agency was created. The Board cannot require holders of pre-1914 water rights to provide water for this purpose, even though they almost certainly contribute to the Delta's problems²⁹. Notably, the City of San Francisco's Hetch Hetchy water system falls into the pre-1914 category.

²⁹Requiring cities with water rights from before 1914 to provide environmental mitigation is further complicated by Section 1006 of the California Water Code, which seems to immunize these municipalities from almost all of the provisions of the Water Code. It presumably does not create any special protection from the Endangered Species Act and other environmental laws not found in the Water Code, however.

The Board's efforts at assigning responsibility for environmental mitigation in the Delta are the most comprehensive and thoughtful so far attempted. But they have several limitations, at least, so far:

- The Board has relied heavily on “agreements” among water districts and the state and federal projects. The agreement approach has considerable virtue, of course, because it carries a degree of more or less voluntary acceptance by the districts which have signed on. It is politically more appealing than a more confrontational approach or endless litigation (although the agreement-based water rights decision has been the subject of several lawsuits eventually joined into one proceeding). A considerable disadvantage is that it does not lead to a transparent way of analyzing the causes of the Delta's various problems or a set of rules for assigning responsibilities.
- They cannot include holders of pre-1914 water rights.
- They have, so far, been unable to include the water districts and other water users who have not signed on to any of the agreements.
- They assign responsibility for providing water flows directly to districts and projects. In some cases, it might be considerably more efficient to produce the required flow by buying water from users who valued it less highly than the responsible district. While it is true that individual districts might reach market agreements along these lines by themselves, perhaps as part of an “agreement,” the Board itself has no systematic role in making that happen.
- Adjusting water rights as a way of providing environmental mitigation pushes two very complicated areas of law into each other. Water rights have their own convoluted rules of priority based on seniority of right, riparian versus appropriative versus contract, and many other subtleties. The potential interactions between the many moving parts of these two worlds could become quite bewildering, especially if the Board needs to go beyond quasi-voluntary agreements. It may be that some part of mitigation needs to be somehow separate from, rather than part of, water rights proceedings.
- The Board has been cautious about pursuing remedies to the apparent decline in fish populations in the Delta, arguing in part that scientific understanding of the causes and solutions is just too poorly developed for it to act. Courts have recently ruled that this position is not an acceptable reason for declining to act to protect endangered species, in particular the smelt and salmon that live in or pass through the Delta.

C. The Courts, Delta Smelt and Salmon

The scale and urgency of potential mitigation requirements in the Delta took a somewhat startling escalation with Judge Wanger's decision and remedy order in the Delta Smelt

case.³⁰ In short, the federal Fish and Wildlife Service issued a “Biological Opinion” in 2004 which held that continued combined operation of the federal and state water projects with existing SWRCB restrictions, and with oversight by a committee charged with protecting the Delta Smelt, would pose “no jeopardy” for the Smelt, an endangered species under the federal Endangered Species Act. On the contrary, the judge held that the “Delta Smelt is indisputably in jeopardy as to its survival and recovery.”³¹ He subsequently ordered reduced levels of pumping for water export at times of the year when effects on the Smelt are thought to be most severe. He acknowledged that the state of scientific understanding of what might be necessary for the Smelt’s survival is far from definitive, but still ruled that the Endangered Species Act requires action based on reasonable judgment even in the face of uncertainty.

This pumping restriction can be understood as a temporary, rough and ready response to a biological crisis. The judge made no pretense of evaluating the degree of responsibility of the many parties that take water from or otherwise affect the biological health of the Delta. The federal and state projects were the biggest, arguably most important source of damage to the Delta, and were clearly involved in dialogue with the Fish and Wildlife Service about the status of the Smelt.

