Chapter 3. Water Supply and Operations

FOCUS OF THE REVISED DRAFT EIR/EIS ANALYSIS

This evaluation provides information on the potential range of Delta Wetlands Project diversion and discharge operations based on the most current project description, current assumptions for modeling Delta water supply, current regulatory standards, and an updated baseline (no-project) water budget.

Summary of Issues Addressed in This Chapter

The analysis presented in this chapter specifically addresses the following two questions, which represent the concerns expressed by stakeholders at the SWRCB water right hearing on the Delta Wetlands Project and in comments on the 1995 DEIR/EIS:

- What is the frequency, timing, and amount of water available to the Delta Wetlands Project, considering:
  - updated DWRSIM results from technical studies prepared in support of the CALFED no-action simulations;
  - upstream and in-Delta actions resulting from implementation of the Central Valley Project Improvement Act (CVPIA);
  - terms of the FOC and the USFWS, NMFS, and DFG biological opinions for the Delta Wetlands Project;
  - Delta Wetlands' settlement agreements with Reclamation, DWR, Amador County, the City of Stockton, and North Delta Water Agency; and
  - the proposed X2 restriction to preserve CCWD senior water rights consistent with the X2 restriction on CCWD operations described in the 1993 USFWS biological opinion for Los Vaqueros Project effects on delta smelt?

- What is the project's potential water supply, considering:
  - water availability (see above),
  - conveyance capacity for export water,
  - a range of south-of-Delta water demand assumptions, and
  - quality of water at the time of diversion and discharge?

The analysis presented below answers these questions by providing new estimates of monthly water availability and project yield using a revised Delta Standards and Operations Simulation (DeltaSOS) model. The updated DeltaSOS simulations themselves are based on a revised Delta water budget developed by DWR using its operations planning model, DWRSIM. The daily operations model DailySOS is used to confirm the adequacy of the DeltaSOS analysis. Results of the new simulations are compared with results presented in the 1995 DEIR/EIS. In addition, the impacts on consumptive use identified in the 1995 DEIR/EIS are reviewed in light of the updated information on project operations to determine whether there are any differences in severity of impacts.

Definition of Terms

The following are definitions of terms as they are used in this chapter:

- *Channel Depletion:* The water removed from Delta channels by diversions for irrigation and by open-water evaporation.

- *Consumptive Use:* Loss of water on the Delta Wetlands Project islands and other Delta islands through crop evapotranspiration (ET) and open-water evaporation and use for shallow-water management for wetlands and wildlife habitat. Rainfall and channel depletion supply the consumptive-use water.

- *Delta Exports:* The water pumped from the Delta to south-of-Delta users by DWR at Banks Pumping Plant and by Reclamation at the CVP Tracy Pumping Plant, and the amount diverted by CCWD at its Rock Slough and Old River intakes.

- *Inflow:* The total rate (cfs) or volume (TAF) of streamflow entering the Delta from the Sacramento and San Joaquin Rivers, Yolo Bypass, and the eastside streams.

- *Interruptible Demand*: An assumed additional demand for SWP water above the specified monthly demands. Interruptible demand is simulated as 84 TAF/month for 5 months, or 1,400 cfs/month during November through March when San Luis Reservoir is full. DWRSIM assumes that additional SWP deliveries are made to meet interruptible demand when there is unused export capacity and available water in the Delta.

- *Local Water Supply:* In the DWRSIM model, the assumed amount of captured rainfall in areas south of the Delta that can be used to satisfy CVP and SWP demands.

- *Outflow:* The water flowing out of the Delta into San Francisco Bay.

- *Project Yield:* Average annual water discharged for export from the Delta Wetlands Project islands. Reported in TAF per year (TAF/yr).

- *South-of-Delta Delivery Deficit:* Unmet demand, that is, total demand for CVP and SWP water minus total CVP and SWP deliveries. Total deliveries are calculated based on water exported from the Delta and the change in San Luis Reservoir storage. (When San Luis Reservoir storage drops, that amount is added to Delta exports to determine total CVP and SWP deliveries. When San Luis Reservoir storage increases, that amount is subtracted from Delta exports to determine total CVP and SWP deliveries.)

- *Surplus Delta Outflow:* Outflow in excess of the amount required to meet all monthly water demands, protect Delta salinity standards, and comply with the export/inflow objectives of the 1995 WQCP.

- *X2:* The mean daily location in the Bay-Delta estuary of the 2–parts-per-thousand-(ppt)–total dissolved solids (TDS) isohaline 1 meter off the bottom; an isohaline is a line connecting all points of equal salinity.

Overview of the Evaluation Methods Used: DeltaSOS, DWRSIM Water Budget, and Modeling Assumptions

DeltaSOS

As described in the 1995 DEIR/EIS, the DeltaSOS model was developed to represent possible Delta Wetlands Project operations (diversions and discharges) under various scenarios for Delta inflow conditions and regulatory standards. DeltaSOS modeling of the No-Project Alternative and project operations is based on the initial water budget developed from the results of simulations performed by DWR using the operations planning model DWRSIM for the water years 1922-1994. DWRSIM represents systemwide hydrology, including upstream reservoirs; inflows to the Delta; and Delta channel depletions, exports, and outflow. DeltaSOS is used to simulate monthly project operations as controlled by the DWRSIM Delta inflows, by appropriate Delta objectives and requirements, and by operating criteria specific to Delta Wetlands.

DeltaSOS has been updated for this analysis through the incorporation, to the extent possible, of the following:

- restrictions on project operations specified in the FOC, biological opinions, and stipulated agreements;

- restrictions on Delta Wetlands Project operations when CCWD's diversions to Los Vaqueros Reservoir are restricted because X2 is upstream of Chipps Island; and

- revised Delta standards resulting from implementation of the CVPIA.

These modifications are described below under "Revisions to DeltaSOS".

DWRSIM

DWRSIM simulates current conditions, including the operation of water storage facilities (reservoirs), regulatory standards (e.g., instream flow requirements), and assumed demand for exports, to estimate likely future Delta inflows, exports, and outflows under hydrologic conditions replicating those of the 73-year hydrologic record (water years 1922-1994).

Since publication of the 1995 DEIR/EIS, the implementation of state and federal programs has resulted in changes to the basic assumptions used for establishing baseline conditions in the Delta. The Anadromous Fish Restoration Program (AFRP) was implemented pursuant to the CVPIA, resulting in the establishment of several new Delta operating criteria and standards. Additionally, in response to the CALFED program, which state and federal agencies initiated in 1994 to resolve several Delta issues, and in response to other statewide planning efforts, DWR has conducted a series of DWRSIM modeling studies to establish new simulated baseline conditions for the Delta under the 1995 WQCP. These baseline conditions incorporate the new Delta operating criteria and standards established as a result of these programs. One of these studies, DWRSIM existing conditions study 1995-D06E-CALFED-771 (study 771 or run 771), completed in July 1998 for CALFED, is the currently accepted standard used by CALFED and other state water planners to represent baseline conditions. The results of study 771 are therefore used as the basis of the simulations of Delta Wetlands Project operations performed using DeltaSOS for the present evaluation. They replace the results of run 409, which provided the baseline water budget for the 1995 DEIR/EIS evaluation.

Similarities between DWRSIM Studies 409 and 771. DWRSIM study 771 is similar to study 409 in that both comply with the 1995 WQCP, use 1995 hydrology and demands, use south-of-Delta demands for SWP exports that vary according to Kern River flow and Los Angeles rainfall, and maintain minimum Trinity River flows below Lewiston Dam at 340 TAF/yr. Neither study provides for SWP pumping of water for the CVP.

Differences between DWRSIM Studies 409 and 771. The following assumptions were revised in DWRSIM study 771:

- A slightly different variable SWP demand is used, ranging from 2,644 to 3,529 TAF/yr.

- Maximum SWP interruptible demand is specified as 84 TAF/month for 5 months.

- New American River Water Forum demands have been added.

- South-of-Delta demands for CVP exports (including Level II refuge demand of 288 TAF/yr) are set at 3,433 TAF/yr.

- SWP export capacity from December through March is slightly higher than in DWRSIM study 409.

Many small changes in the FORTRAN code and parameters have also been made between studies 409 and 771 (362 different studies have been completed). In addition, three additional years of historical data (1992-1994) were added to the 70 years of data used in DWRSIM study 409.

The simulated Delta operating conditions of DWRSIM study 771 reflect new Delta operational objectives established for the AFRP, which is being implemented as part of the CVPIA. The adopted AFRP actions simulated in DWRSIM 771 include:

- export reduction requirements for the Vernalis Adaptive Management Plan (VAMP),

- the addition of days during the period from March through June when X2 must be at specified locations,

- minimum flow requirements for the Sacramento River at Freeport,

- required ramping of Delta exports in May,

- Delta Cross Channel (DCC) closure from October through January, and

- July export restrictions based on the X2 position in June.

These modifications are described in the next section.

REVISED DELTA MONTHLY WATER BUDGET SIMULATED BY DWRSIM

This section describes changes in the major DWRSIM input variables and simulated output between DWRSIM study 409, used for the 1995 DEIR/EIS, and DWRSIM study 771. The 25-year period of 1967-1991 was selected for comparison in the graphs referenced in this section because it represents a wide range of hydrologic year types, and because results covering this period are available from both studies.

The major hydrologic inputs for DWRSIM are the reservoir inflows and inflows from tributary streams. The Delta's two major tributary streams are the Sacramento and San Joaquin Rivers. DWRSIM simulates some, but not all, of the major tributary facilities. The simulation of upstream facility operations is important because some of these operations are controlled by Delta outflow requirements and export limits. The reservoir releases are also governed by flood control storage rules, instream flow requirements, power generation constraints, and upstream diversion targets.

Delta Inflows

Overview

Simulated Delta inflows consist of the combination of simulated upstream reservoir operations and local inflows, minus the simulated diversions along the upstream tributaries. Table 3-1 presents annual values for the Sacramento River and Yolo Bypass, the San Joaquin River and eastside streams, CCWD diversions and net channel depletion, CVP and SWP Delta exports, Delta outflow, and required Delta outflow for water years 1922-1994. Some Sacramento River inflow is diverted into the Yolo Bypass during high-flow periods. The San Joaquin River inflow at Vernalis includes contributions from the Stanislaus, Tuolumne, and Merced Rivers. Eastside streams include the Cosumnes, Mokelumne, and Calaveras Rivers. Sacramento River runoff and San Joaquin River runoff vary considerably from one water year to the next. Local runoff from rainfall events in the Delta can provide substantial flow in some years.

Comparison of Results from Studies 409 and 771

In general, annual average inflows simulated in DWRSIM study 771 do not differ appreciably from those simulated in DWRSIM study 409 because no new upstream storage or conveyance facilities have been constructed since the 1995 DEIR/EIS was prepared, and no major changes in facility operations are simulated. However, the estimates of required Delta outflows changed substantially in some years (see "Delta Outflow" below). DWRSIM 771 has generally lower required Delta outflows, allowing for slightly higher exports for the same inflows.

Sacramento River and Yolo Bypass. Effects of local inflows, Sacramento Valley irrigation diversions, and other consumptive uses are aggregated in the combined Sacramento River and Yolo Bypass inflows. The combined average annual inflow for 1922-1991 was 18,141 TAF/yr in study 409 and 18,086 TAF/yr in study 771 (Table 3-1). Figure 3-1 shows the monthly Sacramento River flows simulated for studies 409 and 771 for the 1967-1991 period. Low-flow periods are generally similar for the two DWRSIM studies. Table 3-2 provides the monthly Sacramento River and Yolo Bypass inflows for the 1967-1991 period for both DWRSIM studies; differences in the monthly and annual values are given for comparison purposes.

San Joaquin River and Eastside Streams. Fixed inputs are used for both the San Joaquin River and eastside streams in DWRSIM study 409, but the San Joaquin River tributary reservoir operations are simulated in study 771. The 70-year annual average inflow was 3,240 TAF in study 409 and 3,743 TAF in study 771 (Table 3-1). Figure 3-2 shows the simulated San Joaquin River flow at Vernalis for 1967-1991 in studies 409 and 771. Simulated flows during many of the peak- flow events are substantially larger in study 771 than in study 409. Summer flows in the two studies are generally similar. The magnitude of the simulated San Joaquin River changes is small relative to total Delta inflows. Table 3-3 provides the monthly San Joaquin River and eastside stream inflows for the 1967-1991 period for both DWRSIM studies; differences in the monthly and annual values are given for comparison purposes.

Contra Costa Water District and Agricultural Diversions. The estimates of CCWD diversions and net channel depletions for agricultural diversions in the Delta were generally the same in studies 409 and 771. Table 3-1 indicates that the 70-year average annual net Delta depletion with CCWD diversion was 1,079 TAF in study 409 and 1,140 TAF in study 771. The simulated depletion in dry water years was greater in study 771 than in study 409. For example, annual average simulated depletion was greater in study 771 than in study 409 by 68 TAF for the 1928-1934 dry-year period and by 108 TAF for the 1987-1991 dry-year period.

Delta Exports

Overview

DWRSIM simulates Delta exports and outflow after determining the amount of inflows needed for Delta channel depletion and required outflow. Delta export pumping and diversion occurs at five locations: CVP pumping at Tracy Pumping Plant, SWP pumping at Banks Pumping Plant, CCWD diversions at Rock Slough and Old River, and North Bay Aqueduct pumping at Barker Slough.

DWRSIM simulates Delta exports to meet downstream monthly demands and to fill San Luis Reservoir to meet seasonal demands, subject to 1995 WQCP and AFRP objectives for outflow and pumping limits. The magnitude of water supply demands is a major input assumption of DWRSIM that governs the amount of simulated Delta exports. Studies 409 and 771 both use simulated 1995 "level of development" for upstream diversions and estimated south-of-Delta demands.

Comparison of Results from Studies 409 and 771

DWRSIM-simulated demands range from 5.9 to 6.9 million acre-feet per year (MAF/yr) throughout the simulated period for study 409 and from 6.1 to 6.9 MAF/yr for study 771. Figure 3-3 compares Delta exports at the CVP Tracy Pumping Plant and the SWP Banks Pumping Plant for 1967-1991 as simulated for DWRSIM studies 409 and 771. Minimum pumping in April and May is slightly less in study 771 because of the assumed VAMP restrictions on pumping during this period, with combined pumping at 1,500 cfs in most years.

DWRSIM study 409 included CVP Delta export demands of 3.15 MAF/yr, with 145 TAF/yr to satisfy CCWD diversions. However, these CVP demands were not always satisfied in drier years in DWRSIM simulations. The SWP variable Delta export demands ranged from 2.6 to 3.6 MAF/yr, with an average of 2.85 MAF/yr. The maximum combined Delta export demand of 6.9 MAF/yr was assumed to occur in about 45% of simulated years. Exports were divided almost equally between the CVP and the SWP.

Table 3-4 lists the monthly combined CVP and SWP exports as simulated for studies 409 and 771; the monthly and annual differences between study 771 and study 409 values are shown for comparison. The combined exports are approximately 90 TAF higher on average in study 771 for

the simulated 25-year period. Neither study 409 nor study 771 includes a joint point of diversion for the CVP to use the large pumps at Banks Pumping Plant to meet CVP demands and to fill the CVP share of San Luis Reservoir.

Delta Outflow

Overview

Figure 3-4 shows monthly Delta outflow for 1967-1991, as simulated by DWRSIM for studies 409 and 771. Differences between the two scenarios can be attributed to differences between estimates of Delta inflows, exports, or required Delta outflow.

Comparison of Results from Studies 409 and 771

Table 3-1 indicates an annual average simulated Delta outflow from 1922-1991 in study 771 of 15,102 TAF, 520 TAF greater than the 14,582 TAF average annual outflow simulated in study 409. Table 3-5 lists the monthly Delta outflows simulated for studies 409 and 771; the monthly and annual differences between study 771 and study 409 values are shown for comparison.

As Table 3-1 demonstrates, the estimated required Delta outflow for the two studies is similar, although study 409 and study 771 use somewhat different methods for estimating outflow requirements to satisfy Delta salinity objectives. The required Delta outflow under 1995 WQCP objectives is a combination of some fixed outflow objectives; salinity requirements at Emmaton, Jersey Point, and Rock Slough that are satisfied by equivalent outflow requirements; and X2 requirements that depend on the previous month's runoff. (Refer to the 1995 DEIR/EIS for more information about the WQCP.)

DWRSIM estimates the minimum outflow necessary to satisfy these combined objectives. The flow necessary to satisfy the salinity objectives is now calculated using a monthly procedure that incorporates the effective outflow-salinity relationships proposed by CCWD (i.e., "G-model"). Table 3-6 lists the monthly estimates of required Delta outflow for studies 409 and 771; the monthly and annual differences between study 771 and study 409 values are shown for comparison.

Surplus Outflow Available for Delta Wetlands Diversion

Overview

Surplus Delta outflow is outflow in excess of the amount required to meet all monthly water demands, protect Delta salinity standards, and comply with the export/inflow objectives of the 1995 WQCP. Not all surplus outflow may be available for Delta Wetlands Project diversions because such diversions are assumed to be subject to the 1995 WQCP "percent of inflow" export ratio limits

(see Chapter 2 of the 1995 DEIR/EIS for a thorough description of assumptions about Delta Wetlands diversions).

Comparison of Results from Studies 409 and 771

Figure 3-5 shows the monthly pattern of available water for Delta Wetlands diversions. Because most of this surplus water is present during periods of relatively high flows, the estimates of water available for diversion by Delta Wetlands are similar for studies 409 and 771. (The monthly values for study 771 are listed in Table 3-11, which is discussed with the results later in this chapter.)

The availability of surplus Delta water in a few months during relatively dry years is important for estimating the Delta Wetlands Project's water supply potential. Upstream reservoirs may be able to store more of this runoff during some years and reduce the surplus flows entering the Delta. This reduced inflow may reduce simulated Delta Wetlands monthly diversions in some dry years. However, because the project is located in the Delta, any excess runoff from Sacramento or San Joaquin River tributaries can be diverted if conditions in the Delta satisfy the Delta Wetlands FOC and senior water rights are satisfied. The ability of Delta Wetlands to modify project operations to respond to daily changes in Delta conditions (i.e., storm events) is explored in the results section of this chapter under "Results: Daily Delta Wetlands Operations". Changes in operations based on daily changes in conditions would generally increase the Delta Wetlands water supply potential.

San Luis Reservoir Operations

Overview

San Luis Reservoir provides offstream storage for surplus water (i.e., water in excess of monthly demands) pumped from the Delta to the California Aqueduct and Delta-Mendota Canal (DMC) during periods of high runoff in winter and spring. San Luis Reservoir provides a source of water during the summer peak-demand period to allow more deliveries than could be pumped directly from the SWP and CVP Delta pumping plants. San Luis Reservoir facilitates the coordinated wheeling (conveyance) of state and federal water supplies allowed under the Coordinated Operations Agreement (COA) between DWR and Reclamation. However, neither study 409 nor study 771 includes any CVP wheeling (i.e., joint point of diversion).

San Luis Reservoir storage values were not evaluated for the 1995 DEIR/EIS because south-of-Delta water supply operations were not included in the DeltaSOS simulations. For the 1995 DEIR/EIS, water stored in Delta Wetlands facilities was simulated as being released for export if excess SWP and CVP export pumping and conveyance capacity was available within the specified export limits. This assumption allowed for estimation of the maximum potential environmental impacts caused by Delta Wetlands Project discharges. However, based on concerns raised at the water right hearing, south-of-Delta demands for water supply and storage in San Luis Reservoir have been considered in the REIR/EIS as constraints to simulated Delta Wetlands discharges for export.

The resulting project operations are simulated in the REIR/EIS analysis to provide reviewers with estimates of a range of potential project yields.

Comparison of Results from Studies 409 and 771

Figure 3-6 shows end-of-month combined CVP and SWP San Luis Reservoir storage for 1967-1991 as simulated by DWRSIM for study 409 and study 771. Table 3-7 compares monthly San Luis Reservoir storage values for these two studies during this same period. On average, end-of-month storage values in study 771 are lower than study 409 values, but this is not a consistent trend in all years. The largest differences occur in dry years. For example, simulated monthly San Luis Reservoir storage values in water year 1977 were 420 TAF less in study 771 than in study 409. In contrast, during the 1987 water year, the study 771 monthly values during the winter reservoir filling period (October to February) were 270 to 496 TAF greater than the study 409 values.

Table 3-8 lists the monthly combined CVP and SWP deliveries that have been calculated from the results of DWRSIM studies 409 and 771. Total deliveries are a combination of water exported from the Delta and water delivered from south-of-Delta storage (i.e., San Luis Reservoir storage). These total deliveries are calculated simply as the combined CVP and SWP exports minus the change in combined CVP and SWP San Luis Reservoir storage. Therefore, when the change in storage is negative (i.e., water is removed from storage), the monthly deliveries consist of the storage volume added to the exports; when the change in storage is positive (water is added to storage), the deliveries consist of the storage volume subtracted from the exports.

Other factors that influence total deliveries in the simulated conditions include SWP interruptible demands, evaporation and seepage losses, and local diversions. These factors were not included in study 409, but have been included in study 771. Table 3-9 lists the monthly deliveries for DWRSIM study 771 that were obtained by adjusting exports and San Luis Reservoir storage for these factors. The combined deliveries include SWP interruptible demands and the assumed evaporation and seepage losses from the canals and south-of-Delta reservoirs. In some wet years, some simulated demand for CVP deliveries is satisfied through San Joaquin River spills from Friant Dam (or from the Tulare Basin) and some simulated demand for SWP deliveries is met by means of diversions from the Kern River. The monthly deliveries shown in Table 3-9 are generally less than the estimated CVP and SWP demands, which are assumed in DWRSIM study 771 to vary with Kern River and Los Angeles rainfall conditions (i.e., rainfall in these areas is assumed to reduce demand for CVP and SWP deliveries).

Combined CVP and SWP Delivery Deficits for Study 771

Table 3-10 shows the monthly combined CVP and SWP delivery deficits (i.e., unmet demands) that resulted from the combination of hydrologic conditions, reservoir operations, and Delta objectives as simulated in DWRSIM study 771. Figure 3-7 shows the monthly combined CVP and SWP demands, deliveries, and corresponding delivery deficits for study 771.

The annual combined CVP and SWP delivery deficits ranged from 102 TAF to 4,485 TAF, with an average deficit of 1,205 TAF per year. Some years have relatively small deficits, and a few have large deficits. This suggests that there is commonly a deficit in meeting combined CVP and SWP south-of-Delta demands that could be partially satisfied with water supply from the Delta Wetlands Project. Figure 3-8 shows the annual demands, interruptible SWP supply, local inflow, and total combined CVP and SWP deliveries.

Because DWRSIM study 771 did not include any CVP wheeling export at the SWP Banks Pumping Plant, most of the simulated deficits were assigned to CVP contractors. DeltaSOS simulates only the combined exports and does not account for the distribution of deliveries and deficits to CVP and SWP contractors. DeltaSOS adjusts the DWRSIM results to simulate the export of all allowable water from the Delta for full CVP and SWP deliveries and storage of any surplus water in San Luis Reservoir. Exports may be reduced in subsequent months if San Luis Reservoir is filled under DeltaSOS simulations earlier than under DWRSIM simulations. These adjustments in combined exports increase deliveries, thereby reducing the original combined CVP and SWP deficits calculated by DWRSIM 771. The DeltaSOS adjustment in combined CVP and SWP exports ranged from 0 to 450 TAF per year and averaged about 110 TAF per year. This DeltaSOS adjustment is explained more fully under "South-of-Delta Demands and Deficits" in the section "Revisions to DeltaSOS", below.

Summary of the Comparison between Results from DWRSIM Studies 409 and 771

This comparison of results from DWRSIM study 771 and study 409 indicates that both simulations of the Delta and upstream reservoir operations provide a reasonable framework for evaluating likely future Delta Wetlands Project operations and assessing their potential environmental impacts. Delta Wetlands Project operations and potential water supply benefits are not substantially different under study 409 and study 771 conditions. Most of the changes in simulated Delta Wetlands Project operations are the result of incorporation of the FOC terms into DeltaSOS, as described below under "Revisions to DeltaSOS".

REVISED DELTA STANDARDS

Several of the Delta standards and operations criteria have been modified slightly since publication of the 1995 DEIR/EIS. Most of these modifications are AFRP recommendations for the use of CVP water under CVPIA Section (b)(2) for several Delta actions. Most of the adjustments to standards and criteria have been incorporated into DWRSIM study 771. Where necessary, DeltaSOS parameters were also modified to reflect these changes in regulatory operations of Delta water supply facilities and water quality protection standards. Adjustments made to DeltaSOS for consistency with the revised Delta criteria and standards are described below.

Minimum Sacramento River Flow at Freeport

The AFRP Delta actions include requiring Sacramento River flow at Freeport of 9,000 to 15,000 cfs in May. DWRSIM includes these specified Sacramento flows in its initial Delta water budget; therefore, further adjustment of the Sacramento River inflow values is not needed in DeltaSOS.

Delta Cross Channel and Georgiana Slough Operations

Operations of the DCC gates are controlled on a daily basis and may depend on either the Sacramento River inflow or Delta outflow at Chipps Island. Whenever Sacramento River inflow is greater than 25,000 cfs, the DCC is closed to protect the gate structure and downstream levees on the Mokelumne River. Original provisions of the 1995 WQCP called for the DCC to be closed 50% of the time from November through January and at all times from February through May. The revised AFRP rules call for the DCC to be closed from November through January. The DeltaSOS input matrix for DCC closure periods was modified accordingly to address this new standard. This modification does not change either the allowable SWP and CVP export pumping or the amount of water available for Delta Wetlands diversions.

X2 Position for Estuarine Habitat Protection

The 1995 WQCP includes a specified salinity standard to protect estuarine habitat in Suisun Bay. This standard is based on the location of X2, the mean daily bottom salinity gradient value of 2 ppt TDS, which is equivalent to approximately 3 mS/cm electrical conductivity (EC). During the February-through-June control period, X2 must be downstream of the confluence of the Sacramento and San Joaquin Rivers near Collinsville. In addition, for a certain number of days each month depending on runoff conditions, X2 must be downstream of Chipps Island and Roe Island. The AFRP action requires additional X2 days at Chipps Island from March through June. DWRSIM estimates the monthly minimum outflow necessary to satisfy the X2 standard. DeltaSOS uses the DWRSIM values for minimum Delta outflow.

Vernalis Adaptive Management Plan and Delta Export Pumping Restrictions

After the 1995 WQCP was put into effect, the VAMP was proposed and implemented to provide the April-through-May pulse-flow requirements for improving the migration of San Joaquin River chinook salmon juveniles. The VAMP flow requirement depends both on San Joaquin River flows during the pulse-flow period of April 15-May 15 and on the previous month's runoff conditions; these pulse-flow requirements differ slightly from the flows specified in the 1995 WQCP.

One recommended AFRP Delta action during the VAMP period would limit combined CVP and SWP pumping to less than the San Joaquin River flow (as allowed under the 1995 WQCP). The combined pumping would be 1,500 cfs during most years, but it would increase to 2,250 cfs in some wet years and would alternate between 3,000 cfs and 1,500 cfs in years with VAMP flows of greater than 7,000 cfs. These VAMP flows and the associated pumping restrictions have been included in DWRSIM study 771.

Because DWRSIM uses split-month calculations to estimate the allowable exports during the first half of April and the second half of May but does not save the split-month calculations, it is not possible for DeltaSOS to check the DWRSIM values during April or May. Therefore, DeltaSOS does not adjust the DWRSIM exports during these two months.

As a result, DeltaSOS cannot determine whether any unused pumping capacity is available for Delta Wetlands exports in the first half of April or the second half of May. These export restrictions during the VAMP period generally increase the delivery deficits because there is usually no opportunity to increase pumping during the summer period. The possibility of allowing some Delta Wetlands exports during the VAMP period is discussed under "Additional Considerations for Proposed Project Operations and Water Supply Potential" in the results section below.

REVISIONS TO DELTASOS

This section describes modifications made to DeltaSOS to incorporate the quantifiable terms of the FOC; the USFWS, NMFS, and DFG biological opinions; and the stipulated agreements.

Restrictions for Fish Protection

Delta Wetlands Project Diversion Criteria

Numerous terms limiting Delta Wetlands Project diversion and discharge operations are specified in the FOC; some additional restrictions are specified as RPMs in DFG's biological opinion. Several of these terms have been simulated with the monthly DeltaSOS model. Other terms depend on fish monitoring and daily flow or salinity conditions, which can only be approximated in DeltaSOS modeling of Delta Wetlands Project operations.

The FOC terms include the following restrictions on Delta Wetlands diversions:

- Initial diversions may not be conducted from September through November unless the X2 position is downstream of Chipps Island. X2 must be downstream of Chipps Island for 10 days if the initial diversion is made in the period from December through March. This condition was simulated in DeltaSOS with a minimum Delta outflow requirement of 9,000 cfs for the months of September through January.

- Delta Wetlands may not divert to storage from September through March unless X2 is west (i.e., downstream) of Collinsville. This term was simulated with a minimum required outflow of 7,100 cfs. If the delta smelt fall midwater trawl (FMWT) index value is less than 239, diversions cannot be made unless X2 is 1.4 kilometers (km) downstream of Collinsville (assumed to correspond to an outflow of 8,500 cfs). However, because the delta smelt FMWT index value cannot be calculated, this additional set of restrictions has not been included in the DeltaSOS modeling.

- Diversions may not cause the X2 position to move upstream more than 2.5 km from October through March. Because the relationship between X2 and outflow is logarithmic, this limitation has been simulated by limiting the Delta Wetlands diversions to be less than 25% of the outflow.

- No water may be diverted in April or May because many delta smelt and other fish species are present during these months. This no-diversion period is extended from February 15 through June if the delta smelt FMWT index is less than 239. As noted above, the FMWT index cannot be calculated and therefore cannot be included in DeltaSOS modeling. "Additional Considerations for Proposed Project Operations and Water Supply Potential", in the results section below, discusses qualitatively the effects of this restriction on Delta Wetlands Project operations.

- Diversions are limited to a specific fraction of Delta outflow, 25% from June through December and 15% from January through March.

- Between November and January, the diversion rate is limited to 3,000 cfs (rather than 4,000 cfs) if the DCC is closed for fish protection and Delta inflow is less than 30,000 cfs. This limitation was simulated based on monthly average inflow.

- Diversions are limited to a specified percentage of the total available water calculated from the 1995 WQCP objectives. Delta Wetlands may divert 90% of available surplus water during the months of August through January, 75% in February, and 50% in March. This provides a buffer of surplus water that may not be diverted by Delta Wetlands. These fractions are used in DeltaSOS calculations of maximum monthly diversions.

Another operations rule required by the DFG biological opinion limits Delta Wetlands Project diversions in March to a maximum rate of 550 cfs unless the previous day's QWEST is positive and is calculated to remain positive during the current day's diversions to storage. (QWEST is a calculated flow parameter that represents net flow between the central and western Delta.) A minimum QWEST flow in March is specified to minimize the upstream movement of juvenile fish life stages from the western Delta into the central Delta, where they would become vulnerable to potential entrainment losses at the export pumps and at Delta Wetlands' diversions. This rule effectively eliminates project diversions in March, except under very high flow conditions, because the DCC gates are closed for fish protection during this month and export capacity is high during this month; both of these factors reduce QWEST.

As described above, Delta Wetlands Project diversions are restricted on a daily basis by salinity conditions in the Delta (i.e., X2 and Delta outflow). The DeltaSOS monthly operations model is limited in its ability to represent daily salinity conditions and daily diversion restrictions. Additionally, Delta Wetlands discharges will be limited by the quality of water on the islands (see Chapter 4, "Water Quality"), so the quality of water at the Delta Wetlands diversion points would be a consideration for project operators. Diversion restrictions as a function of monthly modeled outflow (described above) usually result in low salinity (i.e., chloride [Cl^-]) levels in Delta channels during diversions. However, for monthly modeling purposes, diversions are also restricted until the previous month's Cl^- concentration is less than 150 milligrams per liter (mg/l). This criterion affects diversion activities in less than 5 of the simulated years (i.e., delaying diversions by one month). It is not a specific restriction in the FOC but is used as a tool in the monthly model to more closely represent daily project operations.

Delta Wetlands Project Discharge Criteria

The FOC terms prohibit Delta Wetlands Project discharges for export from Webb Tract from January through June. Delta Wetlands discharges from Bacon Island are limited by the FOC to 50% of San Joaquin River inflow during the period of April through June. Whether discharges from Bacon Island would be allowed during the VAMP export limitation period has not yet been determined. In addition, discharges from the Delta Wetlands reservoir islands are limited to 75% of the unused SWP and CVP pumping capacity in February and July and to 50% of the unused pumping capacity in March through June. Each of these monthly restrictions was specified in DeltaSOS.

Restrictions to Protect Other Parties' Senior Water Rights

Stipulated Agreements

As described in Chapter 2, Delta Wetlands entered into stipulated agreements with five parties protesting Delta Wetlands' water right applications; these agreements restrict Delta Wetlands diversion and discharge operations.

Agreements reached with DWR and Reclamation prevent diversions whenever DWR and Reclamation designate Delta conditions as being "in balance", meaning that all Delta inflow is required to meet Delta objectives and satisfy exports by the CVP and the SWP and diversions by CCWD and Delta riparian and senior appropriative water users. When Delta conditions are designated as being in balance, no additional water would be available for diversion by the Delta Wetlands Project under new water rights. When DWR and Reclamation determine that Delta conditions are "in excess" and when other terms and conditions are met, the Delta Wetlands Project would be allowed to divert available excess water for storage on the designated reservoir islands under new appropriative water rights.

Agreements with the City of Stockton and Amador County include narrative requirements that prevent Delta Wetlands operations from directly or indirectly depriving inhabitants of those jurisdictions of any water reasonably required for beneficial uses.

Delta Wetlands' agreement with North Delta Water Agency prohibits Delta Wetlands Project operations if the water quality criteria for salinity in effect pursuant to the "Contract Between State of California Department of Water Resources and North Delta Water Agency for the Assurance of a Dependable Water Supply of Suitable Quality" dated January 28, 1981, as amended, are not being met.

DeltaSOS simulates these agreements by allowing maximum possible CVP and SWP export pumping and fully satisfying in-Delta diversions by agricultural and senior appropriative water right users.

Contra Costa Water District

DeltaSOS was also modified to address the possibility that the SWRCB would restrict Delta Wetlands Project diversions to preserve CCWD's senior water rights, consistent with the X2 restriction on CCWD operations described in the 1993 USFWS biological opinion for Los Vaqueros Project effects on delta smelt.

