Chapter 3
Topical Responses

3.1 Introduction

This compilation of topical responses provides an overview of recurring issues raised during the public review process, and explains how these issues are addressed in the Draft and Final EIS/EIR. Issues discussed in Sections 3.2 through 3.5 include the relationship between the current EWA EIS/EIR and future programs, Delta water quality, the water transfer market, and the benefits to fish resulting from implementation of EWA water management actions.

3.2 Relationship between the Current EWA EIS/EIR and Future Programs

Many comments asked about the relationship between the EWA and future programs, specifically, (1) has the EWA EIS/EIR considered upcoming projects in the analysis; (2) would there be changes in the EWA project description as new projects come online; and (3) could there be adverse effects related to a change in operation. Programs that are scheduled for completion over the next 1 to 12 years include the South Delta Improvement Project (including the proposed CVP/SWP Integrated Operations and CVP/SWP intertie), In-Delta storage program, and North Delta Improvement Project. Many comments received on the Draft EIS/EIR addressed the proposed increased pumping at the Banks Pumping Plant under the proposed CVP/SWP Integrated Operations and South Delta Improvement Project. A frequent comment asked whether the EWA program would use assets to repay the Projects for the additional water lost during pump reductions if Banks Pumping Plant were pumping at a higher rate than under the EWA EIS/EIR Baseline Condition.

This document describes the EWA through 2007 or earlier if significant changes, such as the South Delta Improvements Project or in-Delta storage, require significant changes in the EWA. The EWA agencies released the Draft EIS/EIR before recent proposals for actions in the South Delta were complete. It does not include project-level analysis of how the EWA would function in cooperation with the South Delta Improvements Project and related actions because the details were not available when completing this document. Moreover, implementation of the SDIP or other future projects that would require significant changes in the size or operation of the EWA would constitute new circumstances or changes in the project that would trigger the need for new environmental analysis. The EWA agencies will complete new environmental analysis before the EWA program could be used in conjunction with increased pump capacity at the Delta export pumps or before they begin to implement a long-term EWA program that would extend beyond 2007.

3.3 Delta Water Quality

The EWA changes flow patterns into and out of the Delta; therefore, there is concern that EWA actions could affect Delta water quality. Comments received during public review regarding Delta water quality include concerns that generally fall within three categories: (1) shifting export pumping could reduce water quality; (2) carriage water will not be adequate to maintain acceptable chloride concentrations; and (3) changes in flow could reduce flushing flows.

3.3.1 Shift in Timing of Export Pumping

EWA actions could affect the water quality (specifically, the average annual salt load) delivered to the CVP and SWP because of the change in the monthly pumping pattern. When EWA fish actions reduce pumping in the winter and spring months, the CVP and SWP forego pumping water that has relatively low chloride concentrations. DWR and Reclamation repay the Project water users between July and September, when the chloride concentration in the Delta may be higher than the chloride concentration during winter and spring months. Generalizations about seasonal trends may not be accurate, however, because depending on the specific month in a season, these trends are not consistent. For example, median chloride concentrations in July are lower than median concentrations in December and January, and median chloride concentrations in August are similar to those in January. Similar trends also exist for bromide. (Figures 5-2 and 5-4 in Volume 1 show baseline long-term monthly median concentrations of chloride and bromide respectively.)

A quantitative analysis of the total annual chloride load and total annual bromide load was conducted to determine whether changes in the monthly pumping pattern would result in an increase in the total annual salt and bromide load delivered to CVP and SWP water users in the Export Service Area. Chapter 5 of Volume 1 presented information regarding the effects on water quality to export users. Under the Flexible Purchase Alternative, median monthly chloride and bromide loading (in tons) for CVP/SWP export locations would be less than the median monthly chloride and bromide loading under the Baseline Condition from December through June, greater than the Baseline Condition from July through September, and equal to the Baseline Condition in October and November. Modeling results demonstrate the total chloride and bromide loading over the 15-year period of record would be 1.7 percent less under the Flexible Purchase Alternative compared to the Baseline Condition.

Organic carbon concentrations could also be altered with a shift in pumping. The EWA would decrease pumping when carbon concentrations are highest (winter months) and increase pumping when carbon concentrations are lowest (summer months). Therefore, organic carbon concentrations in water supplied to in-Delta water users and water users in the Export Service Area would, at a minimum, remain equivalent to the carbon concentrations that would have occurred in the absence of the EWA. In fact, under the Flexible Purchase Alternative, the increased pumping that would occur during the summer months when organic carbon concentrations are lower may result in a net benefit to water quality for Project water users.