Judge Wanger subsequently issued an opinion with similar reasoning rejecting the National Marine Fisheries Service’s “no jeopardy” Biological Opinion about the federal and state projects’ effects on Chinook salmon. This decision may lead to reinforcing and perhaps additional pumping restrictions and perhaps other requirements affecting Delta water. The long term course of these decisions is not clear. Presumably they will be appealed. But they are not aberrations. Water law throughout the western United States is undergoing unsettling transformation, as the Endangered Species Act and other laws intended to protect fish are changing the operation of water systems more broadly. Some examples outside the Delta:

- The Bureau of Reclamation is under court order to restrict irrigation diversions and to maintain at least minimum flows in the Klamath River.
- Although a precise remedy is still contingent on passage of federal legislation, a court has ordered that water be released from Friant Dam to maintain sufficient flow in the middle San Joaquin River to allow restoration of salmon and other fish.
- Dam operators on the Snake River, a tributary of the Columbia, are under court order to maintain dam spill and stream flow levels set by a judge in order to reduce harm to salmon populations. The most important source of salmon mortality is thought to be from grinding in hydroelectric turbines. The National Marine Fisheries Service recently completed a draft Biological Opinion that identifies improvements in salmon habitat and dam design and operation to reduce risk to salmon.³² The costs for these

³⁰ Natural Resources Defense Council et al. v. Dirk Kempthorne et al. Case Number 1:05-cv-1207 OWW (5/25/07).

³¹ Ibid. p. 119.

³² See <http://www.nwr.noaa.gov/Salmon-Hydropower/Columbia-Snake-Basin/Final-BOs.cfm>.

changes would mostly be paid through rate increases for electricity produced by the Bonneville Power Administration.³³

D. Legislative and Other Approaches to “Limited Mitigation”

Pressure for increased environmental mitigation for the federal and state water projects has existed for a number of years, as has resistance to the idea from the water supplier community. This tension has produced several compromises that could be described as providing “limited mitigation.”

One of the earliest was contained in a federal law called the Central Valley Improvement Act, enacted by Congress in 1992. The Act was part of a package of laws related to western reclamation projects, generally intended to make “changes in management of the Central Valley Project, particularly for the protection, restoration, and enhancement of fish and wildlife.”³⁴ The most immediately relevant was contained in Section 3406(b)(2), which required the Bureau to manage 800,000 acre-feet of CVP water “for the primary purpose of implementing the fish, wildlife, and habitat restoration purposes and measures authorized by this title; to assist the State of California in its efforts to protect the waters of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary; and to help meet such obligations as may be legally imposed upon the Central Valley Project under state or federal law following the date of enactment of this title, including but not limited to additional obligations under the federal Endangered Species Act.”³⁵ This instruction is followed by various qualifiers, including that the amount of water for this purpose may be cut in years when agricultural deliveries from the project are reduced “due to hydrologic circumstances.”³⁶

The 800,000 acre foot requirement appears to be a limited mitigation requirement. An earlier subdivision of the section authorizes the Secretary of the Interior to modify CVP operations to provide flows that would benefit fish, “except that such flows shall be provided from the quantity of water dedicated to fish, wildlife, and habitat restoration purposes under paragraph (2) of this subsection”,³⁷ which is the 800,000 acre-feet. The law also explains that the 800,000 acre-feet should be used, among other things, to “help meet such obligations as may be legally imposed upon the Central Valley Project under state or federal law following the date of enactment of this title.” Taken together, this language seems to mean that the Bureau can use the 800,000 acre-feet on its own, but may have to provide additional water if directed to do so by a court or the SWRCB.

This interpretation appears to have been relied on in the *Biological Opinion* prepared by the National Marine Fisheries Service for the CVP and SWP in 2001, for Chinook Salmon. The opinion describes the actions that would be taken by the CVP to help “contribute” to the CVPIA’s goal of doubling Chinook Salmon population as limited to allocating 800,000 acre

³³ The Columbian (Vancouver, WA), May 6, 2008.

³⁴ This is a summary provided by the Bureau of Reclamation at <http://www.usbr.gov/mp/cvpia/>.

³⁵ See <http://www.usbr.gov/mp/cvpia/3406b2/3406b2.html#3406b2>.

³⁶ Ibid.

³⁷ 3406(b) (1) (B).

feet of water. While the opinion should not be considered a reliable interpretation of the law on the matter, it does affirm the existence of a point of view – that 800,000 acre feet was seen as the practical limit of CVP mitigation efforts at the time³⁸.

The same section also directs the Bureau to take other steps to help support fish populations that might be affected by the project, including improving fish screens and “fish recovery facilities” at the Tracy and other pumping plants, installing better water temperature control facilities at Shasta Dam, and other things. It divides up the responsibility for paying for this work by saying that 37.5 percent should be paid for as project expenses, 37.5 percent should be federal money not reimbursable from the project, and 25 percent should be paid by the State of California. If this were the SWP, the “project expenses” cost would be paid by the water contractors. With the CVP, what it means is less than clear.