To simulate this protection of CCWD's senior water rights, the minimum outflow in February and March is specified in DeltaSOS as 11,400 to maintain X2 downstream of Chipps Island so that Delta Wetlands diversions do not interfere with CCWD operations of Los Vaqueros Reservoir, which are limited by the biological opinion if X2 is upstream of Chipps Island.

South-of-Delta Demands and Deficits

For the 1995 DEIR/EIS, Delta Wetlands discharges for export were allowed whenever there was unused permitted pumping capacity at the SWP and CVP export pumping plants. In other words, in the DeltaSOS simulations of Delta Wetlands discharges for export, south-of-Delta demand was assumed to be unlimited.

The DeltaSOS simulation of maximum possible Delta exports was based on the assumption that all available water within the specified export pumping limits would be exported to satisfy combined CVP and SWP water demands or to serve as supplemental water supply that would be purchased by an existing SWP or CVP contractor. This assumption often resulted in additional exports that used the SWP pumping capacity to satisfy CVP demands and fill the CVP portion of San Luis Reservoir. This combined use of SWP pumping and CVP storage is sometimes referred to as "joint point of diversion" and has been approved by the SWRCB in Decision 1641 implementing the 1995 WQCP and the consolidated and conformed place of use (California State Water Resources Control Board 1999).

This assumption of maximum possible export pumping is similar to the SWP interruptible supply simulated in DWRSIM 771 as 84 TAF/month (i.e., 1,400 cfs) during the November-through-March period, whenever there is available water for SWP export beyond the specified monthly demands and SWP target storage in San Luis Reservoir. Because DWRSIM assumes that contractors will take this additional water whenever it is available during winter, it may be reasonably assumed that the Delta Wetlands Project water would be purchased when available.

DeltaSOS simulation of maximum possible Delta Wetlands Project discharges to export and the export of all available water by the combined CVP and SWP export pumps allows for estimation of the maximum environmental impacts that would result from discharge operations.

In response to comments on the 1995 DEIR/EIS analysis and questions raised in testimony at the SWRCB water right hearing, the lead agencies determined that presentation of a broader range of Delta Wetlands Project operations would be helpful. Delta Wetlands discharges to export could be assumed to be limited to the south-of-Delta delivery deficits simulated in DWRSIM (Figure 3-7). Therefore, DeltaSOS was modified to allow Delta Wetlands discharges for export to be limited to south-of-Delta CVP and SWP delivery deficits. Under this option, available water may not be exported if the specified CVP and SWP demands have already been satisfied. These specified CVP and SWP demands reflect the current (i.e., 1995) level of demands and upstream development; projected future levels of demand and upstream development have not been evaluated. Actual demands for Delta Wetlands exports may vary with delivery forecasts and with other hydrologic and economic conditions.

To incorporate south-of-Delta SWP and CVP delivery deficits, the delivery deficit information was extracted from the DWRSIM results and the Delta Wetlands exports were limited to these monthly delivery deficits in the simulations. The combined CVP and SWP demands and deliveries reflect the local inflow from the San Joaquin River and Tulare Basin that satisfy CVP demands in some years and the Kern River flows that satisfy SWP demands in some years. The evaporation and seepage losses from the canals and reservoirs must also be included in these overall demand and delivery values.

Table 3-9 lists the monthly deliveries (in cfs) and annual deliveries (in TAF) for the 1922-1994 period as simulated by DWRSIM study 771. The deliveries are generally highest in the summer months, but the monthly values vary greatly from one year to the next as governed by variable demands and the fluctuations in available water for CVP and SWP exports. Table 3-10 shows the monthly and annual delivery deficits from DWRSIM study 771 that were used to limit potential Delta Wetlands exports, for comparison with the simulation of unlimited Delta Wetlands exports. Based on the DWRSIM 771 results, the annual deficits in south-of-Delta deliveries are relatively high, ranging from 102 TAF in the wettest year (1983) to more than 4,000 TAF in extremely dry years (e.g., 1977 and 1991).

DeltaSOS then adjusts the initial DWRSIM results to increase the combined CVP and SWP exports to the maximum extent possible and to fill San Luis Reservoir within the export limits specified by the 1995 WQCP. The combined CVP and SWP demands, deliveries, and deficits as adjusted by DeltaSOS for combined export pumping capacity under study 771 conditions for 1967-1991 are shown in Figure 3-7.

Although the baseline DWRSIM 771 study did not simulate joint-point-of-diversion operations, water is often available for exports under a joint point of diversion to satisfy some of the CVP delivery deficits. Additional opportunities for delivery of CVP and SWP exports under a joint point of diversion were simulated by DeltaSOS; values ranged from 0 TAF to 450 TAF, with an average annual additional export of 110 TAF. Figure 3-8 shows annual average combined demands and deliveries for DWRSIM study 771 as adjusted by DeltaSOS for a joint point of diversion. Deficits are the difference between the two. The interruptible SWP deliveries are shown at the bottom; values range from 0 TAF in dry years to a maximum of 420 TAF in wet years. Interruptible supply increases the annual demand and delivery values. The annual delivery achieved with local inflows is also shown at the bottom to range from 0 TAF in most years to a maximum of more than 1 MAF (in 1983). These local inflows reduce the annual demand and delivery values. As shown in the figure, even with a joint point of diversion, delivery deficits exist in almost all years.

REVISED ANALYSIS OF DELTA WETLANDS WATER SUPPLY AND OPERATIONS

Two types of results for Delta Wetlands Project operations at a monthly time step are presented in this chapter, as in Chapter 3A of the 1995 DEIR/EIS. The first consists of the results of the DeltaSOS simulations, which show the potential range of Delta Wetlands water supply operations to provide information on the timing, frequency, and amount of project diversions and discharges. The second, based on these DeltaSOS simulation results, consists of results of the analysis of project impacts on Delta consumptive use.

These results are presented below following a description of the criteria for evaluating water supply effects and impact significance and an explanation of the scenarios evaluated in this analysis.

Measures of Potential Water Supply Effects and Criteria for Determining Impact Significance

Diversion and Discharge Operations and Water Supply

The following are the basic assumptions underlying the evaluation of the potential range of Delta Wetlands Project diversions and discharges and the resulting project yield:

- The Delta Wetlands Project would yield a water supply based only on water stored under its own appropriative permits and subsequently conveyed to Delta channels.
- The economic constraints of potential purchasers of Delta Wetlands Project water were not used as criteria for assessing impact significance.

- Permits granted by the SWRCB would specify that project diversions may not interfere with the diversion and use of water by other users with riparian or senior appropriative rights. Because DeltaSOS simulations of the Delta Wetlands alternatives were constrained to preclude interference with any riparian or senior appropriator, the Delta Wetlands Project presumably would have no significant impacts related to interference with senior water rights. Impacts on senior water rights were not used as criteria for assessing impact significance.

- DeltaSOS simulations of the No-Project Alternative and the proposed Delta Wetlands Project accounted for assumed constraints based on 1995 WQCP objectives, AFRP Delta actions, FOC and biological opinion terms, and terms of the stipulated agreements between Delta Wetlands and other parties that can be interpreted and simulated on a monthly basis. Delta Wetlands Project operations, as conditioned and limited by permits, would not be allowed to violate applicable Delta water quality objectives or fish and wildlife requirements or to interfere with other parties' compliance with these objectives and requirements.

- Delta Wetlands Project effects on Delta outflow were not used as criteria for assessing water supply impact significance; the specified 1995 WQCP objectives were presumed to adequately protect beneficial uses related to outflow. Potential effects of augmenting Delta outflow with purchased Delta Wetlands water during periods of reduced flows are assumed to be generally beneficial to the quality of the Delta water supply.

- Delta Wetlands Project effects on export water supply were not used as criteria for assessing impact significance because the addition or reduction of export water supply, by itself, is not a beneficial or adverse environmental impact.

- Potential impacts of the Delta Wetlands Project on water supply, water quality, and fisheries were not directly simulated at a daily time step because available information is not sufficient to allow accurate assessment of these potential daily effects. Therefore, Delta Wetlands Project effects on daily Delta flows were not used as criteria for assessing impact significance. Results of daily simulations are compared with monthly simulation results as part of the discussion and interpretation of the basic monthly findings.

An evaluation of DeltaSOS results is included here to provide useful information for document reviewers on the potential range of project operations. The estimates of diversions and discharges represented by these results are the basis for the analyses of project effects on water quality (Chapter 4), fisheries (Chapter 5), and Delta consumptive water use (below).

Delta Consumptive Use

In addition to the Delta boundary water budget based on the results of DWRSIM study 771, the evaluation of likely effects of Delta Wetlands Project operations relies on a water budget that represents water use on the project islands under no-project conditions (agricultural operations). This second water budget consists of estimates for rainfall, water evaporation, crop ET, soil moisture, seepage, applied irrigation and salt leaching water, and drainage water. The water budgets for the Delta Wetlands Project islands are fully described in Appendix A1 of the 1995 DEIR/EIS.

As described in Chapter 3A of the 1995 DEIR/EIS, the estimated water budget for the four Delta Wetlands Project islands under the No-Project Alternative indicates a net consumptive use of about 44 TAF per year (see Table A1-8 in Appendix A1 of the 1995 DEIR/EIS).

Under Delta Wetlands Project operations, consumptive water use would generally shift from irrigation diversions and crop ET, with minor amounts of open-water evaporation, to open-water evaporation during periods of storage on the reservoir islands and the seasonally flooded portions of the habitat islands, with minor amounts of irrigation diversions and crop ET.

A Delta Wetlands alternative is assumed to have a significant impact on Delta consumptive use if it would cause an increase in Delta lowland ET exceeding 1% of the No-Project Alternative ET from Delta lowlands (estimated as 890 TAF/yr). This assumed significance criterion could also be expressed as a change of greater than 20% of the consumptive use on the Delta Wetlands Project islands (i.e., 8.8 TAF/yr) because the project islands represent about 5% of the area of the Delta lowlands. A project alternative is considered to have a beneficial effect on Delta consumptive use if it would cause a decrease in Delta lowland ET.

Scenarios Evaluated in the Revised Analysis of Delta Wetlands Water Supply and Operations

The 1995 DEIR/EIS evaluated three alternatives for Delta Wetlands operations, as described in Chapter 2 of this REIR/EIS under "Project Alternatives". Alternatives 1 and 2 both represented Delta Wetlands' proposed project, consisting of water storage on two reservoir islands and implementation of an HMP on two habitat islands, but these alternatives offered two different scenarios for the discharge of stored water. Under Alternative 3, all four Delta Wetlands Project islands would be used as reservoirs and limited compensation wetland habitat would be provided on Bouldin Island. Alternative 2, with the largest amount of discharge pumping for export, would have the maximum effect on fisheries associated with project discharges. Therefore, Alternative 2 was used to represent the proposed project in the biological assessment for fish species and is the alternative on which the terms and conditions of the DFG, USFWS, and NMFS biological opinions are based. For this reason, the proposed project evaluated in this REIR/EIS is Alternative 2 from the 1995 DEIR/EIS, as modified by the changes to the project description summarized in Chapter 2.

The range of potential project operations under the proposed project, as described in this REIR/EIS, can be affected by several factors that either depend on natural conditions that cannot be

simulated (e.g., occurrence of fish species) or that result from decisions that the SWRCB will make about allowable Delta Wetlands Project operations during the water right process. For example, if the FMWT delta smelt index is low, Delta Wetlands operations are more restricted than if the FWMT index is high. Alternatively, if Delta Wetlands is allowed to discharge water from Bacon Island for export in April and May (i.e., during the VAMP period), potential project water supply benefits will increase.

Figure 3-9 shows the relationship between the Delta Wetlands Project alternatives evaluated in the 1995 DEIR/EIS and the potential operations under the proposed project that are considered in this REIR/EIS evaluation. The 1995 DEIR/EIS considered three alternatives. The Delta inflows were taken from DWRSIM study 409, which incorporated the Delta objectives from the 1995 WQCP.

The proposed project in this REIR/EIS analysis of water supply and operations is represented by 1995 DEIR/EIS Alternative 2 with the revisions described in Chapter 2. The most consequential revision is the addition of the FOC terms. Delta inflows and other parameters are taken from DWRSIM study 771 for the no-project and with-project simulations. The analysis addresses a range of potential discharge operations for the proposed project. DeltaSOS simulation results are presented for two operational scenarios for discharge to export:

1. Project discharges are assumed to be exported if pumping capacity exists and FOC and other operating rules are met (i.e., not limited by south-of-Delta delivery deficits).

2. Project discharges to export are limited by the simulated delivery deficits (total CVP and SWP deliveries minus combined CVP and SWP demands) in addition to export capacity, FOC, and other operating rules (i.e., limited by south-of-Delta delivery deficits).

Figure 3-9 also illustrates other considerations or operating scenarios that would affect estimated project diversions, storage, and exports. These options are discussed qualitatively below.

Results: Monthly Delta Wetlands Project Operations

This section describes the results of the DeltaSOS simulations of project diversion, storage, and discharge operations and estimates project yield under different discharge scenarios.

Water Available for Diversion and Unused Pumping Capacity

The Delta Wetlands Project water supply simulation results can be described in two basic steps: determining the availability of water for Delta Wetlands diversion and determining the opportunities for Delta Wetlands discharge for export.

Water Available for Diversion. Table 3-11 lists the monthly (in cfs) and annual (in TAF) quantities of water available for Delta Wetlands diversions, as constrained by 1995 WQCP outflow

and "percent of inflow" objectives with DWRSIM study 771 inflows. Because Delta Wetlands diversions are most likely to occur from October through March, the annual total volume is calculated for the October-March period. The results in Table 3-11 suggest that water will be available for diversion during at least one month in the majority of years. The annual amount of water available for Delta Wetlands diversions in the months of October through March ranges from 0 TAF in 10 dry years to more than 5,000 TAF in eight wet years. Under adjusted DWRSIM study 409, less than 100 TAF of water was available in 15 years out of 70. Table 3-11 indicates that for DWRSIM study 771, less than 100 TAF of water was available for diversions in 17 of the 73 study years (i.e., 23%). The quantity and timing of available water simulated by DeltaSOS using DWRSIM study 771 inflows and outflow requirements is similar to the results shown in the simulations previously performed for the 1995 DEIR/EIS using the results of DWRSIM study 409.

The FOC terms impose several additional limits on the available water that may be diverted by the Delta Wetlands Project. No diversions are allowed in April or May. The project can divert only a variable percentage of the available water in the other months. These FOC diversion limits are described above under "Restrictions for Fish Protection" in the section "Revisions to DeltaSOS".

Unused Pumping Capacity. Table 3-12 shows the simulated monthly unused CVP and SWP combined permitted export capacity for adjusted DWRSIM study 771. (Unused pumping capacity in April and May cannot be determined from DWRSIM study 771 because DWRSIM uses split-month calculations.) Because Delta Wetlands exports are most likely to occur from June through September, the unused pumping capacity during this period has been summarized. Unused pumping capacity was not discussed in the 1995 DEIR/EIS but was similar in magnitude and seasonal pattern to the results presented here.

Generally, enough unused permitted pumping capacity is simulated, after all possible CVP and SWP exports have been made, to allow the full Delta Wetlands project capacity of 238 TAF to be exported in most years. However, less than 100 TAF of unused export capacity is simulated from June through September in 9 of the 73 study years (12%). These are not the same years as those when limited amounts of water are available for Delta Wetlands diversions (which represent 23% of the years simulated). Project water supply potential is therefore reduced in 35% of years in the simulations by limits on either available water or unused pumping capacity.

Project Diversions, Storage, and Exports with Unlimited Demand

Table 3-13 shows the monthly simulated diversions for the proposed project with DWRSIM 771 inflows, net channel depletions, and required Delta outflow conditions. Table 3-14 shows the monthly storage values and Table 3-15 shows the discharges for export under the assumptions of maximum allowable Delta Wetlands exports for adjusted DWRSIM study 771, without limitation by south-of-Delta delivery deficits. (The table shows water years, but the 250-TAF annual export limit from the FOC is based on calendar years. Some years [e.g., 1971] in the table may appear to violate the FOC limit but do not on a calendar-year basis.)

This case represents the maximum potential Delta Wetlands operations under the proposed project, similar to the simulated Alternative 2 conditions described in the 1995 DEIR/EIS but as

modified by the FOC and other operating rules. The annual average Delta Wetlands diversions would be 165 TAF (Table 3-13), and the water supply potential would average about 138 TAF per year (Table 3-15). The difference between simulated diversions and discharges for export provides an estimate of evaporation from the reservoir islands of 27 TAF. Table 3-14 indicates that Delta Wetlands storage will not be emptied every year; the simulation results show 12 years with a carryover storage of more than 50 TAF, as indicated by October storage volume.

Figure 3-10 shows the simulated annual Delta Wetlands diversions and discharges for export for the proposed project with exports unlimited by delivery deficits. In most years, diversions were slightly greater than discharges for export, reflecting evaporation losses during the storage period. The FOC terms limit the annual (January-December calendar year) discharge for export to less than 250 TAF. Years characterized by diversions that are much greater than discharges for export reflect carryover storage years.

Project Diversions, Storage, and Exports Limited by South-of-Delta Delivery Deficits

Tables 3-16 to 3-18 show the monthly simulated Delta Wetlands diversions, storage, and discharges for export under the assumption that Delta Wetlands exports are limited to remaining SWP and CVP delivery deficits for adjusted DWRSIM study 771. Delivery deficits are often smaller than the simulated Delta Wetlands discharges for export from June through September, causing Delta Wetlands exports to be delayed and/or reduced. For example, as shown in Table 3-10, delivery deficits in June are less than 2,000 cfs (the maximum allowed Delta Wetlands discharge for export under the FOC terms) in many years. In these years, Delta Wetlands discharges for export are delayed with the delivery-deficit assumption, resulting in evaporative losses and reduced total discharges for export. (Table 3-15 shows the discharges for export without the delivery-deficit limit.) The Delta Wetlands water supply operations are reduced in 22 of the 70 simulated years when compared to operations under unlimited-demand conditions. The annual average diversions would be 144 TAF, and the water supply potential would average about 114 TAF per year. Delta Wetlands carryover storage of more than 50 TAF is simulated in 16 years.

Figure 3-11 shows the simulated annual Delta Wetlands diversions and discharges for export for the proposed project with exports limited by south-of-Delta delivery deficits. In most years, diversions were slightly greater than discharges for export, reflecting evaporation losses during the storage period. In other years, diversions were much greater than discharges, indicating carryover storage on the reservoir islands. Diversions in subsequent years were much less than discharges.

Additional Considerations for Proposed Project Operations and Water Supply Potential

Several different Delta conditions and Delta Wetlands operating choices may affect operations in particular years. Some of these conditions are listed in Figure 3-9. Some conditions and operating choices would restrict diversions and reduce Delta Wetlands' water supply potential (i.e., yield) while others may increase potential water supply. The DeltaSOS monthly simulations described above are representative of the range of potential Delta Wetlands operations and provide the basis for evaluating environmental impacts resulting from the likely range of operations.

However, several Delta conditions may necessitate adjustments in these monthly estimates of likely operations. Because most of these cannot be calculated, these additional considerations were not included in the DeltaSOS modeling.

Delta Smelt Fall Midwater Trawl Index Restriction. The Delta Wetlands FOC terms include several additional restrictions on diversions whenever the FMWT index value is less than 239. If the value is less than 239, diversions could not be made unless X2 is 1.4 km downstream of Collinsville (assumed to correspond to an outflow of 8,500 cfs), and diversions are restricted from February 15 through June. When these restrictions are in place, Delta Wetlands water supply potential would decrease.

Bacon Island Export under the Vernalis Adaptive Management Program. The possible discharge and export of Bacon Island water during April and May (the VAMP period) would increase the Delta Wetlands water supply potential. Whether VAMP rules would apply to Delta Wetlands Project exports has not been determined.

Top-Off Allowance for Evaporative Losses. The allowance for diversions to replace evaporation losses from June through October, as described in the Delta Wetlands FOC, has not been included in the DeltaSOS simulation. This "topping-off" allowance would increase the Delta Wetlands water supply potential. "Topping off" could not violate senior water rights or water quality and outflow requirements, however. The SWRCB will determine during the water right process whether Delta Wetlands would be permitted to divert water to replace evaporation losses.

Delta Outflow Augmentation. For purposes of environmental impact assessment, Delta Wetlands Project operations modeling assumes that all Delta Wetlands water available for export would be exported. However, as indicated in the project purpose (see Chapter 2), Delta Wetlands Project water also may be released to improve Delta water quality and outflow benefits. For example, when Delta Wetlands exports are limited by export capacity or delivery deficits, the Delta Wetlands carryover storage could be reduced by the release of water during periods of relatively low Delta outflow to augment outflow or reduce salinity intrusion (i.e., through the CALFED Environmental Water Account). This could improve water quality and provide slightly improved estuarine habitat conditions. These Delta releases may reduce Delta Wetlands' water supply potential for exports (i.e., project yield) in some years compared to the simulated conditions because insufficient water may be available for diversions to refill the reservoir islands during the next winter. These Delta Wetlands releases for outflow are not assumed to replace the Delta outflow provided by CVP and SWP operations to satisfy the WQCP Delta outflow requirements.

Results: Daily Delta Wetlands Project Operations

Daily Delta Wetlands operations were evaluated in the 1995 DEIR/EIS using the DailySOS model (Appendix A4, "Possible Effects of Daily Delta Conditions on Delta Wetlands Project Operations and Impact Assessments"). The ability of Delta Wetlands to divert water to storage during periods of excess inflows and export during short periods of unused export pumping, while complying with the daily requirements established in the biological opinions, can be more realistically simulated with the daily model than with DeltaSOS. These daily simulations also provide a firm basis for the SWRCB's establishment of terms and conditions for allowable operation of the Delta Wetlands Project.

Appendix A4 of the 1995 DEIR/EIS compared the monthly and daily simulation results and determined that the monthly estimates of CVP and SWP exports were higher than the daily estimates because of inflow fluctuations resulting from storm events and because of the physical capacity of the pumping facilities. The daily Delta Wetlands Project operations were generally higher than the monthly estimates because there were short periods when diversions could be made during storm events and subsequent periods when Delta Wetlands exports could be made.

In this section, the daily rules for Delta Wetlands diversion and discharge are reviewed and the daily results are compared with the monthly results for the case of exports not subject to limitation by delivery deficits. The 10-year period of 1985-1994 is used to illustrate the potential daily Delta Wetlands operations as constrained by the rules contained in the FOC. Appendix F provides a narrative explanation of the DailySOS results for each year and represents the results graphically. The yearly results presented in Appendix F provide a more accurate picture of potential Delta Wetlands operations than the monthly model results; the yearly results can depict how project operations would respond to opportunities for diversions and discharges on a daily basis throughout the year.

Simulation Method

The FOC terms include rules that restrict the timing and magnitude of Delta Wetlands diversions to storage and discharges to export; those rules would be applied on a daily basis. In addition to the WQCP objectives that govern Delta exports (i.e., minimum required Delta outflow and maximum allowed exports as a percentage of inflow [E/I ratio]), several rules for Delta Wetlands diversions are applied. When more than one measure is applicable, the most restrictive is used. The FOC discharge measures differ for Bacon Island and Webb Tract, so the daily modeling simulated Bacon Island diversions, storage, and discharge separately from Webb Tract diversions, storage, and discharge. As simulated in the daily model, Bacon Island diversions would be made first, and diversions to Webb Tract would then be made using any remaining diversion capacity under the FOC rules. Several of the criteria are more restrictive if the FMWT delta smelt index is less than 239; however, because the FMWT index value cannot be calculated, the model assumes a FMWT index greater than 239 for the daily simulations. The Delta Wetlands diversion and discharge rules are described above under "Restrictions for Fish Protection" in the

section "Revisions to DeltaSOS". Table 3-19 lists those rules and the ways in which they are applied in the daily operations model.

Daily Delta Wetlands operations were simulated using daily historical Delta inflows, CCWD diversions, and net channel depletions that were adjusted to match DWRSIM 771 simulated inflows, CCWD diversions, and net channel depletions. The daily pattern of inflows caused by storm events was preserved, but upstream adjustments in reservoir storage made by the monthly planning model were assumed to provide the most realistic future seasonal inflow pattern. Figure 3-12 illustrates this adjustment for 1985 Sacramento and San Joaquin River inflows. The daily values have been adjusted to match the DWRSIM monthly average. Adjustments in the Sacramento River flows are typically less than 2,000 cfs, with adjustments resulting in increases as well as decreases from the historical values. Adjustments in San Joaquin River flows typically reduce the flows to below historical values, except during the pulse flow (i.e., VAMP) period of April and May. Adjustments in river inflows for the other years are similar to those presented for 1985.

Summary of Daily Results

The 10-year sequence of daily simulations using the FOC for Delta Wetlands operations provides the most accurate picture of potential Delta Wetlands operations under highly variable Delta inflow and export conditions. Table 3-20 provides a summary comparison between the monthly and daily model results for Delta Wetlands diversions and Delta Wetlands exports for the 1985-1994 water year sequence. The daily model results confirm the monthly Delta Wetlands diversion and export values for moderately wet years (e.g., 1985, 1986, 1993). Like the monthly results, the daily simulations indicate that there are some years with very little or no available water for Delta Wetlands diversions (i.e., 1990, 1991, 1992). However, in 1989, the monthly model indicates no available water, but the daily model shows that there is some opportunity to divert during a limited major storm event once the X2 location is downstream of Chipps Island. The daily simulation of Delta Wetlands operations indicates that more Delta Wetlands exports could be made in some dry years (i.e., 1987, 1989, and 1994) than indicated by the monthly results. On the other hand, daily simulation of 1988 shows that X2 was not located downstream of Chipps Island for a sufficient length of time to allow Delta Wetlands diversions, so exports were much less in the daily results than the monthly results for that year.

Results: Cumulative Water Supply Conditions

For the 1995 DEIR/EIS, cumulative future conditions were simulated using DeltaSOS for each of the project alternatives, based on the assumption that the full SWP pumping capacity (10,300 cfs) was available in any month for combined CVP and SWP Delta exports. This availability of full pumping capacity is considered to be the most likely change in Delta facilities that would directly influence proposed Delta Wetlands operations. It may require approval and implementation of DWR's South Delta Project and a revised USACE permit for the SWP Banks Pumping Plant. This scenario represents the reasonably foreseeable future Delta conditions and regulatory standards. Results of the DeltaSOS simulations with DWRSIM 771 inflows and demands

adjusted to the full SWP pumping capacity of 10,300 cfs were used to represent the baseline for cumulative future conditions.

For this REIR/EIS analysis, cumulative future conditions for the proposed project were simulated using DeltaSOS in the same way. The DeltaSOS simulations used DWRSIM 771 results showing likely future Delta inflows, exports, and outflows under hydrologic conditions replicating those of the 73-year hydrologic record (water years 1922-1994). The 1995 level of development and demands used in DWRSIM 771 was used for the cumulative-conditions scenario. Assumptions for maximum Delta Wetlands discharges to export in addition to maximum CVP and SWP exports (i.e., future increased demands) are briefly described for comparison with the 1995 DEIR/EIS results for cumulative future conditions.

The annual combined CVP and SWP demands, deliveries, and deficits as adjusted by DeltaSOS for baseline DWRSIM 771 conditions, but with full SWP export pumping capacity under cumulative conditions, are shown in Figure 3-13. Additional CVP and SWP exports as adjusted for cumulative conditions ranged from 0 TAF in dry years to more than 500 TAF in wet years, with an average of 220 TAF. The delivery deficits that Delta Wetlands water supply may satisfy are less under cumulative future conditions than under existing conditions because, with full use of SWP Banks pumping capacity, the combined CVP and SWP exports will be greater.

Cumulative water supply effects of the proposed Delta Wetlands Project were compared with simulated monthly Delta water supply conditions under cumulative conditions. Table 3-21 shows the monthly Delta Wetlands diversions as simulated for cumulative future conditions with full pumping capacity at Banks Pumping Plant and Delta Wetlands exports unlimited by delivery deficits. Average annual diversions would be 169 TAF. Table 3-22 shows the monthly Delta Wetlands storage values for these assumed cumulative future conditions. Carryover storage of more than 50 TAF would occur in only 3 years. Table 3-23 shows the monthly Delta Wetlands discharge for export for these cumulative future conditions. Average annual exports of 147 TAF are simulated.

These results indicate that Delta Wetlands would operate in fewer years under cumulative conditions than under existing conditions because of reduced availability of water for diversions in some years (24 years with diversions less than 100 TAF). However, because of the greater export pumping capacity, more Delta Wetlands exports were simulated in several of the years. Average Delta Wetlands discharges for export were simulated to be approximately 9 TAF/yr more (increase of 7%) under cumulative conditions than for the proposed project without south-of-Delta delivery deficit limitations.

The likely Delta Wetlands yield under cumulative future conditions might be slightly less when limited by simulated south-of-Delta delivery deficits. However, future south-of-Delta demands and delivery deficits are likely to be greater than the 1995 level of demand simulated in DWRSIM 771. The relative effects of limiting Delta Wetlands exports by south-of-Delta delivery deficits for cumulative conditions could be similar to those reported for project conditions. For example, project yield was 138 TAF under unlimited demand versus 114 TAF when limited by south-of-Delta delivery deficits. Similarly, under cumulative conditions, project yield was 147 TAF

under unlimited demand, so project yield is estimated as 123 TAF when limited by south-of-Delta delivery deficits.

When compared to results presented in the 1995 DEIR/EIS, the potential yield from Delta Wetlands Project operations under cumulative conditions is reduced from an estimated average of 197 TAF to 147 TAF because the opportunities for Delta Wetlands diversions are reduced under DWRSIM study 771 conditions and because of limitations imposed by the FOC. However, the south-of-Delta water demands are expected to increase over time, and the project would provide an increment of storage that could be used to increase deliveries to CVP and SWP contractors.

Results: Delta Consumptive Use

Under the proposed project, land uses would change from irrigated agriculture to primarily water storage on the reservoir islands and to wildlife habitat on the habitat islands. These land use changes would reduce ET for the four islands from a total of 44 TAF/yr to 14 TAF/yr (estimated ET from the habitat islands). Additionally, an average of approximately 27 TAF/yr of evaporation would be lost from stored water on the reservoir islands during periods of water storage (i.e., Delta Wetlands diversions minus discharges for export). Therefore, total consumptive use for the proposed project is simulated to be about the same as under existing conditions. There is no change from the 1995 DEIR/EIS conclusion that the project would not have a significant impact on Delta consumptive use and that no mitigation is required.

Impact Evaluation of Project Alternatives from the 1995 Draft EIR/EIS

As described in Chapter 2, project operations under Alternative 1 in the 1995 DEIR/EIS were assumed to be the same as project operations under Alternative 2, except that discharges to export were assumed to be more restricted (i.e., by strict interpretation of the E/I ratio). As shown in the 1995 DEIR/EIS analysis, Alternative 1 operations provide fewer opportunities for Delta Wetlands discharges to export—potentially meaning a lower yield—than Alternative 2 operations (i.e., project yield was 14 TAF less under Alternative 1 than Alternative 2). Changes in simulated Alternative 1 project operations between the 1995 DEIR/EIS analysis and this REIR/EIS analysis are similar in magnitude and direction to the changes described above for the proposed project (i.e., Alternative 2). Therefore, Delta Wetlands discharges to exports under Alternative 1 would be less than previously reported in the 1995 DEIR/EIS, and the potential environmental impacts of Alternative 1 are slightly less than originally estimated. Based on the daily simulation of Delta Wetlands operations, the E/I export restriction would rarely limit Delta Wetlands discharges. The likely effect of applying the E/I export limit would be an increase in the period of Delta Wetlands discharges, resulting in increased evaporative losses on the Delta Wetlands islands. These evaporative losses are estimated to result in an average annual reduction in yield of less than 10 TAF compared with the Alternative 2 results.

Alternative 3, the four-reservoir-island alternative, has not changed since the 1995 DEIR/EIS was published. The FOC and biological opinion terms were developed for the two-reservoir-island operations represented by Alternative 2 in the 1995 DEIR/EIS and are not applicable to a four-reservoir-island alternative. New simulations of Alternative 3, which are based on the Delta water budget developed from DWRSIM study 771 and include AFRP actions, result in minor changes in project diversion, storage, and discharge operations. There is no change to the conclusions of the environmental impact analysis presented in the 1995 DEIR/EIS for Alternative 3.