Overall, the shift in export pumping from the winter and spring to the summer would not cause an adverse water quality effect for the Export Service Area water users.

3.3.2 Carriage Water

When CVP and SWP pumping exceeds the total inflow to the central and south Delta (minus agricultural uses in the central and south Delta), ocean salts move upstream in the lower San Joaquin River. This migration causes an increase in salinity in the central and south Delta and at the CVP and SWP pumping plants. Thus, increased pumping in summer months to pump EWA water through the Delta has the potential to cause increased chloride concentrations in the Delta. The EWA EIS/EIR states that carriage water would be used to maintain the chloride concentrations at without-EWA levels.

The analysis defines carriage water as, "…an increase in Delta outflow that protects Delta water quality and maintains chloride concentrations at levels that would be equivalent to those under the Baseline Condition." The document therefore distinguishes between carriage water and conveyance losses, the latter being the amount of water that is needed to offset system losses between purchase in the Upstream from the Delta region and the Delta. Delta outflow would be increased (carriage water) as required to maintain the in-Delta water quality at the same levels that would have occurred in the absence of EWA-related increased CVP or SWP pumping. During actual operations, the Project Agencies would use DWR's Delta simulation model (DSM2) to predict baseline water quality levels and the amount of increased Delta outflow required to maintain that water quality when EWA-increased pumping occurs. The actual water quality in the Delta would likely be slightly higher and slightly lower for different periods during the summer months, but the net result would be no significant change in Delta water quality from EWA operations. As a result, the quality of water supplied to in-Delta water users would not change significantly.

3.3.3 Flushing Flows

'Flushing flows' are the higher flows of good quality water that occur in the winter and spring months of most water years that flush the saline water from the Delta. EWA actions change the timing and amount of Delta inflow, thus potentially affecting flushing flows. Table 4-3 in Volume 1, however, shows model results that indicate that there would be no decreases in inflow from the Sacramento or San Joaquin Rivers from EWA actions. The only change to Delta inflow during the flushing period could occur when non-Project reservoirs are refilling after stored reservoir water transfers. During refill, water that would have flowed into the Delta would be captured by non-Project reservoirs, therefore reducing Delta inflow. The amount of refill would be small, however, even if refill were occurring for all upstream reservoirs (a maximum of 135,000 acre-feet). At the time of flushing flows, Delta inflow is high; therefore, the potential reduction in Delta inflow during refill would not be substantial and would not likely affect Delta water quality.

3.4 Water Transfer Market

Comments received on the Draft EWA EIS/EIR questioned why the document did not quantitatively evaluate the impacts on the water transfer market. A qualitative approach was necessary because the water transfer market is still developing and the EWA program has been in operation for only 3 years. There is therefore not enough history to quantify any price effects. The qualitative analysis demonstrates, however, that the price effects from the implementation of the EWA would likely be small relative to other variations.

Hydrologic conditions and agricultural prices are both important underlying factors in the water transfer market. These factors could affect water transfer prices much more than water transfer demand. The difference in available supply between a wet year and a dry year amounts to millions of acre-feet. Dry hydrologic conditions probably had an upward influence on water prices in 2001. Small changes in agricultural prices can also have a large effect on water transfer supply because net returns in farming are very responsive to agricultural prices.

The EWA agencies' purchase strategy further emphasizes that there would not likely be substantial effects on the water market. The purchase strategy of the EWA agencies would be to obtain as much water as possible from willing sellers upstream from the Delta, based on cross-Delta transfer capacity available for EWA assets. In the drier years when there may be a higher demand for transfer water by agencies other than the EWA, the EWA agencies' purchases would be concentrated upstream from the Delta. Most Central Valley water users' purchases would be concentrated in the Export Service Area; therefore, there would not be competition for water with the EWA agencies.

In wetter years, the EWA agencies would have the potential to purchase a greater amount of water, and a higher proportion must be purchased in the Export Service Area. Many of these sources may not be in conflict with other local transfers. For example, the banked groundwater that has been purchased by the EWA agencies to date has only been available to the EWA program and to member agencies of KCWA. That water was not eligible for export out of Kern County. The crop idling transfers that this document contemplates may not directly compete with other local transfers.