A more recent version of a “limited mitigation” plan is the Environmental Water Account (EWA) program developed by California Bay-Delta Authority (CALFED). The EWA is intended to “provide protection to at-risk native fish species of the Bay-Delta estuary through environmentally beneficial changes in SWP/CVP operations at no uncompensated water cost to the Projects’ water users.”³⁹ The water projects are subject to environmental restrictions from several sources, including the SWRCB’s water rights restrictions, and limits that result from the federal and state endangered species acts. These restrictions, even before the Delta Smelt and salmon court decisions, required that the projects reduce their pumping during times when fish were likely to be especially affected, close gates in the Delta in ways thought to help fish but which also reduce the flow of relatively clean and salt-free water from the Sacramento River to the pumps, and take other actions. Reduced pumping means that less water is exported south.

The EWA appears to give the agencies concerned with fisheries protection some ability to impose additional restrictions on pumping and on Delta gate operations in order to provide additional protection to fish. However, it also provides that the projects’ contractors must be compensated with an equivalent amount of water from other sources to make up for delivery reductions due to these additional restrictions. The amount of additional restriction is limited by the amount of make-up water that the EWA can provide.

Where does the EWA get water to “reimburse” the projects? Primarily, it buys it from water districts, although some water is also obtained from changes in project operation, and more is sought from relaxation of existing legal restrictions on project operations. The biggest single source of money appears to have been the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (a statewide general obligation bond act), which provides \$180 million for various “water supply reliability projects” including the EWA.⁴⁰ The bond act asks that “preference” be given to using the EWA money to buy “long-term water purchase contracts and water rights”, presumably in line with the general principle that bond

³⁸ U.S. Bureau of Reclamation, Mid-Pacific Region, Biological Opinion: Central Valley Project (CVP) and State Water Project (SWP) Operations, January 1, 2001, through March 31, 2002 (May 8, 2001).

³⁹ EWA ASIP July 2003, pp. 2-3.

⁴⁰ California Water Code Section 79550(d).

funds should be used to acquire capital assets. However, it appears that the EWA has mostly acquired short term, one-time water with the funds.⁴¹

The EWA appears to be an interesting compromise approach to environmental mitigation. Recall the mitigation principle from the Davis Dolwig Act in the 1960s, that the projects and their contractors are responsible for fish “preservation,” and the state as a whole is responsible for fish “enhancement.” The EWA restatement of that principle is that the projects and contractors are responsible for fish preservation up to a baseline level set by the environmental and water rights regulations in force at a particular time, and the state as a whole can provide for additional fish preservation efforts if it is willing to pay for water from other sources to make up for any water delivery reductions that result. It also introduces the concept of “environmental mitigation on a budget.”

The role of the EWA was examined in the court decision in the Delta Smelt case. The environmental organizations that filed the suit argued, among many other things, that the plans to protect the Smelt were inadequate because they relied on EWA water, which might be limited or go away entirely if the money for the program ran out. The court was dismissive of the concern, explaining:

“The EWA is simply a means by which the SWP and CVP can obtain water by purchasing it from willing sellers. EWA water may be used either to protect fish or to compensate project water users for reduced exports at the project pumps. If money is unavailable to fund the EWA, Defendants (meaning the Bureau and DWR, among others) are nonetheless required to prevent smelt take from exceeding permissible take limits.”⁴²

This explanation leaves a number of practical questions unanswered, such as whether the level of pumping restriction which evolves after new Biological Opinions are completed and a new regulatory equilibrium is reached becomes the new baseline level of regulation. In that case, the EWA would be responsible for reimbursing only for water losses arising from pumping restrictions that exceed those required by the court, which seem likely to be very small. Alternatively, perhaps the baseline is the level of regulation that applied at the time of the CALFED negotiations over the EWA, in which case the new pumping restrictions will presumably drain any water assets and money still available to the EWA.

E. Some Notes on the Concept of “Beneficiary Pays”

The idea that water projects should be paid for by those who benefit from them has been at the core of almost all of California’s water history. Early agricultural canals and diversion works were financed by private entrepreneurs or by public water districts that raised money either by selling water or by levying assessments explicitly proportional to benefit against real estate in the district. San Francisco, Los Angeles, and the East Bay financed

⁴¹ Department of Water Resources, Management of the California State Water Project, Bulletin pp. 132-05 (December, 2006), p. 128.

