The Bay Institute of San Francisco

COMMENTS ON THE DRAFT REGULATORY IMPACT ASSESSMENT OF PROPOSED BAY/DELTA WATER QUALITY STANDARDS AND DELTA SMELT CRITICAL HABITAT DESIGNATION

Prepared for:

THE BAY INSTITUTE OF SAN FRANCISCO

and

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These comments concerning the draft Regulatory Impact Assessment (RIA) of the proposed water quality standards for the San Francisco Bay/Delta estuary and critical habitat requirements for Delta smelt performed by the U.S. Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (FWS) are submitted on behalf of The Bay Institute of San Francisco and the Pacific Coast Federation of Fishermen's Associations (PCFFA).

The Bay Institute and PCFFA believe that the RIA represents, for the most part, a serious attempt to analyze potential economic benefits and costs associated with the proposed actions by the two agencies. We especially appreciate the effort made in the RIA to include the many benefits the proposed federal actions will provide for California's declining fisheries and other resource-related values, many of which are not easily or at all quantifiable and therefore not usually recognized adequately in this kind of analysis.

There are a number of water management options available to agricultural water users, in addition to those discussed in the RIA, which will help mitigate potential impacts of changes in water supply. We recommend that these options, which include increased irrigation efficiencies, conjunctive use of groundwater and surface water, and drainage reduction, be included in the final version of the RIA. We also believe that the economic benefits associated with wetlands protection and restoration are much greater than acknowledged in the RIA. These comments are discussed in more detail below.

1. Agricultural water management options

As acknowledged in the RIA, the models used by EPA and FWS to assess potential economic impacts to agricultural water users "did not take into account increases in irrigation efficiencies or increased ground water pumping" (4-1). This omission has allowed potential economic impacts to be overstated. Based on the actual performance of San Joaquin Valley agricultural water users during the recent drought, it is clear that these and other water management options played an important role in helping to mitigate the effects of the supply reductions that occurred late in the drought years. San Joaquin Valley growers dramatically increased their reliance on ground water during the drought. In addition, adoption of improved irrigation technologies by growers increased by as much as 20 percent for a selected variety of crops, i.e., fruit (Dinar et. al., 1993).

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In response to these and other changes in agricultural water management, agricultural cash receipts actually increased during the drought, from $15.5 billion in 1986 to $19.8 billion in 1990 and $18.5 billion in 1991. Production of fruits and vegetables increased from 26 million tons in 1986 to 31 million tons in 1990 and 30 million tons in 1992. Cotton acreage in the San Joaquin Valley was higher in 1992 (1.1 million) than before the drought (1 million), as well. These trends are likely to continue. Although national cotton and rice production is expected to decrease in 1994, California cotton and rice production is expected to increase (Dean, 1994).

The high degree of resiliency provided to agricultural water users who exercise the range of water management strategies cannot be understated. A recent survey (Zilberman et. al., 1992) of how San Joaquin Valley water districts managed their supplies in 1991 demonstrates the extent to which these strategies can be adopted when necessary:

Delivery schedule changes	69%
Groundwater pumping	54%
Improved information exchange	50%
Pricing schedule changes	46%
Irrigation schedule changes	38%
Irrigation method changes	31%
Canal lining	23%
Pressurized pipeline installation	15%

a. Increased irrigation efficiencies

The adoption of improved irrigation technologies provides significant economic benefits to agricultural water users. Because the ratio of effective water to applied water is higher, increased efficiencies create higher per-acre productivity, which then translates to higher revenues for growers. The short-term costs to growers of investing in the hardware for improved irrigation technology and learning how to apply it translate into benefits for the rural economy, as growers spend money on equipment and consultation.

The creation of significant economic benefits from increased irrigation efficiencies may be most dramatic on lower quality lands, but is also applicable to higher quality lands. Evidence suggests that improved irrigation technologies can provide up to a 33 percent increase in yield for selected crops under certain conditions (Dinar et al, 1993).

These improved irrigation technologies may also serve to substantially reduce impacts of climate and soil characteristics on profitability (Dinar and Zilberman, 1990). As a corollary, it should be noted that these strategies may also substantially reduce impacts of soil characteristics and agricultural technology on the environment. Reductions in applied water result in reductions in agricultural return flows, which provides general benefits throughout the area of use by reducing the transfer of sediments, agricultural chemicals and amendments, and soil contaminants to aquatic ecosystems. Direct benefits are also provided to those areas on the west side of the San Joaquin Valley with salinity- and toxicity-related subsurface drainage problems (see discussion on drainage-related benefits below).

b. Groundwater

Agricultural water users relied heavily on groundwater pumping during the recent drought. The volume of groundwater pumping by federal water project users increased 80 percent between 1989 and 1990 (Rausser and Zilberman, 1992). According to one estimate, total groundwater use in the San Joaquin Valley increased by 5 million acre-feet per year (Northwest Associates, 1992).