	Historical Flows					DWRSIM Study 409 (1995 DEIR/EIS)						DWRSIM Study 771 (2000 REIR/EIS)					
Water Year	Sacramento + Yolo*	SJR + Eastside*	Depletion + CCWD*	CVP + SWP Exports	Delta Outflow	Sacramento + Yolo*	SJR + Eastside*	Depletion + CCWD*	CVP + SWP Exports	Delta Outflow	Required Outflow	Sacramento + Yolo*	SJR + Eastside*	Depletion + CCWD*	CVP + SWP Exports	Delta Outflow	Required Outflow
1922	-	-	-	0	28,838	15,460	4,080	1,035	6,193	12,313	6,112	16,271	4,131	1,000	6,522	12,879	6,356
1923	-	-	-	0	19,498	14,704	3,311	1,022	6,199	10,793	5,841	14,266	3,551	942	5,938	10,943	5,653
1924	-	-	-	0	4,972	8,667	1,462	1,421	4,548	4,161	4,069	7,900	1,352	1,431	3,604	4,219	3,921
1925	-	-	-	0	23,103	12,891	2,095	965	5,743	8,278	5,202	12,639	2,275	853	4,445	9,626	5,866
1926	-	-	-	0	14,889	11,974	1,903	1,129	5,741	7,007	5,013	11,426	1,769	1,287	5,157	6,756	4,397
1927	-	-	-	0	34,966	22,268	2,619	981	6,251	17,655	6,990	23,331	3,076	1,009	6,308	19,095	6,830
1928	-	-	-	0	22,064	19,474	2,286	1,152	6,336	14,271	6,674	18,710	2,640	1,257	6,114	13,985	5,961
1929	-	-	-	0	8,687	8,808	1,605	1,288	4,570	4,554	4,424	8,618	1,406	1,306	4,315	4,406	3,931
1930	-	1,734	812	0	15,038	10,947	1,470	1,173	5,016	6,229	5,059	11,322	1,404	1,134	5,080	6,516	4,775
1931	-	838	890	0	5,140	6,852	1,462	1,300	3,332	3,682	3,662	7,586	1,084	1,449	3,397	3,831	3,760
1932	-	4,605	673	0	16,600	8,787	2,244	1,045	4,153	5,833	5,197	8,616	2,755	1,107	3,933	6,322	5,151
1933	-	1,804	882	0	8,719	7,629	1,654	1,306	3,683	4,294	4,055	7,305	1,504	1,372	3,227	4,204	3,821
1934	-	1,362	844	0	8,798	8,330	1,507	1,260	3,742	4,835	4,539	8,487	1,299	1,377	3,577	4,830	4,477
1935	-	4,995	637	0	22,582	13,725	2,692	1,018	5,934	9,466	6,464	13,490	2,864	1,082	5,528	9,748	6,168
1936	-	6,598	402	0	25,092	14,769	3,205	945	6,162	10,867	6,257	15,255	4,276	1,070	6,056	12,408	6,472
1937	-	6,751	434	0	21,235	12,689	3,750	898	5,887	9,654	5,294	12,679	4,713	992	5,506	10,892	5,578
1938	-	13,085	381	0	52,788	36,820	7,100	719	6,235	36,966	8,137	36,707	10,362	789	6,729	39,557	7,471
1939	-	2,139	836	0	8,563	10,796	1,984	1,348	5,096	6,337	4,363	10,917	2,338	1,490	4,889	6,887	4,013
1940	-	6,114	480	0	30,910	22,241	2,655	792	6,428	17,675	7,256	21,570	3,829	922	5,988	18,490	7,253
1941	-	8,614	410	0	43,460	32,989	4,492	652	6,283	30,546	7,020	33,977	5,600	711	6,507	32,363	7,096
1942	-	7,763	338	0	36,995	30,494	4,146	900	5,957	27,783	6,681	30,385	5,261	987	6,077	28,588	6,689
1943	-	7,916	423	0	30,329	22,643	4,707	1,030	5,566	20,755	7,319	22,235	6,555	1,129	5,686	21,982	7,181
1944	-	2,316	735	0	10,787	11,595	2,039	1,192	5,937	6,505	4,959	11,629	2,436	1,305	5,286	7,479	4,191
1945	-	5,638	678	0	18,869	12,920	2,993	1,119	6,142	8,651	5,284	13,398	3,584	1,250	5,910	9,823	6,141
1946	-	4,725	816	0	21,938	17,663	2,871	1,222	6,299	13,013	6,288	16,859	3,677	1,323	6,249	12,967	6,015
1947	-	1,705	1,079	0	10,203	11,073	1,850	1,316	6,042	5,566	5,079	10,915	1,778	1,427	5,888	5,379	4,445
1948	-	2,257	962	0	16,167	13,157	1,785	1,237	6,310	7,394	5,494	12,622	1,829	1,258	5,911	7,287	4,622
1949	12,070	1,858	1,005	0	12,615	12,203	1,881	1,258	5,700	7,127	4,928	12,199	1,890	1,303	6,041	6,747	4,428
1950	14,324	2,793	1,066	0	15,257	12,940	2,043	1,259	6,159	7,564	5,606	13,002	2,237	1,337	6,221	7,685	5,096
1951	25,246	7,066	755	163	30,594	23,605	4,379	969	6,775	20,240	6,335	23,879	5,487	1,006	6,601	21,762	6,331
1952	32,046	9,627	589	165	40,431	30,744	4,800	810	6,936	27,799	7,996	30,899	6,998	834	6,633	30,439	7,675
1953	20,902	2,756	1,014	788	22,393	21,360	2,501	1,175	5,312	17,374	6,088	21,115	3,099	1,213	5,772	17,232	6,004
1954	18,349	2,434	1,101	1,022	19,167	20,648	1,943	1,304	6,382	14,904	7,031	19,938	2,027	1,352	6,205	14,414	6,718
1955	10,682	1,538	906	1,129	10,054	11,635	1,802	1,174	6,025	6,239	5,058	11,371	1,738	1,186	5,494	6,429	4,304
1956	32,232	8,645	572	722	39,798	30,078	4,762	837	6,833	27,171	6,230	30,508	6,803	862	6,796	29,659	6,491
1957	13,947	2,126	978	1,181	13,939	15,512	2,200	1,233	6,295	10,185	5,669	15,133	2,455	1,293	6,334	9,964	5,257
1958	36,120	8,463	159	658	43,825	35,187	5,061	581	7,056	32,611	7,277	35,637	6,310	577	6,861	34,513	6,653
1959	12,712	1,616	958	1,338	12,056	15,120	2,074	1,265	5,184	10,745	5,301	14,192	2,334	1,393	4,971	10,164	5,066

Water Year	Historical Flows: Sacramento + Yolo*	SJR + Eastside*	Depletion + CCWD*	CVP + SWP Exports	Delta Outflow	DWRSIM Study 409 (1995 DEIR/EIS): Sacramento + Yolo*	SJR + Eastside*	Depletion + CCWD*	CVP + SWP Exports	Delta Outflow	Required Outflow	DWRSIM Study 771 (2000 REIR/EIS): Sacramento + Yolo*	SJR + Eastside*	Depletion + CCWD*	CVP + SWP Exports	Delta Outflow	Required Outflow
1960	11,405	802	1,207	1,386	9,720	11,672	1,523	1,285	5,864	6,046	5,210	11,294	1,510	1,396	5,625	5,785	4,563
1961	11,673	542	1,048	1,485	9,700	11,682	1,357	1,252	5,784	6,003	5,104	11,866	1,172	1,298	5,735	6,001	4,312
1962	14,232	2,189	935	1,352	14,158	13,101	1,947	1,122	5,805	8,120	5,070	13,503	2,279	1,172	6,206	8,410	4,720
1963	24,626	4,177	499	1,339	27,006	23,586	2,679	897	6,661	18,708	7,339	23,549	3,008	857	7,187	18,510	6,855
1964	11,674	1,426	1,123	1,646	10,399	12,563	1,675	1,323	5,922	6,993	5,150	11,924	1,680	1,340	5,389	6,874	4,359
1965	26,194	5,451	830	1,469	29,388	24,106	3,550	1,082	6,660	19,914	6,680	24,487	4,774	1,065	7,068	21,130	6,857
1966	13,788	2,339	1,082	1,596	13,467	14,240	2,365	1,241	6,411	8,952	5,610	13,209	2,881	1,310	5,775	9,006	4,765
1967	27,933	7,289	461	1,254	33,561	24,830	4,609	760	6,875	21,804	7,564	25,998	6,632	745	7,084	24,807	7,639
1968	14,064	1,939	1,134	2,471	12,524	16,703	2,095	1,238	4,789	12,771	5,565	15,739	2,294	1,333	5,054	11,649	5,521
1969	29,684	12,572	502	2,879	38,936	29,451	7,387	814	6,439	29,584	7,978	30,183	11,340	865	6,435	34,229	7,478
1970	28,829	4,494	883	2,070	30,332	29,644	4,485	1,041	5,038	28,049	5,644	29,227	5,264	1,169	5,104	28,226	5,639
1971	24,150	2,682	818	2,834	23,223	22,122	2,443	1,105	6,822	16,637	7,103	22,062	2,787	1,132	6,763	16,959	7,051
1972	12,517	1,476	1,352	3,445	9,273	13,421	1,875	1,377	6,352	7,567	5,417	12,990	1,601	1,487	5,890	7,213	4,898
1973	24,679	3,824	532	3,369	24,643	23,309	3,340	653	6,618	19,378	6,830	23,318	4,043	724	6,879	19,762	6,804
1974	38,282	4,327	768	4,366	37,534	36,436	3,497	992	6,838	32,103	6,954	37,025	4,702	1,076	6,766	33,892	6,679
1975	20,920	3,954	934	3,910	20,070	21,389	3,209	1,122	6,503	16,973	6,636	21,026	4,091	1,186	6,773	17,168	6,653
1976	10,992	1,731	1,337	4,846	6,592	10,557	1,382	1,423	5,006	5,510	4,423	10,754	1,669	1,503	5,335	5,586	3,694
1977	5,506	446	1,337	2,081	2,542	6,939	1,167	1,387	3,057	3,662	3,662	6,825	1,290	1,453	2,695	3,965	3,965
1978	20,564	5,642	393	4,356	21,497	19,343	3,111	714	4,513	17,228	7,944	19,034	4,935	778	5,431	17,760	8,205
1979	13,206	3,648	834	4,476	11,571	14,143	2,993	1,059	5,813	10,264	5,852	14,134	3,854	1,123	5,651	11,219	5,816
1980	25,785	7,806	732	4,529	28,541	23,927	6,151	866	5,681	23,531	6,577	24,028	6,669	871	5,905	23,927	6,591
1981	11,641	2,052	1,066	4,728	7,919	13,220	2,258	1,284	5,595	8,599	5,116	12,865	2,198	1,404	4,767	8,891	4,618
1982	37,381	8,522	105	4,627	41,287	36,386	8,491	602	7,276	36,999	7,109	36,684	9,721	596	7,043	38,771	6,966
1983	49,079	20,014	51	4,405	64,732	49,206	20,669	249	5,421	64,201	6,206	49,309	19,397	239	5,294	63,181	6,413
1984	27,110	8,070	922	3,846	30,634	27,404	8,629	1,150	4,582	30,301	5,684	27,000	7,597	1,247	4,838	28,515	6,144
1985	12,381	2,574	1,053	5,478	8,465	13,248	2,321	1,139	5,942	8,488	5,075	12,721	1,919	1,229	5,716	7,700	4,502
1986	28,760	7,366	341	5,293	30,535	27,876	7,208	691	6,277	28,117	6,164	28,579	7,547	760	6,186	29,189	5,985
1987	10,079	2,194	1,131	5,050	6,113	11,045	1,985	1,318	5,816	5,896	4,826	10,887	1,695	1,421	5,054	6,111	4,206
1988	9,782	1,307	1,101	5,619	4,415	9,567	1,258	1,223	4,452	5,150	4,511	9,484	1,205	1,348	3,936	5,399	4,318
1989	12,306	1,279	1,023	5,975	6,608	11,878	1,330	1,270	5,285	6,653	4,823	11,593	1,279	1,377	4,871	6,657	4,374
1990	9,894	1,085	1,211	5,819	3,973	8,787	1,156	1,251	4,071	4,621	4,512	9,400	1,098	1,378	4,438	4,687	4,092
1991	7,626	877	941	3,185	4,377	8,700	1,228	1,256	3,813	4,860	4,094	8,334	1,179	1,335	2,666	5,510	4,055
1992	-	1,247	961	2,912	-	-	-	-	-	-	-	8,774	1,371	1,262	3,132	5,764	4,486
1993	-	-	-	-	-	-	-	-	-	-	-	19,349	3,523	625	6,157	16,090	8,402
1994	-	-	-	-	-	-	-	-	-	-	-	11,038	1,692	1,353	5,312	6,064	3,961
Avg ('22-'91)	19,892	4,419	798	1,691	20,644	18,141	3,240	1,079	5,720	14,582	5,810	18,086	3,743	1,140	5,590	15,102	5,586

* Notes: Sacramento + Yolo = Sacramento River and Yolo Bypass

SJR + Eastside = San Joaquin River and eastside streams

Depletion + CCWD = Contra Costa Water District diversions and net channel depletion

See "Notes and Acronyms" at end of tables section

Table 3-2. Comparison of Sacramento River and Yolo Bypass Inflows (cfs) between DWRSIM Studies 771 and 409

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
DWRSIM Study 409 (1995 DEIR/EIS)													
1967	12,680	15,473	41,319	46,741	59,682	56,679	43,818	46,199	40,864	15,589	12,698	19,813	24,830
1968	23,643	18,017	16,207	29,254	67,429	37,050	12,293	10,820	14,760	21,516	14,177	11,675	16,703
1969	14,078	12,574	23,151	111,492	111,153	52,937	43,896	44,733	25,335	13,042	12,083	23,658	29,451
1970	21,939	18,806	57,778	184,333	85,637	36,152	13,232	10,762	15,238	23,106	13,363	10,993	29,644
1971	13,723	22,988	67,713	53,426	29,159	52,059	19,441	31,548	22,990	23,192	13,662	16,761	22,122
1972	18,865	16,485	21,278	18,288	25,382	32,355	11,592	10,956	14,603	21,618	20,089	10,936	13,421
1973	15,127	23,028	27,877	72,678	88,679	56,526	17,416	17,979	19,696	22,972	12,753	11,608	23,309
1974	15,026	66,497	69,975	127,939	47,112	106,615	71,375	24,715	21,434	18,189	13,856	21,175	36,436
1975	22,724	17,840	18,043	16,081	64,541	83,394	22,644	32,443	25,262	20,252	13,015	18,274	21,389
1976	23,074	20,504	15,689	13,414	19,069	15,202	9,873	10,305	14,737	16,563	8,650	7,893	10,557
1977	8,183	11,104	18,131	8,303	13,468	10,403	9,127	6,787	7,009	9,003	6,316	7,178	6,939
1978	7,179	6,260	16,102	58,430	57,316	64,666	38,711	19,681	14,350	13,255	10,870	13,778	19,343
1979	18,469	15,924	10,638	25,785	40,922	30,818	16,689	15,571	20,572	17,819	11,205	10,001	14,143
1980	10,623	18,125	20,806	100,940	112,793	51,001	16,691	14,264	12,647	13,041	11,215	14,433	23,927
1981	17,286	14,254	16,319	25,675	28,599	32,518	14,686	10,889	13,654	20,878	14,221	10,145	13,220
1982	12,801	35,650	94,683	73,874	92,720	67,180	115,305	36,117	22,606	15,164	13,851	23,136	36,386
1983	30,060	41,797	68,882	78,120	141,232	200,690	79,835	59,449	52,097	23,412	15,591	24,410	49,206
1984	27,521	69,988	131,698	60,540	39,887	33,563	14,220	12,617	15,445	21,437	12,186	15,112	27,404
1985	18,599	35,922	26,287	14,443	19,838	17,790	9,859	13,784	13,489	20,965	17,901	10,706	13,248
1986	12,711	10,997	15,940	18,764	198,107	122,935	20,232	11,194	12,479	16,354	11,426	10,901	27,876
1987	10,638	12,133	9,495	12,911	19,356	32,272	13,457	11,495	13,656	21,261	16,142	10,254	11,045
1988	10,369	9,911	16,405	26,311	17,146	12,006	9,207	9,574	14,318	15,770	10,258	7,289	9,567
1989	7,179	9,446	11,759	12,971	13,986	39,617	22,383	14,636	13,464	21,670	19,283	10,483	11,878
1990	9,151	8,092	14,263	17,463	15,935	11,083	13,102	7,884	14,643	16,078	10,380	7,568	8,787
1991	7,159	7,716	9,364	10,525	13,924	29,237	14,113	8,058	13,814	12,442	9,529	8,320	8,700
DWRSIM Study 771 (2000 REIR/EIS)													
1967	11,270	19,007	40,723	51,132	59,437	57,832	42,904	46,009	45,274	21,012	18,085	18,217	25,998
1968	17,353	13,461	16,361	31,421	59,786	39,129	14,335	12,555	13,730	15,190	16,101	11,444	15,739
1969	12,149	14,200	25,110	110,525	110,357	52,790	42,534	48,155	27,678	18,085	16,832	21,847	30,183
1970	15,938	14,805	57,149	183,384	86,985	38,771	14,604	13,255	14,016	18,556	15,531	11,428	29,227
1971	11,921	23,628	63,492	54,400	28,647	52,351	21,360	29,713	23,746	21,728	17,190	17,494	22,062
1972	15,336	13,932	21,402	20,459	23,730	33,388	11,781	14,230	15,276	16,654	17,076	12,033	12,990
1973	13,108	21,494	26,200	76,372	87,526	56,596	20,099	15,369	20,318	21,061	13,791	14,553	23,318
1974	14,051	64,784	70,485	126,349	47,571	109,272	67,288	27,615	24,216	22,150	19,435	20,452	37,025
1975	16,475	13,764	17,743	18,410	59,833	83,658	26,922	27,452	28,048	20,313	18,101	17,780	21,026
1976	20,589	15,612	16,702	16,751	20,079	17,515	9,680	9,872	15,831	13,238	11,287	11,092	10,754
1977	11,108	8,823	8,977	8,928	13,342	8,083	9,999	7,383	11,058	8,717	8,847	7,848	6,825
1978	6,164	6,117	13,027	59,426	57,114	59,214	34,837	20,036	15,108	14,507	15,515	14,419	19,034
1979	14,393	12,722	12,604	27,338	41,827	32,640	18,234	12,864	21,796	17,011	10,815	12,016	14,134
1980	12,929	15,713	21,402	93,172	111,367	51,294	20,015	15,076	13,461	13,531	16,231	14,066	24,028
1981	11,775	10,470	16,979	29,046	30,033	30,656	17,746	12,328	13,999	13,840	15,678	10,688	12,865
1982	11,335	40,585	90,521	71,086	87,454	74,355	111,117	37,682	25,208	20,427	18,036	20,217	36,684
1983	23,045	35,577	67,346	80,454	140,714	195,451	81,405	58,889	59,289	27,826	24,037	23,242	49,309
1984	20,882	64,364	129,146	61,930	36,282	36,218	16,251	14,897	18,839	20,410	14,539	13,747	27,000
1985	13,287	31,560	23,956	17,125	21,697	21,955	12,906	13,011	13,814	13,482	16,117	11,932	12,721
1986	11,563	12,033	18,133	22,980	190,014	126,934	23,309	14,068	11,579	16,605	12,149	14,318	28,579
1987	12,604	11,226	12,311	15,564	21,697	28,379	12,554	10,034	15,579	14,198	16,393	9,915	10,887
1988	10,327	8,672	17,450	28,152	14,064	15,271	9,327	9,433	14,217	12,750	8,506	9,024	9,484
1989	9,075	9,966	10,165	13,417	11,794	41,910	25,914	13,401	13,226	14,133	16,767	12,386	11,593
1990	13,515	10,638	14,686	19,857	16,205	13,677	13,612	9,481	15,058	10,864	8,928	9,277	9,400
1991	8,701	8,235	8,164	7,985	12,244	32,591	17,158	9,498	8,503	7,904	8,213	8,940	8,334
Change: DWRSIM 771 - DWRSIM 409													
1967	-1,410	3,534	-596	4,391	-245	1,153	-914	-190	4,410	5,423	5,387	-1,596	1,167
1968	-6,290	-4,556	154	2,167	-7,643	2,079	2,042	1,735	-1,030	-6,326	1,924	-231	-964
1969	-1,929	1,626	1,959	-967	-796	-147	-1,362	3,422	2,343	5,043	4,749	-1,811	732
1970	-6,001	-4,001	-629	-949	1,348	2,619	1,372	2,493	-1,222	-4,550	2,168	435	-417
1971	-1,802	640	-4,221	974	-512	292	1,919	-1,835	756	-1,464	3,528	733	-60
1972	-3,529	-2,553	124	2,171	-1,652	1,033	189	3,274	673	-4,964	-3,013	1,097	-431
1973	-2,019	-1,534	-1,677	3,694	-1,153	70	2,683	-2,610	622	-1,911	1,038	2,945	9
1974	-975	-1,713	510	-1,590	459	2,657	-4,087	2,900	2,782	3,961	5,579	-723	589
1975	-6,249	-4,076	-300	2,329	-4,708	264	4,278	-4,991	2,786	61	5,086	-494	-363
1976	-2,485	-4,892	1,013	3,337	1,010	2,313	-193	-433	1,094	-3,325	2,637	3,199	198
1977	2,925	-2,281	-9,154	625	-126	-2,320	872	596	4,049	-286	2,531	670	-114
1978	-1,015	-143	-3,075	996	-202	-5,452	-3,874	355	758	1,252	4,645	641	-309
1979	-4,076	-3,202	1,966	1,553	905	1,822	1,545	-2,707	1,224	-808	-390	2,015	-9
1980	2,306	-2,412	596	-7,768	-1,426	293	3,324	812	814	490	5,016	-367	101
1981	-5,511	-3,784	660	3,371	1,434	-1,862	3,060	1,439	345	-7,038	1,457	543	-355
1982	-1,466	4,935	-4,162	-2,788	-5,266	7,175	-4,188	1,565	2,602	5,263	4,185	-2,919	298
1983	-7,015	-6,220	-1,536	2,334	-518	-5,239	1,570	-560	7,192	4,414	8,446	-1,168	103
1984	-6,639	-5,624	-2,552	1,390	-3,605	2,655	2,031	2,280	3,394	-1,027	2,353	-1,365	-405
1985	-5,312	-4,362	-2,331	2,682	1,859	4,165	3,047	-773	325	-7,483	-1,784	1,226	-527
1986	-1,148	1,036	2,193	4,216	-8,093	3,999	3,077	2,874	-900	251	723	3,417	703
1987	1,966	-907	2,816	2,653	2,341	-3,893	-903	-1,461	1,923	-7,063	251	-339	-158
1988	-42	-1,239	1,045	1,841	-3,082	3,265	120	-141	-101	-3,020	-1,752	1,735	-83
1989	1,896	520	-1,594	446	-2,192	2,293	3,531	-1,235	-238	-7,537	-2,516	1,903	-285
1990	4,364	2,546	423	2,394	270	2,594	510	1,597	415	-5,214	-1,452	1,709	613
1991	1,542	519	-1,200	-2,540	-1,680	3,354	3,045	1,440	-5,311	-4,538	-1,316	620	-366

Note: See "Notes and Acronyms" at end of tables section.

C-062689

Table 3-3. Comparison of San Joaquin River and Eastside Stream Inflows (cfs) between DWRSIM Studies 771 and 409

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
DWRSIM Study 409 (1995 DEIR/EIS)													
1967	2,163	2,285	4,607	6,732	7,039	5,746	12,312	9,585	10,645	9,511	2,251	3,508	4,609
1968	4,058	2,290	2,802	3,036	4,613	3,565	4,291	3,202	2,163	2,017	1,330	1,360	2,095
1969	1,641	2,532	2,555	13,179	27,970	11,301	11,590	24,907	15,284	6,059	2,298	3,117	7,387
1970	8,283	4,208	5,047	21,274	10,411	6,234	5,998	4,607	2,667	2,063	1,983	1,563	4,485
1971	1,851	3,718	6,567	3,529	3,145	3,516	4,980	4,795	2,802	2,066	1,999	1,516	2,443
1972	2,260	2,170	2,968	2,476	3,109	2,752	4,459	3,365	2,165	2,032	1,298	2,022	1,875
1973	1,606	3,098	2,270	6,126	10,661	10,686	6,603	6,239	2,551	2,033	1,953	1,531	3,340
1974	2,566	4,156	5,710	8,513	4,286	7,570	8,363	7,097	3,893	2,124	2,078	1,605	3,497
1975	2,335	3,183	2,918	1,889	7,839	8,722	7,741	7,683	4,565	2,121	2,068	2,119	3,209
1976	2,569	3,048	2,381	1,121	1,340	2,049	2,398	2,387	2,111	1,339	1,099	1,072	1,382
1977	1,721	1,616	1,189	1,127	1,382	1,741	2,430	2,250	2,109	1,298	1,204	1,280	1,167
1978	1,779	1,511	1,873	6,100	6,865	6,312	8,783	7,081	5,196	2,108	2,186	1,776	3,111
1979	3,530	2,780	1,772	4,350	9,098	7,206	6,301	6,336	2,568	2,024	1,930	1,706	2,993
1980	2,354	3,750	2,793	16,699	24,189	24,976	7,187	6,869	4,739	2,521	2,241	3,640	6,151
1981	4,478	4,059	3,295	3,543	3,567	4,200	4,106	3,153	2,156	2,022	1,441	1,410	2,258
1982	1,537	2,639	4,246	11,796	14,264	20,962	36,202	24,293	9,727	5,948	3,354	5,768	8,491
1983	13,458	12,724	28,435	31,556	49,188	62,664	37,426	32,518	34,260	20,942	7,553	11,848	20,669
1984	18,450	18,643	30,960	28,088	13,948	9,620	6,721	4,949	3,592	2,435	2,676	2,944	8,629
1985	3,399	4,577	5,682	3,706	3,700	3,374	3,598	3,267	2,166	2,009	1,446	1,548	2,321
1986	2,130	2,826	2,817	2,564	28,698	36,518	20,598	9,361	5,580	2,600	2,647	3,134	7,208
1987	6,669	3,493	3,918	2,037	2,329	2,948	2,543	2,275	2,154	1,753	1,303	1,473	1,985
1988	1,643	1,895	2,110	1,566	1,053	1,489	2,410	2,308	2,159	1,537	1,297	1,383	1,258
1989	1,989	1,538	1,554	1,100	1,205	2,952	3,178	2,422	2,249	1,391	1,327	1,141	1,330
1990	1,570	1,316	1,083	1,319	1,421	1,685	2,528	2,275	1,939	1,327	1,259	1,444	1,156
1991	2,008	1,407	1,258	857	1,269	2,599	2,561	2,487	2,005	1,288	1,223	1,397	1,228
DWRSIM Study 771 (2000 REIR/EIS)													
1967	2,082	2,252	3,968	7,416	5,600	9,156	21,914	22,394	17,646	10,311	2,992	4,185	6,632
1968	5,351	2,302	2,472	2,651	5,424	4,342	5,109	3,480	1,798	1,740	1,691	1,664	2,294
1969	2,017	2,000	2,683	23,695	40,729	23,793	26,132	31,160	20,654	6,570	4,033	4,487	11,340
1970	5,904	3,378	4,521	27,469	12,550	10,506	6,957	6,001	3,008	2,212	2,244	2,504	5,264
1971	2,472	3,126	6,603	4,017	3,241	5,123	6,168	5,529	2,823	2,326	2,309	2,454	2,787
1972	2,163	1,983	2,927	2,179	2,712	2,196	3,227	2,862	1,731	1,464	1,626	1,462	1,601
1973	1,838	2,168	2,000	6,944	13,954	13,515	8,235	7,530	3,311	2,505	2,407	2,605	4,043
1974	3,692	4,470	6,310	12,571	6,536	11,710	11,344	8,262	4,554	2,781	2,732	2,975	4,702
1975	3,887	2,487	2,862	2,635	8,445	13,791	8,957	8,392	7,596	2,944	2,814	2,991	4,091
1976	4,602	2,353	2,244	1,984	2,451	2,212	2,891	2,716	1,580	1,578	1,529	1,529	1,669
1977	3,204	2,386	1,968	1,529	1,494	1,464	2,286	1,952	1,496	1,138	1,155	1,311	1,290
1978	1,545	1,529	1,919	6,473	9,345	14,003	18,167	12,490	7,865	3,350	2,082	3,025	4,935
1979	4,668	2,353	2,082	5,757	12,784	11,677	7,596	7,026	2,790	2,358	2,309	2,487	3,854
1980	2,765	2,218	2,667	20,719	27,468	17,483	8,201	8,896	8,924	4,879	2,651	3,664	6,669
1981	5,237	2,269	2,130	3,123	3,259	4,716	5,109	3,741	1,798	1,643	1,708	1,697	2,198
1982	1,968	2,806	3,724	15,824	25,766	22,768	40,450	19,939	12,033	5,481	3,919	6,436	9,721
1983	9,384	12,789	28,314	34,754	50,110	60,727	26,284	26,964	40,568	17,483	4,781	9,344	19,397
1984	8,148	21,007	32,803	19,060	12,778	8,001	7,075	5,920	3,311	2,505	2,553	2,756	7,597
1985	2,391	3,361	2,618	2,130	3,133	3,253	4,386	3,692	1,832	1,626	1,724	1,664	1,919
1986	1,984	2,201	2,326	2,830	40,099	34,868	11,747	10,457	10,503	2,683	2,602	2,790	7,547
1987	3,838	2,252	2,082	1,984	2,773	3,090	2,941	2,700	1,613	1,610	1,594	1,613	1,695
1988	1,691	1,832	2,065	1,838	1,512	1,447	2,218	2,049	1,496	1,138	1,171	1,512	1,205
1989	1,529	1,529	1,756	1,366	1,548	3,041	2,504	2,212	1,714	1,236	1,203	1,563	1,279
1990	1,529	1,529	1,366	1,529	1,711	1,756	2,168	1,773	1,260	1,041	1,073	1,462	1,098
1991	1,415	1,311	1,301	1,106	1,314	3,757	2,554	2,082	1,328	1,041	1,008	1,328	1,179
Change: DWRSIM 771 - DWRSIM 409													
1967	-81	-33	-639	684	-1,439	3,410	9,602	12,809	7,001	800	741	677	2,023
1968	1,293	12	-330	-385	811	777	818	278	-365	-277	361	304	199
1969	376	-532	128	10,516	12,759	12,492	14,542	6,253	5,370	511	1,735	1,370	3,953
1970	-2,379	-830	-526	6,195	2,139	4,272	959	1,394	341	149	261	941	779
1971	621	-592	36	488	96	1,607	1,188	734	21	260	310	938	344
1972	-97	-187	-41	-297	-397	-556	-1,232	-503	-434	-568	328	-560	-274
1973	232	-930	-270	818	3,293	2,829	1,632	1,291	760	472	454	1,074	703
1974	1,126	314	600	4,058	2,250	4,140	2,981	1,165	661	657	654	1,370	1,205
1975	1,552	-696	-56	746	606	5,069	1,216	709	3,031	823	746	872	882
1976	2,033	-695	-137	863	1,111	163	493	329	-531	239	430	457	287
1977	1,483	770	779	402	112	-277	-144	-298	-613	-160	-49	31	123
1978	-234	18	46	373	2,480	7,691	9,384	5,409	2,669	1,242	-104	1,249	1,823
1979	1,138	-427	310	1,407	3,686	4,471	1,295	690	222	334	379	781	862
1980	411	-1,532	-126	4,020	3,279	-7,493	1,014	2,027	4,185	2,358	410	24	517
1981	759	-1,790	-1,165	-420	-308	516	1,003	588	-358	-379	267	287	-60
1982	431	167	-522	4,028	11,502	1,806	4,248	-4,354	2,306	-467	565	668	1,230
1983	-4,074	65	-121	3,198	922	-1,937	-11,142	-5,554	6,308	-3,459	-2,772	-2,504	-1,271
1984	-10,302	2,364	1,843	-9,028	-1,170	-1,619	354	971	-281	70	-123	-188	-1,032
1985	-1,008	-1,216	-3,064	-1,576	-567	-121	788	425	-334	-383	278	116	-402
1986	-146	-625	-491	266	11,401	-1,650	-8,851	1,096	4,923	83	-45	-344	339
1987	-2,831	-1,241	-1,836	-53	444	142	398	425	-541	-143	291	140	-290
1988	48	-63	-45	272	459	-42	-192	-259	-663	-399	-126	129	-53
1989	-460	-9	202	266	343	89	-674	-210	-535	-155	-124	422	-51
1990	-41	213	283	210	290	71	-360	-502	-679	-286	-186	18	-58
1991	-593	-96	43	249	45	1,158	-7	-405	-677	-247	-215	-69	-49

Note: See "Notes and Acronyms" at end of tables section.