⁴² Natural Resources Defense Council et al v. Dirk Kempthorne, et al, 1:05-CV-01207 OWW p. 61.

development of their massive water works through property taxes paid by each city's taxpayers or through sales of water and electricity, which were at least roughly proportional to the benefit that each property owner received from the new water supply. Financing of the Bureau of Reclamation's vast projects started with the premise that the beneficiaries of the water would pay construction and operation costs, although adjustments were made over time that somewhat fictionalized the story line. The State Water Project, by contrast, has been paid for through one of the purest applications of beneficiary-pays principles on the face of the earth.

There is at least some reason to think that this approach to financing water projects continues to enjoy considerable support, except from the apparent beneficiaries. For example, the CALFED Record of Decision, perhaps the most collaborative statement of principles of water development in recent years, includes among its "Implementation Commitments" the item:

*"Beneficiaries Pay. A fundamental philosophy of the CALFED Program is that costs should, to the extent possible, be paid by the beneficiaries of the program actions"*⁴³

The practical meaning of this commitment is not altogether clear. The same Record of Decision describes plans for financing ecosystem restoration work, for example, that relies principally on state and federal funding⁴⁴ (observers argue that this work should be paid for by water beneficiaries). It says CALFED will work "to develop state legislation to create a broad-based user fee that will generate approximately \$35 million annually,"⁴⁵ "but that has not happened. The Legislature put language directing that beneficiary financing be applied to particular water projects, and that CALFED produce an overall Bay-Delta financing plan based on beneficiary payments in budget acts from 1999-00 through 2003-04. That did not happen. The Governor's 2005-06 May Revision of the budget proposed that CALFED produce a financing plan "consistent with the beneficiary pays funding principle".⁴⁶ That did not happen. CALFED did produce a plan in 2006 which suggested that it would negotiate agreements with water users who were willing to voluntarily contribute money to CALFED for programs where they felt the benefits to them were sufficient to warrant doing so. The Legislative Analyst observed indignantly, "such a proposal appeared more in line with a "willingness to pay," as opposed to a true beneficiary funding principle as previously articulated by the Legislature."⁴⁷

This history is somewhat unusual. Ordinarily, when the Legislature directs an agency to do something, the agency goes to some pains to create at least the appearance of compliance. CALFED's nonresponsiveness presumably reflected the intense opposition of many of the water districts to any "beneficiary pays" plan, at least along the lines that the Legislature

⁴³ CALFED Bay-Delta Program, Programmatic Record of Decision, August 28, 2000, p. 34.

⁴⁴ Ibid, p. 37.

⁴⁵ Ibid, p. 38.

⁴⁶ From California Legislative Analyst's Office, Analysis of the 2007-08 Budget Bill: Resources (see http://www.lao.ca.gov/analysis_2007/resources/res_03_anl07.aspx).

⁴⁷ Ibid.

seemed to have in mind. Caught between legislative imperium and the wishes of a central constituency of the agency, CALFED gridlocked.

Opposition to “beneficiary pays” almost certainly arises because it is more attractive to the beneficiaries if someone else can be found to pay, such as the taxpayers of the state as a whole. This path has considerable plausibility, since the voters have approved bond measures in recent years to pay for projects that might arguably be the responsibility, at least in part, of a narrower set of “beneficiaries”.⁴⁸ Bills to authorize bond measures to fund additional projects arguably in this category are under consideration in the Legislature.

But opposition also probably stems from disagreement about just what “beneficiary pays” means in the context of contemporary California water realities. The Legislature has made one attempt to explore the definitional issues underlying this concept, but the bill was controversial and did not pass.⁴⁹

When the financing arrangements for the State Water Project were created, “beneficiary pays” was the unequivocal guiding principle. A number of theoretical frameworks for accounting for benefit exist, some borderline theological. The framework for the State Water Project was pretty straightforward. The water districts who contracted for water from the project were the beneficiaries, and they benefited in proportion to the amount of water that they would get (questions about the timing of when they would get the water, and what the priorities would be in event of a delivery shortfall complicate this a little, and continue to vex, but ignore these details for the moment). The defining principle for financing the SWP was that the beneficiaries would pay all (well, nearly all) the costs of supplying the water, including the capital costs of building all the works and the ongoing costs of operating and maintaining the system.