Increased reliance on groundwater supplies translates into both costs and benefits for the agricultural economy. On the one hand, economic impacts to growers are increased by the energy costs associated with pumping groundwater, by investment in new wells, and other factors. On the other hand, when combined with increased irrigation efficiencies and other improvements in water management, groundwater use can be extremely profitable for growers, as demonstrated by the drought period trends in agricultural revenues and production cited earlier.

A particularly important specific value of groundwater pumping for growers is that investments in high-value crops (i.e., orchards) can be protected in periods when surface water supplies are restricted. In addition, investments in new wells, pumping technology and maintenance provide substantial benefits to equipment suppliers and installers in the local rural economy. The scale of these benefits is indicated by the fact that during the recent drought, 1,306 new wells were drilled in the San Joaquin Valley at an average cost of $95,000 per well (Northwest Associates, 1992).

Clearly, groundwater use has played and will continue to play a primary role in allowing agricultural water users greater flexibility to respond to deficits in water supply. This reality should be incorporated into the estimates of potential impacts on the agricultural economy in the final RIA.

However, we do not mean to suggest that groundwater withdrawal as practiced by San Joaquin Valley growers during the recent drought (and in previous years) is a sustainable practice. Groundwater supplies in the San Joaquin Valley are being severely overdrafted, which may reduce aquifer capacity and water quality and cause structural damage from land subsidence. Regimes for groundwater management and for conjunctive use of groundwater and surface water supplies are necessary if groundwater pumping is to continue to serve as an important tool in the repertory of water management strategies available to agricultural water users. In fact, the regulation of groundwater use and the increased costs of groundwater supplies may prove to be the most important factors in promoting the adoption of improved irrigation technologies and management strategies among agricultural water users.

2. Assessing impacts to urban and agricultural water users

a. SWP contract provisions on shortage in water supply

The RIA may significantly overestimate potential impacts on urban water users who receive supplies from the State Water Project (SWP) because it does not reflect SWP contract provisions which establish water shortage reduction schedules preferential to the urban sector. According to Article 18(a) of the standard SWP contract, when shortages in water supply occur the SWP

> shall, before reducing deliveries of project water to all contractors, reduce the delivery of project water to each contractor using such water for agricultural purposes by a percentage, not to exceed fifty percent (50%) in any one year or a total of one hundred percent (100%) in any series of seven consecutive years . . . Any necessary reduction in deliveries of project water beyond said maximum total reduction allowable under the foregoing provision shall be apportioned among all contractors irrespective of the uses to which such water is to be put.

Under this schedule, SWP urban contractors are insulated from water supply shortages in most years, until extended drought conditions occur. The RIA should be revised to incorporate this factor, which mitigates potential economic impacts on the single largest component of the urban sector.

b. Farm labor wages

It should be noted that potential impacts to the farm labor community from water supply reductions may be overstated. As noted above, agricultural cash receipts actually increased during the recent drought, from $15.5 billion in 1986 to $19.8 billion in 1990 and $18.5 billion in 1991. Production of fruits and vegetables increased from 26 million tons in 1986 to 31 million tons in 1990 and 30 million tons in 1992. Cotton acreage in the San Joaquin Valley in 1992 was higher in 1992 (1.1 million) than before the drought (1 million).

One major reason for this increased production and profit is the flexibility afforded to agricultural water users by the water management strategies, including groundwater pumping and irrigation technology, discussed above. Another is the general trend toward declining wages and deteriorating work conditions for agricultural laborers in California.

Hired workers account for at least 80 percent of all the labor performed in California agricultural operations today (Villarejo and Runsten, 1994), a significant change in the demographic character of the farm community from the past. Nonetheless, real wages have declined for many workers more than 40 percent in the last 20 years, despite increases in agricultural production and profits. Real wages for agricultural workers have continued to fall: "farm wage rates declined 50 percent faster than manufacturing ones during the 1980s" (Villarejo and Runsten, 1994). This trend has been accompanied by unsanitary work conditions, increased exposure to toxic substances and the absence of worker benefits.