C-062690

Table 3-4. Comparison of Combined CVP and SWP Exports (cfs) between DWRSIM Studies 771 and 409

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
DWRSIM Study 409 (1995 DEIR/EIS)													
1967	8,718	10,672	11,526	11,916	10,784	6,352	7,644	8,128	10,257	10,775	5,927	11,243	6,875
1968	9,342	7,641	6,876	4,239	4,835	6,480	4,666	3,870	5,924	11,287	7,538	6,684	4,789
1969	9,074	8,547	11,249	12,373	11,632	6,647	6,727	7,690	9,600	6,578	5,360	11,243	6,439
1970	11,027	7,887	7,427	4,700	4,822	6,543	5,990	4,706	6,268	11,287	6,324	6,526	5,038
1971	9,054	10,941	11,411	11,618	9,028	10,190	6,116	7,704	9,028	11,287	6,640	10,061	6,822
1972	11,027	10,941	11,264	10,891	8,473	8,443	4,578	3,924	5,870	11,287	11,287	7,294	6,352
1973	10,113	10,941	11,250	11,573	12,382	7,836	6,772	6,930	7,786	11,110	6,124	6,866	6,618
1974	10,863	10,941	11,352	11,037	8,319	8,492	8,550	8,701	8,864	8,065	6,913	11,243	6,838
1975	11,027	10,941	9,893	7,640	6,018	7,644	8,266	8,756	10,439	9,670	6,241	11,243	6,503
1976	11,027	10,941	10,586	8,462	8,468	6,038	3,070	3,268	5,896	7,623	3,547	4,042	5,006
1977	5,434	6,433	11,057	4,844	6,067	4,197	2,825	2,394	1,076	1,817	941	3,580	3,057
1978	4,415	3,326	10,812	10,363	5,453	5,280	6,313	6,696	6,613	2,839	4,473	8,219	4,513
1979	11,027	10,941	6,331	10,707	7,836	8,114	6,604	6,512	8,100	8,864	5,187	6,117	5,813
1980	7,828	10,941	11,332	12,621	8,081	6,096	6,262	6,772	5,681	3,232	4,873	10,445	5,681
1981	11,027	10,941	9,165	7,318	7,774	7,239	5,026	3,874	5,534	11,287	7,551	6,005	5,595
1982	8,382	10,941	11,217	12,015	11,725	8,742	8,607	9,742	11,277	8,589	8,123	11,243	7,276
1983	11,027	8,298	7,936	6,107	4,628	4,948	6,594	6,273	7,679	7,796	10,177	8,388	5,421
1984	7,062	5,299	5,242	3,218	4,144	6,341	6,270	5,104	6,664	10,505	5,856	10,243	4,582
1985	11,027	10,941	11,708	7,800	8,028	7,408	3,696	4,418	5,480	11,287	10,258	6,439	5,942
1986	8,726	7,912	11,320	11,410	12,821	10,247	8,347	7,354	6,322	6,447	5,051	8,075	6,277
1987	11,027	8,936	7,785	9,199	9,758	10,838	3,800	3,456	5,534	11,287	8,755	6,020	5,816
1988	6,587	6,114	11,175	11,273	6,370	4,724	2,964	3,114	5,768	7,321	4,885	3,498	4,452
1989	4,627	5,403	6,928	8,317	6,836	11,402	5,466	4,050	5,500	11,287	11,287	6,501	5,285
1990	5,470	3,927	7,841	11,255	6,076	4,468	3,620	2,804	5,804	7,330	5,021	3,857	4,071
1991	4,665	3,854	5,073	6,171	6,384	11,142	3,790	2,873	5,453	5,022	4,228	4,544	3,813
DWRSIM Study 771 (2000 REIR/EIS)													
1967	8,067	11,226	11,547	12,067	10,893	7,709	7,041	5,416	11,612	11,661	11,693	11,596	7,272
1968	9,172	8,672	8,164	7,725	6,884	7,221	4,336	3,318	5,781	5,936	11,384	8,302	5,243
1969	9,026	10,772	11,401	12,295	6,230	6,326	6,235	4,310	11,612	11,026	11,010	9,495	6,621
1970	8,018	7,445	6,668	7,725	8,481	7,188	5,126	4,115	6,302	8,213	9,237	9,075	5,285
1971	9,270	11,209	11,466	11,791	7,292	9,091	5,697	4,863	9,646	11,661	11,693	11,512	6,950
1972	11,466	10,587	11,368	8,831	8,779	9,091	3,411	2,911	6,302	7,302	11,693	9,108	6,085
1973	10,002	11,209	11,319	11,710	12,910	8,863	6,403	4,554	8,621	11,238	8,798	11,495	7,066
1974	11,433	11,226	11,579	8,034	8,805	8,310	6,235	4,310	10,419	11,661	11,693	11,528	6,952
1975	11,466	10,806	9,059	8,278	9,057	8,148	7,041	5,416	11,612	11,205	11,693	11,528	6,957
1976	11,466	11,226	10,311	8,294	8,675	7,156	3,059	2,488	6,403	6,473	7,871	8,167	5,526
1977	7,611	6,857	6,554	5,838	2,287	2,814	2,958	699	1,395	1,464	4,310	4,773	2,869
1978	960	3,411	9,904	12,132	12,946	7,432	6,235	4,310	8,403	5,529	10,213	11,612	5,616
1979	11,563	9,915	7,058	7,660	8,373	8,392	5,966	4,163	8,957	8,668	6,456	9,613	5,839
1980	10,490	11,209	11,417	8,652	6,606	5,692	5,395	3,562	8,184	6,538	11,693	11,478	6,089
1981	11,352	7,310	6,082	5,188	6,086	7,221	4,924	3,285	5,882	6,050	11,026	7,764	4,958
1982	8,473	11,209	11,368	12,880	9,795	9,059	6,235	4,310	11,612	11,661	11,693	11,528	7,229
1983	11,466	11,243	9,725	3,415	3,241	4,131	6,184	4,310	8,772	8,522	10,750	9,041	5,478
1984	7,660	6,974	4,261	5,253	5,441	7,188	4,571	3,204	8,100	10,522	9,042	11,058	5,024
1985	10,474	11,226	11,319	8,278	9,057	8,473	3,697	2,814	5,815	5,855	11,693	9,176	5,905
1986	8,424	9,293	11,368	11,579	12,874	9,075	6,235	3,610	8,083	7,026	6,603	11,411	6,370
1987	10,961	8,050	9,042	8,636	5,870	6,749	3,479	2,488	6,352	6,782	11,677	6,689	5,235
1988	6,863	5,294	11,287	11,433	4,242	4,293	2,806	2,358	5,092	5,090	3,757	5,663	4,113
1989	3,789	7,294	7,758	9,742	2,413	11,270	5,613	2,797	5,563	5,757	11,677	9,394	5,012
1990	10,034	6,873	10,604	11,384	6,752	5,627	3,580	2,391	5,663	3,334	4,131	5,899	4,602
1991	3,432	5,142	5,139	4,310	1,152	11,498	4,218	2,407	471	455	3,497	5,294	2,837
Change: DWRSIM 771 - DWRSIM 409													
1967	-651	554	21	151	109	1,357	-603	-2,712	1,355	886	5,766	353	397
1968	-170	1,031	1,288	3,486	2,049	741	-330	-552	-143	-5,351	3,846	1,618	453
1969	-48	2,225	152	-78	-5,402	-321	-492	-3,380	2,012	4,448	5,650	-1,748	182
1970	-3,009	-442	-759	3,025	3,659	645	-864	-591	34	-3,074	2,913	2,549	246
1971	216	268	55	173	-1,736	-1,099	-419	-2,841	618	374	5,053	1,451	127
1972	439	-354	104	-2,060	306	648	-1,167	-1,013	432	-3,985	406	1,814	-267
1973	-111	268	69	137	528	1,027	-369	-2,376	835	128	2,674	4,629	449
1974	570	285	227	-3,003	486	-182	-2,315	-4,391	1,555	3,596	4,780	285	114
1975	439	-135	-834	638	3,039	504	-1,225	-3,340	1,173	1,535	5,452	285	454
1976	439	285	-275	-168	207	1,118	-11	-780	507	-1,150	4,324	4,125	520
1977	2,177	424	-4,503	994	-3,780	-1,383	133	-1,695	319	-353	3,369	1,193	-187
1978	-3,455	85	-908	1,769	7,493	2,152	-78	-2,386	1,790	2,690	5,740	3,393	1,103
1979	536	-1,026	727	-3,047	537	278	-638	-2,349	857	-196	1,269	3,496	27
1980	2,662	268	85	-3,969	-1,475	-404	-867	-3,210	2,503	3,306	6,820	1,033	407
1981	325	-3,631	-3,083	-2,130	-1,688	-18	-102	-589	348	-5,237	3,475	1,759	-638
1982	91	268	151	865	-1,930	317	-2,372	-5,432	335	3,072	3,570	285	-47
1983	439	2,945	1,789	-2,692	-1,387	-817	-410	-1,963	1,093	726	573	653	57
1984	598	1,675	-981	2,035	1,297	847	-1,699	-1,900	1,436	17	3,186	815	442
1985	-553	285	-389	478	1,029	1,065	1	-1,604	335	-5,432	1,435	2,737	-37
1986	-302	1,381	48	169	53	-1,172	-2,112	-3,744	1,761	579	1,552	3,336	94
1987	-66	-886	1,257	-563	-3,888	-4,089	-321	-968	818	-4,505	2,922	669	-580
1988	276	-820	112	160	-2,128	-431	-158	-756	-676	-2,231	-1,128	2,165	-339
1989	-838	1,891	830	1,425	-4,423	-132	147	-1,253	63	-5,530	390	2,893	-274
1990	4,564	2,946	2,763	129	676	1,159	-40	-413	-141	-3,996	-890	2,042	531
1991	-1,233	1,288	66	-1,861	-5,232	356	428	-466	-4,982	-4,567	-731	750	-976

Note: See "Notes and Acronyms" at end of tables section.

C-062691

Table 3-5. Comparison of Delta Outflow (cfs) between DWRSIM Studies 771 and 409

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
DWRSIM Study 409 (1995 DEIR/EIS)													
1967	4,506	6,538	34,816	46,682	55,505	56,651	48,507	45,279	37,462	9,803	5,741	9,902	21,804
1968	16,772	11,630	11,134	28,914	67,389	33,948	10,325	7,579	6,840	7,724	5,259	4,158	12,771
1969	5,157	5,675	13,929	116,820	130,914	56,981	47,434	59,410	26,877	8,002	5,741	13,407	29,584
1970	17,934	14,092	55,147	205,170	91,229	35,248	11,579	7,959	7,579	9,358	5,741	3,872	28,049
1971	5,063	15,618	64,439	45,778	22,775	44,856	16,812	26,487	12,689	9,449	5,741	6,040	16,637
1972	8,528	6,661	12,423	9,956	19,716	25,452	9,811	7,579	6,840	7,840	6,820	3,791	7,567
1973	5,618	15,492	18,954	72,356	89,859	59,498	15,653	14,634	10,301	9,373	5,302	4,147	19,378
1974	5,615	59,398	65,122	126,767	42,649	106,026	70,318	20,652	12,454	8,002	5,741	9,345	32,103
1975	12,707	9,012	10,182	10,316	67,661	85,520	20,861	28,861	15,245	8,263	5,741	6,958	16,973
1976	13,567	11,491	6,355	5,879	11,385	9,744	7,475	6,366	6,897	5,750	3,415	3,008	5,510
1977	2,992	5,211	7,186	4,505	8,083	6,897	6,897	4,505	4,000	4,001	3,415	3,008	3,662
1978	2,992	3,537	6,832	59,011	60,344	67,366	40,512	17,640	8,774	8,002	5,302	5,227	17,228
1979	9,352	6,861	4,984	21,446	44,456	29,641	15,028	12,903	10,882	6,505	4,668	3,397	10,264
1980	4,001	9,948	12,113	107,524	132,325	69,498	16,291	12,000	7,579	8,002	5,302	5,436	23,531
1981	9,134	6,252	9,481	22,569	24,089	29,667	12,223	7,579	6,117	7,090	4,831	3,492	8,599
1982	4,793	26,967	87,982	77,836	95,820	82,058	142,617	48,242	16,998	8,002	5,801	16,124	36,999
1983	31,393	46,767	89,976	107,902	189,090	262,789	110,435	83,414	74,552	32,036	9,719	26,029	64,201
1984	37,420	83,000	159,165	85,443	49,713	36,149	13,094	9,792	8,231	8,845	5,741	5,638	30,301
1985	9,792	29,597	19,994	10,628	15,513	14,122	8,185	10,012	6,117	7,164	5,807	3,758	8,488
1986	4,675	5,194	7,089	11,205	219,765	150,695	31,242	10,807	7,579	8,002	5,741	4,037	28,117
1987	4,677	5,554	4,598	5,767	12,344	24,487	10,473	7,579	6,117	7,205	5,409	3,515	5,896
1988	4,001	4,740	6,877	17,924	11,400	7,804	7,300	6,496	6,897	5,491	3,415	3,008	5,150
1989	2,992	4,648	5,565	5,788	8,175	31,151	18,361	10,268	6,117	7,264	6,120	3,818	6,653
1990	4,001	4,504	6,416	7,862	11,400	7,310	10,251	5,910	6,897	5,584	3,447	3,008	4,621
1991	2,992	4,187	4,532	5,025	8,258	21,264	11,259	5,362	7,037	4,215	3,415	3,008	4,860
DWRSIM Study 771 (2000 REIR/EIS)													
1967	4,033	10,487	35,486	46,903	49,408	58,580	63,154	62,337	46,147	12,848	5,595	8,117	24,320
1968	10,392	6,689	13,043	30,445	58,465	36,153	13,293	12,116	5,126	6,505	4,342	3,008	12,041
1969	4,033	4,924	17,841	125,650	146,746	70,241	66,163	73,184	29,527	8,001	5,757	11,915	34,027
1970	10,018	10,050	55,083	206,998	91,181	41,162	14,721	12,799	6,604	8,001	5,578	3,008	28,067
1971	4,033	16,469	58,791	45,260	24,650	46,806	23,981	30,526	13,764	8,001	4,911	3,882	16,958
1972	4,050	4,504	10,880	16,963	19,714	25,533	10,655	12,197	6,218	6,505	4,180	3,008	7,506
1973	4,342	16,368	22,004	77,478	91,469	55,799	23,780	15,727	10,234	8,001	4,586	3,479	20,107
1974	5,432	56,583	66,533	131,618	45,608	113,338	76,229	31,664	13,646	8,506	6,668	9,461	34,106
1975	7,725	4,588	9,010	15,174	62,930	89,399	31,880	29,274	17,108	8,001	5,952	5,344	17,279
1976	12,051	5,260	6,700	10,864	17,420	14,653	8,218	7,562	6,285	4,001	2,992	3,008	5,974
1977	5,302	3,496	3,497	4,863	11,668	6,522	6,773	6,896	6,873	4,001	2,992	3,008	3,975
1978	5,416	3,496	5,253	57,653	55,151	71,200	52,416	27,387	9,579	8,001	4,521	3,748	18,331
1979	4,017	4,537	4,505	24,427	47,715	35,177	21,309	13,482	11,024	6,505	4,001	3,008	10,842
1980	4,342	5,848	13,076	98,799	136,419	64,906	25,830	20,914	10,638	8,001	4,456	3,865	23,958
1981	4,163	4,504	8,766	26,509	27,315	27,973	18,620	10,539	5,277	4,993	3,497	3,008	8,758
1982	4,033	31,560	83,414	74,648	103,569	89,529	150,239	55,262	20,452	8,001	5,595	11,713	38,494
1983	20,085	39,156	86,390	115,160	190,824	257,170	106,865	83,658	84,816	31,258	15,125	21,208	63,454
1984	17,532	78,733	156,940	73,119	42,732	36,023	18,671	15,434	9,646	8,001	5,269	3,075	28,066
1985	4,375	24,805	19,565	14,051	18,042	19,500	13,780	10,994	5,344	4,993	3,497	3,008	8,564
1986	4,033	4,958	10,978	20,898	220,786	153,167	33,644	21,158	10,066	8,001	5,188	4,100	29,984
1987	4,017	4,521	4,977	9,368	19,878	23,452	10,050	7,904	6,218	4,993	3,497	3,008	6,147
1988	4,033	4,504	8,701	20,231	11,022	11,433	7,596	7,497	6,436	4,001	2,992	3,008	5,518
1989	5,464	3,496	3,497	5,107	11,146	36,690	23,410	9,530	5,310	4,993	3,497	3,664	6,987
1990	4,017	4,504	4,521	11,026	12,802	9,953	10,218	7,985	6,134	4,001	2,992	3,008	4,897
1991	5,481	3,496	3,497	4,749	11,974	29,469	16,520	7,351	5,865	4,001	2,992	3,008	5,937
Change: DWRSIM 771 - DWRSIM 409													
1967	-473	3,949	670	221	-6,097	1,929	14,647	17,058	8,685	3,045	-146	-1,785	2,516
1968	-6,380	-4,941	1,909	1,531	-8,924	2,205	2,968	4,537	-1,714	-1,219	-917	-1,150	-730
1969	-1,124	-751	3,912	8,830	15,832	13,260	18,729	13,774	2,650	-1	16	-1,492	4,443
1970	-7,916	-4,042	-64	1,828	-48	5,914	3,142	4,840	-975	-1,357	-163	-864	18
1971	-1,030	851	-5,648	-518	1,875	1,950	7,169	4,039	1,075	-1,448	-830	-2,158	321
1972	-4,478	-2,157	-1,543	7,007	-2	81	844	4,618	-622	-1,335	-2,640	-783	-61
1973	-1,276	876	3,050	5,122	1,610	-3,699	8,127	1,093	-67	-1,372	-716	-668	729
1974	-183	-2,815	1,411	4,851	2,959	7,312	5,911	11,012	1,192	504	927	116	2,003
1975	-4,982	-4,424	-1,172	4,858	-4,731	3,879	11,019	413	1,863	-262	211	-1,614	305
1976	-1,516	-6,231	345	4,985	6,035	4,909	743	1,196	-612	-1,749	-423	0	464
1977	2,310	-1,715	-3,689	358	3,585	-375	-124	2,391	2,873	0	-423	0	313
1978	2,424	-41	-1,579	-1,358	-5,193	3,834	11,904	9,747	805	-1	-781	-1,479	1,103
1979	-5,335	-2,324	-479	2,981	3,259	5,536	6,281	579	142	0	-667	-389	578
1980	341	-4,100	963	-8,725	4,094	-4,592	9,539	8,914	3,059	-1	-846	-1,571	427
1981	-4,971	-1,748	-715	3,940	3,226	-1,694	6,397	2,960	-840	-2,097	-1,334	-484	159
1982	-760	4,593	-4,568	-3,188	7,749	7,471	7,622	7,020	3,454	-1	-206	-4,411	1,495
1983	-11,308	-7,611	-3,586	7,258	1,734	-5,619	-3,570	244	10,264	-778	5,406	-4,821	-747
1984	-19,888	-4,267	-2,225	-12,324	-6,981	-126	5,577	5,642	1,415	-844	-472	-2,563	-2,236
1985	-5,417	-4,792	-429	3,423	2,529	5,378	5,595	982	-773	-2,171	-2,310	-750	76
1986	-642	-236	3,889	9,693	1,021	2,472	2,402	10,351	2,487	-1	-553	63	1,867
1987	-660	-1,033	379	3,601	7,534	-1,035	-423	325	101	-2,212	-1,912	-507	251
1988	32	-236	1,824	2,307	-378	3,629	296	1,001	-461	-1,490	-423	0	368
1989	2,472	-1,152	-2,068	-681	2,971	5,539	5,049	-738	-807	-2,271	-2,623	-154	334
1990	16	0	-1,895	3,164	1,402	2,643	-33	2,075	-763	-1,583	-455	0	276
1991	2,489	-691	-1,035	-276	3,716	8,205	5,261	1,989	-1,172	-214	-423	0	1,077

Note: See "Notes and Acronyms" at end of tables section.

Table 3-6. Comparison of Required Delta Outflow (cfs) between DWRSIM Studies 771 and 409

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
DWRSIM Study 409 (1995 DEIR/EIS)													
1967	4,506	6,538	7,120	6,001	24,954	14,889	15,102	11,288	15,427	8,002	5,741	5,795	7,564
1968	4,001	5,464	4,685	6,001	9,901	20,302	10,325	7,579	6,840	7,724	5,259	4,158	5,565
1969	5,157	5,675	6,705	6,001	22,447	15,373	10,822	20,587	19,795	8,002	5,741	5,921	7,978
1970	4,001	4,562	4,885	6,001	16,029	12,369	11,579	7,579	7,579	9,358	5,741	3,872	5,644
1971	5,063	5,876	5,719	8,484	22,775	15,023	16,279	9,466	7,822	9,449	5,741	6,040	7,103
1972	5,475	6,485	6,235	6,103	11,400	11,400	9,811	7,579	6,840	7,840	6,820	3,791	5,417
1973	5,618	5,947	7,461	6,001	23,408	16,464	10,742	8,440	10,301	9,373	5,302	4,147	6,830
1974	5,615	7,269	6,591	6,001	17,027	12,241	16,292	15,365	8,779	8,002	5,741	6,333	6,954
1975	5,398	6,266	5,984	6,001	11,400	19,282	15,699	7,722	12,026	8,263	5,741	6,212	6,636
1976	5,242	6,313	6,355	5,865	8,609	8,007	7,475	6,366	6,897	5,750	3,415	3,008	4,423
1977	2,992	5,211	7,186	4,505	8,083	6,897	6,897	4,505	4,000	4,001	3,415	3,008	3,662
1978	2,992	3,537	6,832	6,001	28,559	19,427	21,202	15,808	8,774	8,002	5,302	5,227	7,944
1979	5,026	6,316	4,984	6,294	11,400	16,369	13,576	7,579	10,882	6,505	4,668	3,397	5,852
1980	4,001	6,096	6,397	6,001	23,044	16,110	11,084	9,962	7,579	8,002	5,302	5,436	6,577
1981	4,597	6,062	5,589	6,001	11,276	9,935	12,223	7,579	6,117	7,090	4,831	3,492	5,116
1982	4,793	7,477	7,160	6,001	18,180	17,080	13,890	15,768	9,704	8,002	5,801	3,975	7,109
1983	4,001	4,504	4,505	6,001	16,285	13,554	11,748	10,940	14,572	8,002	5,741	3,008	6,206
1984	4,001	4,504	4,505	6,001	14,676	12,102	12,388	7,579	8,231	8,845	5,741	5,638	5,684
1985	4,950	7,066	7,108	6,001	7,382	10,891	7,863	10,012	6,117	7,164	5,807	3,758	5,075
1986	4,675	5,194	6,742	6,993	11,400	19,425	14,337	8,034	7,579	8,002	5,741	4,037	6,164
1987	4,001	5,554	4,598	5,767	8,363	11,400	10,473	7,579	6,117	7,205	5,409	3,515	4,826
1988	4,001	4,740	6,877	7,344	11,400	7,804	7,300	6,496	6,897	5,491	3,415	3,008	4,511
1989	2,992	4,648	5,565	5,788	8,175	8,765	10,416	10,268	6,117	7,264	6,120	3,818	4,823
1990	4,001	4,504	6,416	6,418	11,400	6,949	10,251	5,910	6,897	5,584	3,447	3,008	4,512
1991	2,992	4,187	4,532	5,025	8,258	8,566	11,259	5,362	7,037	4,215	3,415	3,008	4,094
DWRSIM Study 771 (2000 REIR/EIS)													
1967	4,001	4,504	4,505	6,001	25,460	18,280	17,998	13,807	17,041	8,001	4,001	3,008	7,639
1968	4,001	4,504	4,505	6,001	10,118	22,915	13,360	6,863	5,327	6,505	4,407	3,008	5,521
1969	4,001	4,504	4,505	6,001	22,273	15,759	13,360	19,304	19,175	8,001	4,050	3,008	7,478
1970	4,001	4,504	4,505	6,001	16,223	15,043	14,688	5,253	6,621	8,001	5,611	3,008	5,639
1971	4,001	4,504	4,505	6,001	24,272	17,190	18,704	13,320	8,352	8,001	5,009	3,008	7,051
1972	4,001	4,504	4,505	6,001	11,005	11,401	9,848	9,823	6,386	6,505	4,196	3,008	4,898
1973	4,001	4,504	4,505	6,001	24,434	17,890	14,352	11,043	10,453	8,001	4,586	3,008	6,804
1974	4,001	4,504	4,505	6,001	17,249	15,174	17,074	17,337	9,428	8,001	4,424	3,008	6,679
1975	4,001	4,504	4,505	6,001	11,398	22,785	18,066	9,986	13,276	8,001	4,733	3,008	6,653
1976	4,001	4,504	4,505	4,505	6,589	6,505	7,798	6,115	6,705	4,001	2,992	3,008	3,694
1977	5,464	3,496	3,497	4,733	12,010	5,643	7,092	6,896	6,890	4,001	2,992	3,008	3,965
1978	5,448	3,496	3,497	9,807	28,467	22,004	20,066	18,020	9,663	8,001	4,521	3,008	8,205
1979	4,001	4,504	4,505	4,505	11,146	18,296	15,747	8,994	11,192	6,505	4,001	3,008	5,816
1980	4,001	4,504	4,505	6,001	23,052	16,686	14,974	10,961	8,991	8,001	4,554	3,008	6,591
1981	4,001	4,504	4,505	6,001	10,479	9,351	13,192	7,692	5,310	4,993	3,497	3,008	4,618
1982	4,001	4,504	4,505	6,001	19,572	17,467	16,099	15,450	12,856	8,001	4,001	3,008	6,966
1983	4,001	4,504	4,505	6,001	17,033	13,856	11,814	13,368	16,200	8,001	4,001	3,008	6,413
1984	4,001	4,504	4,505	6,001	16,498	16,279	15,511	8,408	9,865	8,001	5,253	3,008	6,144
1985	4,001	4,504	4,505	6,001	7,274	11,401	9,041	11,010	5,378	4,993	3,497	3,008	4,502
1986	4,001	4,504	4,505	6,001	11,398	18,540	14,839	10,929	8,235	8,001	5,237	3,008	5,985
1987	4,001	4,504	4,505	4,505	7,400	11,401	9,949	5,318	6,638	4,993	3,497	3,008	4,206
1988	4,001	4,504	4,505	6,001	11,005	11,401	7,193	6,261	6,705	4,001	2,992	3,008	4,318
1989	5,464	3,496	3,497	4,733	10,821	7,725	9,949	10,002	5,310	4,993	3,497	3,008	4,374
1990	4,001	4,504	4,505	4,505	11,398	6,652	10,234	5,708	6,319	4,001	2,992	3,008	4,092
1991	5,448	3,496	3,497	4,733	11,974	5,643	10,655	5,773	5,983	4,001	2,992	3,008	4,055
Change: DWRSIM 771 - DWRSIM 409													
1967	-505	-2,034	-2,615	0	506	3,391	2,896	2,519	1,614	-1	-1,740	-2,787	75
1968	0	-960	-180	0	217	2,613	3,035	-716	-1,513	-1,219	-852	-1,150	-44
1969	-1,156	-1,171	-2,200	0	-174	386	2,538	-1,283	-620	-1	-1,691	-2,913	-500
1970	0	-58	-380	0	194	2,674	3,109	-2,326	-958	-1,357	-130	-864	-6
1971	-1,062	-1,372	-1,214	-2,483	1,497	2,167	2,425	3,854	530	-1,448	-732	-3,032	-52
1972	-1,474	-1,981	-1,730	-102	-395	1	37	2,244	-454	-1,335	-2,624	-783	-519
1973	-1,617	-1,443	-2,956	0	1,026	1,426	3,610	2,603	152	-1,372	-716	-1,139	-26
1974	-1,614	-2,765	-2,086	0	222	2,933	782	1,972	649	-1	-1,317	-3,325	-275
1975	-1,397	-1,762	-1,479	0	-2	3,503	2,367	2,264	1,250	-262	-1,008	-3,204	16
1976	-1,241	-1,809	-1,850	-1,360	-2,020	-1,502	323	-251	-192	-1,749	-423	0	-728
1977	2,472	-1,715	-3,689	228	3,927	-1,254	195	2,391	2,890	0	-423	0	303
1978	2,456	-41	-3,335	3,806	-92	2,577	-1,136	2,212	889	-1	-781	-2,219	261
1979	-1,025	-1,812	-479	-1,789	-254	1,927	2,171	1,415	310	0	-667	-389	-36
1980	0	-1,592	-1,892	0	8	576	3,890	999	1,412	-1	-748	-2,428	14
1981	-596	-1,558	-1,084	0	-797	-584	969	113	-807	-2,097	-1,334	-484	-498
1982	-792	-2,973	-2,655	0	1,392	387	2,209	-318	3,152	-1	-1,800	-967	-143
1983	0	0	0	0	748	302	66	2,428	1,628	-1	-1,740	0	207
1984	0	0	0	0	1,822	4,177	3,123	829	1,634	-844	-488	-2,630	460
1985	-949	-2,562	-2,603	0	-108	510	1,178	998	-739	-2,171	-2,310	-750	-574
1986	-674	-690	-2,237	-992	-2	-885	502	2,895	656	-1	-504	-1,029	-179
1987	0	-1,050	-93	-1,262	-963	1	-524	-2,261	521	-2,212	-1,912	-507	-619
1988	0	-236	-2,372	-1,343	-395	3,597	-107	-235	-192	-1,490	-423	0	-193
1989	2,472	-1,152	-2,068	-1,055	2,646	-1,040	-467	-266	-807	-2,271	-2,623	-810	-449
1990	0	0	-1,911	-1,913	-2	-297	-17	-202	-578	-1,583	-455	0	-420
1991	2,456	-691	-1,035	-292	3,716	-2,923	-604	411	-1,054	-214	-423	0	-39

Note: See "Notes and Acronyms" at end of tables section.

Table 3-7. Comparison of Combined SWP and CVP San Luis Reservoir Storage (TAF) between DWRSIM Studies 771 and 409

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DWRSIM Study 409 (1995 DEIR/EIS)												
1967	675	949	1,277	1,699	1,994	2,038	2,038	2,038	1,928	1,786	1,372	1,643
1968	1,812	1,948	2,005	2,038	2,038	2,038	1,794	1,434	961	768	415	401
1969	673	847	1,138	1,616	1,970	2,038	2,038	2,038	1,935	1,671	1,235	1,519
1970	1,819	1,955	2,012	2,038	2,038	2,038	1,867	1,552	1,090	886	448	419
1971	689	1,003	1,299	1,724	1,891	2,026	1,799	1,597	1,254	999	531	668
1972	1,010	1,288	1,538	1,847	1,972	2,038	1,742	1,310	797	590	449	439
1973	737	1,025	1,292	1,687	2,019	2,038	1,858	1,692	1,359	1,117	637	603
1974	956	1,245	1,513	1,847	1,977	2,038	1,982	1,964	1,734	1,302	871	1,096
1975	1,458	1,748	1,876	2,038	2,038	2,038	1,939	1,798	1,564	1,206	713	918
1976	1,261	1,538	1,747	1,906	2,031	2,037	1,783	1,507	1,267	985	613	548
1977	661	707	966	1,219	1,269	1,349	1,349	1,302	1,098	910	699	751
1978	907	1,044	1,554	1,853	2,038	2,038	2,038	2,038	1,816	1,158	672	776
1979	1,181	1,512	1,516	1,847	1,972	2,038	1,913	1,805	1,471	1,125	624	578
1980	778	1,101	1,401	1,847	1,998	2,038	2,038	1,996	1,613	1,104	635	871
1981	1,277	1,607	1,717	1,883	2,007	2,038	1,816	1,455	960	767	415	361
1982	591	908	1,196	1,648	1,940	2,023	2,038	2,038	1,935	1,615	1,255	1,469
1983	1,739	1,875	1,936	2,038	2,038	2,038	2,038	2,038	1,935	1,793	1,684	1,821
1984	1,981	2,038	2,038	2,038	2,038	2,038	1,901	1,617	1,188	944	486	682
1985	1,079	1,401	1,657	1,847	1,972	2,016	1,677	1,330	834	643	458	404
1986	623	737	1,014	1,402	1,794	2,030	2,038	1,921	1,596	1,126	632	695
1987	1,067	1,243	1,304	1,564	1,768	1,986	1,662	1,257	798	640	418	366
1988	463	512	776	1,163	1,182	1,129	891	666	480	386	160	107
1989	179	263	387	679	813	1,114	953	691	347	318	344	380
1990	426	355	465	878	912	881	736	560	425	339	168	155
1991	258	320	369	559	699	1,130	1,030	829	648	548	185	164
DWRSIM Study 771 (2000 REIR/EIS)												
1967	253	582	1,030	1,509	1,799	1,876	1,891	1,719	1,724	1,637	1,495	1,509
1968	1,565	1,725	1,869	1,990	2,038	2,038	1,802	1,388	937	454	374	353
1969	519	851	1,277	1,754	1,895	1,990	1,961	1,730	1,750	1,631	1,435	1,440
1970	1,490	1,617	1,755	1,879	2,037	2,038	1,849	1,485	1,066	724	510	533
1971	715	1,073	1,504	1,875	1,929	1,992	1,779	1,385	1,073	840	685	785
1972	1,041	1,311	1,661	1,806	1,945	2,024	1,695	1,206	728	270	152	163
1973	321	633	1,008	1,486	1,874	1,949	1,806	1,430	1,161	952	663	792
1974	1,074	1,403	1,703	1,871	1,998	2,038	1,888	1,498	1,297	1,083	946	1,068
1975	1,344	1,592	1,751	1,893	2,033	2,038	1,899	1,532	1,326	1,053	888	983
1976	1,237	1,544	1,710	1,851	2,010	2,038	1,771	1,354	1,016	662	440	415
1977	492	578	696	916	916	916	876	665	444	279	206	262
1978	138	197	684	1,329	1,809	1,951	1,961	1,768	1,510	927	677	820
1979	1,107	1,302	1,433	1,546	1,702	1,783	1,651	1,307	1,055	751	375	442
1980	705	1,071	1,505	1,764	1,937	2,038	2,038	1,838	1,657	1,361	1,340	1,533
1981	1,848	1,992	2,038	2,038	2,038	2,038	1,832	1,409	956	469	358	302
1982	432	789	1,211	1,721	1,876	1,969	1,899	1,605	1,528	1,313	1,154	1,253
1983	1,506	1,852	2,030	2,038	2,038	2,038	2,038	1,897	1,842	1,716	1,588	1,651
1984	1,822	2,004	2,038	2,038	2,038	2,038	1,816	1,396	1,081	878	649	795
1985	1,053	1,417	1,698	1,852	1,991	2,038	1,726	1,228	720	170	80	121
1986	142	331	709	1,222	1,733	1,985	1,989	1,744	1,622	1,265	933	1,096
1987	1,371	1,525	1,800	2,038	2,038	2,038	1,758	1,295	896	490	443	308
1988	321	408	728	1,255	1,276	1,276	1,102	836	628	398	130	123
1989	80	299	589	1,031	1,031	1,545	1,357	886	410	80	80	123
1990	262	343	639	1,155	1,349	1,431	1,306	1,046	879	551	315	312
1991	241	320	440	566	510	1,056	1,096	997	727	445	366	457
Change: DWRSIM 771 - DWRSIM 409												
1967	-422	-367	-247	-190	-195	-162	-147	-319	-204	-149	123	-134
1968	-247	-223	-136	-48	0	0	8	-46	-24	-314	-41	-48
1969	-154	4	139	138	-75	-48	-77	-308	-185	-40	200	-79
1970	-329	-338	-257	-159	-1	0	-18	-67	-24	-162	62	114
1971	26	70	205	151	38	-34	-20	-212	-181	-159	154	117
1972	31	23	123	-41	-27	-14	-47	-104	-69	-320	-297	-276
1973	-416	-392	-284	-201	-145	-89	-52	-262	-198	-165	26	189
1974	118	158	190	24	21	0	-94	-466	-437	-219	75	-28
1975	-114	-156	-125	-145	-5	0	-40	-266	-238	-153	175	65
1976	-24	6	-37	-55	-21	1	-12	-153	-251	-323	-173	-133
1977	-169	-129	-270	-303	-353	-433	-473	-637	-654	-631	-493	-489
1978	-769	-847	-870	-524	-229	-87	-77	-270	-306	-231	5	44
1979	-74	-210	-83	-301	-270	-255	-262	-498	-416	-374	-249	-136
1980	-73	-30	104	-83	-61	0	0	-158	44	257	705	662
1981	571	385	321	155	31	0	16	-46	-4	-298	-57	-59
1982	-159	-119	15	73	-64	-54	-139	-433	-407	-302	-101	-216
1983	-233	-23	94	0	0	0	0	-141	-93	-77	-96	-170
1984	-159	-34	0	0	0	0	-85	-221	-107	-66	163	113
1985	-26	16	41	5	19	22	49	-102	-114	-473	-378	-283
1986	-481	-406	-305	-180	-61	-45	-49	-177	26	139	301	401
1987	304	282	496	474	270	52	96	38	98	-150	25	-58
1988	-142	-104	-48	92	94	147	211	170	148	12	-30	16
1989	-99	36	202	352	218	431	404	195	63	-238	-264	-257
1990	-164	-12	174	277	437	550	570	486	454	212	147	157
1991	-17	0	71	7	-189	-74	66	168	79	-103	181	293

Note: See "Notes and Acronyms" at end of tables section.