Commentors are concerned that if the EWA program were to increase prices in the water transfer market, there could be potential indirect environmental impacts such as increased land idling and land subsidence and decreased groundwater levels and water quality. These subsequent indirect effects would not likely occur because the direct effects of the EWA transfers on the on the water transfer market would not be substantial.

3.5 Fisheries Benefits

One of the purposes of the EWA program is to benefit at-risk Delta-dependent fish species through changes in Delta pumping. A number of comments discussed the necessity for the EWA EIS/EIR to demonstrate the fish benefits that result from fish

actions. Comments also indicated the need to demonstrate that the greater water amounts contemplated under the Flexible Purchase Alternative were necessary to benefit fish.

3.5.1 Salvage as an Indicator

The EWA Review Panel recognizes that the largest issue of scientific uncertainty that requires attention is how take at the pumps will affect fish populations. The Panel strongly supports an "experimental approach to resolving scientific uncertainties through both system level and field experiments." At this time, the Science Program staff is limited by a lack of data, but acknowledges that the EWA "provides a valuable opportunity for experimentation that could lead to improved protection of fish species" and intends to move forward to examine uncertainties.

Currently, effects on export pumping on fish populations are difficult to quantify; therefore, fish salvage at the export facilities is used as a surrogate. Comments received on the Draft EIS/EIR question the effectiveness of this method.

Calculations of salvage and loss at the SWP and CVP pumping facilities, as a function of changes in the seasonal volume of water diverted, are used as an indicator of potential effects resulting from changes in water project operations. Salvage data are available on species-specific levels at both the SWP and CVP facilities. Salvage calculations are one of the means available to quantify benefits provided by the EWA, when export reductions are used to provide that benefit. Without some quantification, the discussion and analysis of benefits of the EWA and the cost of exporting water would have to be qualitative and based upon scientific opinion. Therefore, the results provided by the analyses must be considered as only part of the information (quantitative and qualitative) that should be used to evaluate the effects of implementing the EWA in the Delta.

3.5.2 Benefits of the Flexible Purchase Alternative Compared with the Fixed Purchase Alternative

Comments received on the Draft EWA EIS/EIR question the biological necessity of a larger EWA (i.e., the Flexible Purchase Alternative rather than the Fixed Purchase Alternative). Section 2.2.2.3 in Volume 1 provides the rationale for an alternative that includes purchases of up to 600,000 acre-feet. The following discussion focuses on the additional biological benefits gained with the Flexible Purchase Alternative when compared with the Fixed Purchase Alternative.

The effects of the Flexible Purchase and Fixed Purchase Alternatives on salvage are presented in Chapter 9 of Volume 1. Salvage estimates are defined as the number of fish entering a salvage facility and subsequently returned to the Delta through a trucking and release operation. Because survival of species that are sensitive to handling is believed to be low for most fish species (especially Delta smelt), increased salvage is an adverse impact and decreased salvage is a beneficial impact on fisheries resources. As shown below, the Flexible Purchase Alternative has a greater decrease

in salvage for striped bass (Maximum Water Purchase Scenario only), Chinook salmon, splittail, steelhead, and Delta smelt compared to the Baseline Condition than the Fixed Purchase Alternative.

Salvage – Action Alternatives Compared to the Baseline Condition			
Fish Species	***Flexible Purchase Alternative (Maximum Water Purchase Scenario)***	***Flexible Purchase Alternative (Typical Water Purchase Scenario)***	***Fixed Purchase Alternative***
Striped bass	-8,935,211	-7,087,274	-7,633,409
Chinook salmon	-1,123,826	-895,433	-704,528
Splittail	-1,014,290	-656,597	-489,681
Steelhead	-28,928	-20,386	-18,255
Delta smelt	-135,887	-93,690	-84,577

Note: Salvage is total salvage over a 15-year period from 1979-1993.

It is recognized that during the historical period, 1979-93, the Projects were operated under Delta water quality, flow, and export constraint requirements that were much less stringent than the Delta requirements in place today. Differences in conditions between the 1979 and 1993 period and what would occur if that hydrologic period reoccurred today indicate that the historical fish salvage that occurred during 1979 and 1993 at the Projects' pumping plants would not be the same today. Despite the inaccuracies caused by assuming historical fish salvage at the pumping plants, the evaluations provide an approximation of the overall potential EWA benefits that may be realized with the EWA program, using the best available data.

The results indicate that both alternatives provide beneficial effects compared to the Baseline Condition. The beneficial impacts of the Flexible Purchase Alternative however, would be greater than the benefits provided under the Fixed Purchase Alternative.