The unhappy reality seems to be that real wages for farm labor will continue to decline, independent of potential water supply impacts on agriculture from the proposed federal actions. Inflated estimates of potential impacts on farm labor from water supply reductions should therefore be avoided in the RIA.

c. Mitigation funding

The Central Valley Project Improvement Act of 1992 established a $50 million per year Restoration Fund collected from fees on CVP water users, two-thirds of which is to be used to protect fish and wildlife habitat through such measures as the purchase of water supplies for environmental use. A similar water user fee-based mitigation fund for habitat improvement was proposed by the State Water Resources Control Board in its draft Water Right Decision 1630. After D-1630 was abandoned, the Natural Heritage Institute petitioned the State Board on behalf of The Bay Institute, PCFFA and other organizations to adopt the mitigation fund component of the draft plan. The RIA should be revised to reflect how CVPIA Restoration Fund activities and potential state mitigation funding programs will help mitigate potential impacts of water supply reductions on both agricultural and urban water users.

3. Additional benefits

The RIA provides one of the better attempts we have seen to include resource-related values in an economic analysis, both through its recognition of qualitative ecological benefits from increased productivity and improved habitat conditions and through its consideration of monetized benefits from increased commercial and recreational fishery harvest. Inclusion of quantitative benefits from wetlands protection, drainage reduction and other factors would further strengthen the assessment.

a. Wetlands

The RIA does not adequately represent the tremendous economic and environmental benefits that wetlands protection and restoration provide to society. Although it does acknowledge that protecting and restoring riparian and tidal marsh habitat will result in increased opportunities for recreational fishing, hunting and wildlife observation and improved ecoystem health, the only monetized value for wetlands cited in the document is an estimate by Jones & Stokes Associates of average willingness to pay per household per year to maintain wetlands in the San Joaquin valley ($174). Assessment based on average willingness to pay per household may tend to underestimate environmental values because hidden benefits to society are often overlooked. In the case of wetlands, these benefits include flood control; groundwater recharge; erosion and sedimentation control; improvement of water quality; sport, recreational and educational uses; fishery production; wildlife habitat; and enhancement of property value. Many households surveyed will associate wetlands with only some of these benefits.

A recent comprehensive survey of the literature which attempted to assess the economic value of California's wetlands (Allen et. al., 1992) listed a range of estimated per-acre values in 1990 dollars for the following wetlands functions:

Flood control	$260-$4,650
Water supply	$6,800-$20,360
Water quality	$3,360-$10,400
Recreation	$67-$6,060
Fishery production	$164-$199
Wildlife habitat	$3,337-$8,128

Allen et. al. (1992) concluded that the median annual value per acre of wetlands in California was $21,933. Using this estimate, the annual value of riparian and intertidal wetlands in Suisun Bay and the Delta alone (29,097 acres, according to the Association of Bay Area Governments, 1991; this figure does not include freshwater wetland areas upstream of the Delta or intertidal wetland acreage in San Pablo and San Francisco Bays) is $638 million. Even using the study's low-end estimate ($13,862 annual value per acre), protecting and restoring the quality of this subset of the estuary's wetlands preserves benefits of $403 million each year for the environment and economy of Northern California.

b. Drainage reduction

Some reduction in water supply to agricultural water users on the west side of the San Joaquin Valley is expected to occur under all of the three water supply impact scenarios used in the RIA, yet the extensive benefits to agriculture, the environment and society at large from achieving reductions in subsurface drainage on the west side are not directly addressed in the RIA. As in the case of wetland protection, this issue is touched upon only incidentally in Table 5-7, which cites an estimate of willingness to pay per household per year for protecting fish and wildlife from selenium contamination as an example of how non-use benefits may be calculated. Interestingly, the estimated value cited for appear to be quantifiable.

A final word is in order concerning the assumptions behind the geographical extent of distribution of water supply impacts on water users in the RIA's three scenarios. It is unclear from the RIA and its supporting documents how these impacts are differentiated in the three scenarios, and the extent to which non-federal and non-state project water users are included in the most universal scenario. Clarification of the assumptions used would be helpful.

We appreciate the efforts of EPA and FWS to capture the often intangible benefits associated with resource protection, and believe that the RIA also makes a fair attempt at assessing the real degree of flexibility that both agricultural and urban water users possess. It is our hope that by addressing the concerns we have raised in these comments the agencies will produce an even more comprehensive document.