Table 3-8. Comparison of Combined CVP and SWP Deliveries (Banks + Tracy - San Luis Reservoir Storage Change) between DWRSIM Studies 771 and 409

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
DWRSIM Study 409 (1995 DEIR/EIS)													
1967	5,108	6,067	6,192	5,053	5,472	5,636	7,644	8,128	12,106	13,084	12,660	6,689	5,662
1968	6,594	5,355	5,949	3,702	4,835	6,480	8,766	9,725	13,873	14,426	13,279	6,919	6,028
1969	4,650	5,623	6,516	4,599	5,258	5,541	6,727	7,690	11,331	10,871	12,451	6,470	5,293
1970	6,148	5,601	6,500	4,277	4,822	6,543	8,864	9,829	14,032	14,605	13,447	7,013	6,135
1971	4,663	5,664	6,597	4,706	6,021	7,994	9,931	10,989	14,792	15,434	14,251	7,759	6,564
1972	5,465	6,269	7,198	5,866	6,300	7,370	9,552	10,950	14,491	14,653	13,580	7,462	6,586
1973	5,267	6,101	6,908	5,149	6,404	7,527	9,797	9,630	13,382	15,046	13,930	7,437	6,430
1974	5,122	6,084	6,993	5,605	5,978	7,500	9,491	8,994	12,729	15,091	13,922	7,462	6,333
1975	5,140	6,067	7,811	5,005	6,018	7,644	9,930	11,049	14,371	15,492	14,259	7,798	6,672
1976	5,449	6,286	7,187	5,876	6,295	5,940	7,339	7,757	9,929	12,209	9,597	5,134	5,370
1977	3,596	5,660	6,845	729	5,167	2,896	2,825	3,158	4,504	4,874	4,373	2,706	2,856
1978	1,878	1,024	2,518	5,500	2,122	5,280	6,313	6,696	10,344	13,540	12,377	6,471	4,468
1979	4,440	5,378	6,266	5,324	5,585	7,041	8,705	8,268	13,713	14,491	13,335	6,890	5,999
1980	4,575	5,513	6,453	5,368	5,456	5,445	6,262	7,455	12,117	11,510	12,500	6,479	5,378
1981	4,424	5,395	7,376	4,618	5,541	6,735	8,757	9,745	13,853	14,426	13,276	6,912	6,097
1982	4,641	5,614	6,533	4,664	6,467	7,392	8,355	9,742	13,008	13,793	13,978	7,647	6,144
1983	6,636	6,012	6,944	4,448	4,628	4,948	6,594	6,273	9,410	10,105	11,950	6,086	5,070
1984	4,460	4,341	5,242	3,218	4,144	6,341	8,572	9,723	13,873	14,473	13,305	6,949	5,710
1985	4,571	5,530	7,545	4,710	5,777	6,692	9,393	10,061	13,815	14,393	13,267	7,346	6,220
1986	5,164	5,996	6,815	5,100	5,763	6,409	8,213	9,257	11,784	14,091	13,085	7,016	5,954
1987	4,977	5,978	6,793	4,971	6,085	7,293	9,245	10,043	13,248	13,857	12,365	6,894	6,139
1988	5,009	5,291	6,882	4,979	6,040	5,586	6,964	6,773	8,894	8,850	8,560	4,389	4,719
1989	3,456	3,991	4,911	3,568	4,423	6,507	8,172	8,311	11,281	11,759	10,864	5,896	5,016
1990	4,722	5,120	6,052	4,538	5,464	4,972	6,057	5,666	8,073	8,729	7,802	4,075	4,300
1991	2,990	2,812	4,276	3,081	3,863	4,133	5,471	6,142	8,495	6,648	10,132	4,897	3,797
DWRSIM Study 771 (2000 REIR/EIS)													
1967	6,652	5,462	4,066	4,098	5,510	6,310	6,604	7,936	11,192	12,702	13,596	11,041	5,742
1968	7,969	5,747	5,627	5,595	5,980	7,058	8,134	9,758	12,991	13,336	12,295	8,319	6,203
1969	6,034	4,958	4,277	4,375	3,547	4,635	6,554	7,790	10,940	12,588	13,791	9,075	5,343
1970	6,928	5,075	4,245	5,546	5,474	7,091	8,117	9,758	12,991	13,401	12,328	8,369	5,992
1971	6,034	4,958	4,261	5,595	6,158	7,904	9,092	10,994	14,553	15,076	13,807	9,512	6,513
1972	7,009	5,815	5,481	6,310	6,224	7,644	8,756	10,587	13,948	14,295	13,206	8,588	6,508
1973	7,140	5,731	5,042	3,789	5,762	7,497	8,621	10,376	12,789	14,263	13,092	8,991	6,220
1974	6,554	5,445	6,505	5,139	6,356	7,562	8,571	10,376	13,444	14,767	13,515	9,142	6,478
1975	6,700	6,403	6,278	5,790	6,374	7,969	9,193	11,108	14,738	15,271	13,970	9,613	6,842
1976	7,058	5,831	7,416	5,822	5,754	6,489	7,310	8,961	11,764	11,856	11,140	8,251	5,892
1977	6,050	5,159	4,407	2,098	2,125	2,618	3,462	3,887	4,840	3,806	5,220	3,546	2,849
1978	2,716	2,218	1,789	1,496	4,105	4,977	5,899	7,172	12,369	14,621	13,889	8,873	4,834
1979	6,619	6,386	4,733	5,660	5,402	6,928	7,999	9,465	12,839	13,238	12,181	8,151	6,009
1980	5,920	4,823	4,163	4,277	3,460	3,952	5,226	6,538	10,873	10,978	11,628	7,898	4,811
1981	5,952	4,638	5,123	5,025	5,924	7,058	8,201	9,872	13,159	13,580	12,425	8,386	5,994
1982	6,066	4,974	4,310	4,424	6,842	7,400	7,226	8,815	12,570	14,783	13,873	9,545	6,083
1983	7,074	5,176	6,635	3,139	3,079	3,984	6,016	6,326	9,361	10,197	12,441	7,646	4,892
1984	4,602	3,680	3,497	5,074	5,302	7,042	8,134	9,758	13,058	13,450	12,360	8,268	5,685
1985	5,985	4,857	6,554	5,595	6,392	7,562	8,772	10,604	14,016	14,442	12,750	8,151	6,376
1986	7,790	5,882	5,025	3,106	3,547	4,830	5,999	7,302	9,781	12,458	11,596	8,335	5,168
1987	6,196	5,210	4,424	4,619	5,726	6,603	7,999	9,742	12,722	13,011	12,051	8,638	5,849
1988	6,375	3,613	5,904	2,732	3,755	4,163	5,596	6,456	8,268	8,294	7,741	5,495	4,126
1989	4,472	3,613	2,879	2,423	2,305	2,814	8,604	10,197	13,243	10,766	11,287	8,352	4,884
1990	7,514	5,025	5,611	2,879	3,115	4,066	5,495	6,359	8,201	8,619	7,725	5,647	4,239
1991	4,326	3,596	2,992	2,098	1,981	2,423	3,361	3,757	4,739	4,716	4,489	3,479	2,531
Change: DWRSIM 771 - DWRSIM 409													
1967	1,544	-606	-2,126	-955	37	674	-1,040	-192	-913	-383	936	4,352	80
1968	1,375	392	-322	1,892	1,145	578	-633	33	-882	-1,090	-984	1,399	175
1969	1,383	-665	-2,239	-224	-1,711	-906	-173	100	-391	1,716	1,340	2,605	50
1970	780	-526	-2,255	1,269	652	548	-747	-71	-1,042	-1,204	-1,120	1,356	-142
1971	1,371	-707	-2,336	888	137	-91	-839	5	-239	-358	-444	1,753	-52
1972	1,544	-454	-1,717	444	-76	274	-797	-362	-543	-358	-374	1,125	-78
1973	1,873	-370	-1,866	-1,360	-642	-30	-1,176	746	-593	-783	-838	1,553	-210
1974	1,432	-639	-488	-466	378	62	-920	1,382	715	-324	-408	1,680	145
1975	1,561	335	-1,534	784	356	325	-737	59	367	-221	-289	1,815	170
1976	1,610	-454	229	-54	-541	549	-28	1,204	1,834	-353	1,543	3,117	522
1977	2,454	-501	-2,438	1,369	-3,042	-278	637	729	336	-1,069	848	840	-7
1978	838	1,195	-729	-4,004	1,983	-303	-414	476	2,025	1,080	1,512	2,402	366
1979	2,179	1,008	-1,533	336	-184	-113	-705	1,197	-874	-1,253	-1,154	1,261	10
1980	1,344	-690	-2,290	-1,090	-1,996	-1,494	-1,036	-917	-1,244	-532	-872	1,420	-567
1981	1,528	-757	-2,253	407	383	323	-556	127	-694	-846	-851	1,473	-103
1982	1,425	-639	-2,223	-240	375	8	-1,129	-927	-438	990	-105	1,899	-61
1983	439	-836	-309	-1,309	-1,549	-964	-578	53	-49	92	492	1,561	-178
1984	143	-661	-1,745	1,856	1,158	701	-439	35	-816	-1,024	-945	1,319	-25
1985	1,414	-673	-991	885	615	870	-621	542	200	48	-516	804	156
1986	2,626	-114	-1,790	-1,994	-2,216	-1,579	-2,213	-1,955	-2,003	-1,633	-1,489	1,319	-787
1987	1,219	-769	-2,369	-352	-359	-690	-1,246	-301	-526	-846	-314	1,744	-290
1988	1,366	-1,677	-978	-2,247	-2,285	-1,423	-1,367	-317	-626	-556	-819	1,107	-593
1989	1,016	-378	-2,033	-1,145	-2,119	-3,693	433	1,886	1,962	-992	423	2,456	-132
1990	2,792	-95	-441	-1,660	-2,349	-906	-561	693	128	-109	-77	1,571	-61
1991	1,336	784	-1,284	-983	-1,883	-1,709	-2,109	-2,385	-3,756	-1,932	-5,643	-1,418	-1,266

Note: See "Notes and Acronyms" at end of tables section.

C-062695

Table 3-9. South-of-Delta SWP and CVP Deliveries (Exports/Interruptible/Local/Changes in Reservoirs) (cfs) for DWRSIM Study 771

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
1922	7,011	5,600	5,038	4,611	5,665	6,692	7,939	8,860	13,069	14,720	13,331	8,715	6,109
1923	6,377	5,129	6,844	5,456	4,458	6,286	8,645	10,210	13,540	13,955	12,859	8,799	6,188
1924	6,474	5,297	4,583	3,179	2,757	3,570	4,729	5,559	7,104	7,076	6,793	5,237	3,762
1925	3,856	3,348	2,761	1,521	2,099	5,164	6,998	8,226	10,734	11,207	10,095	6,850	4,396
1926	5,255	4,188	3,607	2,968	3,090	5,359	7,199	9,088	11,927	12,183	11,298	8,077	5,082
1927	5,938	4,944	4,209	3,228	6,853	7,392	8,577	10,291	13,473	14,297	13,054	8,631	6,087
1928	6,247	5,079	5,738	5,554	5,886	7,180	8,426	10,178	13,523	13,890	12,811	8,782	6,232
1929	6,442	5,297	4,567	3,066	3,306	4,334	5,838	6,795	8,784	8,979	8,306	5,993	4,326
1930	4,555	3,734	3,136	2,415	3,900	5,180	7,670	9,104	11,826	12,118	11,200	8,144	5,007
1931	6,117	5,079	4,339	2,561	2,658	3,326	4,578	5,299	6,784	6,068	6,891	4,850	3,532
1932	3,677	3,096	2,550	1,830	3,348	4,497	6,090	7,120	9,221	9,402	8,680	6,228	3,966
1933	4,702	3,885	3,266	2,285	2,370	2,724	4,527	5,266	6,717	6,653	6,322	4,850	3,232
1934	3,628	3,129	2,550	1,683	2,478	3,976	5,368	6,258	8,045	8,166	7,558	5,556	3,523
1935	4,246	3,532	2,957	2,074	3,090	4,172	7,653	10,259	13,775	14,183	13,054	8,749	5,294
1936	6,312	5,179	4,485	2,968	3,383	7,684	7,922	9,234	13,557	14,004	12,843	8,598	5,802
1937	6,198	5,112	4,388	3,245	4,944	6,497	6,292	7,039	12,028	13,370	12,290	8,211	5,407
1938	5,954	4,826	3,786	5,668	5,376	6,611	7,065	8,193	11,557	13,679	13,900	10,866	5,881
1939	8,101	6,272	5,673	5,651	5,611	6,513	7,636	9,218	12,280	12,557	11,623	7,909	5,976
1940	5,743	4,658	3,965	2,545	3,696	6,530	9,031	10,649	14,195	14,639	13,152	9,135	5,909
1941	6,718	5,566	4,648	3,635	4,800	6,269	8,897	9,055	12,565	14,411	10,176	8,497	5,746
1942	7,808	4,911	4,144	5,424	5,665	6,985	8,056	9,657	11,322	14,021	12,778	8,396	5,983
1943	7,775	6,053	5,364	4,968	6,079	5,863	7,351	7,039	12,028	13,272	12,209	8,245	5,807
1944	6,019	4,877	4,193	5,847	5,365	6,790	7,788	9,397	12,549	12,866	11,900	8,009	5,768
1945	5,808	4,709	4,030	3,749	5,755	7,034	8,157	9,803	12,649	13,516	12,420	8,329	5,790
1946	6,052	4,927	4,241	6,253	5,106	7,505	8,846	10,665	14,179	14,704	13,445	9,018	6,331
1947	6,653	5,415	4,746	4,106	5,611	6,627	8,830	10,698	14,179	13,939	12,095	9,152	6,157
1948	7,710	6,289	5,055	2,757	2,740	3,261	6,326	11,153	14,666	14,801	13,071	9,808	5,891
1949	7,938	6,087	5,347	3,537	3,558	4,806	8,359	9,852	12,868	13,289	12,193	8,530	5,814
1950	6,474	5,280	4,583	2,805	3,810	5,261	8,661	10,275	13,456	13,874	12,794	9,018	5,810
1951	6,751	5,465	4,388	6,221	6,745	7,636	8,779	10,633	14,061	14,508	13,347	9,253	6,503
1952	6,848	5,633	4,843	4,611	4,565	6,172	6,796	7,949	11,238	15,126	13,705	8,951	5,818
1953	6,865	5,011	4,404	5,700	6,151	7,001	8,309	10,080	13,473	13,972	12,778	8,497	6,168
1954	6,182	6,860	5,429	5,651	6,601	7,587	8,981	10,861	14,363	14,850	13,624	9,354	6,657
1955	6,930	5,684	4,973	4,269	5,629	5,814	7,418	8,942	11,691	12,069	11,087	7,741	5,565
1956	5,808	4,726	3,737	4,090	6,704	6,839	8,712	10,129	13,725	15,338	14,014	9,539	6,236
1957	7,076	5,784	5,412	6,448	6,385	7,603	8,729	10,584	13,977	14,395	13,282	9,219	6,570
1958	6,832	5,616	4,876	5,944	5,791	7,327	7,670	8,519	10,582	14,183	12,924	8,581	5,964
1959	8,946	6,171	5,461	5,245	5,953	5,895	8,275	9,934	13,254	13,712	11,022	8,346	6,167
1960	6,100	4,961	4,290	2,968	2,844	6,660	8,443	10,259	13,439	13,809	12,469	8,967	5,744
1961	6,702	5,549	4,811	3,212	4,152	6,237	8,140	9,820	12,817	12,606	10,729	8,514	5,628
1962	6,426	5,280	4,567	2,838	2,730	7,733	9,535	11,479	15,271	15,679	12,453	9,976	6,273
1963	7,320	6,087	5,364	4,497	6,403	7,359	8,577	10,389	13,221	14,769	13,494	9,068	6,428
1964	6,686	5,616	6,941	5,782	5,174	5,830	8,594	10,194	13,439	12,963	11,249	8,329	6,081
1965	7,418	6,137	4,859	3,781	5,358	7,424	7,804	10,291	13,574	14,037	12,908	9,001	6,190
1966	6,686	5,482	7,088	5,326	6,457	7,636	8,863	10,682	14,195	14,541	11,444	9,001	6,480
1967	6,621	5,431	4,030	4,074	5,485	6,237	6,561	7,933	11,170	12,687	13,575	10,950	5,717
1968	7,971	5,684	5,559	5,586	5,852	7,001	8,090	9,738	12,969	13,370	12,258	8,261	6,174
1969	6,003	4,911	4,225	4,350	3,504	4,578	6,510	7,754	10,902	12,524	13,754	8,984	5,309
1970	6,897	5,028	4,176	5,521	5,467	6,969	8,073	9,722	12,985	13,386	12,274	8,261	5,959
1971	6,019	4,911	4,209	5,554	6,133	7,847	9,065	10,958	14,498	15,061	13,770	9,438	6,484
1972	7,011	5,734	5,461	6,253	6,182	7,571	8,678	10,535	13,876	14,281	13,120	8,665	6,478
1973	6,979	5,667	4,990	3,765	5,899	7,408	8,577	10,340	12,733	14,199	13,054	8,934	6,187
1974	6,539	5,381	6,437	5,115	6,331	7,440	8,561	10,340	13,406	14,752	13,477	9,085	6,447
1975	6,686	6,322	6,226	5,765	6,349	7,847	9,166	11,072	14,700	15,257	13,965	9,505	6,809
1976	7,060	5,768	7,380	5,798	5,660	6,351	7,132	8,779	11,490	11,614	10,924	8,060	5,793
1977	5,938	5,062	4,306	2,074	2,099	2,578	3,418	3,867	4,835	3,547	5,183	3,506	2,800
1978	2,701	2,154	1,769	1,472	4,080	4,936	5,855	7,136	12,347	14,622	13,868	8,816	4,812
1979	6,572	6,356	4,664	5,635	5,376	6,871	7,956	9,446	12,801	13,191	12,144	8,093	5,979
1980	5,905	4,759	4,111	4,253	3,418	3,846	5,166	6,502	10,834	10,947	11,591	7,841	4,777
1981	5,889	4,591	5,071	4,985	5,917	7,018	8,174	9,836	13,120	13,533	12,388	8,295	5,962
1982	6,052	4,927	4,258	4,383	6,835	7,343	7,199	8,779	12,498	14,769	13,851	9,488	6,056
1983	7,027	5,129	6,583	3,098	3,018	3,928	5,956	6,291	9,305	10,166	12,404	7,556	4,854
1984	4,588	3,633	3,445	5,050	5,261	6,985	8,107	9,722	12,985	13,419	12,323	8,194	5,654
1985	5,986	4,810	6,502	5,570	6,367	7,489	8,729	10,584	13,977	14,378	12,745	8,093	6,349
1986	7,775	5,818	4,990	3,082	3,450	4,790	5,956	7,283	9,776	12,476	11,607	8,278	5,145
1987	6,198	5,179	4,306	4,529	5,683	6,546	7,905	9,592	12,549	12,850	11,884	8,497	5,775
1988	6,328	3,936	5,656	2,724	3,748	4,172	5,620	6,470	8,364	8,589	7,834	5,539	4,162
1989	4,246	3,432	2,892	2,415	2,244	2,757	8,577	10,161	13,221	10,947	11,266	8,295	4,854
1990	7,483	4,188	5,998	3,488	3,090	4,025	5,435	6,339	8,146	8,280	7,655	5,606	4,207
1991	4,279	3,532	2,957	2,074	1,955	2,366	3,301	3,705	4,717	4,669	4,451	3,422	2,499
1992	2,620	2,104	1,737	1,342	1,905	3,131	5,267	6,128	7,893	7,987	7,444	5,505	3,201
1993	4,198	3,482	2,924	2,318	4,962	7,782	8,897	9,608	13,288	14,980	13,152	8,698	5,689
1994	6,344	5,095	6,844	5,440	5,575	5,229	7,972	9,348	12,448	11,483	10,778	7,942	5,701
Minimum	2,620	2,104	1,737	1,342	1,905	2,366	3,301	3,705	4,717	3,547	4,451	3,422	2,499
Average	6,209	4,994	4,629	4,081	4,698	5,971	7,493	8,947	12,010	12,662	11,677	8,155	5,522
Maximum	8,946	6,860	7,380	6,448	6,853	7,847	9,535	11,479	15,271	15,679	14,014	10,950	6,809

Note: See "Notes and Acronyms" at end of tables section.

C-062696

Table 3-10. South-of-Delta SWP and CVP Delivery Deficits (cfs) for DWRSIM Study 771

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
1922	360	335	305	43	1,141	506	429	464	677	802	629	262	359
1923	206	124	191	317	717	799	1,101	1,212	1,736	2,070	1,605	649	647
1924	525	328	461	1,982	3,493	3,797	5,290	6,208	8,565	9,345	8,063	4,616	3,178
1925	3,450	2,570	2,575	3,641	4,274	2,204	3,022	3,541	4,936	5,182	4,713	2,969	2,599
1926	2,068	1,747	1,729	1,960	3,022	1,748	2,536	2,302	3,299	3,771	3,094	1,372	1,728
1927	1,027	664	835	1,418	691	457	647	707	1,013	1,208	938	380	603
1928	314	192	256	447	1,136	951	1,118	1,244	1,770	2,119	1,654	665	716
1929	542	328	477	2,096	3,068	3,033	4,181	4,972	6,885	7,443	6,551	3,843	2,620
1930	2,751	2,184	2,201	2,747	2,474	2,187	2,349	2,663	3,843	4,287	3,623	1,725	1,993
1931	1,206	856	998	2,600	3,716	4,041	5,442	6,452	8,868	9,768	8,405	4,952	3,457
1932	3,646	2,805	2,787	2,817	2,345	2,297	3,304	3,819	5,456	5,995	5,162	2,649	2,599
1933	1,816	1,331	1,427	2,626	3,724	4,383	5,208	6,108	8,492	9,268	8,022	4,515	3,434
1934	3,303	2,462	2,494	3,479	3,878	3,391	4,652	5,509	7,608	8,223	7,234	4,246	3,408
1935	3,044	2,385	2,380	2,573	2,707	2,622	1,840	1,000	1,450	1,761	1,345	531	1,426
1936	428	276	400	1,679	1,789	652	899	984	1,400	1,680	1,312	531	726
1937	428	259	368	1,061	2,061	1,238	1,017	1,130	1,618	1,940	1,491	598	797
1938	493	309	433	703	747	7	0	0	0	0	0	0	162
1939	0	8	18	30	1,090	1,205	1,454	1,602	2,291	2,737	2,126	867	810
1940	688	428	611	2,366	2,284	717	882	968	1,400	1,664	1,573	531	851
1941	428	259	368	597	593	1	1	0	0	233	2,922	0	326
1942	6	0	21	30	730	733	1,017	756	1,081	1,306	1,003	413	428
1943	339	209	302	471	744	815	1,118	1,228	1,753	2,103	1,638	665	687
1944	542	331	470	755	1,288	945	1,302	1,423	2,038	2,444	1,898	783	858
1945	623	377	546	898	1,412	815	1,050	1,163	1,669	1,989	1,540	632	767
1946	515	309	451	724	735	642	697	756	1,081	1,306	1,003	413	521
1947	330	210	298	1,055	2,149	1,813	1,151	1,260	1,803	2,168	2,126	682	908
1948	542	343	481	2,422	3,545	4,123	3,660	838	1,215	1,485	1,134	430	1,220
1949	363	225	335	1,673	2,834	2,561	1,660	1,898	2,784	3,084	2,631	1,288	1,287
1950	848	654	754	2,357	2,564	2,106	1,358	1,492	2,196	2,515	2,046	835	1,190
1951	588	369	526	779	727	772	1,050	1,163	1,652	1,973	1,540	632	710
1952	509	318	445	691	57	0	0	0	0	0	0	0	122
1953	3	10	25	26	709	817	899	886	1,282	1,534	1,182	481	474
1954	401	242	354	551	835	805	849	935	1,349	1,615	1,247	514	585
1955	411	268	363	1,049	1,437	1,455	2,116	2,449	3,518	3,885	3,322	1,692	1,325
1956	1,173	883	981	860	764	441	613	675	980	1,160	906	363	591
1957	298	184	266	421	1,088	805	1,101	1,212	1,736	2,087	1,621	665	693
1958	525	335	461	732	1,070	473	647	707	1,013	1,208	938	380	512
1959	314	196	291	443	907	671	933	1,033	1,467	1,761	2,825	565	688
1960	450	276	403	2,194	3,406	2,090	1,375	1,508	2,213	2,564	2,290	835	1,183
1961	588	385	526	1,950	2,474	2,220	1,677	1,947	2,835	3,767	4,046	1,305	1,431
1962	881	654	770	2,324	3,644	1,147	630	691	997	1,241	2,922	380	982
1963	298	192	254	431	735	799	664	740	1,047	1,257	971	397	470
1964	314	194	282	454	990	1,042	1,437	1,586	2,257	3,014	2,922	850	926
1965	688	436	591	1,186	1,070	1,439	2,013	1,475	2,112	2,385	1,964	902	981
1966	669	469	591	691	717	496	681	740	1,064	1,452	2,922	397	657
1967	330	194	282	459	693	782	781	138	190	233	174	77	261
1968	54	49	76	101	799	817	1,118	1,228	1,753	2,103	1,638	665	627
1969	548	326	468	739	446	0	0	0	0	0	0	0	152
1970	3	10	25	26	781	850	1,134	1,244	1,770	2,119	1,654	682	621
1971	548	326	484	746	493	561	765	838	1,198	1,436	1,117	447	541
1972	363	234	315	519	1,129	838	1,139	1,228	1,776	2,119	1,639	665	722
1973	556	352	477	1,195	943	750	1,000	1,098	1,568	1,875	1,459	598	716
1974	477	292	412	675	843	691	681	756	1,081	1,290	1,003	413	520
1975	330	210	298	470	1,088	545	664	724	1,030	1,241	955	397	480
1976	314	201	282	454	1,615	1,911	2,685	2,988	4,179	4,792	3,916	1,793	1,516
1977	1,369	873	1,030	3,072	4,274	4,773	6,568	7,867	10,767	12,110	10,193	6,296	4,175
1978	4,670	3,679	3,567	2,988	1,205	717	513	0	0	0	0	0	1,046
1979	0	0	0	30	1,378	847	1,101	1,212	1,753	2,087	1,621	665	645
1980	525	327	464	743	1,156	799	1,085	1,195	1,719	2,054	1,589	649	742
1981	531	326	470	735	889	801	1,034	1,130	1,618	1,940	1,508	615	700
1982	499	309	435	678	709	799	647	707	1,013	1,208	938	380	502
1983	319	192	284	434	467	1	1	0	0	0	0	0	102
1984	6	0	21	30	870	717	983	1,098	1,568	1,875	1,459	598	557
1985	477	293	416	665	1,070	903	1,101	1,212	1,719	2,070	1,654	649	738
1986	525	335	461	1,785	1,967	1,221	1,689	1,862	2,643	3,144	2,467	1,035	1,154
1987	818	494	660	1,413	1,825	1,862	1,912	2,175	3,104	3,539	2,924	1,356	1,332
1988	995	705	851	2,519	2,502	3,196	4,383	5,265	7,271	7,768	6,941	4,246	2,814
1989	3,044	2,452	2,445	2,747	4,130	4,611	1,442	1,589	2,415	4,320	3,526	919	2,030
1990	588	385	559	2,357	3,302	3,407	4,568	5,411	7,490	8,093	7,136	4,213	2,866
1991	3,028	2,385	2,380	3,072	4,400	4,985	6,685	8,030	10,935	11,704	10,340	6,397	4,485
1992	4,751	3,746	3,600	3,570	4,092	3,976	4,468	5,262	7,332	7,967	6,981	3,910	3,599
1993	2,751	2,109	2,120	2,235	781	408	244	252	375	444	711	145	759
1994	119	74	91	186	1,180	961	1,319	1,456	2,089	3,762	2,922	800	903
Minimum	0	0	0	26	57	0	0	0	0	0	0	0	102
Average	924	668	754	1,301	1,734	1,493	1,709	1,855	2,614	3,015	2,652	1,247	1,205
Maximum	4,751	3,746	3,600	3,641	4,400	4,985	6,685	8,030	10,935	12,110	10,340	6,397	4,485

Note: See "Notes and Acronyms" at end of tables section.

Table 3-11. Available Water for Delta Wetlands Diversions under the 1995 Water Quality Control Plan and Delta Wetlands Final Operations Criteria (cfs)

Delta Wetlands%	90%	90%	90%	90%	75%	50%	0%	0%	50%	75%	90%	90%	
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Oct - Mar (TAF)
1922	0	0	416	2,102	2,783	2,376	0	0	2,024	0	0	0	461
1923	0	0	14,793	14,456	0	0	0	0	0	51	0	0	1,755
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	7,038	0	0	0	0	0	0	0	422
1926	0	0	0	109	2,128	0	0	0	0	0	0	0	134
1927	0	3,199	0	9,823	19,849	2,314	0	0	0	0	0	0	2,111
1928	0	1,218	0	7,132	2,213	6,505	0	0	0	0	0	0	1,024
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	4,583	0	0	0	0	0	0	0	0	275
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	1,639	2,613	0	0	0	0	0	0	0	0	255
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	187	0	0	0	0	0	0	0	0	11
1935	0	0	0	8,347	0	0	0	0	0	0	0	0	501
1936	0	0	0	11,104	11,508	991	0	0	0	0	0	0	1,416
1937	0	0	0	0	4,068	5,623	0	0	0	0	0	0	582
1938	0	4,954	16,329	14,297	34,940	23,535	0	0	3,733	0	46	0	5,643
1939	2,728	0	4,084	6,033	960	0	0	0	0	0	0	0	828
1940	0	0	0	7,990	7,278	6,453	0	0	0	64	0	0	1,303
1941	0	0	12,873	19,842	25,504	8,897	0	0	160	0	924	0	4,027
1942	943	0	18,671	30,505	26,316	2,435	0	0	1,021	0	60	0	4,732
1943	0	1,611	9,493	33,337	12,955	13,773	0	0	0	0	0	0	4,270
1944	0	0	0	3,019	4,826	807	0	0	0	0	0	0	519
1945	0	0	0	0	6,376	3,221	0	0	0	0	0	0	576
1946	0	0	19,160	15,044	0	422	0	0	0	51	0	0	2,078
1947	0	0	0	0	0	0	0	0	0	0	75	0	0
1948	0	0	0	0	0	0	0	0	0	51	60	0	0
1949	0	0	0	0	0	913	0	0	0	64	0	0	55
1950	0	0	0	3,154	1,809	0	0	0	0	39	46	0	298
1951	0	17,887	30,714	25,622	11,740	2,904	0	0	0	0	46	0	5,332
1952	0	0	14,999	26,244	18,474	10,332	0	0	3,724	3,272	2,844	616	4,203
1953	35	0	19,142	24,419	4,286	582	0	0	0	0	60	0	2,908
1954	0	0	0	11,483	11,922	2,065	0	0	0	0	46	0	1,528
1955	0	0	6,181	5,280	0	0	0	0	0	0	0	0	688
1956	0	0	26,198	44,925	16,820	3,143	0	0	0	51	60	0	5,465
1957	3,036	0	0	302	3,746	1,932	0	0	0	51	0	0	541
1958	0	0	4,922	12,589	21,123	12,257	0	0	3,362	613	3,168	0	3,053
1959	328	0	0	16,242	10,196	0	0	0	0	0	46	0	1,606
1960	0	0	0	0	0	0	0	0	0	0	60	0	0
1961	0	0	0	0	821	0	0	0	0	0	75	0	49
1962	0	0	0	0	5,656	0	0	0	0	0	60	0	339
1963	9,363	0	6,732	2,340	12,345	0	0	0	0	0	0	0	1,847
1964	0	8,478	0	7,615	0	0	0	0	0	0	60	0	966
1965	0	0	19,957	30,729	2,679	0	0	0	0	64	60	0	3,202
1966	0	5,317	1,740	11,108	3,455	496	0	0	0	0	46	0	1,327
1967	0	356	12,744	18,126	8,052	4,098	0	0	5,371	5,467	2,178	87	2,603
1968	738	0	2,686	14,755	12,139	1,425	0	0	0	0	0	0	1,905
1969	0	0	6,184	36,108	32,869	11,112	0	0	2,818	417	1,846	3,535	5,176
1970	313	1,388	20,689	48,182	21,438	4,321	0	0	0	0	0	0	5,780
1971	0	5,499	17,922	13,754	0	1,567	0	0	0	51	46	0	2,324
1972	0	0	3,159	2,100	215	0	0	0	0	0	60	0	328
1973	0	3,472	6,486	19,565	17,114	5,314	0	0	0	0	0	0	3,117
1974	0	14,891	17,861	26,204	8,820	9,919	0	0	0	1,015	2,816	828	4,662
1975	0	0	0	2,822	12,342	9,054	0	0	598	0	1,802	0	1,453
1976	3,475	0	0	0	454	0	0	0	0	0	0	0	236
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	17,771	7,920	6,460	0	0	0	0	0	0	1,929
1979	0	0	0	8,337	9,089	3,895	0	0	0	0	0	0	1,279
1980	0	0	3,219	30,753	32,228	9,507	0	0	0	0	46	0	4,542
1981	0	0	2,540	13,671	3,648	1,352	0	0	0	0	0	0	1,273
1982	0	10,999	16,249	25,857	20,195	12,695	0	0	877	1,625	2,692	4,549	5,160
1983	8,819	18,142	38,390	52,532	47,491	36,495	0	0	11,835	14,121	6,707	11,086	12,112
1984	12,416	37,108	52,339	32,698	8,293	3,082	0	0	0	0	0	0	8,756
1985	0	10,277	5,473	0	640	0	0	0	0	0	60	0	983
1986	0	0	0	4,819	46,285	18,154	0	0	0	0	0	0	4,155
1987	0	0	0	0	806	25	0	0	0	0	60	0	50
1988	0	0	0	7,394	0	0	0	0	0	0	0	0	444
1989	0	0	0	0	0	0	0	0	0	0	60	0	0
1990	0	0	0	1,289	0	0	0	0	0	0	0	0	77
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	717	0	0	0	0	0	0	0	43
1993	0	0	0	21,161	6,303	426	0	0	577	0	60	0	1,673
1994	0	0	0	0	1,442	0	0	0	0	0	0	0	86
Avg ('22-'94)	578	1,984	5,945	11,102	8,114	3,437	0	0	495	371	360	284	1,870

Note: See "Notes and Acronyms" at end of tables section.