This principle had two things going for it. One was that the “benefits” and costs were uncomplicated. Benefit meant water. Costs meant the amount needed to pay for construction, electricity, personnel, and other items that would have been instantly legitimate to any accountant of the day. The second was that the SWP was cliff-hangingly controversial, and heavy reliance on the state’s general fund would have become an almost certainly mortal argument against the project. It was “beneficiary pays” or no State Water Project. These circumstances were sufficient to produce perhaps the purest example of beneficiary financing of a major water project anywhere.

Legislators and voters alike focused on water and money, two subjects sufficiently engaging to fully occupy the public debate. Saltwater intrusion in the Delta was something of an insider issue. State water law since 1945 said state water projects should provide for “protection of migratory fishes” “when engineering and economic features of the project

⁴⁸ The LAO has repeatedly argued that funds from Propositions 13 and 50, for example, for South Delta Improvements, surface storage investigations, and other purposes should not be spent until a workable beneficiary payment program is operational. See *Ibid.*

⁴⁹ Senate Bill 113 (Machado) 2005-06.

make it practicable”⁵⁰ State law also required the owner of any dam to release sufficient water “to keep in good condition any fish that may ... exist below the dam,”⁵¹ but this provision had had no discernible impact until it arose from extended quietude in the recent San Joaquin River case. The Davis Dolwig Act (1961) said that water contractors should pay for fish preservation while the public should pay for fish enhancement, as reported earlier. There is little reason to think that anyone was very exercised about these provisions at the time. Certainly they didn’t muddy the concept of beneficiary payment.

A considerable shift in public attitudes and in laws about the importance of fish, endangered species, and environmental protection has occurred since then. The concept that developers of a broad range of projects should be required to “mitigate” environmental harm that might result from their projects has become mainstream law and practice in the approval of housing and commercial land development, for highway projects, for public buildings, for timber harvests, for power plants, and for many other kinds of activities that support contemporary civilization. This change has been controversial and has come about through changes in state and federal law and through an enormous amount of litigation. It is an undeniable practical reality. For the most part, developers are required to pay the costs of studies to determine what environmental harm the project might cause and what mitigation might be helpful, and then to pay for the work or sometimes property acquisition that might be required. Sometimes mitigation requires a reduction in the size of the project, so that fewer housing units might be allowed, for example. Either way, mitigation is part of the cost of building (and maybe operating) the project.

In a world where environmental mitigation is part of the cost of doing business, “beneficiary pays” means the districts that get the water from the SWP pay all the costs that were recognized when the project was initiated and also pay the costs of environmental mitigation needed to keep the project legal. Therein lies a world of disagreement.

One source of disagreement may be a simple rejection by some of the water districts that environmental mitigation is important or should be binding on them. Districts have made arguments in court, for example, that the Bureau or DWP cannot legally reduce water deliveries for environmental reasons, because they are obligated by water supply contracts to deliver water without such interference. A variation is that, if the Bureau should reduce water supply for environmental reasons, it must compensate the water districts for the “taken” water. Appellate courts have fairly uniformly rejected arguments along these lines.⁵² It seems reasonable to expect that this sort of disagreement will diminish with repeated disillusionment in court.

⁵⁰ California Water Code Section 12582.

⁵¹ California Fish and Game Code 5937.

⁵² *State Water Resources Control Board Cases*, Court of Appeal, Third Appellate District, California C044714, February 9, 2006, Section V(A), or *Klamath Irrigation District, et al., v US and Pacific Coast Federation of Fishermen’s Associations*, US Court of Federal Claims, Nos. 01-591, 01-5910L through 01-59125L, March 16, 2007

A second source of disagreement is more complex. Developers pay for incremental harm done by single projects. Perhaps the developer is required to set aside some land or to contribute to a fund to buy habitat for an endangered raptor. There is conflict and tension, but something is worked out. In most cases, the framework of environmental laws was in place, or at least the trend apparent. Species protection is mostly done at the margin, one project at a time, and is very partial. No one seriously proposes compelling a large city to tax itself or just move to provide habitat for an endangered species on a large scale, even if nearly all of the species habitat used to be where the city now stands. For the most part, we don't reach back and try to compel a city to undo the environmental damage it caused over 50 years of development.