Table 3-12. Unused CVP and SWP Permitted Pumping Capacity for Delta Wetlands Exports (cfs)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Jun - Sep (TAF)
1922	3,353	3,108	0	0	0	3,052	0	0	0	4,176	1,494	1,558	434
1923	0	0	0	2,693	7,805	4,582	0	0	3,922	0	3,706	1,613	554
1924	3,971	4,570	1,946	660	2,821	7,424	0	0	9,262	9,852	10,098	6,633	2,151
1925	6,899	6,284	1,537	4,155	0	6,047	0	0	6,472	6,160	5,007	2,919	1,234
1926	5,370	5,662	2,506	0	0	4,590	0	0	5,633	5,396	210	5,322	994
1927	4,394	0	0	0	562	3,678	0	0	3,728	1,184	3,397	1,438	585
1928	32	0	0	0	3,324	3,268	0	0	4,992	1,639	1,332	4,028	719
1929	3,581	1,511	547	347	2,292	6,706	0	0	6,774	9,299	9,626	5,003	1,842
1930	6,704	5,427	0	0	4,270	0	0	0	5,951	5,689	470	4,482	995
1931	4,671	4,956	819	1,636	5,283	7,534	0	0	10,959	10,958	6,991	5,171	2,045
1932	8,753	6,872	0	0	1,552	8,138	0	0	8,959	9,120	6,259	5,407	1,785
1933	5,289	6,334	4,956	967	4,699	6,356	0	0	10,774	10,974	8,048	5,339	2,108
1934	8,232	6,838	839	0	5,245	7,052	0	0	6,892	10,730	7,870	5,087	1,835
1935	8,558	3,998	3,934	0	5,954	253	0	0	2,940	598	4,845	3,272	699
1936	2,670	4,402	4,250	0	0	268	0	0	3,939	1,444	5,040	1,558	719
1937	4,020	4,385	1,456	27	0	3,998	0	0	4,153	4,827	6,146	2,180	1,038
1938	1,694	0	0	1,523	6,558	5,114	0	0	0	484	0	0	29
1939	0	0	4,567	5,966	5,321	4,508	0	0	5,239	4,957	1,462	6,112	1,066
1940	5,695	6,553	6,575	0	0	0	0	0	4,134	0	2,129	2,017	497
1941	3,109	1,629	0	0	651	5,428	0	0	0	3,965	0	0	238
1942	0	0	1,658	7,182	6,301	3,979	0	0	0	2,875	0	0	173
1943	0	0	0	6,559	5,856	5,036	0	0	4,633	3,119	2,698	1,340	707
1944	857	2,066	649	2,526	5,295	3,722	0	0	4,045	972	5,349	5,457	949
1945	4,947	0	0	106	790	3,884	0	0	2,998	452	5,007	3,289	705
1946	1,523	0	0	0	6,674	2,271	0	0	3,275	0	3,153	2,348	527
1947	3,435	1,220	0	628	1,052	2,600	0	0	5,669	5,591	0	1,372	758
1948	3,256	2,738	4,254	0	6,791	4,047	0	0	2,351	0	0	892	195
1949	1,369	2,015	0	706	3,570	0	0	0	3,734	0	4,503	2,953	671
1950	3,841	3,713	3,910	0	0	2,214	0	0	3,316	0	0	804	247
1951	2,833	0	0	0	1,746	3,289	0	0	4,563	712	0	695	358
1952	1,483	0	0	0	7,542	5,525	0	0	0	0	0	0	0
1953	0	3,372	6,932	6,710	5,816	3,727	0	0	1,404	2,452	0	0	231
1954	0	0	0	2,547	4,099	2,946	0	0	4,939	582	0	2,079	456
1955	1,662	0	0	0	3,342	5,071	0	0	4,192	3,688	5,446	3,390	1,003
1956	4,768	2,738	0	0	165	4,438	0	0	204	0	0	0	12
1957	0	1,847	624	83	4,235	3,057	0	0	3,598	0	779	957	320
1958	0	0	0	0	3,748	3,933	0	0	0	0	0	0	0
1959	0	1,175	3,363	5,858	5,500	5,482	0	0	5,816	5,754	0	2,181	825
1960	4,134	4,150	860	923	0	2,481	0	0	5,475	4,957	0	2,197	758
1961	3,223	881	0	0	0	3,579	0	0	5,751	5,672	0	4,045	928
1962	3,906	3,595	0	2,871	0	0	0	0	4,228	923	0	1,930	425
1963	0	0	0	0	0	0	0	0	3,116	13	161	116	204
1964	455	0	0	0	4,698	4,581	0	0	5,886	5,689	0	2,028	816
1965	3,630	0	0	0	0	1,254	0	0	4,504	0	0	586	305
1966	1,190	0	0	1,699	5,461	3,379	0	0	5,663	4,957	0	2,936	813
1967	3,532	0	0	0	0	1,380	0	0	0	0	0	0	0
1968	0	1,091	5,420	5,751	5,344	3,578	0	0	5,845	5,672	242	3,289	903
1969	2,573	750	0	0	3,645	7,119	0	0	0	0	0	0	0
1970	0	4,726	7,253	7,088	6,447	3,912	0	0	5,322	3,395	2,389	2,516	817
1971	2,312	0	0	0	4,427	1,318	0	0	1,981	0	0	0	119
1972	0	957	0	0	2,480	2,732	0	0	5,328	4,306	0	2,508	729
1973	1,565	0	0	0	0	903	0	0	3,010	354	2,828	127	379
1974	0	0	0	1,453	5,521	3,582	0	0	1,210	0	0	0	73
1975	0	717	0	2,736	5,186	3,322	0	0	0	403	0	0	24
1976	0	0	0	705	4,265	4,271	0	0	5,186	5,087	3,674	3,423	1,042
1977	3,971	4,670	4,854	5,630	9,172	8,401	0	0	10,068	10,063	7,186	6,785	2,046
1978	10,558	8,065	1,408	0	0	2,349	0	0	3,239	6,063	1,413	0	643
1979	0	1,629	2,147	0	5,704	3,979	0	0	2,675	2,940	5,154	1,978	765
1980	1,079	0	0	0	7,078	7,053	0	0	3,445	5,054	0	0	510
1981	223	4,234	4,899	5,901	4,977	3,605	0	0	5,751	5,542	600	3,827	943
1982	3,126	0	0	0	0	3,098	0	0	0	0	0	0	0
1983	0	0	1,896	9,121	9,233	7,804	0	0	0	656	0	2,418	184
1984	6,552	7,620	8,210	7,620	6,586	4,030	0	0	3,528	1,070	2,584	553	464
1985	1,089	0	0	0	3,703	2,867	0	0	5,804	5,737	0	2,443	839
1986	3,158	2,267	0	0	0	753	0	0	3,551	4,566	5,040	160	799
1987	593	3,494	2,349	1,581	4,026	2,836	0	0	5,263	4,794	0	4,902	898
1988	4,719	6,233	0	0	7,150	6,848	0	0	6,421	6,453	7,821	5,894	1,595
1989	7,744	4,200	3,516	1,652	8,968	0	0	0	6,051	5,819	0	2,214	845
1990	1,516	4,654	673	0	4,996	5,694	0	0	5,816	8,209	7,365	5,659	1,623
1991	8,118	6,368	6,164	6,718	10,217	0	0	0	10,976	11,072	8,000	6,247	2,178
1992	8,265	7,326	6,850	2,768	0	2,984	0	0	8,556	9,559	10,146	6,919	2,111
1993	8,232	7,359	80	0	0	104	0	0	0	5,054	0	804	352
1994	0	1,931	0	0	2,470	4,942	0	0	5,392	5,315	291	3,205	852
Avg ('22-'94)	2,910	2,470	1,533	1,577	3,570	3,671	0	0	4,226	3,658	2,410	2,419	763

Note: See "Notes and Acronyms" at end of tables section.

Table 3-13. Delta Wetlands Diversions (cfs) with Unlimited Demands

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
1922	0	0	0	1,723	2,409	49	0	0	296	0	0	0	270
1923	0	0	3,871	15	0	0	0	0	0	51	0	0	237
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	4,000	0	0	0	0	0	0	0	241
1926	0	0	0	0	2,128	0	0	0	0	0	0	0	128
1927	0	0	0	3,576	357	49	0	0	0	0	0	0	240
1928	0	1,218	0	2,719	30	49	0	0	0	0	0	0	242
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	2,238	0	0	0	0	0	0	0	0	135
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	1,786	0	0	0	0	0	0	0	0	108
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	4,000	177	0	0	0	0	0	0	252
1937	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1938	0	0	3,871	15	31	49	0	0	296	0	46	0	259
1939	822	0	37	15	31	0	0	0	0	0	0	0	54
1940	0	0	0	0	4,000	177	0	0	0	64	0	0	256
1941	0	0	0	3,871	31	49	0	0	160	0	924	0	303
1942	943	0	2,179	15	31	49	0	0	296	0	60	0	215
1943	0	1,611	1,676	15	31	49	0	0	0	0	0	0	204
1944	0	0	0	0	4,000	177	0	0	0	0	0	0	252
1945	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1946	0	0	3,871	15	0	422	0	0	0	51	0	0	263
1947	0	0	0	0	0	0	0	0	0	0	75	0	5
1948	0	0	0	0	0	0	0	0	0	51	60	0	7
1949	0	0	0	0	0	913	0	0	0	64	0	0	59
1950	0	0	0	0	1,809	0	0	0	0	39	46	0	114
1951	0	0	3,871	15	31	49	0	0	0	0	46	0	242
1952	0	0	3,871	15	30	49	0	0	296	130	115	87	277
1953	35	0	3,319	15	31	49	0	0	0	0	60	0	211
1954	0	0	0	3,668	255	49	0	0	0	0	46	0	242
1955	0	0	3,000	885	0	0	0	0	0	0	0	0	234
1956	0	0	0	3,871	30	49	0	0	0	51	60	0	245
1957	755	0	0	302	2,087	49	0	0	0	51	0	0	195
1958	0	0	3,000	885	31	49	0	0	296	130	115	0	271
1959	137	0	0	3,871	31	0	0	0	0	0	46	0	246
1960	0	0	0	0	0	0	0	0	0	0	60	0	4
1961	0	0	0	0	821	0	0	0	0	0	75	0	54
1962	0	0	0	0	4,000	0	0	0	0	0	60	0	245
1963	0	0	3,000	885	31	0	0	0	0	0	0	0	236
1964	0	3,533	0	28	0	0	0	0	0	0	60	0	218
1965	0	0	0	3,871	31	0	0	0	0	64	60	0	243
1966	0	0	1,740	2,145	31	49	0	0	0	0	46	0	242
1967	0	0	3,871	15	31	49	0	0	296	130	115	87	277
1968	53	0	1,093	15	30	49	0	0	0	0	0	0	75
1969	0	0	0	3,871	31	49	0	0	296	130	115	87	276
1970	53	25	13	15	31	49	0	0	0	0	0	0	11
1971	0	0	3,871	15	0	1,567	0	0	0	51	46	0	334
1972	0	0	3,000	200	30	0	0	0	0	0	60	0	198
1973	0	0	3,000	885	31	49	0	0	0	0	0	0	239
1974	0	4,000	13	15	31	49	0	0	0	1,015	688	87	355
1975	0	0	0	799	31	49	0	0	296	0	649	0	110
1976	137	0	0	0	265	0	0	0	0	0	0	0	24
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1979	0	0	0	3,417	533	49	0	0	0	0	0	0	241
1980	0	0	3,000	885	30	49	0	0	0	0	46	0	242
1981	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1982	0	0	3,871	15	31	49	0	0	296	130	115	87	277
1983	53	25	13	15	31	49	0	0	296	130	115	87	49
1984	53	25	13	15	30	49	0	0	0	0	0	0	11
1985	0	0	3,000	0	640	0	0	0	0	0	60	0	223
1986	0	0	0	2,356	1,708	49	0	0	0	0	0	0	248
1987	0	0	0	0	806	25	0	0	0	0	60	0	54
1988	0	0	0	2,999	0	0	0	0	0	0	0	0	181
1989	0	0	0	0	0	0	0	0	0	0	60	0	4
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	3,871	31	49	0	0	296	0	60	0	259
1994	0	0	0	0	1,442	0	0	0	0	0	0	0	87
Avg ('22-'94)	42	143	850	818	659	80	0	0	47	32	58	7	165

Note: See "Notes and Acronyms" at end of tables section.

Table 3-14. Delta Wetlands Storage (TAF) with Unlimited Demands

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	0	0	0	106	238	238	234	227	238	0	0	0
1923	0	0	238	238	125	0	0	0	0	3	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	222	96	92	86	0	0	0	0
1926	0	0	0	0	118	0	0	0	0	0	0	0
1927	0	0	0	220	238	238	234	227	101	21	0	0
1928	0	72	72	238	238	238	234	227	101	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	138	25	22	17	11	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	110	108	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	.0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	230	238	234	227	101	5	0	0
1937	0	0	0	0	222	238	234	227	101	0	0	0
1938	0	0	238	238	238	238	234	227	238	200	196	191
1939	238	237	238	238	238	112	108	101	0	0	0	0
1940	0	0	0	0	230	238	234	227	101	97	0	0
1941	0	0	0	238	238	238	234	227	230	0	57	52
1942	106	105	238	238	238	238	234	227	238	53	50	45
1943	41	136	238	238	238	238	234	227	101	0	0	0
1944	0	0	0	0	230	238	234	227	101	34	0	0
1945	0	0	0	0	222	238	234	227	101	66	0	0
1946	0	0	238	238	125	148	144	138	12	7	0	0
1947	0	0	0	0	0	0	0	0	0	0	5	0
1948	0	0	0	0	0	0	0	0	0	3	4	0
1949	0	0	0	0	0	56	52	46	0	4	0	0
1950	0	0	0	0	100	0	0	0	0	2	3	0
1951	0	0	238	238	238	238	234	227	101	50	45	0
1952	0	0	238	238	238	238	234	227	238	238	238	238
1953	237	35	238	238	238	238	234	227	137	0	4	0
1954	0	0	0	226	238	238	234	227	101	58	53	0
1955	0	0	184	238	125	0	0	0	0	0	0	0
1956	0	0	0	238	238	238	234	227	208	203	200	195
1957	238	127	106	124	238	238	234	227	101	97	42	0
1958	0	0	184	238	238	238	234	227	238	238	238	233
1959	238	167	0	238	238	112	108	101	0	0	3	0
1960	0	0	0	0	0	0	0	0	0	0	4	0
1961	0	0	0	0	46	0	0	0	0	0	5	0
1962	0	0	0	0	222	219	215	209	83	18	14	0
1963	0	0	184	238	238	235	231	224	98	90	73	61
1964	29	238	237	238	121	0	0	0	0	0	4	0
1965	0	0	0	238	238	207	203	197	71	67	63	23
1966	0	0	107	238	238	238	234	227	101	0	3	0
1967	0	0	238	238	238	238	234	227	238	238	238	238
1968	238	172	238	238	238	238	234	227	101	0	0	0
1969	0	0	0	238	238	238	234	227	238	238	238	238
1970	238	238	238	238	238	238	234	227	101	0	0	0
1971	0	0	238	238	125	219	214	208	83	78	74	69
1972	66	43	227	238	238	112	108	101	0	0	4	0
1973	0	0	184	238	238	238	234	227	101	72	0	0
1974	0	238	238	238	238	238	234	227	148	203	238	238
1975	235	191	190	238	238	238	234	227	238	205	238	233
1976	238	237	236	224	238	112	108	101	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	222	238	234	227	101	0	0	0
1979	0	0	0	210	238	238	234	227	101	0	0	0
1980	0	0	184	238	238	238	234	227	101	0	3	0
1981	0	0	0	238	238	238	234	227	101	0	0	0
1982	0	0	238	238	238	238	234	227	238	238	238	238
1983	238	238	238	238	238	238	234	227	238	238	238	238
1984	238	238	238	238	238	238	234	227	101	28	0	0
1985	0	0	184	184	217	91	87	81	0	0	4	0
1986	0	0	0	145	238	238	234	227	101	0	0	0
1987	0	0	0	0	45	43	39	33	0	0	4	0
1988	0	0	0	184	68	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	4	0
1990	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	238	238	238	234	227	238	0	4	0
1994	0	0	0	0	80	0	0	0	0	0	0	0
Avg ('22-'94)	36	37	87	136	162	142	139	135	80	42	39	35

Note: See "Notes and Acronyms" at end of tables section.

Table 3-15. Delta Wetlands Discharge for Exports (cfs) with Unlimited Demands

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)	Calendar (TAF)
1922	0	0	0	0	0	0	0	0	0	3,741	0	0	225	226
1923	0	0	0	0	2,000	1,988	0	0	0	0	0	0	240	241
1924	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	2,000	0	0	1,320	0	0	0	200	200
1926	0	0	0	0	0	1,873	0	0	0	0	0	0	113	113
1927	0	0	0	0	0	0	0	0	2,000	1,184	220	0	205	205
1928	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1929	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	2,000	0	0	0	71	0	0	0	125	125
1931	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	1,709	0	0	0	0	0	0	103	103
1933	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	2,000	1,444	0	0	207	208
1937	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1938	0	0	0	0	0	0	0	0	0	484	0	0	29	29
1939	0	0	0	0	0	2,000	0	0	1,587	0	0	0	216	216
1940	0	0	0	0	0	0	0	0	2,000	0	1,467	0	209	209
1941	0	0	0	0	0	0	0	0	0	3,609	0	0	217	218
1942	0	0	0	0	0	0	0	0	0	2,875	0	0	173	173
1943	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1944	0	0	0	0	0	0	0	0	2,000	972	431	0	205	205
1945	0	0	0	0	0	0	0	0	2,000	452	952	0	205	205
1946	0	0	0	0	2,000	0	0	0	2,000	0	0	0	241	241
1947	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	647	0	0	0	39	39
1950	0	0	0	0	0	1,585	0	0	0	0	0	0	95	96
1951	0	0	0	0	0	0	0	0	2,000	712	0	674	204	204
1952	0	0	0	0	0	0	0	0	0	0	0	0	0	203
1953	0	3,372	0	0	0	0	0	0	1,404	2,095	0	0	414	211
1954	0	0	0	0	0	0	0	0	2,000	582	0	809	204	205
1955	0	0	0	0	2,000	1,988	0	0	0	0	0	0	240	241
1956	0	0	0	0	0	0	0	0	204	0	0	0	12	143
1957	0	1,847	319	0	0	0	0	0	2,000	0	779	611	335	205
1958	0	0	0	0	0	0	0	0	0	0	0	0	0	234
1959	0	1,175	2,696	0	0	2,000	0	0	1,587	0	0	0	449	216
1960	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	692	0	0	0	0	0	0	42	42
1962	0	0	0	0	0	0	0	0	2,000	923	0	154	185	186
1963	0	0	0	0	0	0	0	0	2,000	13	161	116	138	166
1964	455	0	0	0	2,000	1,923	0	0	0	0	0	0	264	237
1965	0	0	0	0	0	452	0	0	2,000	0	0	586	183	203
1966	322	0	0	0	0	0	0	0	2,000	1,519	0	0	231	212
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	66
1968	0	1,091	0	0	0	0	0	0	2,000	1,519	0	0	278	212
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1971	0	0	0	0	2,000	0	0	0	1,981	0	0	0	240	262
1972	0	354	0	0	0	2,000	0	0	1,587	0	0	0	237	216
1973	0	0	0	0	0	0	0	0	2,000	354	1,049	0	205	205
1974	0	0	0	0	0	0	0	0	1,210	0	0	0	73	116
1975	0	717	0	0	0	0	0	0	0	403	0	0	67	24
1976	0	0	0	168	0	2,000	0	0	1,587	0	0	0	226	227
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1979	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1980	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1981	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	2,000	1,070	334	0	205	205
1985	0	0	0	0	0	2,000	0	0	1,241	0	0	0	195	196
1986	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1987	0	0	0	0	0	0	0	0	432	0	0	0	26	26
1988	0	0	0	0	2,000	1,052	0	0	0	0	0	0	184	184
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	3,741	0	0	225	226
1994	0	0	0	0	0	1,253	0	0	0	0	0	0	76	76
Avg ('22-'94)	11	117	41	2	192	363	0	0	888	567	74	40	138	139

Note: See "Notes and Acronyms" at end of tables section.

Table 3-16. Delta Wetlands Diversions (cfs) Limited by South-of-Delta Delivery Deficits

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
1922	0	0	0	1,723	2,409	49	0	0	296	0	0	0	270
1923	0	0	3,556	15	0	0	0	0	0	51	0	0	218
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	4,000	0	0	0	0	0	0	0	241
1926	0	0	0	0	2,128	0	0	0	0	0	0	0	128
1927	0	0	0	3,576	357	49	0	0	0	0	0	0	240
1928	0	1,218	0	2,719	30	49	0	0	0	0	0	0	242
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	2,238	0	0	0	0	0	0	0	0	135
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	1,786	0	0	0	0	0	0	0	0	108
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	4,000	177	0	0	0	0	0	0	252
1937	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1938	0	0	3,871	15	31	49	0	0	296	0	46	0	259
1939	337	0	37	15	31	0	0	0	0	0	0	0	25
1940	0	0	0	0	4,000	177	0	0	0	64	0	0	256
1941	0	0	0	3,871	31	49	0	0	160	0	377	0	270
1942	137	0	37	15	31	49	0	0	296	0	60	0	38
1943	0	359	13	15	31	49	0	0	0	0	0	0	28
1944	0	0	0	0	4,000	177	0	0	0	0	0	0	252
1945	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1946	0	0	3,871	15	0	422	0	0	0	51	0	0	263
1947	0	0	0	0	0	0	0	0	0	0	75	0	5
1948	0	0	0	0	0	0	0	0	0	51	60	0	7
1949	0	0	0	0	0	913	0	0	0	64	0	0	59
1950	0	0	0	0	1,809	0	0	0	0	39	46	0	114
1951	0	0	3,871	15	31	49	0	0	0	0	46	0	242
1952	0	0	3,871	15	30	49	0	0	296	130	115	87	277
1953	35	0	55	15	31	49	0	0	0	0	60	0	15
1954	0	0	0	3,668	255	49	0	0	0	0	46	0	242
1955	0	0	3,000	885	0	0	0	0	0	0	0	0	234
1956	0	0	0	3,871	30	49	0	0	0	51	60	0	245
1957	755	0	0	302	270	49	0	0	0	51	0	0	86
1958	0	0	3,000	885	31	49	0	0	296	130	115	0	271
1959	137	0	0	52	31	0	0	0	0	0	46	0	16
1960	0	0	0	0	0	0	0	0	0	0	60	0	4
1961	0	0	0	0	821	0	0	0	0	0	75	0	54
1962	0	0	0	0	4,000	0	0	0	0	0	60	0	245
1963	0	0	3,000	885	31	0	0	0	0	0	0	0	236
1964	0	1,893	0	28	0	0	0	0	0	0	60	0	119
1965	0	0	0	3,871	31	0	0	0	0	64	60	0	243
1966	0	0	1,740	2,145	31	49	0	0	0	0	46	0	242
1967	0	0	3,871	15	31	49	0	0	296	130	115	87	277
1968	53	0	37	15	30	49	0	0	0	0	0	0	11
1969	0	0	0	3,871	31	49	0	0	296	130	115	87	276
1970	53	25	13	15	31	49	0	0	0	0	0	0	11
1971	0	0	3,871	15	0	485	0	0	0	51	46	0	269
1972	0	0	2,797	15	30	0	0	0	0	0	60	0	175
1973	0	0	3,000	885	31	49	0	0	0	0	0	0	239
1974	0	4,000	13	15	31	49	0	0	0	1,015	688	87	355
1975	0	0	0	332	31	49	0	0	296	0	649	0	82
1976	137	0	0	0	85	0	0	0	0	0	0	0	13
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1979	0	0	0	721	31	49	0	0	0	0	0	0	48
1980	0	0	3,000	885	30	49	0	0	0	0	46	0	242
1981	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1982	0	0	3,871	15	31	49	0	0	296	130	115	87	277
1983	53	25	13	15	31	49	0	0	296	130	115	87	49
1984	53	25	13	15	30	49	0	0	0	0	0	0	11
1985	0	0	3,000	0	640	0	0	0	0	0	60	0	223
1986	0	0	0	2,356	1,708	49	0	0	0	0	0	0	248
1987	0	0	0	0	806	25	0	0	0	0	60	0	54
1988	0	0	0	2,999	0	0	0	0	0	0	0	0	181
1989	0	0	0	0	0	0	0	0	0	0	60	0	4
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	3,871	31	49	0	0	296	0	60	0	259
1994	0	0	0	0	446	0	0	0	0	0	0	0	27
Avg ('22-'94)	24	103	732	720	612	65	0	0	47	32	51	7	144

Note: See "Notes and Acronyms" at end of tables section.

Table 3-17. Delta Wetlands Storage (TAF) Limited by South-of-Delta Delivery Deficits

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	0	0	0	106	238	238	234	227	238	91	47	25
1923	22	20	238	238	236	233	229	223	97	92	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	222	96	92	86	0	0	0	0
1926	0	0	0	0	118	10	5	0	0	0	0	0
1927	0	0	0	220	238	238	234	227	101	21	0	0
1928	0	72	72	238	238	238	234	227	101	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	138	25	22	17	11	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	110	108	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	230	238	234	227	101	5	0	0
1937	0	0	0	0	222	238	234	227	101	0	0	0
1938	0	0	238	238	238	238	234	227	238	230	226	221
1939	238	237	238	238	238	180	175	169	43	0	0	0
1940	0	0	0	0	230	238	234	227	101	97	0	0
1941	0	0	0	238	238	238	234	227	230	222	238	233
1942	238	237	238	238	238	238	234	227	238	230	227	221
1943	218	238	238	238	238	238	234	227	101	0	0	0
1944	0	0	0	0	230	238	234	227	101	34	0	0
1945	0	0	0	0	222	238	234	227	101	66	0	0
1946	0	0	238	238	210	233	229	223	97	92	0	0
1947	0	0	0	0	0	0	0	0	0	0	5	0
1948	0	0	0	0	0	0	0	0	0	3	4	0
1949	0	0	0	0	0	56	52	46	0	4	0	0
1950	0	0	0	0	100	0	0	0	0	2	3	0
1951	0	0	238	238	238	238	234	227	101	50	45	0
1952	0	0	238	238	238	238	234	227	238	238	238	238
1953	237	235	238	238	238	238	234	227	137	0	4	0
1954	0	0	0	226	238	238	234	227	101	58	53	0
1955	0	0	184	238	158	68	63	57	0	0	0	0
1956	0	0	0	238	238	238	234	227	208	203	200	195
1957	238	223	207	225	238	238	234	227	101	97	42	0
1958	0	0	184	238	238	238	234	227	238	238	238	233
1959	238	237	236	238	238	201	197	191	65	0	3	0
1960	0	0	0	0	0	0	0	0	0	0	4	0
1961	0	0	0	0	46	0	0	0	0	0	5	0
1962	0	0	0	0	222	219	215	209	83	18	14	0
1963	0	0	184	238	238	235	231	224	189	180	163	151
1964	127	238	237	238	236	233	229	223	97	0	4	0
1965	0	0	0	238	238	207	203	197	71	67	63	23
1966	0	0	107	238	238	238	234	227	101	0	3	0
1967	0	0	238	238	238	238	234	227	238	238	238	238
1968	238	237	238	238	238	238	234	227	101	0	0	0
1969	0	0	0	238	238	238	234	227	238	238	238	238
1970	238	238	238	238	238	238	234	227	101	0	0	0
1971	0	0	238	238	211	238	234	227	103	98	93	88
1972	85	67	238	238	238	235	231	224	98	0	4	0
1973	0	0	184	238	238	238	234	227	101	72	0	0
1974	0	238	238	238	238	238	234	227	148	203	238	238
1975	235	219	218	238	238	238	234	227	238	205	238	233
1976	238	237	236	235	238	140	135	129	3	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	222	238	234	227	220	212	205	200
1979	197	195	195	238	238	238	234	227	220	97	0	0
1980	0	0	184	238	238	238	234	227	101	0	3	0
1981	0	0	0	238	238	238	234	227	101	0	0	0
1982	0	0	238	238	238	238	234	227	238	238	238	238
1983	238	238	238	238	238	238	234	227	238	238	238	238
1984	238	238	238	238	238	238	234	227	101	28	0	0
1985	0	0	184	184	217	210	206	199	73	0	4	0
1986	0	0	0	145	238	238	234	227	101	0	0	0
1987	0	0	0	0	45	43	39	33	0	0	4	0
1988	0	0	0	184	68	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	4	0
1990	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	238	238	238	234	227	238	230	227	221
1994	218	217	216	215	238	235	231	224	154	0	0	0
Avg ('22-'94)	48	53	97	141	170	160	156	152	94	61	52	48

Note: See "Notes and Acronyms" at end of tables section.

Table 3-18. Delta Wetlands Discharges for Export (cfs) Limited by South-of-Delta Delivery Deficits

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)	Calendar (TAF)
1922	0	0	0	0	0	0	0	0	0	2,256	602	287	189	190
1923	0	0	0	0	0	0	0	0	2,000	0	1,378	0	204	204
1924	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	2,000	0	0	1,320	0	0	0	200	200
1926	0	0	0	0	0	1,711	0	0	0	0	0	0	103	103
1927	0	0	0	0	0	0	0	0	2,000	1,184	220	0	205	205
1928	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1929	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	2,000	0	0	0	71	0	0	0	125	125
1931	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	1,709	0	0	0	0	0	0	103	103
1933	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	2,000	1,444	0	0	207	208
1937	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1938	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	895	0	0	2,000	575	0	0	209	209
1940	0	0	0	0	0	0	0	0	2,000	0	1,467	0	209	209
1941	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1944	0	0	0	0	0	0	0	0	2,000	972	431	0	205	205
1945	0	0	0	0	0	0	0	0	2,000	452	952	0	205	205
1946	0	0	0	0	470	0	0	0	2,000	0	1,376	0	232	232
1947	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	647	0	0	0	39	39
1950	0	0	0	0	0	1,585	0	0	0	0	0	0	95	96
1951	0	0	0	0	0	0	0	0	2,000	712	0	674	204	204
1952	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	1,404	2,095	0	0	211	211
1954	0	0	0	0	0	0	0	0	2,000	582	0	809	204	205
1955	0	0	0	0	1,414	1,415	0	0	844	0	0	0	221	222
1956	0	0	0	0	0	0	0	0	204	0	0	0	12	41
1957	0	229	244	0	0	0	0	0	2,000	0	779	611	233	205
1958	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	549	0	0	2,000	921	0	0	209	209
1960	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	692	0	0	0	0	0	0	42	42
1962	0	0	0	0	0	0	0	0	2,000	923	0	154	185	186
1963	0	0	0	0	0	0	0	0	483	13	161	116	47	67
1964	337	0	0	0	0	0	0	0	2,000	1,442	0	0	228	208
1965	0	0	0	0	0	452	0	0	2,000	0	0	586	183	203
1966	322	0	0	0	0	0	0	0	2,000	1,519	0	0	231	212
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1971	0	0	0	0	452	0	0	0	1,981	0	0	0	147	164
1972	0	280	0	0	0	0	0	0	2,000	1,470	0	0	226	209
1973	0	0	0	0	0	0	0	0	2,000	354	1,049	0	205	205
1974	0	0	0	0	0	0	0	0	1,210	0	0	0	73	87
1975	0	235	0	0	0	0	0	0	0	403	0	0	38	24
1976	0	0	0	0	0	1,545	0	0	2,000	0	0	0	214	214
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	1,881	1,458	0	201	201
1980	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1981	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	2,000	1,070	334	0	205	205
1985	0	0	0	0	0	72	0	0	2,000	1,064	0	0	189	189
1986	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1987	0	0	0	0	0	0	0	0	432	0	0	0	26	26
1988	0	0	0	0	2,000	1,052	0	0	0	0	0	0	184	184
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	1,057	2,382	0	0	207	208
Avg ('22-'94)	9	10	3	0	87	187	0	0	927	491	140	44	114	115

Note: See "Notes and Acronyms" at end of tables section.

Table 3-19. Diversion and Discharge Rules from the Final Operations Criteria and Application to the Daily Delta Wetlands Operations Model

Diversion Rules	Discharge Rules
X2 at Chipps Island: The X2 location must be downstream of Chipps Island (74 km) for at least 1 day prior to Delta Wetlands diversions in September through November, and for at least 10 days if the initial Delta Wetlands diversion occurs after November 30. The combined Delta Wetlands diversions are then limited to 5,500 cfs for 5 days.	**San Joaquin Inflow:** During the period of April through June, Bacon Island discharges for export are limited to 50% of the San Joaquin River inflow at Vernalis. No Delta Wetlands discharges for export are simulated in April or May because the monthly DWRSIM results do not allow an accurate simulation of the "split-month" VAMP pulse flows and exports. There may be some opportunity for discharging stored water from Bacon Island at the allowable 50% of San Joaquin River flow during April and May. Such discharges were not included in the daily results shown in this report.
X2 at Collinsville: The X2 locations must always be downstream of Collinsville (81 km). This is approximately equivalent to an outflow of 7,100 cfs.	**Webb Tract Discharge Prohibition:** No discharges from Webb Tract are allowed from January through June.
X2 Shift: The Delta Wetlands diversions cannot cause a cumulative upstream shift in the X2 location of more than 2.5 km. This is generally equivalent to limiting the Delta Wetlands diversions to less than 25% of the outflow.	**Habitat Island Discharges:** No discharges from Delta Wetlands habitat islands can be exported by Delta Wetlands or rediverted onto the Delta Wetlands reservoir islands.
Diversion Prohibition: No Delta Wetlands diversions are allowed in the months of April or May.	**Export Capacity:** Delta Wetlands discharges are limited to a specified fraction of the unused permitted CVP and SWP export capacity. This fraction is 75% in February and July, and 50% from March through June (but no Delta Wetlands discharges are simulated in April or May). Delta Wetlands discharges can use 100% of the unused permitted export capacity in August through January.
Surplus Available Water: Delta Wetlands diversions are limited to a specified fraction of the "surplus" available water for diversions as defined by the required Delta outflow and the E/I ratio. Delta Wetlands may divert 90% of this available water in August through January, 75% in February or July, and 50% in March or June.	**Environmental Water:** Delta Wetlands discharges for export made during December through June will be mitigated by an allocation of 10% of the discharge volume to an "environmental water account" that will be controlled by DFG. The daily modeling assumed that an additional 10% of any Delta Wetlands discharges for export were released to increase Delta outflows during the December-June period.
Delta Outflows: Delta Wetlands diversions are limited to a specified fraction of Delta outflow. A maximum of 25% of outflows can be diverted in June through December, and a maximum of 15% of outflows can be diverted in January through March.	**Discharge Maximum:** A calendar-year maximum of 250 TAF of Delta Wetlands storage can be exported. The daily water-year model specifies the amount of Delta Wetlands export from the previous January-September. Any remaining export volume can be exported during the October-December period. The 250-TAF cumulative export limit is reset on January 1.
DFG Limits: At the request of DFG, Delta Wetlands diversions can be limited to a specified fraction of the San Joaquin River flow for a maximum of 15 days between December and March. This criterion is a "real-time" adaptive management criterion that was not included in the daily modeling.	
Delta Smelt: A daily monitoring program is required during Delta Wetlands diversion periods. The Delta Wetlands diversion rate must be reduced to 50% if delta smelt are sampled near the Delta Wetlands islands. This was not included in the daily modeling.	

Diversion Rules	Discharge Rules
DCC Gates and Delta Inflow: During the November-through-January period, Delta Wetlands diversions will be limited to 3,000 cfs if the DCC gates are closed and Delta inflow is less than 30,000 cfs. Delta Wetlands diversions will be limited to 4,000 cfs if the inflow is less than 50,000 cfs and DCC gates are closed.	
Topping Off: The FOC allow some Delta Wetlands diversions for replacement of evaporative losses from the reservoir islands in June through October. This allowance was not included in the daily modeling; Delta Wetlands storage discharge for export generally begins in June from Bacon Island and in July from Webb Tract, so the potential gain in Delta Wetlands storage is limited to about 10 TAF.	

Note: See "Notes and Acronyms" at end of tables section.

Table 3-20. Comparison of Monthly and Daily Operations Model Results for Delta Wetlands Diversions and Exports (1985-1994)

Delta Wetlands Diversions (cfs)

Monthly Model Results

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	(TAF)
85	0	0	3,000	0	640	0	0	0	0	0	60	0	223
86	0	0	0	2,356	1,708	49	0	0	0	0	0	0	248
87	0	0	0	0	806	25	0	0	0	0	60	0	54
88	0	0	0	2,999	0	0	0	0	0	0	0	0	181
89	0	0	0	0	0	0	0	0	0	0	60	0	4
90	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	3,871	31	49	0	0	296	0	60	0	259
94	0	0	0	0	1,442	0	0	0	0	0	0	0	87

Daily Model Results

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	(TAF)
85	0	1,186	2,356	659	226	49	0	0	0	0	128	0	278
86	0	0	0	0	4,074	260	0	0	0	0	0	295	279
87	0	0	0	0	110	1,777	0	0	0	0	154	0	123
88	0	0	0	269	0	0	0	0	0	0	0	0	16
89	0	0	0	0	0	978	0	0	0	0	750	0	104
90	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	199	0	0	0	0	0	0	12
92	0	0	0	0	86	21	0	0	0	0	0	0	6
93	0	0	0	1,729	2,361	650	0	0	1,036	0	425	17	375
94	0	0	0	0	491	1,187	0	0	0	0	141	0	110

Delta Wetlands Exports (cfs)

Monthly Model Results

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	(TAF)
85	0	0	0	0	0	2,000	0	0	1,241	0	0	0	195
86	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212
87	0	0	0	0	0	0	0	0	432	0	0	0	26
88	0	0	0	0	2,000	1,052	0	0	0	0	0	0	184
89	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	3,741	0	0	225
94	0	0	0	0	0	1,253	0	0	0	0	0	0	76

Daily Model Results

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	(TAF)
85	0	0	287	110	0	0	0	0	590	2,839	95	0	237
86	0	0	0	0	0	0	0	0	1,435	1,977	0	0	206
87	259	0	0	0	0	89	0	0	753	706	108	0	115
88	0	0	0	0	259	0	0	0	0	0	0	0	16
89	0	0	0	0	0	0	0	0	750	9	501	191	88
90	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	98	0	0	0	6
92	0	0	0	0	0	89	0	0	0	0	0	0	5
93	0	0	0	0	0	1,184	0	0	157	2,729	0	0	246
94	91	933	0	0	0	0	0	0	757	625	0	126	153

Notes: See "Notes and Acronyms" at end of tables section.

Table 3-21. Delta Wetlands Diversions (cfs) under Cumulative Conditions

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)
1922	0	0	0	0	4,000	307	0	0	214	0	0	0	272
1923	0	0	3,871	15	0	0	0	0	0	0	0	0	234
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	4,000	0	0	0	0	0	0	0	241
1926	0	0	0	0	15	0	0	0	0	0	0	0	1
1927	0	0	0	3,299	664	49	0	0	0	0	0	0	242
1928	0	0	0	3,375	559	49	0	0	0	0	0	0	240
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	379	0	0	0	0	0	0	0	0	23
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	4,000	177	0	0	0	0	0	0	252
1937	0	0	0	0	3,050	1,165	0	0	0	0	0	0	254
1938	0	0	3,871	15	31	49	0	0	296	0	0	0	257
1939	2,474	1,468	13	15	31	0	0	0	0	0	0	0	241
1940	0	0	0	0	4,000	177	0	0	0	0	0	0	252
1941	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1942	0	0	3,871	15	31	49	0	0	0	0	0	0	239
1943	0	0	3,871	15	31	49	0	0	0	0	0	0	239
1944	0	0	0	0	4,000	177	0	0	0	0	0	0	252
1945	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1946	0	0	3,871	15	0	1,039	0	0	0	0	0	0	297
1947	0	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	3,871	15	31	49	0	0	0	0	0	0	239
1952	0	0	3,871	15	30	49	0	0	296	130	115	87	277
1953	53	25	13	15	31	49	0	0	0	0	0	0	11
1954	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1955	0	0	3,000	885	0	0	0	0	0	0	0	0	234
1956	0	0	0	3,871	30	49	0	0	0	0	0	0	238
1957	0	0	0	1,854	2,263	49	0	0	0	0	0	0	251
1958	0	0	1,913	1,972	31	49	0	0	296	0	0	0	257
1959	1,698	0	762	1,988	31	0	0	0	0	0	0	0	270
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	4,000	0	0	0	0	0	0	0	241
1963	0	0	3,000	0	1,510	49	0	0	0	0	0	0	275
1964	0	4,000	0	188	30	0	0	0	0	0	0	0	254
1965	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1966	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1967	0	0	3,871	15	31	49	0	0	296	130	0	154	274
1968	1,304	0	2,785	133	30	49	0	0	0	0	0	0	259
1969	0	0	0	3,871	31	49	0	0	296	0	0	3,343	457
1970	688	25	13	15	31	49	0	0	0	0	0	0	49
1971	0	0	3,871	15	31	49	0	0	0	0	0	0	239
1972	0	0	157	2,048	1,429	0	0	0	0	0	0	0	219
1973	0	0	3,000	885	31	49	0	0	0	0	0	0	239
1974	0	4,000	13	15	31	49	0	0	0	0	0	0	247
1975	0	0	3,000	885	31	49	0	0	0	0	0	0	239
1976	217	0	0	1,834	454	0	0	0	0	0	0	0	151
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1979	0	0	0	0	4,000	307	0	0	0	0	0	0	259
1980	0	0	259	3,626	30	49	0	0	0	0	0	0	239
1981	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1982	0	0	3,871	15	31	49	0	0	0	0	0	1,291	317
1983	2,674	25	13	15	31	49	0	0	296	130	115	87	207
1984	53	25	13	15	30	49	0	0	0	0	0	0	11
1985	0	0	3,000	885	31	0	0	0	0	0	0	0	236
1986	0	0	0	1,894	2,219	49	0	0	0	0	0	0	251
1987	0	0	0	0	806	25	0	0	0	0	0	0	50
1988	0	0	0	2,516	0	0	0	0	0	0	0	0	152
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	3,871	31	49	0	0	0	0	0	0	238
1994	0	0	0	1,316	2,859	0	0	0	0	0	0	0	252
Avg ('22-'94)	126	131	817	838	722	75	0	0	27	5	3	68	169

Note: See "Notes and Acronyms" at end of tables section.

Table 3-22. Delta Wetlands Storage (TAF) under Cumulative Conditions

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1922	0	0	0	0	222	238	234	227	233	0	0	0
1923	0	0	238	238	125	0	0	0	0	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	222	96	92	86	0	0	0	0
1926	0	0	0	0	1	0	0	0	0	0	0	0
1927	0	0	0	203	238	238	234	227	101	0	0	0
1928	0	0	0	208	238	238	234	227	101	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	23	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	230	238	234	227	101	0	0	0
1937	0	0	0	0	169	238	234	227	101	0	0	0
1938	0	0	238	238	238	238	234	227	238	0	0	0
1939	152	238	238	238	238	112	108	101	0	0	0	0
1940	0	0	0	0	230	238	234	227	101	0	0	0
1941	0	0	0	238	238	238	234	227	101	0	0	0
1942	0	0	238	238	238	238	234	227	127	0	0	0
1943	0	0	238	238	238	238	234	227	101	0	0	0
1944	0	0	0	0	230	238	234	227	101	0	0	0
1945	0	0	0	0	222	238	234	227	101	0	0	0
1946	0	0	238	238	125	186	182	175	49	22	14	9
1947	6	5	4	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	238	238	238	238	234	227	101	0	0	0
1952	0	0	238	238	238	238	234	227	238	238	238	238
1953	238	238	238	238	238	238	234	227	101	0	0	0
1954	0	0	0	238	238	238	234	227	101	0	0	0
1955	0	0	184	238	125	0	0	0	0	0	0	0
1956	0	0	0	238	238	238	234	227	101	0	0	0
1957	0	0	0	114	238	238	234	227	101	0	0	0
1958	0	0	118	238	238	238	234	227	238	58	44	0
1959	104	71	117	238	238	112	108	101	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	222	96	92	86	0	0	0	0
1963	0	0	184	156	238	238	234	227	101	0	0	0
1964	0	238	227	238	238	112	108	101	0	0	0	0
1965	0	0	0	238	238	238	234	227	101	0	0	0
1966	0	0	0	238	238	238	234	227	101	0	0	0
1967	0	0	238	238	238	238	234	227	238	238	157	161
1968	238	60	231	238	238	238	234	227	101	0	0	0
1969	0	0	0	238	238	238	234	227	238	42	0	199
1970	238	238	238	238	238	238	234	227	101	0	0	0
1971	0	0	238	238	238	238	234	227	101	0	0	0
1972	0	0	10	135	215	89	85	79	0	0	0	0
1973	0	0	184	238	238	238	234	227	101	0	0	0
1974	0	238	238	238	238	238	234	227	101	0	0	0
1975	0	0	184	238	238	238	234	227	101	0	0	0
1976	13	0	0	113	137	11	7	1	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	222	238	234	227	101	0	0	0
1979	0	0	0	0	222	238	234	227	101	0	0	0
1980	0	0	16	238	238	238	234	227	101	0	0	0
1981	0	0	0	238	238	238	234	227	101	0	0	0
1982	0	0	238	238	238	238	234	227	109	12	0	77
1983	238	238	238	238	238	238	234	227	238	238	238	238
1984	238	238	238	238	238	238	234	227	101	0	0	0
1985	0	0	184	238	238	112	108	101	0	0	0	0
1986	0	0	0	116	238	238	234	227	101	0	0	0
1987	0	0	0	0	45	43	39	33	0	0	0	0
1988	0	0	0	155	38	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	238	238	238	234	227	101	0	0	0
1994	0	0	0	81	238	112	108	101	0	0	0	0
Avg ('22-'94)	20	25	75	125	159	142	139	135	68	12	9	13

Note: See "Notes and Acronyms" at end of tables section.

Table 3-23. Delta Wetlands Discharges for Export (cfs) under Cumulative Conditions

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total (TAF)	Calendar (TAF)
1922	0	0	0	0	0	0	0	0	0	3,661	0	0	221	221
1923	0	0	0	0	2,000	1,988	0	0	0	0	0	0	240	241
1924	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	2,000	0	0	1,320	0	0	0	200	200
1926	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1928	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1929	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	376	0	0	0	0	0	0	0	23	23
1933	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1937	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1938	0	0	0	0	0	0	0	0	0	3,741	0	0	225	226
1939	0	0	0	0	0	2,000	0	0	1,587	0	0	0	216	216
1940	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1941	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1942	0	0	0	0	0	0	0	0	1,578	1,928	0	0	211	211
1943	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1944	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1945	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1946	0	0	0	0	2,000	0	0	0	2,000	324	0	0	261	261
1947	0	0	0	46	0	0	0	0	0	0	0	0	3	3
1948	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1952	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1954	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1955	0	0	0	0	2,000	1,988	0	0	0	0	0	0	240	241
1956	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1957	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1958	0	0	0	0	0	0	0	0	0	2,803	100	658	215	248
1959	0	543	0	0	0	2,000	0	0	1,587	0	0	0	249	216
1960	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	2,000	0	0	1,320	0	0	0	200	200
1963	0	0	0	451	0	0	0	0	2,000	1,519	0	0	239	249
1964	0	0	160	0	0	2,000	0	0	1,587	0	0	0	226	216
1965	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1966	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1967	0	0	0	0	0	0	0	0	0	0	1,200	0	72	251
1968	0	2,961	0	0	0	0	0	0	2,000	1,519	0	0	390	212
1969	0	0	0	0	0	0	0	0	0	3,064	562	0	218	219
1970	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1971	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1972	0	0	0	0	0	2,000	0	0	1,203	0	0	0	193	193
1973	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1974	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1975	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	224
1976	0	199	0	0	0	2,000	0	0	0	0	0	0	132	121
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1979	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1980	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1981	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1982	0	0	0	0	0	0	0	0	1,866	1,453	80	0	205	205
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1985	0	0	0	0	0	2,000	0	0	1,587	0	0	0	216	216
1986	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1987	0	0	0	0	0	0	0	0	432	0	0	0	26	26
1988	0	0	0	0	2,000	568	0	0	0	0	0	0	155	155
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	2,000	1,519	0	0	212	212
1994	0	0	0	0	0	2,000	0	0	1,587	0	0	0	216	216
Avg ('22-'94)	0	51	2	7	115	309	0	0	1,064	857	27	9	147	147

Note: See "Notes and Acronyms" at end of tables section.

Notes and Acronyms

The following acronyms and terms appear in the tables that accompany Chapter 3, "Water Supply and Operations".

CCWD	Contra Costa Water District
cfs	cubic feet per second
CVP	Central Valley Project
DCC	Delta Cross Channel
DFG	California Department of Fish and Game
E/I ratio	allowable amount of exports as a percentage of inflow
km	kilometer
SJR	San Joaquin River
SWP	State Water Project
TAF	thousand acre-feet
VAMP	Vernalis Adaptive Management Plan
WQCP	Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary

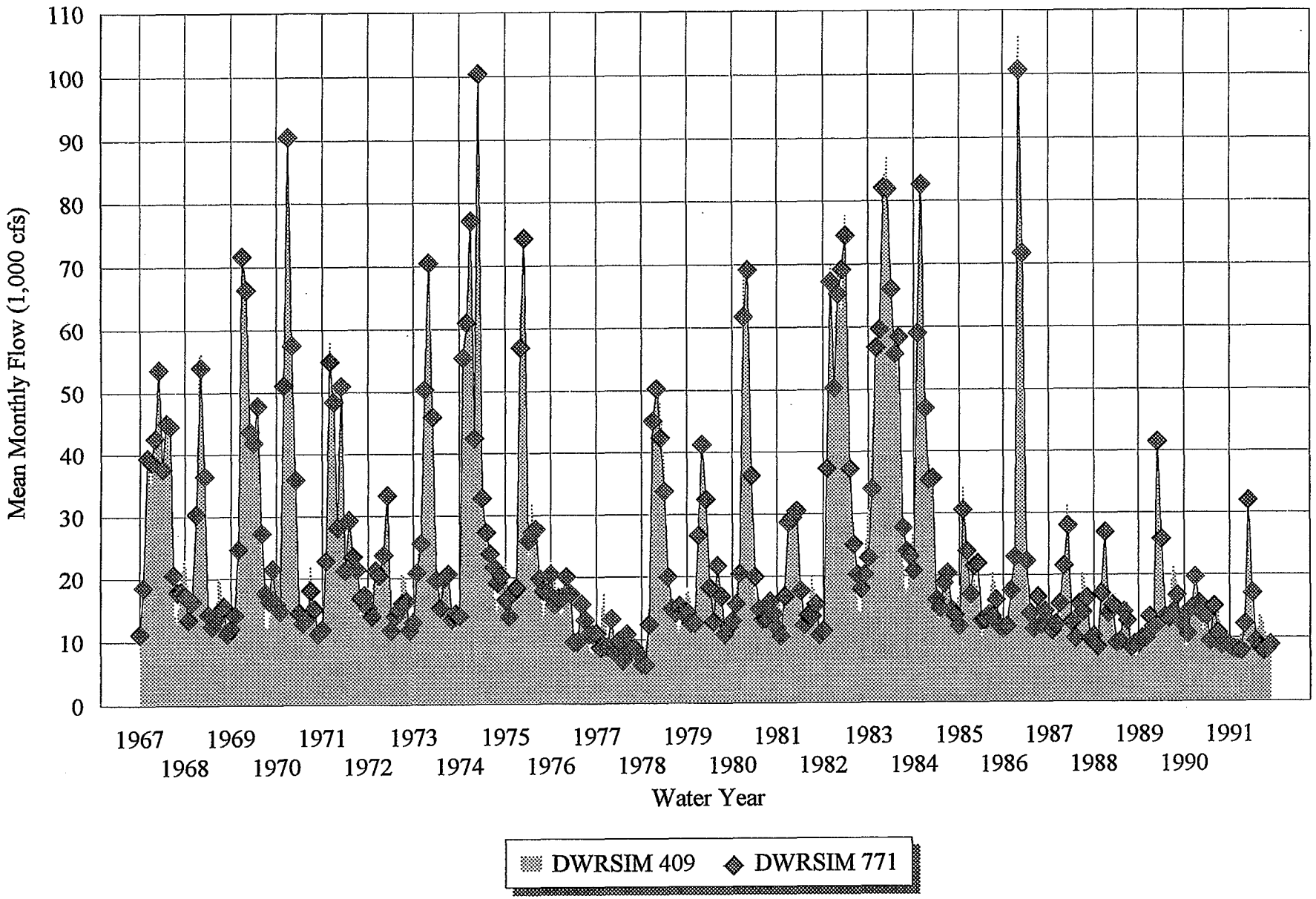

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Figure 3-1
DWRSIM-Simulated Mean Monthly Sacramento River Flows: Studies 409 and 771

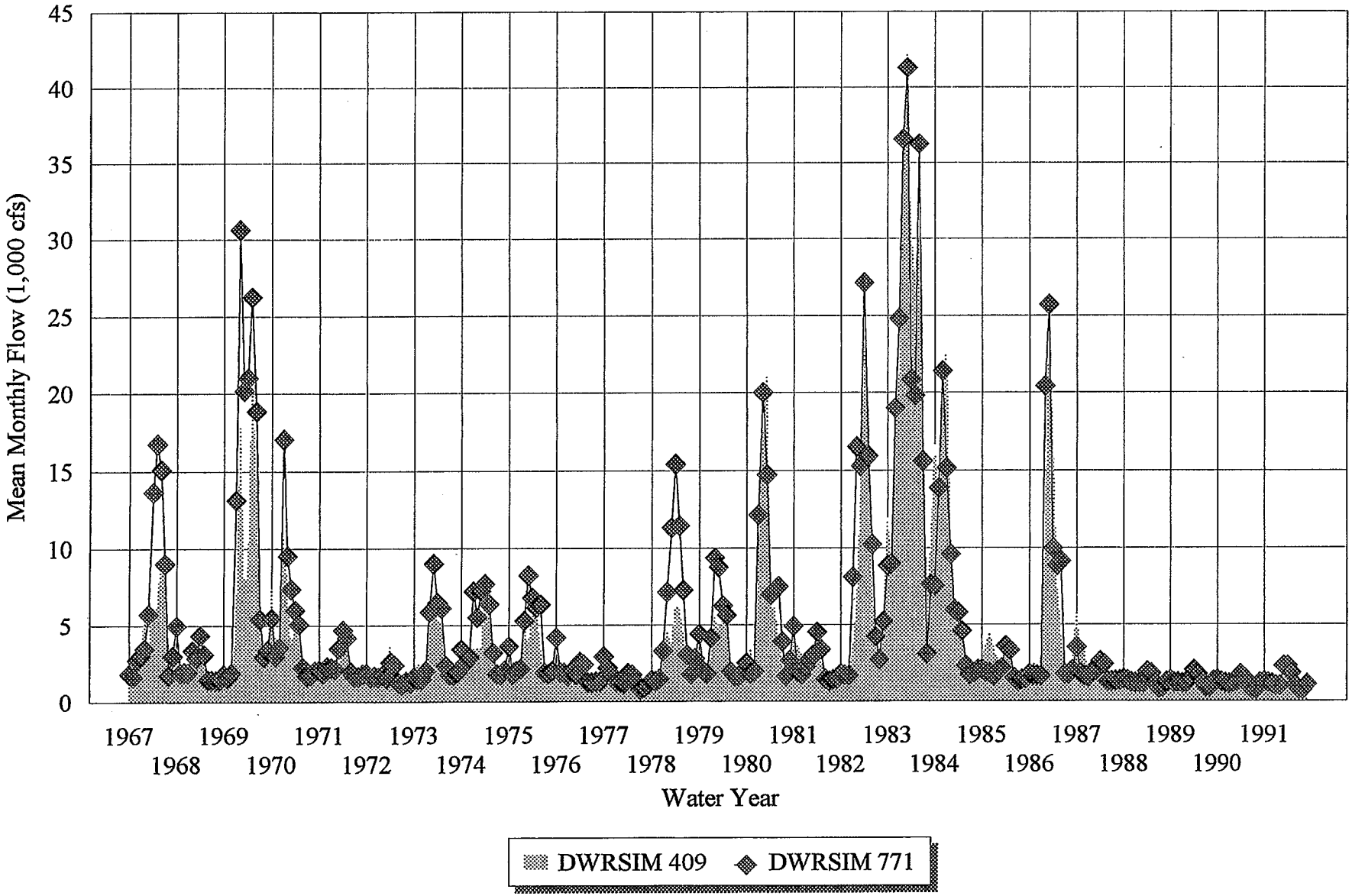

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Figure 3-2
DWRSIM-Simulated Mean Monthly San Joaquin River Flows: Studies 409 and 771

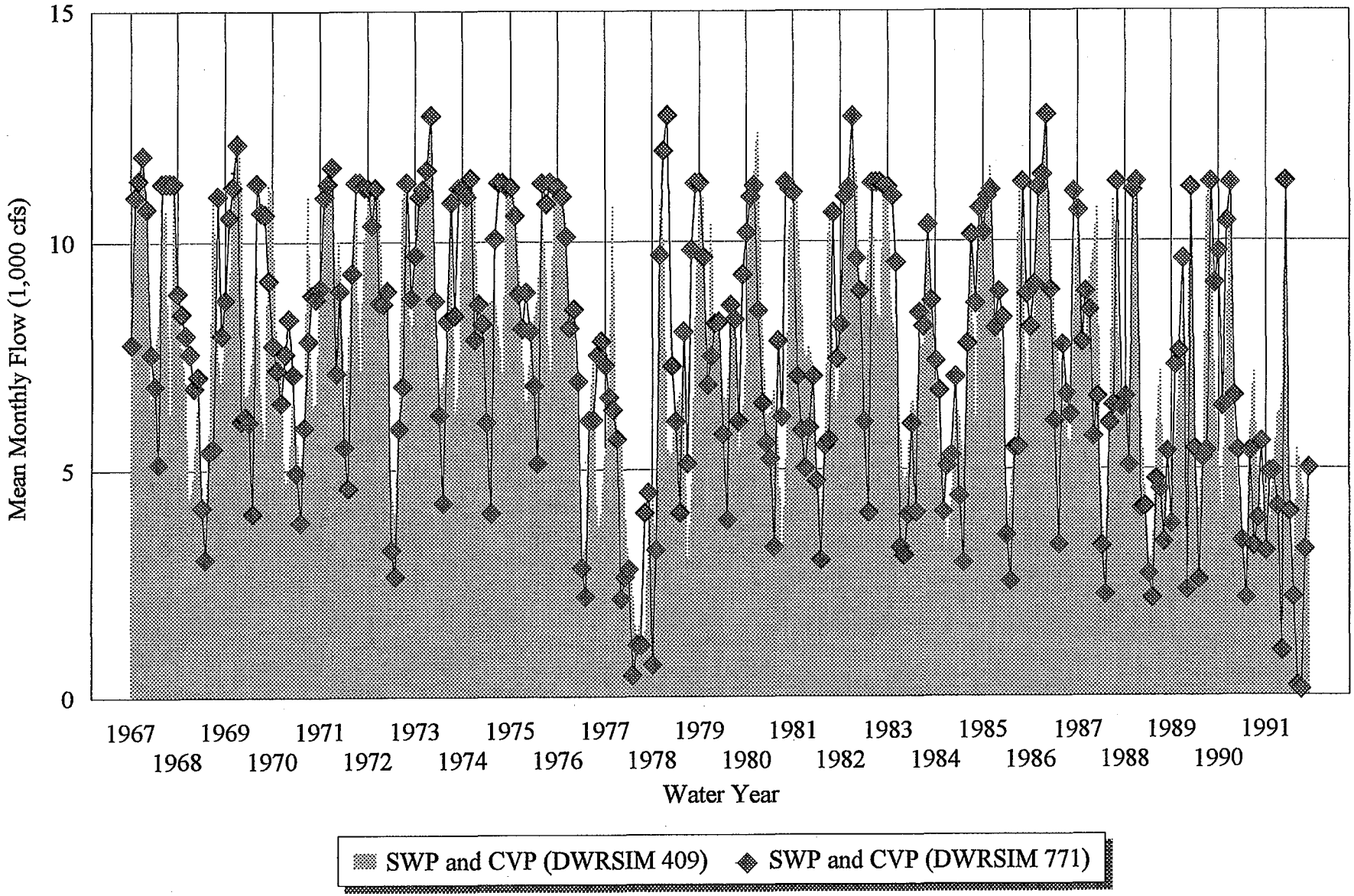

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Figure 3-3
DWRSIM-Simulated Mean Monthly SWP and CVP Exports: Studies 409 and 771

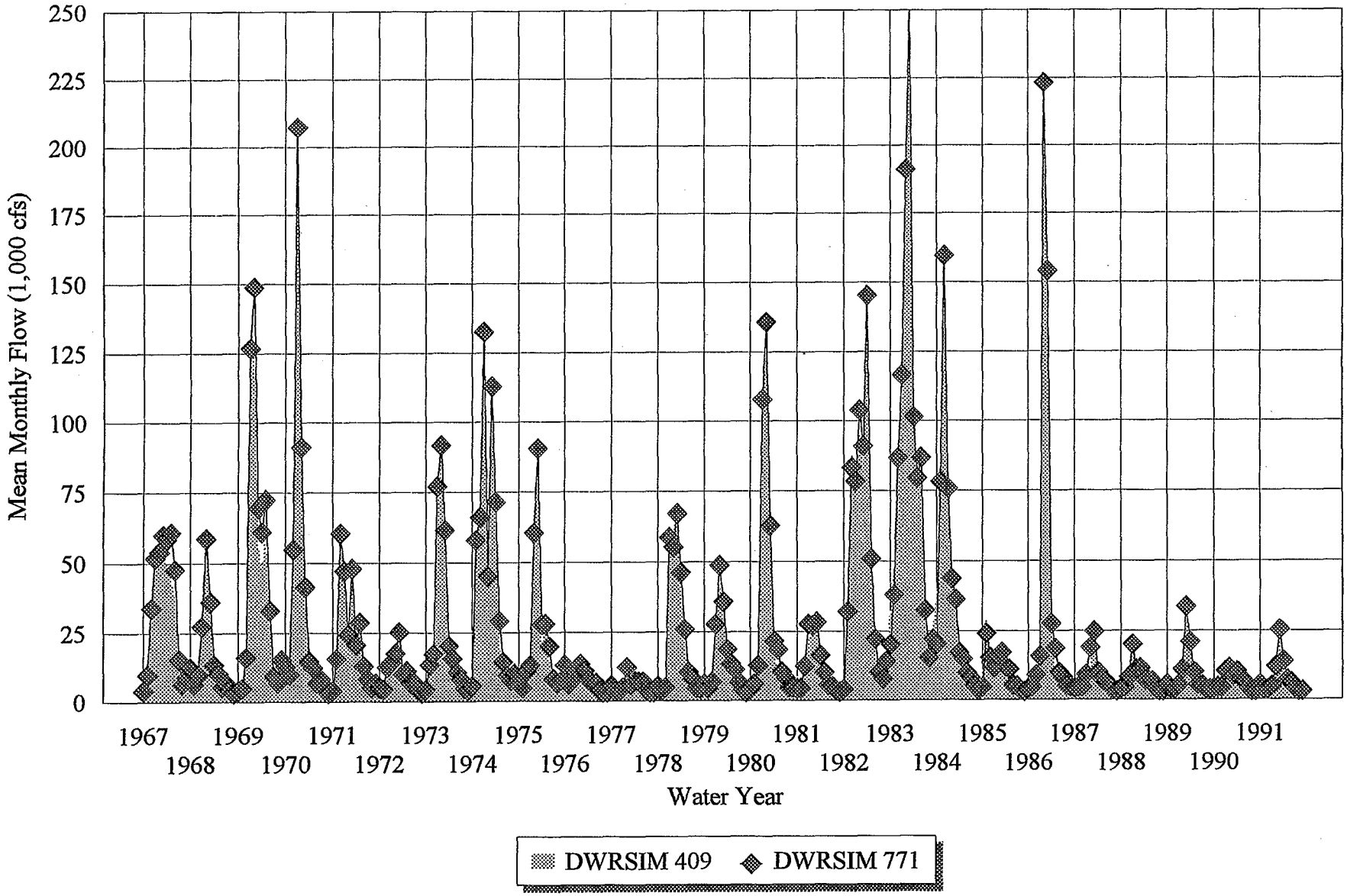

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Figure 3-4
DWRSIM-Simulated Mean Monthly Delta Outflow: Studies 409 and 771

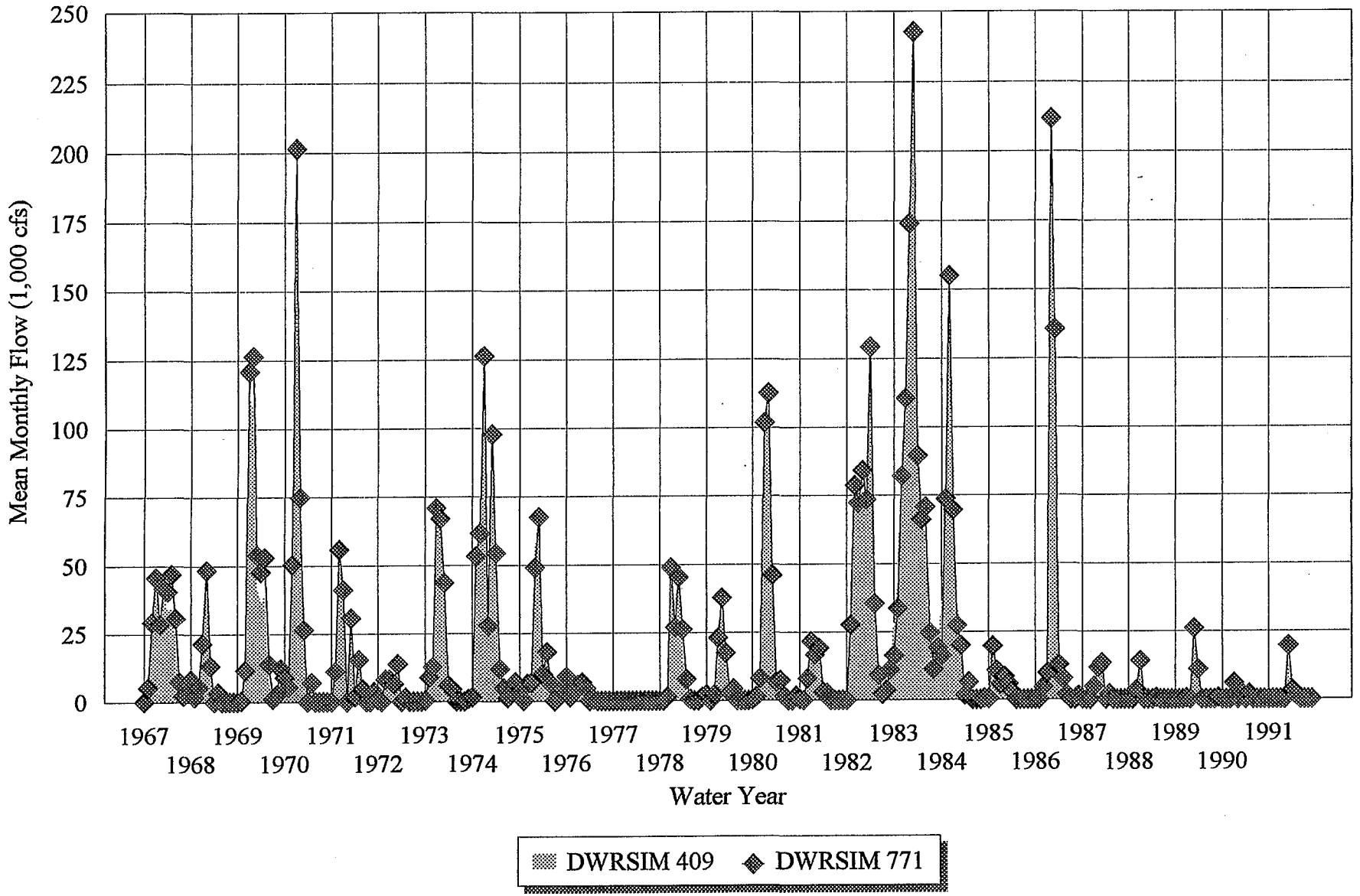

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Figure 3-5
DWRSIM-Simulated Mean Monthly Available Water for Delta Wetlands Diversion: Studies 409 and 771