We do, however, sometimes demand that a city massively upgrade the level of its sewage treatment, even at great expense. This was done on a large scale throughout the nation during the 1970's, after passage of the federal Clean Water Act (CWA). The Act required cities to upgrade their sewer plants. But the CWA contained large appropriations to fund a grant program to cover 75 percent of the cost of the work. One reason for this "generosity" was to reduce potentially proto-revolutionary political opposition to the Clean Water Act. A more subtle way to understand the same phenomenon involves recognizing that the CWA reflected a very large change in cultural values and municipal behavior, changes that would have come as a surprise in many places in the country where there was far from universal agreement with the notion of requiring high level sewage treatment, and especially of paying for this change. Arguably the CWA embodies the wisdom that the financial shock of a major cultural and environmental change should sometimes be softened by financing it as broadly and invisibly as possible.

There is some basis for comparison with the SWP. When the project was authorized and built, and the water supply contracts were initially signed, fish were a negligible concern. Fish preservation was mentioned in law, but hardly in a dramatic way. There is little evidence of great concern that fish populations would be exterminated. It was mostly a nonissue.

Things changed. Laws changed, fish populations declined, and, recently, the courts have imposed restrictions on water projects that would have been unthinkable a few years ago. CALFED may have had the odd and unintended effect of supporting a somewhat delusional conversation that environmental mitigation could be contained by structures such as the Environmental Water Account to levels of occasional inconvenience. Arguably this chain of events records a cultural change in many ways analogous to the Clean Water Act. Perhaps the Act's lesson of buffering cultural change with financial cushion is worth replicating in some way.

A third source of disagreement has to do with the allocation of responsibility for protecting fish. The smelt decision placed responsibility on the state and federal water projects. Their contractors may reasonably argue that the demise of the smelt is not all their fault, or that even the part that is due to their diversions ought properly to be paid for some other way.

This in turn backs into the fair and difficult question of how to apportion responsibility for protecting fish populations in the Delta.

The preceding review of water financing history suggests that this question can be divided into three parts:

(1). The Preservation/Enhancement Baseline

A good place to start is with Davis Dolwig's distinction between "preservation" and "enhancement", which implies the existence of an environmental baseline. The project was responsible for keeping fish populations up to the baseline, and the public was responsible if it decided to do things to increase fish populations to a higher level.

Exactly where that baseline is today is far from clear. A romantic notion is that the Davis Dolwig baseline means the level of fish populations before 1961, when the act was passed. So the contractors would be responsible for bringing fish populations to that level. It might well be impossible to achieve this level of fish "preservation" without completely stopping the SWP's pumps and tearing out a number of dams, and even that might not do it. This does not seem like a very plausible alternative.

Another way of thinking about the baseline is that there was implied consent to the effects of the CVP/SWP's operations until quite recently. There has been complaint and debate, of course, but legally binding limitations on the projects were largely limited to the SWRCB's directives. It could be argued that this acquiescence over a long period of time created a de facto standard for the projects' fish preservation responsibilities. The SWRCB's highest aspiration was its "narrative standard" for salmon, which called for doubling the Chinook population from the relatively low levels of the 1990's. So perhaps that is the baseline level. This leaves open the possibility that the SWRCB might set a new fish preservation standard in the future, which would define a new baseline. Perhaps the baseline is moveable.

A baseline that the federal Fish and Wildlife Service and National Marine Fisheries Service seem to have used in some of their Biological Opinions is that the baseline is defined by a certain level of effort on the part of the projects. In particular, if the projects ran their operations so that no more fish were killed in the pumps than had been killed in past years, then they were at baseline. At least in the context of endangered species such as the Delta Smelt, the court dismissed this standard as being somewhat beside the point. What mattered was: how many Smelt were surviving?

A fourth, rather polar position is that the contractors are absolutely entitled to the water for which they have contracted and fish protection cannot be allowed to interfere with those rights. This assertion can be made as a matter of contractual rights or by claiming that using water for environmental purposes constitutes a "taking" in violation of the Fifth Amendment. Several courts have dismissed these lines of argument recently with remarkable lack of equivocation.

This idea of baseline is not the same thing as the level of environmental protection that we are seeking as a society. It is the level of protection for which the SWP, for example, is responsible. We could decide to seek “enhanced” fish and other protection beyond baseline, but we would need to find some other way to pay for that.

The “preservation”/”enhancement” distinction from the Davis Dolwig Act applies to the State Water Project, not to the CVP nor to the multitude of other water users who might be affecting fish populations in the Delta. These other users are subject to the various fish preservation provisions in the Fish and Game Code. Holders of water rights granted after 1914 are subject to the rules of the SWRCB, which is legally charged to manage water rights to protect fish populations as a beneficial use of water. Despite the different sources of legal authority, any effort to assign these water users some degree of responsibility for preserving fish populations or for other environmental goals would still need to define some sort of baseline level for which they were responsible. Perhaps there are different baselines for each of these categories of water users.

It is conceivable that the baseline issue has been transformed by the smelt and salmon cases. From these cases, the baseline is the level of water flow, quality, and whatever else may be relevant to avoid placing the survival of the species in question in jeopardy and to bring about their return to healthy population levels. For the immediate future, the decisions seem to impose complete responsibility for achieving this level of protection on the CVP and SWP, making it the baseline. It is at least an open question whether this is a good place to leave the baseline for the long run.

(2). What Physical Steps Will Work?

There is a remarkable degree of uncertainty about exactly what is causing fish population declines in the Delta, even among apparently disinterested scientists. Leading candidates include:

- Excessive water exports and related reverse flows, salinity, damage caused by pumps, water temperature changes, loss of breeding habitat, and other things directly tied to the SWP and CVP.
- Loss of water and damage to fish caused by diverters upstream of the Delta and within the Delta.
- Loss of breeding habitat caused especially by dams which breeding fish cannot scale, but also for other reasons.
- Foreign species, which have been introduced into the Delta and may be out-competing native fish.
- Ammonia from Sacramento or other city sewage treatment plants.

- Introduced game fish.
- Global warming and natural changes in ocean heat levels, acidity, and ocean current and nutrient flow patterns.

Each theory implies different sets of corrective measures and perhaps a different allocation of responsibility. Perhaps several contribute to the problem. The courts have seized on the water projects as the principal cause, and demanded flow increases and other management changes. They acknowledge the level of scientific uncertainty, but ruled that the Endangered Species Act requires that decisions be made about what to do based on current best available judgment.

(3). Allocation of Responsibility

The Davis Dolwig Act directed DWR to set charges for water sufficient to repay costs incurred for fish preservation “and determined to be allocable” to the project. This language set in law the important concept that the contractors were not responsible for all fish preservation, only the preservation that was necessary because of project operations. If, for subjunctive example, all fish damage were due to introduced game fish, then no part of the costs of mitigating that damage would be levied against the contractors. Presumably the allocable costs would be apportioned to contractors in proportion to their benefit, meaning the amount of water they got from the project, perhaps as part of the Delta Water Charge.

Allocating responsibility in this way is exactly what the SWRCB was attempting to do in its water rights decision hearings about the Delta. As a complete model for allocation, the Board’s work had shortcomings discussed earlier . Of course, these limitations could perhaps be corrected in the future. A plausible, but far from certain, scenario is that the Board might hold the necessary hearings and revise its Delta water quality plan in a way that was more nearly consistent with the new judicial standards for endangered species protection. Probably it would first wait to see how the dust settled. In time, it would undertake a water rights hearing to assign responsibility for meeting the standards in its new water quality plan. Voluntary agreement might be more difficult with the more stringent flow limitations. Its new water rights decision would lead to considerable litigation, where the courts might set some rules about assignment of environmental mitigation responsibility in this context.

Another possibility is that the Legislature could propose an allocation of responsibility, or create a new mechanism to make this allocation, or give the SWRCB clearer direction about principles that should underpin any allocation, perhaps with the ability to include water diverters with pre-1914 water rights.

Finally, legislation could propose new reservoirs or other measures to “replace” the water used for Smelt and salmon protection. This option raises considerable controversy about where new reservoirs could be built that would produce significant new water supplies without creating a whole new round of environmental difficulties. It also raises in a slightly different manner the question of how to pay for “environmental mitigation” in the form of

dams intended to create additional water supply. In a way, that brings us back to the beginning of the paper.