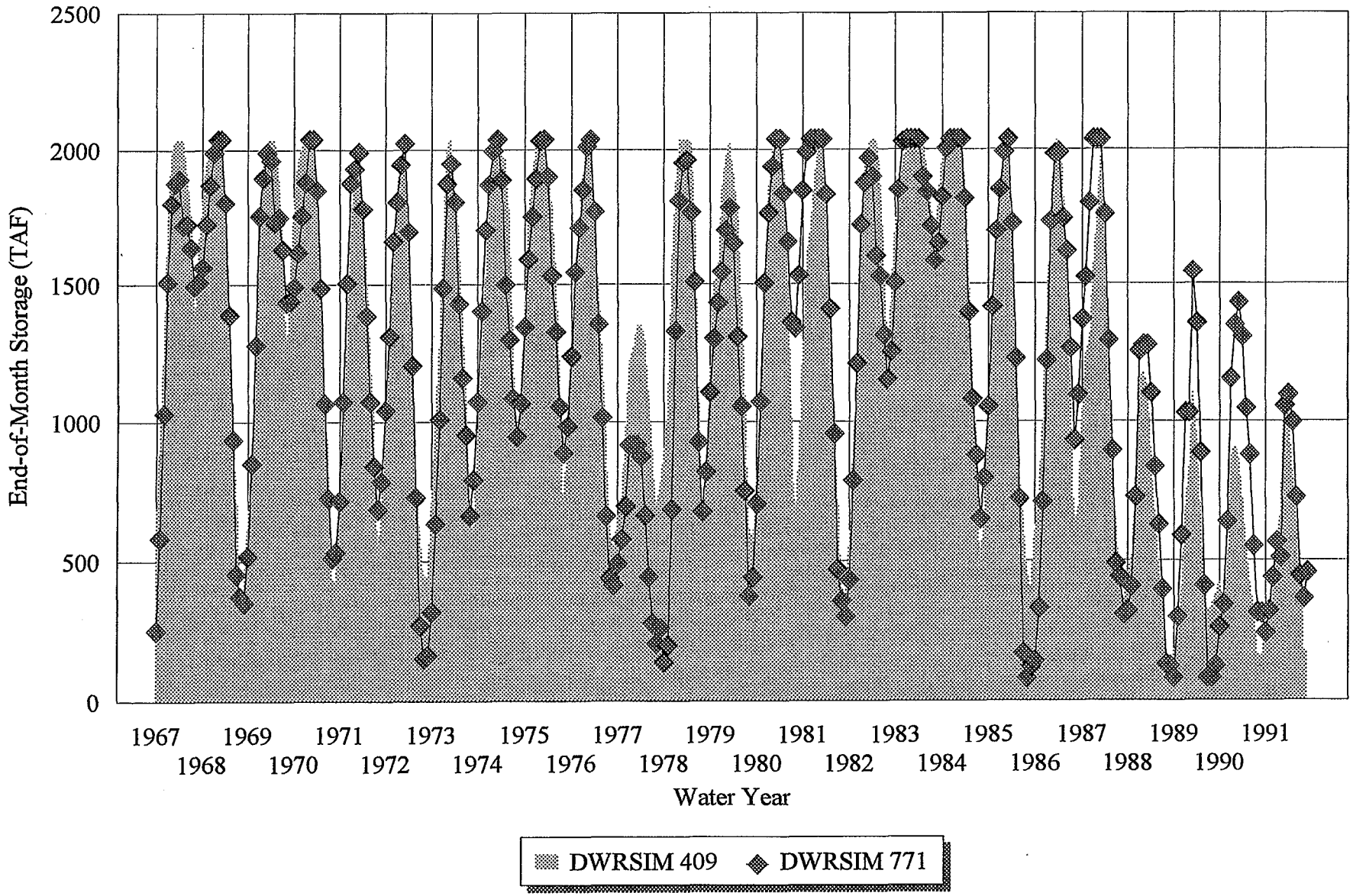

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Figure 3-6
DWRSIM-Simulated Mean Monthly SWP and CVP San Luis Reservoir Storage: Studies 409 and 771

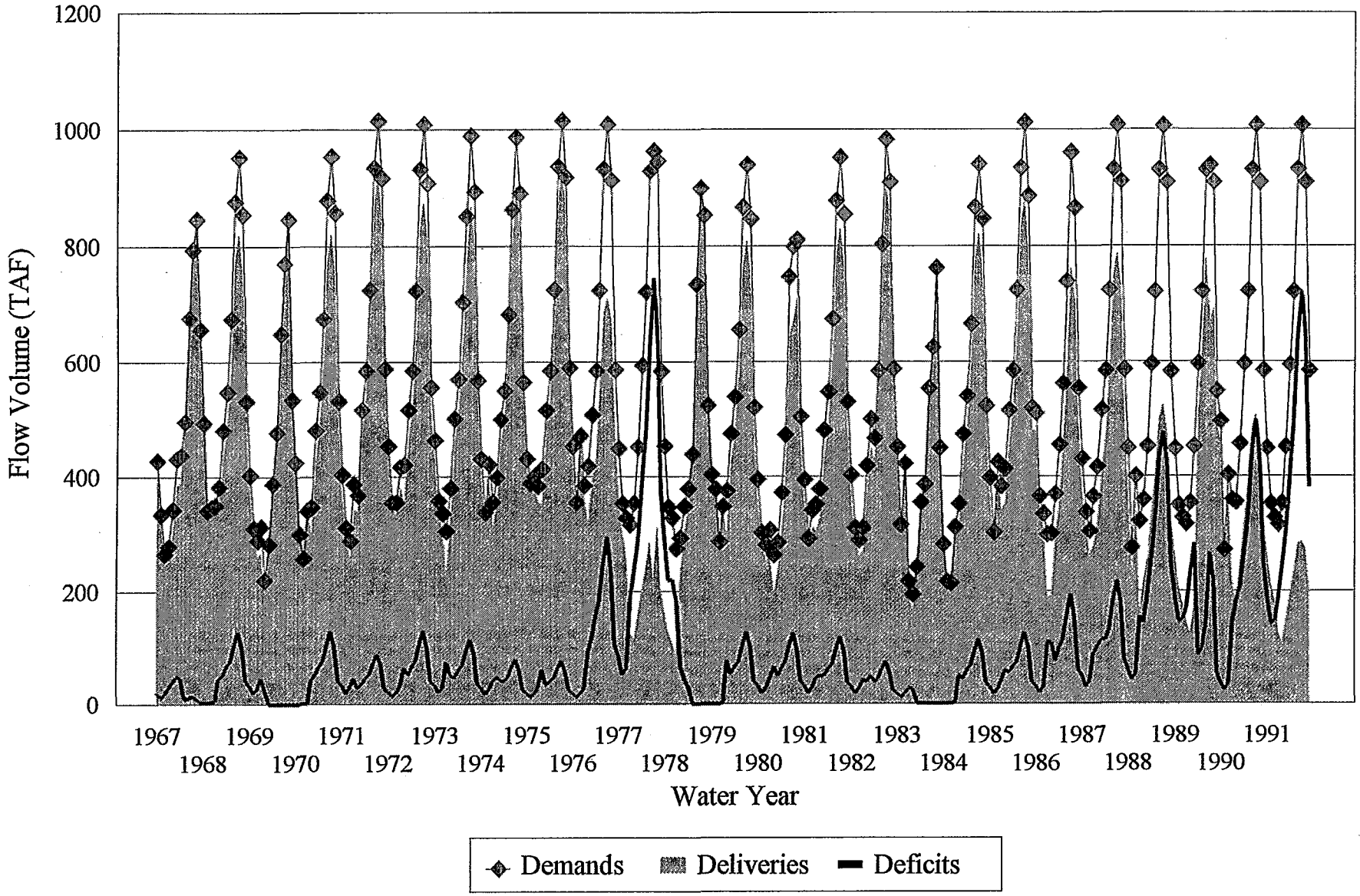

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Figure 3-7
South-of-Delta Demands and Deliveries:
DWRSIM Study 771 with VAMP

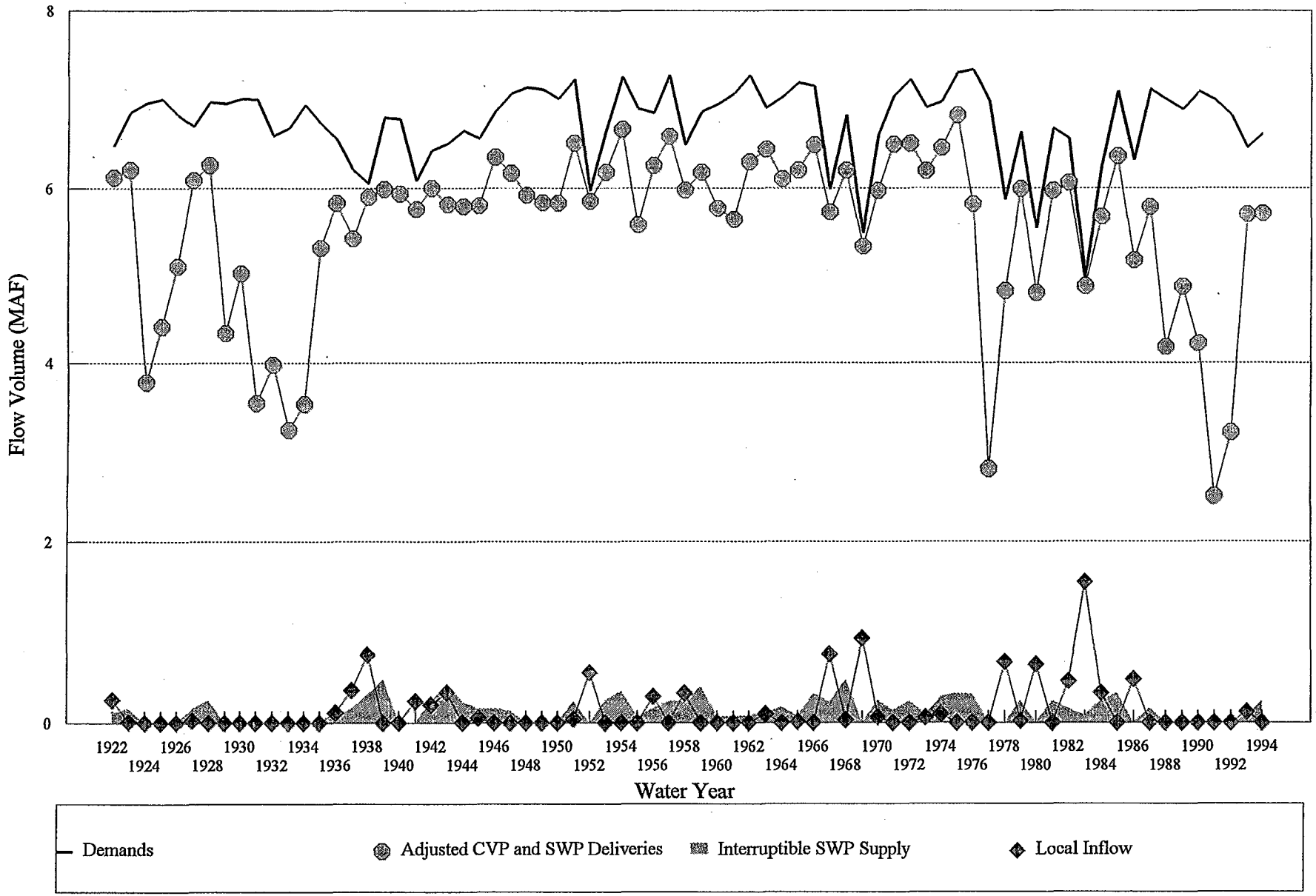

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Figure 3-8
Annual Demands and Deliveries for South-of-Delta Water Supply: DWRSIM Study 771 as Adjusted by DeltaSOS for Joint Point of Diversion

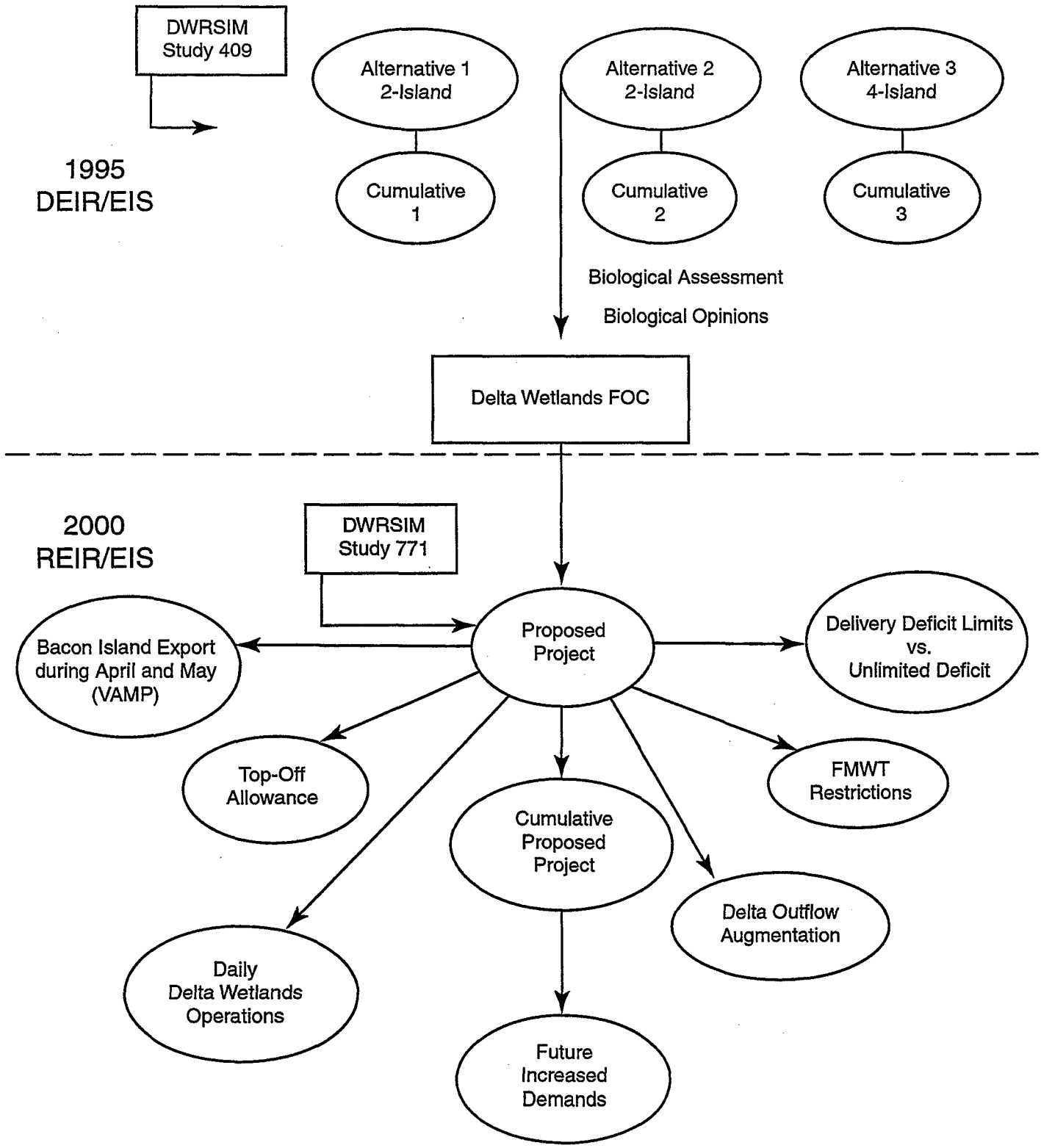

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Figure 3-9
Relationship between 1995 DEIR/EIS Alternatives and 2000 REIR/EIS Simulated Potential Project Operations

C—0 6 2 7 2 1

C-062721

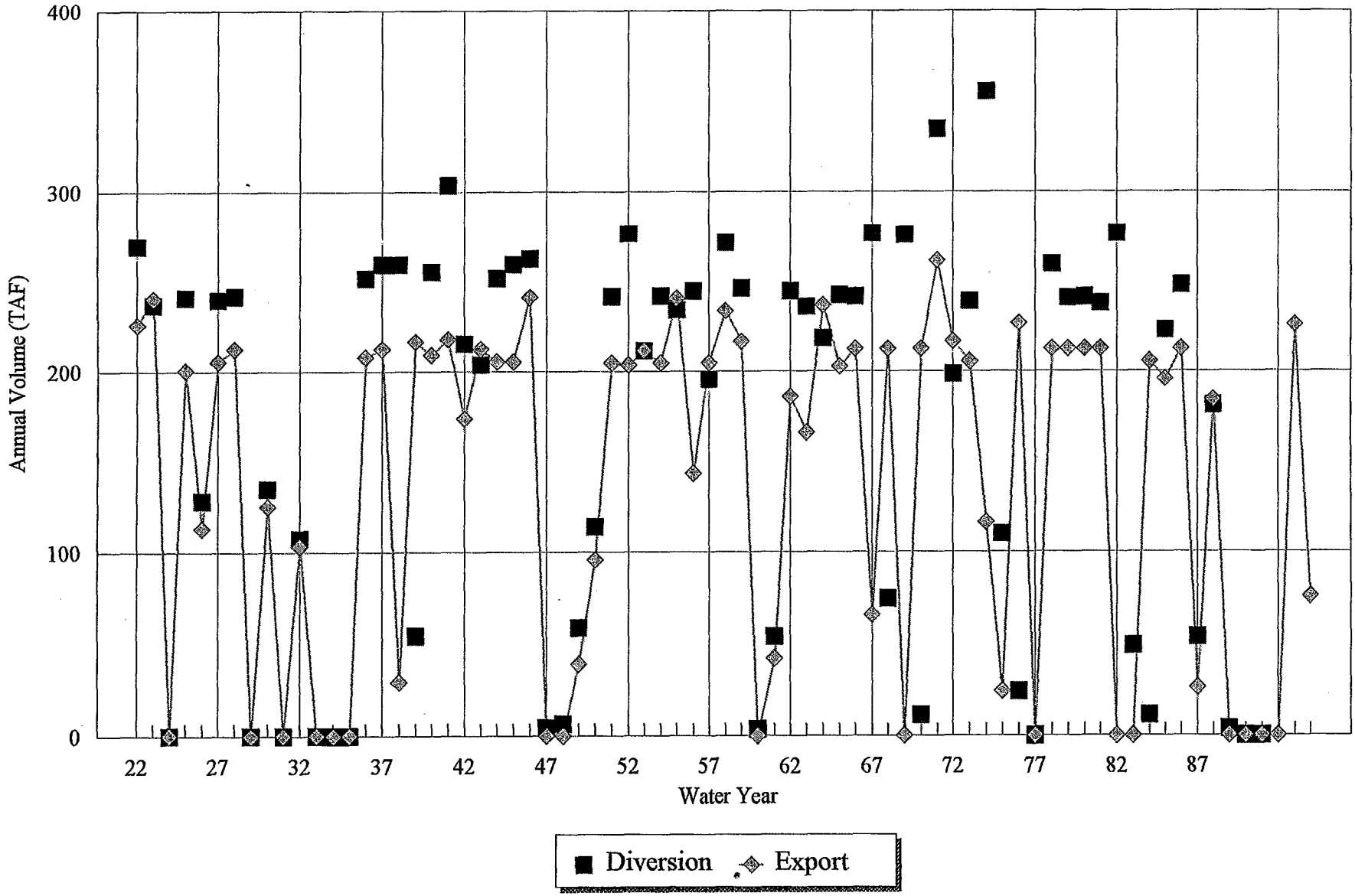

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Figure 3-10
Simulated Annual Delta Wetlands Diversion and Export Volumes Unlimited by South-of-Delta Delivery Deficits

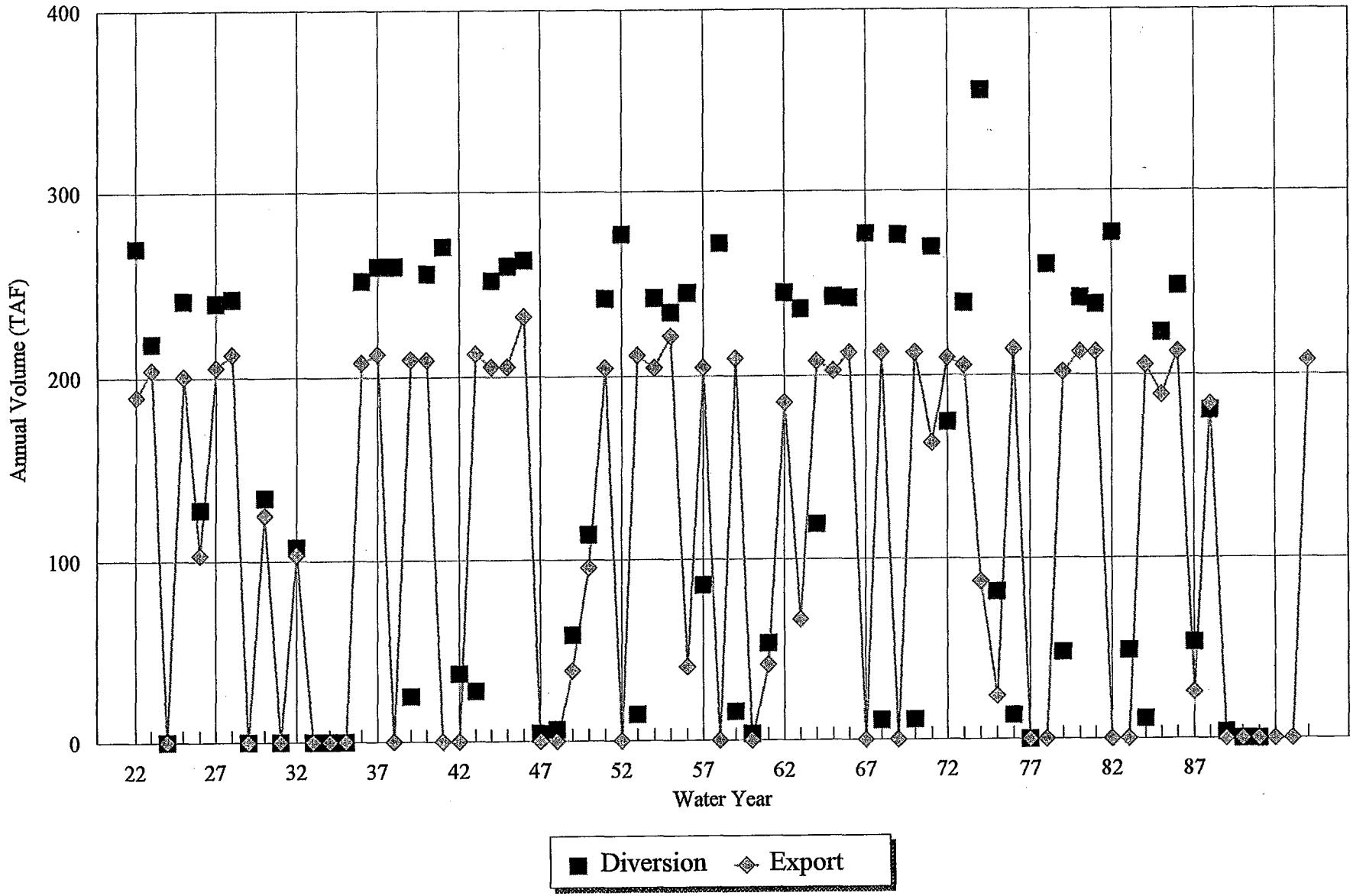

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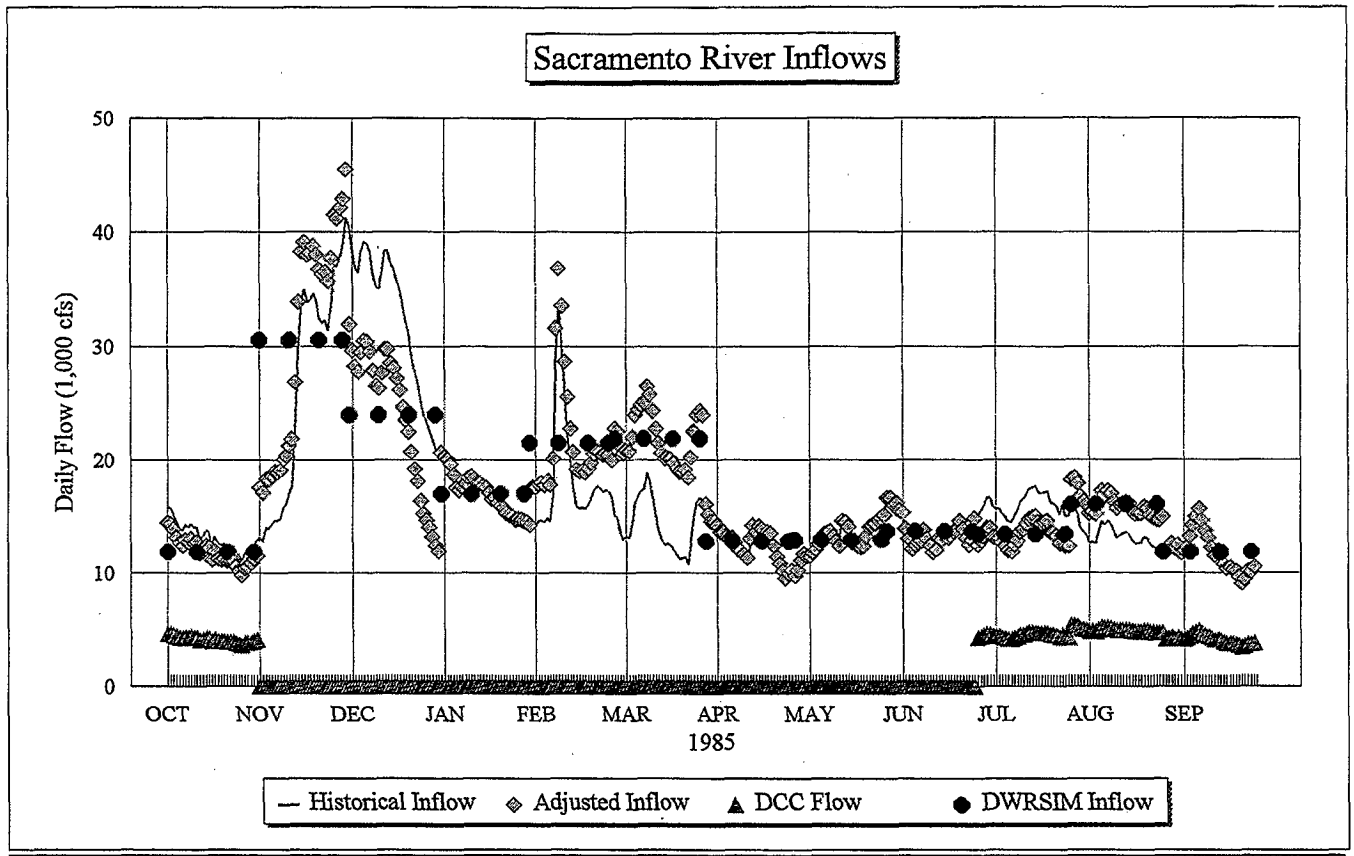
Figure 3-11
Simulated Annual Delta Wetlands Diversion and Export Volumes Limited by South-of-Delta Delivery Deficits



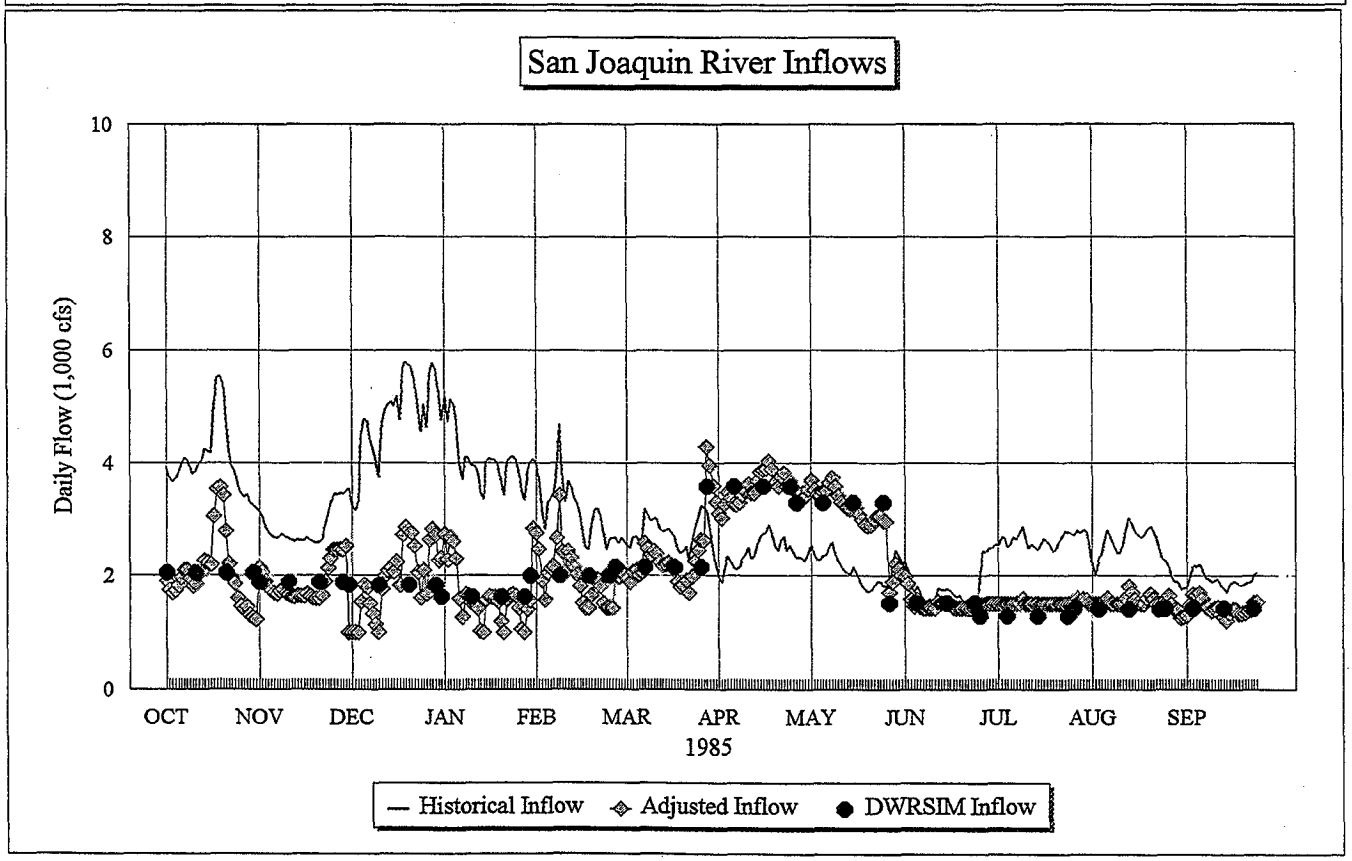


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Figure 3-12
Daily Adjusted Sacramento and San Joaquin River Inflows for Simulating Delta Wetlands Final Operations Criteria for 1985

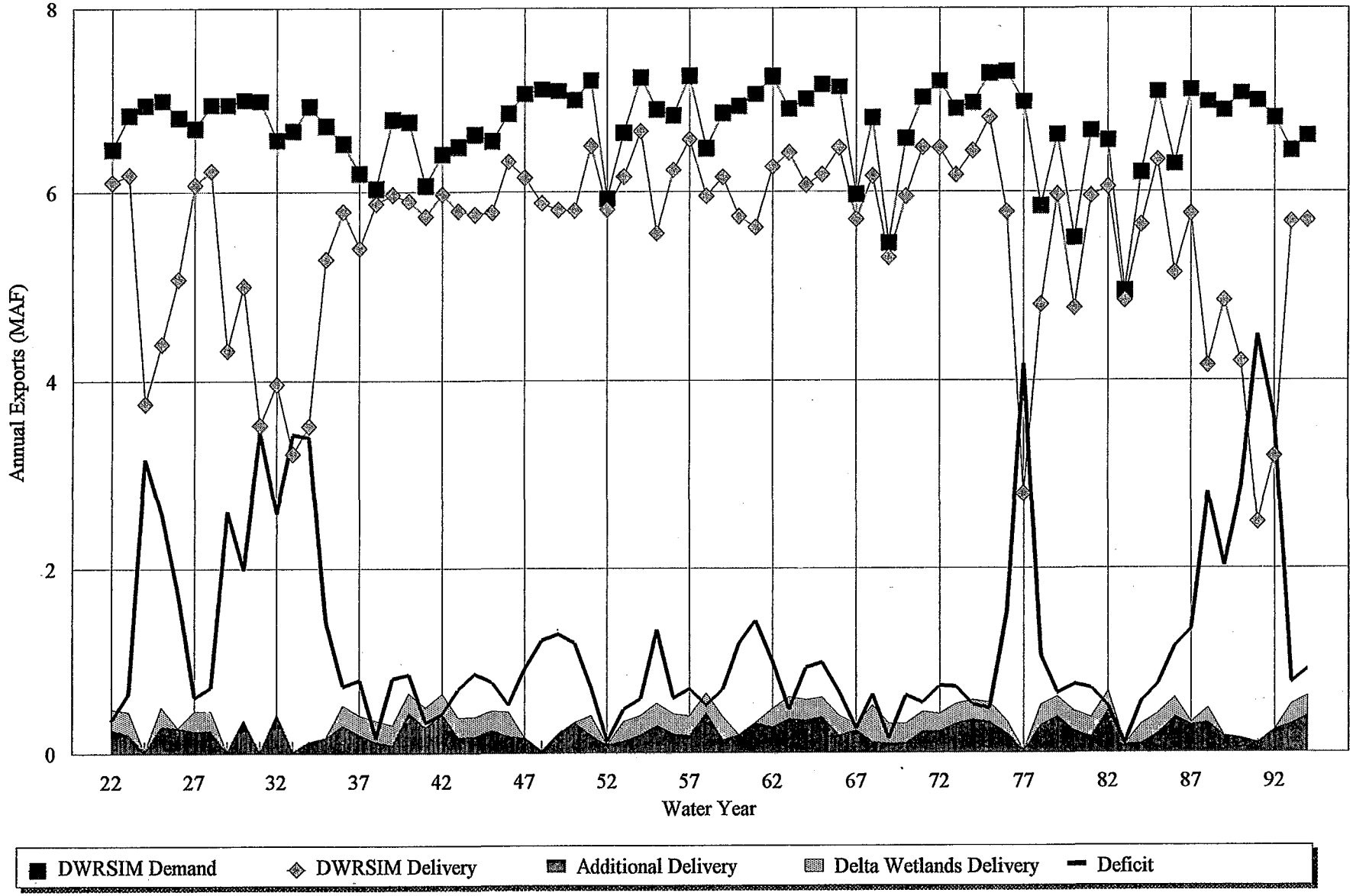

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Figure 3-13
Simulated Annual Delta Demands and Deliveries under Cumulative Conditions